

A REGIONAL OPEN AND RECREATION SPACE PLAN

for the municipalities of the Ten Mile River and Narragansett / Mt. Hope Bay Watersheds

Attleboro, Fall River, North Attleborough, Plainville
Rehoboth, Seekonk, Swansea, Wrentham



June 2000

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EXECUTIVE SUMMARY

The municipalities within the Ten Mile River and Narragansett/Mount Hope Bay Watersheds are at a crossroads in planning to meet the conservation, recreation and open space needs of their citizens over the next several years. While great deal of time and effort is being spent on updating local Open Space Plans, Master Plans, Community Action Statements and growth management related studies, it has become very apparent that how we plan regionally may be one of the most important tasks we undertake. Our shared regional resources, including, water supplies, natural land riparian corridors, cultural resources, historical resources, archaeological resources, and numerous others, continue to be threatened and encroached upon, as we continue to grow.

Growth is inevitable. It is not necessarily unwelcome - indeed, it can be - beneficial if properly planned. It does not have to result in sprawl and the loss of local character. The Commonwealth's Executive Office of Environmental Affairs (EOEA), as part of its Watershed Initiative, has also recently focused a great deal of fiscal and physical resources on regional, watershed based planning efforts. EOEA has, in the past two years, supported: the North Attleborough/Plainville West Side Growth Study; the Bungay Conservation and Oak Hill recreation acquisitions in Attleboro; the River Aware monitoring effort in Swansea; the Coles Brook Study in Seekonk; a Watershed Action Plan for then Ten Mile River; open space plan updates in Plainville, Wrentham, Seekonk, Attleboro, North Attleborough, Swansea and Rehoboth, and; the preparation of this plan, a Regional Open Space and Recreation Plan, for the Ten Mile River and Narragansett/Mount Hope Bay Watersheds.

The process of working with several municipalities to construct a plan of this nature, for a geographic area defined by its watersheds, is without precedent in Massachusetts. This plan was built from the ground up by the participants. Planning with a facilitator and technical advisor, the goals, objectives and needs outlined in this plan reflect what was "brought to the table" by the communities, specifically: the need to improve regional water quality; the need to develop through trails and greenways; the need to increase the amount of permanently protected open land; the need to continue to meet as an officially delegated Regional Open Space Committee; the need to promote regulatory consistency in construct and application, throughout the region, and; the need to assume a single watershed identity in order to strengthen the

sense of regionalism and better promote the causes of the region as a whole.

The Regional Open Space and Recreation Plan is a tool by which we can connect to local plans, and vice versa, in order to better preserve the qualities of both community and life on a watershed-wide basis.

On June 9, 1999, speaking to a crowded auditorium at the Moakley Center on the campus of Bridgewater State College, addressing the issue of open space preservation and working together to make it happen, EOEА Secretary Bob Durand said:

"Not only have we lost our open spaces, farmland and scenic vistas, but we have witnessed the bulldozing of our historic landscapes...we are now becoming increasingly aware of the cost of sprawl on our rivers, streams, lakes, ponds, coastal waters and water supplies."

"This is [community preservation of open space] about maintaining community character and preserving what is important to the fabric of our communities."

"We need to give them [municipalities] the tools they need to chart the future and preserve the quality of life."



Chapter II. Regional Open Space and Recreation Plan Ten Mile & Narragansett and Mount Hope Bay watersheds

II. INTRODUCTION

The goal of the Regional Open Space and Recreation Plan is to encourage the communities constituting the Ten Mile & Narragansett and Mount Hope Bay watersheds to cooperate in identifying regional issues and in implementing regional planning initiatives. Within the context of this plan, the watershed is the geographic unit used to define "regional." Using the watershed as a planning unit is consistent with the goals of the Massachusetts Watershed Initiative:

1. Measurable improvement in water quality and environmental quality;
2. Protection and restoration of habitats;
3. Improved public access to, and balanced use of, waterways;
4. Improved local capacity to protect water resources; and,
5. Shared responsibility for watershed protection and management.

This approach is logical considering that many of the municipal open space action items either involve linear features such as trails and greenways which follow stream corridors or involve other natural resources which cross municipal boundaries.

The Massachusetts Watershed Initiative defines "watershed" as "an area of land that naturally captures and channels the runoff and subsurface flow to one common point, such as a lake or river." Further, the Initiative defines the "watershed approach" as "An integrated ecosystem management methodology based on:

- Geographically defined management...
- Local people solving local problems...
- Partnership of watershed stakeholders...
- Guidance by science and input...
- Watershed based prioritization...

In furtherance of Watershed Initiative goals and objectives, the purposes of the Regional Open Space Plan are: 1) to supplement municipal open space planning in these two watersheds, and 2) to consolidate and regionally prioritize those municipal "priority action items" which have regional impact. By bringing these items together,

within one planning document for the first time, we might collectively, as municipalities, state, local and regional agencies, better orchestrate our efforts to enhance, preserve and offer quality open space opportunities to our watershed(s) population.

As this regional plan has no precedent within the Ten Mile and Narragansett/Mount Hope Bay Watersheds, we are in the unique position of being able to create a collective vision for the future. The paths, trails, corridors, landscapes and bikeways mentioned within this plan may or may not become a reality. The growth management, zoning and conservation design tools outlined within this plan may or may not be employed. But, the first steps in developing a means, format and a regional will to plan for the future have been "put on the table" by a representative, Regional Open Space Committee.

A. Planning Process and Participation

The Ten Mile River and Narragansett/Mount Hope Bay Watershed Regional Open Space and Recreation Plan was developed by municipal and local volunteers working with the EOEA Basin Team Leader and a planning facilitator/consultant from SRPEDD. Meetings were held at the SRPEDD offices on a monthly basis between May, 1999 and May of 2000. Subcommittees, working on specific issues, met more or less frequently as was required.

Initial work centered on reviewing the most recent municipal Open Space and Recreation Plans within the Ten Mile River and Narragansett/Mount Hope Bay Watersheds to seek any regionally oriented action items. These items were extracted from the municipal plans and circulated to Regional Open Space Committee members for accuracy, relevance and to determine whether or not specific items had been or were scheduled to be addressed. A final list of items to be retained and addressed in the Regional Open Space and Recreation Plan was developed by the Committee after a series of monthly meetings and additional sub-committee meetings.

Each of the monthly meetings was organized around a topic or topics relevant to the format of a traditional Open Space Plan (per the Division of Conservation Services Open Space Planner's Handbook, rev. 1993). Committee members were responsible for both informing and gathering information from the appropriate parties within their respective municipalities. The EOEA Basin Team Leader maintained contacts with,

and provided information from, the appropriate state and local agencies. The SRPEDD planner/ facilitator conducted the monthly meetings, recorded the sessions in writing, provided access to GIS data and maps, and provided direct technical assistance to the municipalities in between monthly meetings.

The EOEA Basin Team Leader and the SRPEDD representative also provided the Committee access to federal, state and local organizations and individuals to offer suggestions and guidance. Several of these people attended monthly working meetings to provide direct input, explain the relevance of their work and to answer questions posed to them by Committee members.

All of these activities were part of a "planning with" (rather than "planning at") strategy employed by the SRPEDD planner/facilitator. This approach allowed the Committee to build a plan from the ground up, with local references, initiatives and points of identification and buy-in. In the end, this planning approach yielded, besides a Committee generated plan, the desire to implement the recommendations of the plan as well as the desire to continue working together as a Regional Open Space Committee in order to facilitate the implementation of the plan.

III. REGIONAL SETTING

A. Regional Context

The Ten Mile River Watershed, with a total drainage area of about 50 square miles, is the smallest of the 27 major Massachusetts watersheds. Tucked into the southeast corner of the state, it is flanked by the Blackstone River, Charles River, Taunton River, and Narragansett Bay Watersheds. The watershed drains parts of Attleboro, North Attleborough, Plainville, Seekonk, Wrentham, Foxborough, Rehoboth, Providence RI, and Pawtucket RI.

The Ten Mile River's headwaters begin in Plainville and the river flows slowly south forming many ponds before it reaches its ultimate outlet into the Seekonk and Providence Rivers of Narragansett Bay. The Ten Mile picks up flow from its first major tributary, the Bungay River, in Attleboro. The Bungay, whose headwaters extend into Foxborough, is flanked by some of the state's best southern red maple swamps and it contains reaches considered by locals to be prime for canoeing. In addition, the North Attleborough National Fish Hatchery is located in its upper reaches. The Ten Mile and Bungay Rivers provide modest stocked trout fishing opportunities in the spring. As the Ten Mile River continues south, it flows through numerous ponds (including Falls Pond and Dodgeville Pond). In Seekonk, the Ten Mile is impounded in Rhode Island's Ten Mile River Reservation. There it receives flow from its other major tributary, the Seven Mile River. A large section of the Seven Mile River watershed is designated as an Outstanding Resource Water due to its use as a public surface water supply for the City of Attleboro.

Attleboro and North Attleborough comprise the urban core of the watershed that, at the turn of the century, supported a diversified mix of industries led by jewelry plating and textiles manufacturing. As a result of increasing levels of industrial use and residential development, the Ten Mile River was grossly polluted by the mid 1900's. The Ten Mile is much cleaner today thanks in part to the construction of two wastewater treatment plants. However, the nutrient enrichment and high concentrations of metals in the water column and sediments continue to impact the basin's biological communities and diminish its recreational potential. The Ten Mile River and nearly all its tributaries are designated as Class B waters (fishable, swimmable). Only the Four Mile Brook and the upper reach of the Seven Mile River are designated as Class A "outstanding resource" waters (ORWs). However, the entire Seven Mile

River is listed on the state impaired waters list as not meeting surface water quality standards. Also included on the list is the entire length of the Ten Mile River, Speedway Brook, Dodgeville Pond, and four other ponds pending confirmation.

The Mount Hope Bay Shores and Narragansett Bay Watershed is located in southeastern Massachusetts and a portion of eastern Rhode Island (hereinafter referred to as the "Narragansett" Watershed). In Massachusetts, the watershed has an area of 112 square miles in the eight municipalities of Fall River, Swansea, Rehoboth, Seekonk and smaller portions of Westport, Dighton, Somerset and Attleboro. Mount Hope Bay is located at the mouth of the Taunton River. The five (5) smaller rivers that comprise this watershed are the Lees, Cole, Kickamuit, Palmer and Runnins Rivers. All of these waterbodies drain into Narragansett Bay, an estuary of national significance as designated by the EPA. Although the basin includes the urban core of the City of Fall River, the majority of the land areas are small residential communities and strip mall developments interspersed among woodlands, wetlands, and actively farmed agricultural lands.

There are numerous lakes within this watershed, including two that are over 500 acres in size, namely: North Wattuppa Reservoir (1,750 acres) and South Wattuppa Pond in Fall River and Westport (1,660 acres). The former is used as Fall River's principal water supply. Mount Hope Bay and the five major rivers are designated as Class B waters. Only the Lees River and the mouth of the Cole River are designated as Class A, "outstanding resource" waters (ORWs). However, the entire Cole, Runnins, and Palmer Rivers as well as Mount Hope Bay, are listed as state impaired waters for not meeting surface water quality standards. Also included on the list is the Lee River, pending confirmation.

B. Local History.....Regional Roots

Detailed histories of the municipalities within the watersheds of the Ten Mile River and Narragansett Bay are found in local Open Space and Master Plans, as well as numerous local historical publications. In researching the watersheds for regional historical facts, some points of interest not often discussed in local plans provide evidence of deep regional roots.

Many of the municipalities in the Ten Mile River and Narragansett/Mount Hope Bay Watersheds were originally part of the Town of Rehoboth. Rehoboth was established on June 4, 1645. Rehoboth was originally known as "Seacunck," and comprised an area much larger than the current boundaries of the town. Over time, parts of the town split off to become the municipalities of Attleboro, North Attleborough, Rehoboth and Seekonk in Massachusetts, and Cumberland and East Providence in Rhode Island. In fact, when Seekonk incorporated in 1812, Rehoboth lost its town center, along with most of the sites where power could be used for industrial development (particularly in the Attleboros).

While Seekonk, Swansea and Rehoboth retained much of their rural character, even into the twentieth century, North Attleborough, Attleboro and Plainville, along with the Greater Providence and Fall River Areas, harnessed the water power of the rivers to fuel the growth of mills and manufacturing, the jewelry industry.

C. Regional Population Characteristics

Since 1990, the Ten Mile River and Narragansett Bay Watersheds have experienced a slow, fairly consistent rate of population growth (with the exception of Fall River, which has lost population, and Rehoboth, which has grown at two to three times the rate of its neighbors). The table below shows the trend in growth between 1990 and 1998.

Table III-1 - Regional Population Growth, 1990-1998

	<u>1990</u>	<u>1998</u>	<u>% Change</u>
Attleboro	38,383	39,831	+3
Fall River	92,703	90,654	-2.2
North Attleborough	25,038	25,973	+3.7
Plainville	6,871	7,178	+4.5
Rehoboth	8,656	9,601	+11
Seekonk	13,046	13,370	+2.4
Swansea	15,411	15,824	+2.7
Wrentham	N/A	N/A	N/A

*Note: The area of the Mount Hope Bay Watershed within Fall River, around the Watuppa Ponds, has experienced virtually no growth since 1990 due to local water supply protection regulations. Meanwhile, the more densely developed area around Route 195 has been virtually built-out.

D. Regional Employment Trends

According to the latest statistics available (1996 and 1997) from the Massachusetts Division of Employment and Training (MA DET), the Ten Mile River and Narragansett/Mount Hope Bay Watershed communities have continued a recent trend of slow, steady growth in terms of retail and non-retail employment (with Rehoboth declining slightly in non-retail employment and Swansea declining slightly in retail employment, while Fall River had a surge in non-retail employment in 1997).

Table III-2: Regional Non-Retail Employment

	MA DET <u>1996</u>	MA DET <u>1997</u>
Attleboro	17,868	18,074
Fall River	32,016	32,235
North Attleborough	5,872	6,145
Plainville	1,983	2,107
Rehoboth	1,086	1,068
Seekonk	3,601	3,767
Swansea	2,264	2,459

Table III-3: Regional Retail Employment

	MA DET <u>1996</u>	MA DET <u>1997</u>
Attleboro	4,766	4,788
Fall River	6,837	6,880
North Attleborough	5,507	5,564
Plainville	585	597
Rehoboth	271	285
Seekonk	4,473	4,473
Swansea	2,911	2,862

E. Land Use and Development Patterns

Two major factors in the pattern of development within the Ten Mile River and Narragansett Bay Watersheds are proximity to waterways and proximity to major highways. The historical, pre-zoning development in the Attleboros, Fall River, Plainville and Wrentham areas coincided with the growth of water dependent industry and manufacturing. This type of growth created dense urban centers surrounded by more rural, largely agricultural settlement.

While Swansea and Seekonk experienced some of the same types of pre-zoning growth as their neighbors, transportation infrastructure improvement during the past fifty years has encouraged the commercial development which today characterizes the east-west corridors along Routes 6 and 195. The Attleboros, Plainville and Wrentham have been similarly impacted along Route 495 and Routes 95, 1 and 1A, running north and south. Fall River, which had already developed around Route 6 and its waterfront area, has also grown, to a lesser degree, around the Route 195 corridor and Routes 24, 79 and 138 running north and south.

Rehoboth, with very little commercial development, has been able to maintain its agricultural and scenic landscapes despite being bisected by Route 44.

Table III-4: Land Use Changes, 1971-1997, Urbanized Acres

<u>Community</u>	<u>1971</u>	<u>1997</u>	<u>Difference</u> <u>1971-1997</u>	<u>% Change</u> <u>1971-1997</u>
Attleboro	5,565	7,988	2,423	44%
Fall River	N/A	N/A	N/A	N/A
North Attleborough	3,113	5,064	1,951	63%
Plainville	1,146	2,162	1,016	89%
Rehoboth	2,367	4,998	2,631	111%
Seekonk	2,884	4,956	2,072	72%
Swansea	2,953	5,320	2,364	80%
Wrentham	N/A	N/A	N/A	N/A

Table III-5: Land Subdivided, 1990-1999

<u>Community</u>	<u>Acres</u>	<u>% of Community Subdivided</u>	<u>Community Total Land Area</u>
Attleboro	1,345	8%	17,413
Fall River	N/A	N/A	N/A
North Attleborough	678	6%	12,178
Plainville	241	3%	7,126
Rehoboth	793	2.6%	30,147
Seekonk	164	1%	11,814
Swansea	374	3%	14,608
Wrentham	N/A	N/A	N/A

F. Water Resources, Sewer, Transportation

Sub-Watersheds and Water Resources

1. Rehoboth

Rehoboth lies within portions of five (5) sub-watersheds. The largest of these sub-watershed areas is the Palmer River sub-watershed which occupies approximately 85% (26,010 acres) of the town's 30,460 acres. The Palmer River sub-watershed includes most of the town's significant swamps and wetland areas as well as the three surface water impoundments (Shad Factory Pond, Warren Upper Reservoir and Perryville Pond).

The other sub-watershed areas within Rehoboth include the Coles River (1,750 acres), Taunton River (approximately 150 acres), Wading River (1,200 acres) and the Ten Mile River (1,250 acres).

These latter four sub-watershed areas are located mainly around the fringes of town at the extreme northern or southern boundaries. They are characterized by sparse development and dense forested areas.

The principal aquifer supplying drinking water to the majority of residents in town underlies the Palmer River sub-watershed area. The integrity of the Palmer River corridor itself is amongst the best of any major river in southeastern Massachusetts.

Of the surface water impoundments in town, the Shad Factory Pond and Warren Upper Reservoir have been utilized (under lease from their respective owners) by the Bristol County Water Supply Company, which supplies water to the towns of Warren and Bristol, Rhode Island.

2. Swansea

The largest sub-watershed in Swansea is the Cole River Watershed. This stream has headwaters in Dighton and Rehoboth, and follows a course generally southwestward through central Swansea and into Mount Hope Bay. The Cole River has a total drainage area of approximately 7,600 acres, of which approximately 7,000 lie within Swansea. There are extensive wetlands in the upper reaches of the watershed. Intensive development exists within the watershed south of Route 6.

The Lee River drains an area of approximately 3,700 acres, nearly 3,000 of which lie within Swansea. This stream, known as Lewin Brook throughout much of its length, originates in wet swampy land near Sharps Lot Road and Marvel Street, and flows generally southwestward into Mount Hope Bay.

The third major stream in Swansea is the Kickamuit River, which enters Mount Hope Bay in Rhode Island. This stream drains approximately 2,300 acres in Swansea. The Warren Reservoir is located on this stream.

3. Seekonk

The largest sub-watershed in Seekonk is that of the Runnins River, which occupies approximately 4,775 acres in the western part of the town. There are two existing impounded ponds in the watershed, Burrs Pond and Grist Mill Pond, which are located near the intersection of Fall River Avenue and Arcade Avenue. The Runnins River forms the town and state (with RI) boundary south of County Street and there has been little development along this stretch of the river. Between County Street and Hedge Road, the stream channel passes through several residential areas and one golf course.

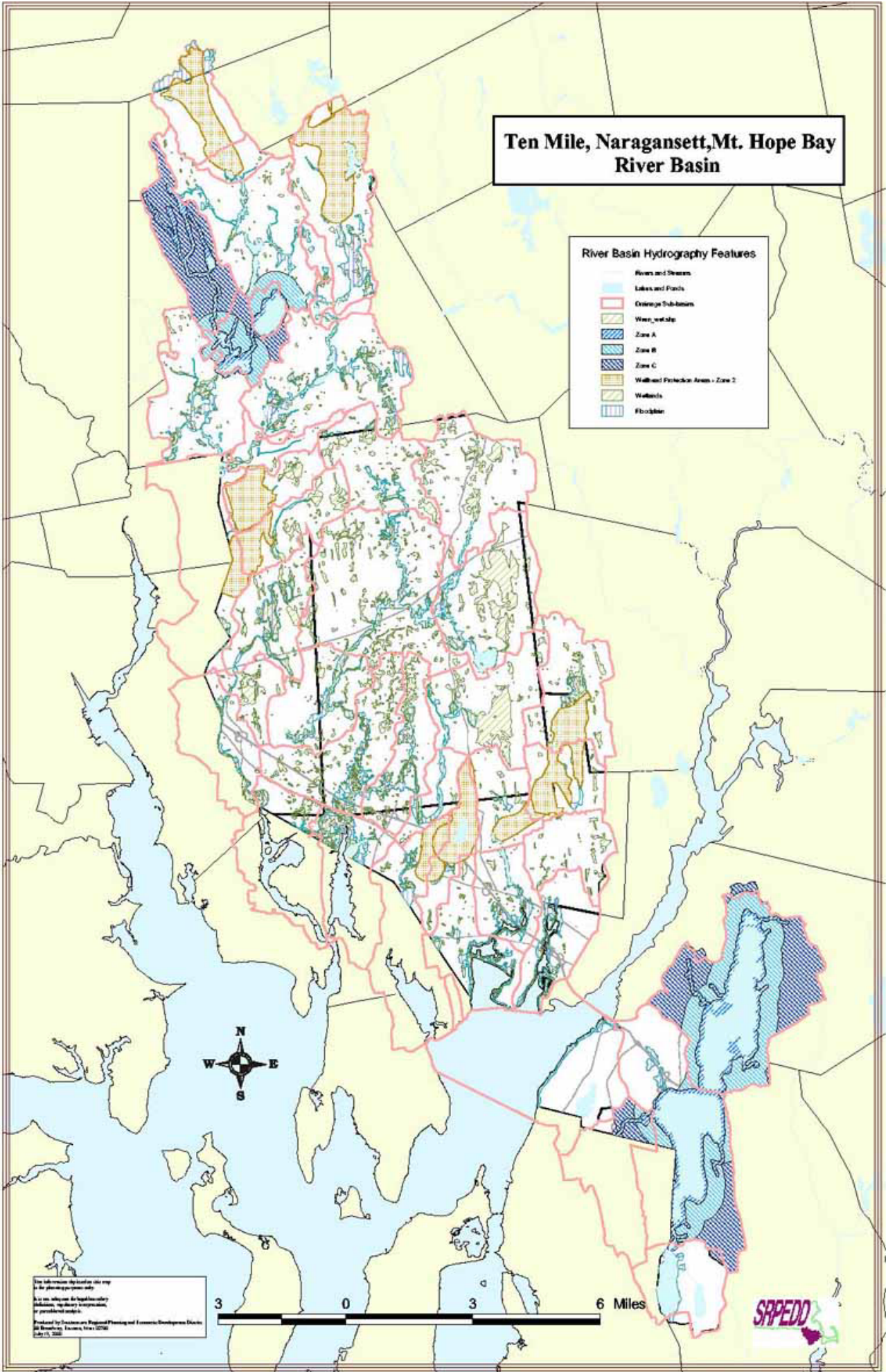
Approximately 4,000 acres of the Ten Mile River watershed lies within Seekonk north of the Runnins River. While much of the watershed is rural, the area near the stream channel is intensively developed.

The eastern part of Seekonk lies within the Palmer River sub-watershed. Approximately 3,080 acres of this sub-watershed are within the town boundary. There are two streams named in this sub-watershed, Clear Run Brook and Torrey Creek.

Ten Mile, Naragansett, Mt. Hope Bay River Basin

River Basin Hydrography Features

- Rivers and Streams
- Lakes and Ponds
- Drainage Subbasins
- Ways, wetlands
- Zone A
- Zone B
- Zone C
- Wetland Protection Areas - Zone 2
- Wetlands
- Floodplain



This information is based on the map for the planning purposes only. It is not, and does not constitute, a legal boundary. It is not, and does not constitute, a warranty, or a representation, or a guarantee.

Prepared by Sustainable Regional Planning and Economic Development District
 66 Broadway, Exeter, New Hampshire
 July 15, 2010



4. Attleboro

The City of Attleboro is divided between five major sub-watersheds, of which the Ten Mile and Seven Mile are the largest, occupying 6,192 and 5,352 acres, respectively. The Bungay River sub-watershed and Chartley Brook sub-watershed occupy 1,366 acres and 4,550 acres, respectively, in the eastern portion of the city. The Blackstone occupies approximately 660 acres on the west side of the city.

While the Ten Mile River area is largely urbanized and densely developed, parts of the upper Seven Mile, the Bungay and Chartley Brook sub-watersheds are sparsely developed.

5. North Attleborough/Wrentham

North Attleborough is divided between four major sub-watersheds: the Bungay River; the Ten Mile River mainstem; the Seven Mile River; and Abbott Run. The Bungay River is also a major tributary of the Ten Mile River mainstem, with its confluence located in the City of Attleboro. The Bungay River in North Attleborough flows through Greenwood Lake, the North Attleborough National Fish Hatchery, and the upper reach of the Bungay Swamp. The Bungay River drainage area covers approximately 2,400 acres and is located in the eastern portion of the town.

The Ten Mile River has its headwaters in the Towns of Wrentham and Plainville. It flows in a southerly direction through a series of impoundments in Plainville before entering North Attleborough along its northern corporate limit. The Ten Mile River in North Attleborough extends from Whiting Pond along parts of Routes 1 (Washington Street) and 1A (East Washington Street), to the Falls Pond and Attleboro Falls areas, and finally into Attleboro. The Ten Mile mainstem sub-watershed drains two major areas - Scotts Brook and the Ten Mile itself - totalling roughly 4,300 acres. Scotts Brook originates in Plainville and flows south through the western part of the town to join the Ten Mile River north of Falls Pond.

The Seven Mile River is located in the western half of North Attleborough and flows in a southerly direction parallel to the Ten Mile River. It is the largest tributary to the Ten Mile River, with its confluence located further downstream in Pawtucket, Rhode Island. The Seven Mile River watershed drains approximately 2,900 acres of North Attleborough while supplying water to both the Hoppin Hill and Luther

Reservoirs. Its use as a water supply system mandates maintenance of pollution-control programs within the watershed. Under these circumstances, adjacent land use becomes an extremely critical parameter.

Abbott Run originates in Franklin and Wrentham, Massachusetts before flowing through a series of large reservoirs and ponds in Cumberland, Rhode Island. It then flows along the western boundary of North Attleborough in a southerly direction before entering the Blackstone River in Cumberland, Rhode Island.

6. Plainville

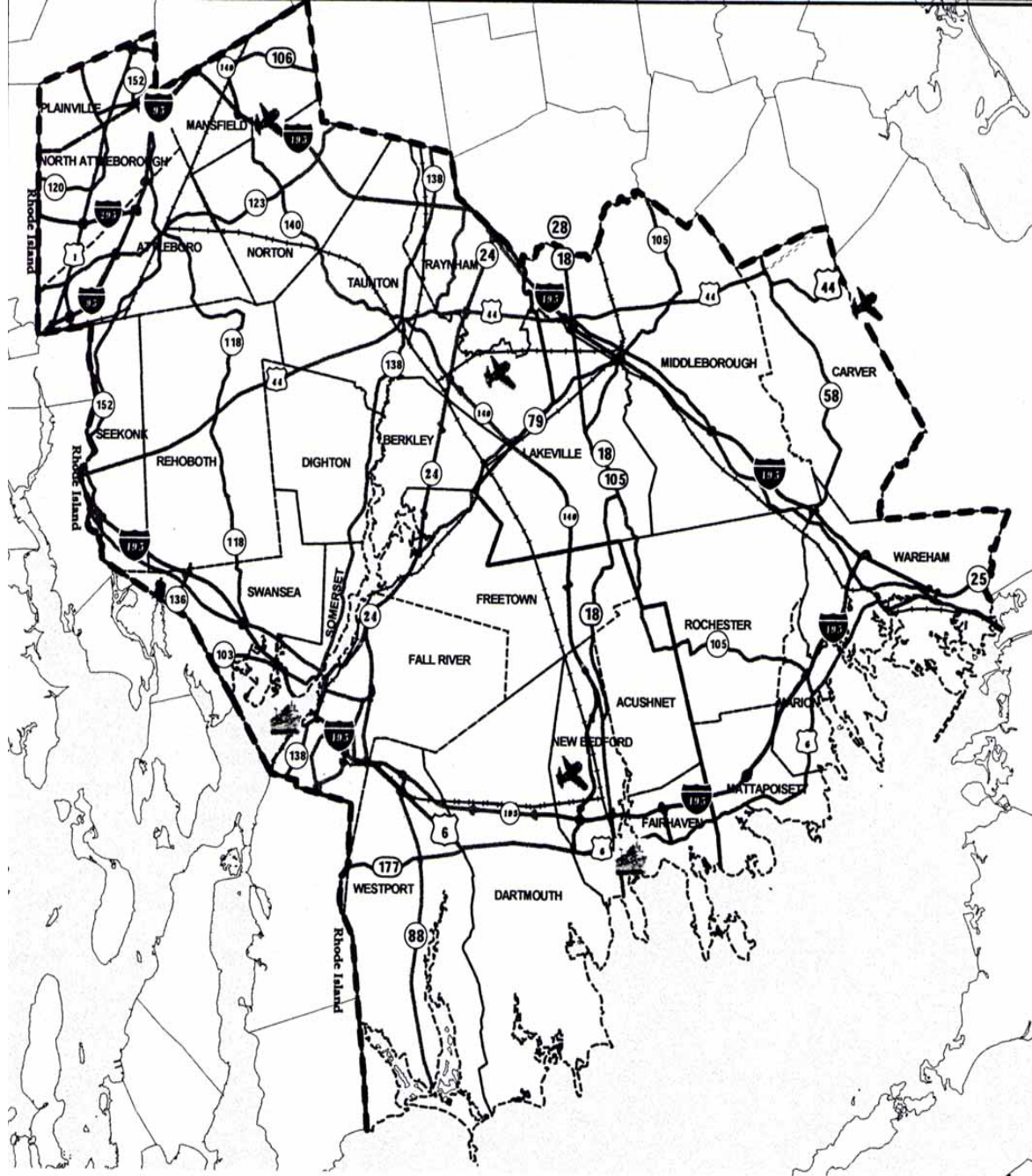
Plainville is divided by three major watersheds, the Blackstone, the Ten Mile and the Taunton River. The Ten Mile River Watershed occupies 2,598 acres in the western, central and southeastern portions of town. Much of the western portion is undeveloped or rural.

The Blackstone Watershed occupies some 1,114 acres in the extreme western portion of town. The Taunton River Watershed covers the eastern portion of Plainville and occupies some 3,712 acres, or about 50% of the town.



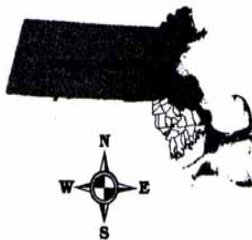
Table III-6: Regional Water and Sewer

City/Town	Water Source	Water Supply Use (MGD)	Est. Population Sewered (%)	Sewers – Level of Treatment	Est. Design Flow (MGD)
Attleboro	Municipal Wells, Manchester Reservoir	8.0	55%	Advanced	8.60
Fall River	N. Wattupa Pond, Copicut Reservoir	16.50	95%	Secondary	30.00
North Attleborough	Municipal Wells	5.58	60%	Advanced	4.50
Plainville	Municipal Wells	1.34	20%	Advanced	4.50
Rehoboth	Private Wells	N/A	0%		
Seekonk	Municipal Wells	3.36	0%		
Swansea	Municipal Wells	3.00	0%		



LEGEND

- SRPEDD DISTRICT BOUNDARY
- COUNTY BOUNDARY
- COMMUNITY BOUNDARY
- RAILROAD
- AIRPORT
- SEAPORT



TRANSPORTATION NETWORK

OCTOBER 2000

SCALE

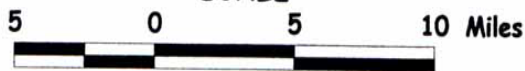


Table III - 7: Regional Road and Rail Transportation

Highways		Railroads	
Facility	Section	Freight Service	Mileage
1-195*	Seekonk-Wareham	Boston- Providence	9
1-295*	Attleboro-N. Attleborough	Attleboro - Taunton	9.4
1-495*	Mansfield- Wareham	Taunton - Myricks	
U.S. 1	Attleboro- Plainville	Myricks - Fall River	12
U.S. 6	Seekonk- Wareham	Myricks - New Bedford	
U.S. 44	Seekonk- Carver	New Bedford - Fall River	12.1
RTE. 24	Raynham- Fall River	Link to: CSX	
RTE. 79	Fall River- Middleborough	Passenger Service	
RTE. 1	Attleboro- Plainville	Attleboro line (Providence/Boston)	Stations
RTE. 1A	Attleboro- Plainville		So. Attleboro
RTE. 103	Swansea- Somerset		Attleboro
RTE. 106	Mansfield- Plainville		Mansfield
RTE. 114A	Seekonk	Middelborough/ Lakeville line (Boston)	Stations
RTE. 118	Attleboro- Swansea		Middle/Lakeville
RTE. 123	N. Attleborough- Norton	Fall River/ NewBedford line (Boston) Proposed	
RTE. 138	Raynham- Fall River	Links to Amtrak	
RTE. 152	Plainville- Seekonk	and MBTA	
	Links to: Mass Highway		

G. Zoning and Build-Out Potential

For the purposes of this plan, SRPEDD has prepared a composite Zoning Map for the Ten Mile River and Narragansett/Mount Hope Bay Watershed areas.

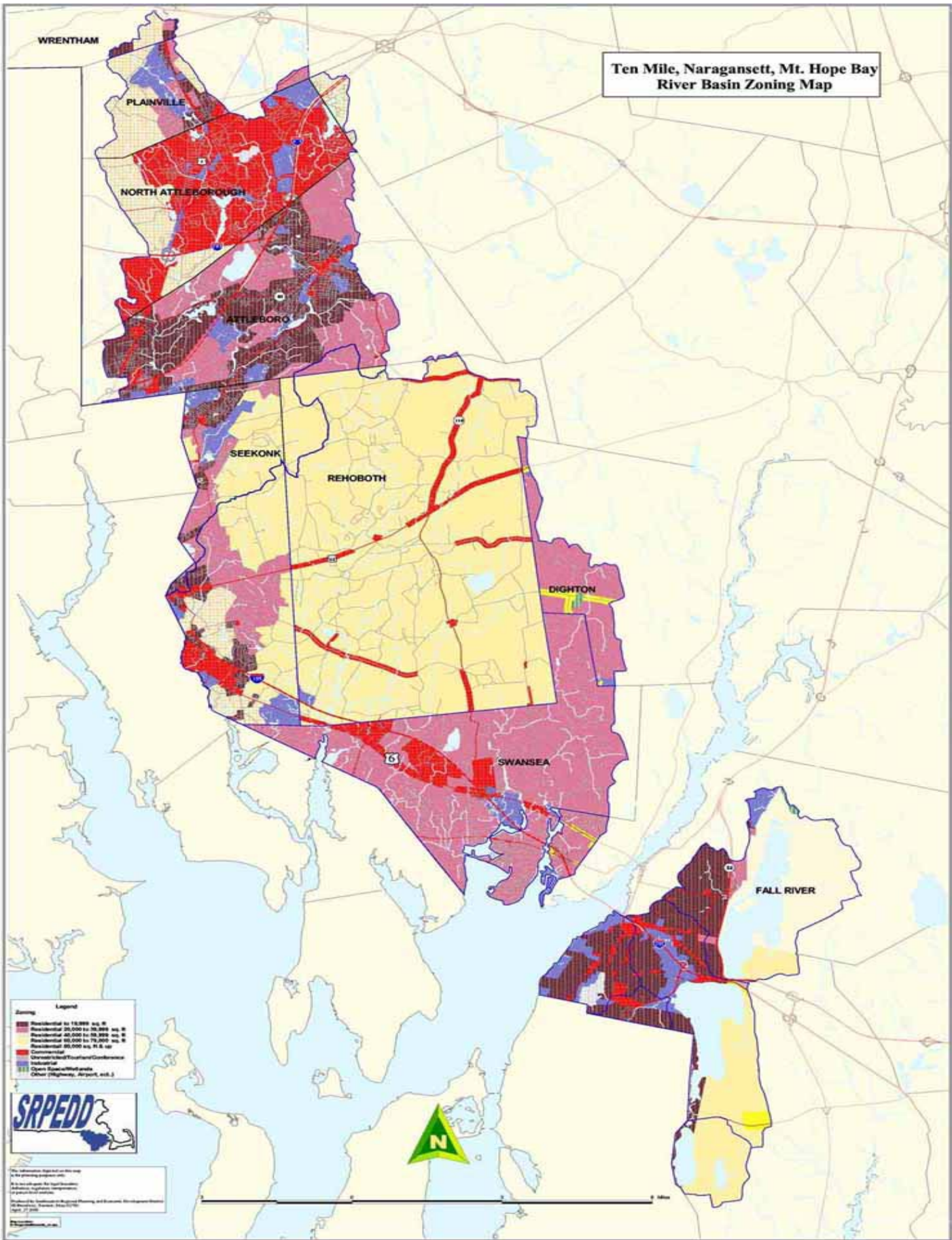
From the Fall of 1999 to the Spring of 2000, SRPEDD worked with the Executive Office of Environmental Affairs and the Basin Team Leaders to prepare Build-Out Analyses for twenty municipalities within southeastern Massachusetts. The Ten Mile River and

Narragansett/Mount Hope Bay Watershed areas were seen as a priority due to the level of regional activity and study already underway (Planning for Growth, Regional Open Space, Watershed Action Plan, etc.).



The Regional Zoning Map, along with a consideration of environmental factors, municipal growth trends and development constraints, were used to determine what these watershed municipalities could look like at build-out. The following table (III-5) documents the predicted impacts on the watershed municipalities in terms of additional: population, students, households, water use, developable land, solid waste generation and roadway miles.

**Ten Mile, Naragansett, Mt. Hope Bay
River Basin Zoning Map**



Legend

[Red]	Residential to 10,000 sq. ft.
[Pink]	Residential 10,000 to 20,000 sq. ft.
[Light Pink]	Residential 20,000 to 30,000 sq. ft.
[Light Purple]	Residential 30,000 to 75,000 sq. ft.
[Purple]	Residential 75,000 sq. ft. & up
[Dark Purple]	Commercial
[Blue]	Open Space/Recreation/Conservation
[Dark Blue]	Industrial
[Hatched]	Open Space/Waterways
[Hatched]	Other (Highway, Airport, etc.)

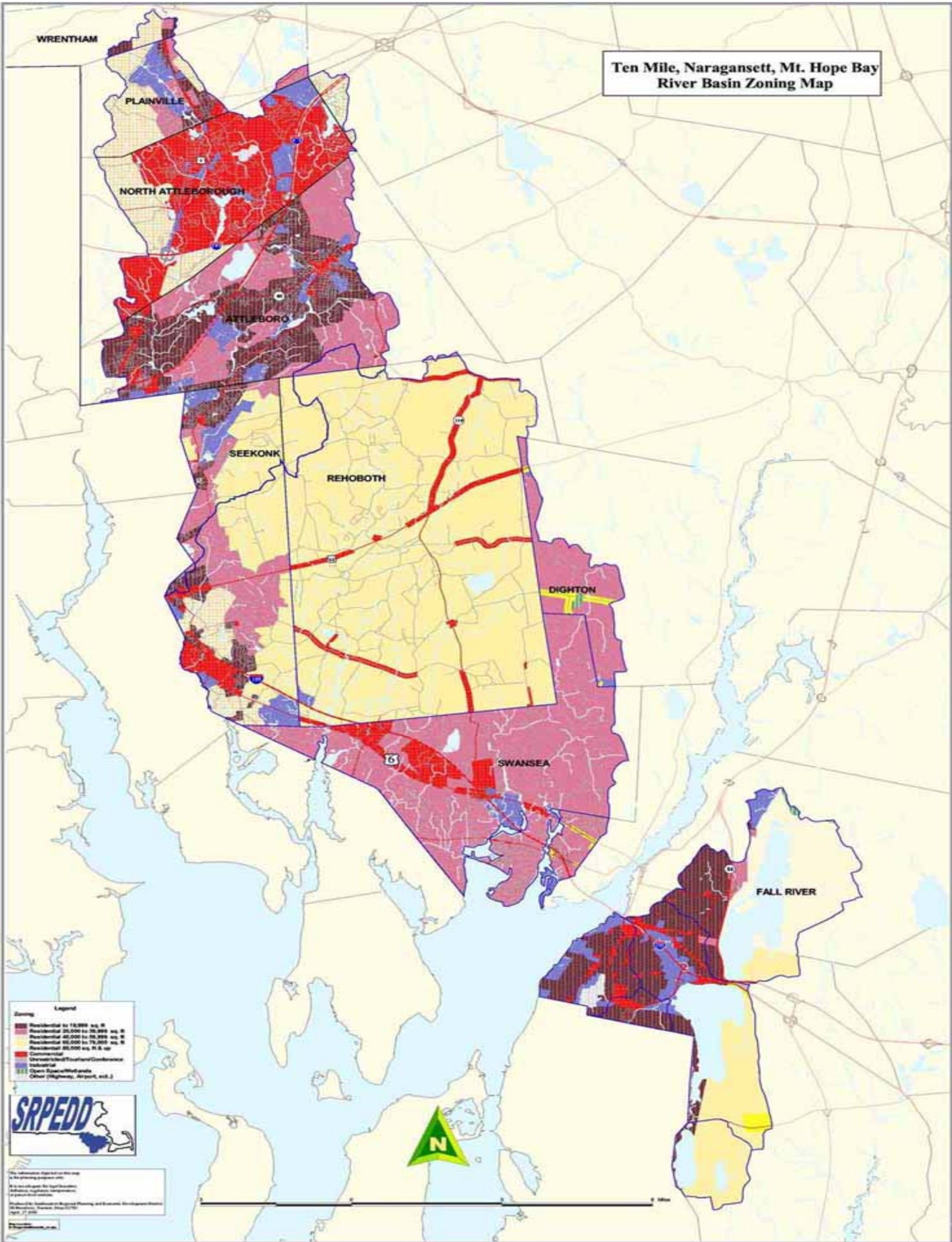


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Table III-8: Current Demographics and Build-Out Projections

		Attleboro	Fall River	No.Attleborough	Plainville	Rehoboth	Seekonk	Swansea
Population								
	1990	38,383	92,703	25,038	6,871	8,656	13,046	15,411
	1998	39,831	90,654	25,973	7,178	9,601	13,370	15,824
	Buildout	76,072	130,210	41,692	14,971	35,499	21,105	34,682
Students								
	1990	5,529	13,166	3,715	939	2,647	2,294	2,476
	1998	6,699	12,110	4,361	980	3,042	2,172	2,210
	Buildout	13,745	16,650	7,418	2,488	8,077	3,676	5,876
Households								
	1990	14,180	37,331	9,235	2,642	2,870	4,482	5,252
	1998	15,628	36,554	9,235	2,949	3,183	4,806	5,665
	Buildout	28,256	49,524	15,056	5,699	12,207	7,825	12,237
Water Use (gallons/day)								
	1998	5,169,000	13,402,000	2,748,000	682,000	720,075	1,618,000	1,310,000
	Buildout	8,516,643	17,413,743	4,833,709	2,113,647	2,791,326	2,741,816	2,859,846
Summary of Buildout Impacts								
Additional Developable Land Area (sq ft)		291,249,259	286,612,553	189,301,800	145,734,858	894,695,991	226,424,880	322,779,600
Additional Developable Area (acres)		6,686	6,580	4,346	3,345	20,539	5,198	7,410
Additional Residential Units		12,628	12,970	5,821	2,750	9,024	3,019	6,572
Additional Residents		36,241	39,556	15,719	7,793	25,898	7,735	18,858
Additional Commercial/Industrial Buildable Floor Area (sq ft)		8,428,584	13,933,548	12,091,394	11,295,409	1,719,131	7,277,534	1,806,774
Additional School Children at Buildout		7,046	4,540	3,057	1,508	5,035	1,504	3,666
Additional Water Demand at Buildout (gallons/day)		3,347,643	4,011,743	2,085,709	1,431,647	2,071,251	1,123,816	1,549,846
Additional Residential Water Demand at Buildout		2,718,092	2,966,727	1,178,854	584,492	1,942,316	578,001	1,414,338
Additional Commercial and Industrial Water Demand at Buildout		629,550	1,045,016	906,855	847,156	128,935	545,815	135,508
Additional Municipal Solid Waste (tons/yr)		18,592	43,116	8,063	3,998	13,285	3,968	9,674
Additional NonRecyclable Solid Waste(tons)		13,228	34,018	5,737	2,845	9,447	2,822	6,879
Additional Recyclable Solid Waste (tons)		5,364	9,098	2,326	1,153	3,838	1,146	2,795
Additional Roadway at Buildout (miles)		158	168	124	62	203	53	129

Ten Mile, Naragansett, Mt. Hope Bay River Basin Zoning Map



Zoning Legend

[Red]	Residential 10,000 sq. ft.
[Light Red]	Residential 20,000 to 30,000 sq. ft.
[Pink]	Residential 40,000 to 50,000 sq. ft.
[Light Purple]	Residential 60,000 to 70,000 sq. ft.
[Dark Purple]	Residential 80,000 sq. ft. & up
[Blue]	Commercial
[Dark Blue]	Overweight/Truckload/Conference
[Green]	Industrial
[Light Green]	Open Space/Wetlands
[Yellow]	Other (Highway, Airport, etc.)



This information is based on the most current zoning information available. It is not intended to be a substitute for the zoning ordinance of any municipality. It is not intended to be a substitute for the zoning ordinance of any municipality. It is not intended to be a substitute for the zoning ordinance of any municipality.

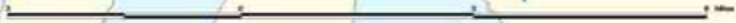


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IV. ENVIRONMENTAL INVENTORY AND ANALYSIS

A. Soils and Geology

The Ten Mile and Narragansett Bay Watersheds' soils and geology are reflective of its location within a large glaciated region (Massachusetts and Rhode Island being part of the larger Glaciated Appalachians region).

Upper bedrock and outcrops consist primarily of shales, sandstones and conglomerates (referred to locally as pudding stone). These sedimentary rocks are particularly characteristic of the Dighton-Rehoboth-Swansea area. The red felsite ledge formations in North Attleborough represent a very unusual and limited geologic occurrence in Massachusetts and Rhode Island.

The soils in the watersheds are largely a product of other areas of significant glacial till, with sand and gravel resulting from glacial outwash. Additional silts and clays are found in floodplain deposits.

The major soils associations found throughout the watersheds are Hinckley-Medisaprists-Windsor, Paxton-Woodbridge-Ridgebury, Paxton-Woodbridge-Whitman and Charlton-Rock outcrop-Paxton.

The Hinckley-Medisaprists-Windsor soils range from nearly level to steep, excessively drained soils that form in glacial outwash, and very poorly drained organic soils.

The Paxton-Woodbridge-Ridgebury soils range from nearly level to moderately steep, well drained to very poorly drained soils on glaciated uplands.

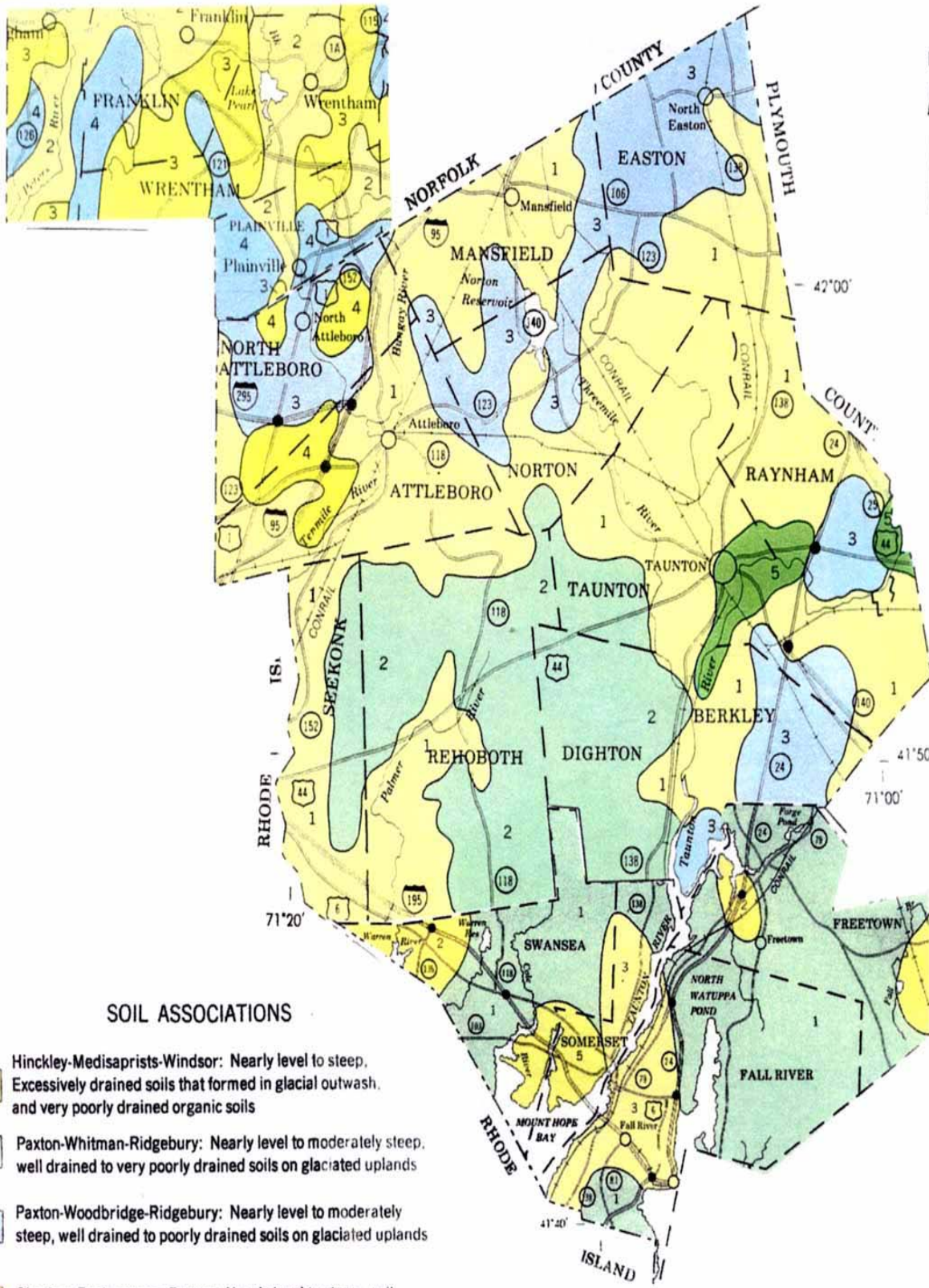
Paxton-Woodbridge-Whitman association: nearly level to moderately steep soils that are well drained, moderately well drained, and very poorly drained; on glaciated uplands.

Charlton-Rock outcrop-Paxton: nearly level to steep, well drained soils and Rock outcrop on glaciated uplands.

"Agricultural Soils"

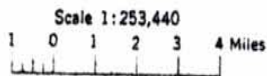
Within the Ten Mile and Narragansett Bay Watershed areas, hundreds of parcels of land are devoted to agriculture and agricultural pursuits.

Many of the farms in this area have developed soil conservation and management plans in conjunction with the U.S. Department of Natural Resource Conservation Service (NRCS). These plans, when actively applied to the land, promote soil and water conservation while curbing the effects of surface runoff (including erosion, sedimentation, water pollution, etc.). For example, it is not uncommon to see farmers terrace their lands in order to best maintain a workable field in areas of the Palmer River Watershed in Rehoboth.



SOIL ASSOCIATIONS

- 1** Hinckley-Medisaprists-Windsor: Nearly level to steep, Excessively drained soils that formed in glacial outwash, and very poorly drained organic soils
- 2** Paxton-Whitman-Ridgebury: Nearly level to moderately steep, well drained to very poorly drained soils on glaciated uplands
- 3** Paxton-Woodbridge-Ridgebury: Nearly level to moderately steep, well drained to poorly drained soils on glaciated uplands
- 4** Charlton-Rock outcrop-Paxton: Nearly level to steep, well drained soils and Rock outcrop on glaciated uplands
- 5** Raynham-Scio-Birdsall: Nearly level to gently sloping, moderately well drained to very poorly drained soils that formed on old lakebeds



UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
MASSACHUSETTS AGRICULTURE EXPERIMENT STATION

GENERAL SOIL MAP

The NRCS has developed maps which indicate areas that have been designated as prime or unique farmland, or farmland of statewide importance. The designated areas are presently available for growing crops, although some will require clearing of trees or stones. Soil surveys and national or state criteria are the basis for making these designations.

Prime farmland is the land that has the best combination of soil properties for growing crops. National NRCS criteria are used to assess these soil qualities and determine which areas qualify as prime farmland.

Prime farmland soils retain and provide ample moisture for crops, have favorable temperature, growing season, acceptable salt content and acidity, and have few or no surface stones. They are permeable to water and air, are not excessively erodible, are not saturated with water for long periods of time, and do not flood frequently.

Unique farmland is land other than prime that is used for production of specific high-value crops. It has the special combination of soil quality, location, growing season, and moisture to produce high quality specialty crops. Cranberries are a good example.

Farmland of statewide importance is the land that is also important for growing crops, but it has one or more soil properties which do not qualify for prime farmland. The soils of such land may be moderately erodible, may not provide ample moisture for crops, or may be less permeable to water and air.

Important Farmland Soils

<u>Soil Name</u>	<u>Map Symbol</u>	<u>Prime</u>	<u>State or Local Importance</u>	<u>Unique</u>
Agawam	AgB	Yes		
Deerfield	De		Yes	
Hinckley	HaA, HaB		Yes	
Merrimac	MeA, MeB	Yes		
Scituate	SeA, SeB	Yes		
	SfA, SfB		Yes	
Sanded Muck	Sb			Yes
Windsor	WnA, WnB		Yes	
Woodbridge	WrA, WrB	Yes		

B. Wildlife and Vegetation

The diversity of habitat in the Ten Mile and Narragansett Bay Watersheds provides good to excellent habitat opportunities for numerous wildlife and vegetative species. Large undeveloped areas of swamp, forest, river corridor and agricultural/agricultural support land, attract a variety of wildlife species, indigenous and migratory, to these watersheds.

Below are brief lists of indigenous, observed and reported flora and fauna in the watershed(s) communities. While this is not a comprehensive listing, it is representative of what one might observe on a journey through the watersheds.

Fishes (indigenous and reported)

Brown bullhead	Smelts	Mummichog
American shad	White perch	Pickrel
Alewife	Striped bass	Bluegill
Sunfish	Yellow perch	Native Eastern Brook Trout
American Eel	Largemouth bass	Spotfin killifish
Blueback Herring	Brown trout	Swamp darter
Stickleback	Rainbow trout	

Amphibians and Reptiles (indigenous/observed)

Blue spotted salamander	Wood frog
Spotted salamander	Painted turtle
Red-backed salamander	Spotted turtle
American toad	Wood turtle
Fowler's toad	Eastern box turtle
Spring peeper	Black racer (snake)
Gray treefrog	Hognose snake
Bullfrog	Water snake
Green frog	Eastern spadefoot toad
Garter snake	Wood turtle
Diamondback terrapin	

Mammalian Species (indigenous/observed)

Gray squirrel	White-tailed deer
Red squirrel	Red fox
Woodchuck	Gray fox
Eastern cottontail rabbit	Shrew
Snowshoe hare	Deer mouse
Raccoon	White-footed mouse
Opossum	Eastern gray squirrel
Skunk	Eastern chipmunk
Redback vole	porcupine
Coyote	

Birds (indigenous or migratory/sighted)

Sighted

Turkey vulture
Red-shouldered hawk
Redwinged blackbird

Indigenous or Migratory

Morning dove	Ruffed grouse
Pheasant	Quail
Bluejay	Crow
American robin	Wood thrush
Common grackle	Cardinal
Red-tailed hawk	Broad-winged hawk
Barn swallow	Black and white warbler
Pine warbler	Chestnut-sided warbler
American goldfinch	Chirping sparrow
Field sparrow	Tufted titmouse
Black-capped chickadee	Hairy woodpecker
Downy woodpecker	Scarlet tanager
Hermit thrush	House wren
Northern oriole	Red-eyed vireo
Black duck	Mallard
Wood duck	Bald eagle
Northern oriole	Wild turkey

Plant Species (indigenous/observed)

Red maple	Marsh fern	Spike-rush
White oak	New York fern	Horsebriar
Black oak	Sweet fern	Sweet pepperbush
Scarlet oak	Royal fern	Black raspberry
Northern red oak	Cinnamon fern	Lowbush blueberry
Red pine	Horseweed	Highbush blueberry
White pine	Fireweed	Cranberry
Pitch pine	Sphagnum moss	Grape
Yellow birch	Club moss	Huckleberry
Black birch	Lady slipper	Choke cherry
Gray birch	Sassafrass	Inkberry
American chestnut	Wool grass	Strawberry
American beech	Bracken fern	Witch hazel
Speckled alder	Virginia chain fern	Poison ivy
American hazelnut	Sheep laurel	Poison sumac
Atlantic white cedar	Mountain laurel	Lilac
	Plymouth gentian	Long's bittercress

Plants, continued

Red cedar
Black alder
Eastern cottonwood
Lily-of-the-valley
Mockernut hickory

Mountain holly
American holly
Cow-wheat
Aster
Skunk cabbage

White ash
Hemlock
Dogwood
Pussy willow

TRIBUTARY

"Protecting A Species ... Conserving a Habitat"

Biodiversity is a term that was brought to the fore in communities throughout southeastern Massachusetts during the spring and summer this year. Spearheaded by Secretary of Environmental Affairs, Bob Durand, students, teachers, naturalists and interested citizens traversed the forests, hills, meadows, riverfronts and pond shores of their communities in an effort to catalog flora and fauna during "Biodiversity Days".

Biodiversity refers to the variety and variability of all living creatures and the ecosystem which they inhabit. Biodiversity is all inclusive, from the simplest single-celled lifeform to the most complex ... from isolated land subject to flooding, to vast expanses of forest, forested wetland and sand dunes.

Species diversity, or the variety of living creatures within a specific ecosystem, is a marker of the overall health of that ecosystem. Ecosystem diversity, or the variety of habitats within a region housing and conserving a diversity of species, is a marker of the environmental and ecological health of a region. These two concepts represent interdependent levels of biodiversity and reinforce the argument that we must conserve our habitats, intact, in order to conserve species variety and our "biodiversity".

C. Scenic Resources and Unique Environments

The Ten Mile and Narragansett - Mount Hope Bay Watersheds offer a variety of scenic resources and unique environments. While many of these areas are highlighted in local Open Space Plans, some remain relatively unknown outside of the region and merit special discussion for their regional, statewide and global significance.

Perhaps one of the most locally recognized areas in the Ten Mile River Watershed is the "Red Rocks" area in North Attleborough. Named for its distinctive red felsite ledge, this particular land form represents a very limited occurrence in Massachusetts and neighboring Rhode Island. The surrounding area also supports several very uncommon and high priority natural communities, including: Southern New England Rich Mesic Forest, which is characterized by its hardwoods on nutrient rich soil, a mature canopy (including sycamore and basswood) with hop hornbeam in the understory (this rare forest type is more common to Massachusetts' four western counties); areas of Rock Outcrop Pine Barrens; circumneutral rock outcrop community; talus slope; several rare plants and vernal pools. This is one of the most important natural resource areas in the Ten Mile Watershed.

Pitch Pine Scrub Oak Barrens, North Attleborough Town Forest. Equivalent to the more familiar Cape Cod Pine Barrens, it is globally rare and threatened habitat type. The best examples of pine barrens remaining in the world are New Jersey, Long Island, and Southeastern Massachusetts. The barrens in North Attleborough represent an isolated patch of this rare habitat, which persisted on the droughty soils probably due to periodic fires (every 5 to 20 + years). This habitat is threatened because of its vulnerability to residential development and also natural change resulting from fire suppression - the habitat requires fire to be sustained. Apparently, much habitat may have been lost to the gravel mining operation in the surrounding area. Aside from being a rare vegetative community, there are several rare plants and animals which are found in pine barrens in Massachusetts, including over 12 rare moth species, which feed primarily on the scrub oak. It is unclear how important a small (less than 100 acres) remnant may be, however, these smaller barrens may provide stepping stones to other barrens in Rhode Island and New York. The species of the larger barrens would become isolated without the smaller barrens in-between. Regardless, it

represents a remarkable natural feature in the Town of North Attleborough.

The "Cascades," as it is known locally, is a unique forested wetland area north of the Emerald Square Mall. Its name derives from its natural waterfall which occurs at a drop in the topography as the wetland emerges on the fringe of the more open and developed land.

The Bungay River, in Attleboro and North Attleborough, is home to an unusual streamside Coastal Atlantic White Cedar Swamp. This area is also characterized by its very mature Red Maple swamp forests and valuable habitat.

The Palmer River is contained primarily within Rehoboth and North Swansea. The Palmer River corridor contains tidal freshwater marsh and tidal brackish marsh, and is home to several rare and one globally rare plant species. The East Branch of the Palmer is perhaps one of the most undisturbed streams in this part of the state. The East Branch is home to Native Eastern Brook Trout, unusual stream-side Cedar Swamps and an overall rich aquatic habitat. The Palmer is also part of one anadromous fish run, including one of only two shad runs in eastern Massachusetts.

The Narragansett Bay Basin, including Swansea, Rehoboth, Seekonk and Fall River, is part of a large geographic area referred to as the Southern New England Acidic Basin Fen. Within this area, wetland communities are characterized by acidic conditions which combine with the soils structure, vegetative cover and high or exposed water tables (for much of the year) to produce a slow decay of organic matter. This combination of conditions creates peat bog/swamp areas populated predominantly by sedges. The Massachusetts Natural Heritage Program has surveyed this area and strongly recommends that these wetland areas be protected for their ecological significance.

The Wattuppa Ponds complex in the City of Fall River is one of the largest natural lakes in the state and is used as the primary water supply for the city. The Wattuppa Ponds area contains over three thousand acres of land consisting largely of unfragmented forest habitat. The ponds are home to a globally rare plant species, several rare plants and invertebrates and nesting Bald Eagles.

D. Historic Resources

Communities within the Ten Mile and Narragansett Bay Watersheds have demonstrated a strong commitment to historical inventory, preservation and designation related work over the past three decades (and in some instances, longer). Many of the municipalities within the watersheds are known to the Massachusetts Historical Commission for their very active historical commissions and/or societies and their detailed survey work.

Amongst the municipalities in southeastern Massachusetts, Rehoboth, Attleboro, North Attleborough and Swansea have been some of the most active in terms of identifying Multiple Resource Areas (MRAs) and pursuing National Register designations. Overall, the municipalities within the Ten Mile and Narragansett/Mount Hope Bay Watersheds have approximately one hundred listings with the Massachusetts Historical Commission, including ninety-four National Register designations involving four hundred properties and seventeen designated historic districts. The Massachusetts Historical

Commission also considers portions of this area, particularly around Seekonk and Rehoboth, an extremely sensitive Native American cultural, historical and archaeological resource area.

Historic districts throughout these municipalities highlight the region's: industrial history (Attleboro and North Attleborough, jewelry); agricultural history and rural agrarian landscapes (Seekonk, Swansea and particularly, Rehoboth) and; farming, fishing, industrial and transitional landscapes and activities (Swansea).

The Watershed Team is also currently involved in the Department of Environmental Management's (DEM) Historic Landscape Inventory project - the first of its kind in the nation.

Salt Marsh, Tidal Flats and Tidal Shoreline

Salt marshes are generally characterized by salt meadow cord grass (*Spartina patens*) and/or salt marsh cord grass (*Spartina alterniflora*). Salt marshes are generally flat, open grassy areas along tidal waters and are found in areas protected from the open water (salt ponds, estuaries, etc.). Salt marshes provide key habitat and are important to

the base of the marine food chain as well as for natural pollution mitigation.

Tidal flats are nearly level parts of coastal beaches which may extend from the mean low water line landward to a more steeply sloping face of the beach or may be separated from the beach by an area of deeper water. Tidal flats are exposed at low tide and can be found along the shoreline on the open ocean or within estuaries. Tidal flats help to lessen storm impacts, provide important shellfish habitat, provide material to down-current beaches and expedite the flow of plant materials and other nutrients from adjacent salt marshes.

Within the Ten Mile River and Narragansett Bay Watersheds, Swansea has approximately 185 acres of salt marsh; Rehoboth 88 acres; Seekonk 53 acres, and; Fall River 4 acres. Only Swansea, with 11 acres, has any tidal flats within the Narragansett Bay Watershed.

Swansea also contains approximately 13.5 miles of tidal shoreline which includes 33 acres of barrier beach. Fall River contains approximately 10 miles of tidal shoreline, but no barrier beach areas.

E. Environmental Problems

"Hazardous Waste Sites"

The Massachusetts Department of Environmental Protection's (DEP) Bureau of Waste Site Clean-up currently lists ninety-four (94) sites within the Ten Mile River and Narragansett Bay Watershed communities. An additional forty-seven (47) sites are listed by DEP as being in non-compliance.

Attleboro and North Attleborough have been very active in the proposed reuse of industrial sites. Attleboro successfully converted the former Balfour jewelry manufacturing site into a downtown park and riverwalk. North Attleborough is working on the conversion of the Barrows Building, a former jewelry manufacturing facility at the edge of the downtown, into a Criminal Justice Center.

"Landfills"

The Committee was concerned about the threats posed by older unlined, uncapped landfills. This is a common concern throughout the Commonwealth, one the state has been addressing through its closure program (North Attleborough was a recent funding recipient). As a part of the closure process, where feasible, the Committee saw a need for community reuse planning, particularly where passive open space and trails connections are concerned.

Seekonk has been attempting to cap its 3 closed, unlined landfills. One of these landfills, located off of Route 152, is part of a capping and reuse funding proposal. The reuse plan would involve the library expansion project and construction of the first public park in Seekonk.

"Water Quality"

The fact that nearly all region's rivers and streams are not presently meeting their water quality assignments (classifications), according to the DEP, is of uniform concern. There are numerous factors contributing to water quality problems, including: failed septic systems; non-point source pollution; erosion and sedimentation; etc.

Amongst the longest and most involved water quality improvement projects within the Ten Mile and Narragansett Bay Watersheds is the Runnins River Task Force. The Runnins River meanders between Seekonk, MA and East Providence, RI, forming a shared boundary on its way to Barrington, RI, on its way to Narragansett Bay. Water quality problems in the Runnins have been a topic of concern in both municipalities, states and with the federal Environmental Protection Agency (EPA) for over a decade. Virtually every federal, state and local water quality-related agency has had a hand in the collection, analysis and dissemination of data to date. The Pokanoket Watershed Alliance, based in Barrington, RI, has had an ongoing water quality monitoring program since 1990.

The process has led to a greater level of cooperation between the MA and RI state agencies involved, and complemented the multi-jurisdictional efforts undertaken by the EPA in coordinating the Task Force for several years. The Ten Mile River and Narragansett Bay Basin Team Leader has, of late, assumed a coordinating and facilitating role for the Task Force.

The Regional Open Space Committee members and their communities, both individually and through partnering, are involved in a number of activities focused upon improving water quality, such as:

- Seekonk has employed a septic system improvement loan program for the past three years;
- Swansea employed a similar program in critical areas during 1997-98;
- The Ten Mile River Watershed Alliance has conducted monitoring, education and clean-up activities over a number of years;
- Swansea has been involved in the "River Aware" monitoring program involving volunteers and the Basin Team Leader;
- North Attleborough is working with the state Wetlands Restoration and Banking Program, through a grant from the Watershed Initiative, to restore two former open water wetlands, adjacent to Route 1, that had become almost completely pitted-in and overrun with vegetation;
- Seekonk has worked through the Mass Highway Efficiency Act, (ISTEA) Enhancements Program and the Massachusetts Coastal Zone Management Office's Coastal Pollution Remediation grants program to improve catch basins along several streets and roads adjacent to the Runnins River (as part of the Runnins River Task Force's projects), and;
- The Ten Mile River and Narragansett/Mount Hope Bay Basin Team, through the Watershed Initiative, is spearheading the preparation of a Watershed Action Plan for the Ten Mile River Watershed.

"Dams"

The region's dams and the problems associated with them, such as: structural integrity and overall safety; flooding; erosion and sedimentation; barriers to fish conveyance due to non-functioning or obsolete technology; unknown ownership and the related problems of liability, maintenance and responsibility.

While some of the municipalities have worked to repair or study and assess their dams (Rehoboth, Attleboro, North Attleborough), the needs, as is the case throughout the Commonwealth, are great. The Regional Open Space Committee envisions working through the Basin Team and Watershed Initiative to begin addressing these needs on a regional basis.

Save the Bay is also working with the Basin Team to bring anadromous fish back to the Ten Mile River in conjunction with necessary dam restoration efforts.

"Flooding"

The most pronounced flooding problems within the Ten Mile River and Narragansett/Mount Hope Bay Watershed have historically occurred in the Ten Mile River Corridor, from Plainville to northern Seekonk. The flooding problem has been particularly severe in the North Attleborough - Attleboro area.

Dense development on the flood plain and floodway of the Ten Mile River, particularly in the downtown areas of North Attleborough and Attleboro, along with several other related factors, have created chronic flooding problems in both municipalities. The problem is acute around the downtown area and Route 1 in North Attleborough, particularly along a relatively flat portion of the river. This area is characterized by older neighborhoods with small drainage pipes providing shorter lead time during flash or peak storm events. The problem is sometimes extreme in the Arnold Road and Summer Street areas.

In Attleboro, a low-lying area around the Manchester and Garden Street neighborhoods is referred to as "Back Bay." This area is characterized by small drains that are connected to a large drain in the Main Street area. When the large drain fills during peak or flash storm events, the stormwater backs up into these low areas and causes severe street flooding and property damage.

While Plainville and Seekonk do not experience the severe problems occurring in other portions of the Greater Attleboro area, they share other problems related to flood management being at the head and terminus of the floodway, respectively.

Other ongoing flood-related problems in the Ten Mile River corridor include: accumulation of debris; siltation, heavy in several areas; vegetative encroachment in several areas, large areas of impervious surface and; man-made channels. All of these factors have served to: increase the magnitude and frequency of flood problem; impact water quality through increased runoff, pollutant wash-off and sediment pulses; and; cause habitat impact and loss through deposition of runoff materials, vegetative encroachment, trash and debris jams, etc.

In July of 1998, a proposal was submitted by North Attleborough to the Army Corps of Engineers Public Assistance to States (PAS) program, as facilitated through the DEM Office of Water Resources, to study and develop mitigation measures for flood problems in the Ten Mile River Corridor. This proposal was accepted and field survey and conceptual work began in 1999.

Concurrently, North Attleborough and Attleboro are working on an emergency procedures plan for response and operation of flood control structures. This activity is being carried out in conjunction with the Basin Team and state's Flood Hazard Management Program.

"Development Impacts"

Growth is inevitable. Responsible growth is desirable. The impacts associated with growth are not unavoidable. These three statements were all part of a discussion on the impacts of development during a Committee session devoted to documenting regional environmental problems.

In addition to some of the environmental problems discussed above, the Committee saw the following as some of the most severe impacts associated with development over the past ten years:

- Fragmentation of natural land riparian corridors and habitat, including wildlife corridors and routes of conveyance;
- Loss of agricultural land and prime agricultural soils and the related impact to the amount and quality of open space, including edge, meadow and buffer areas;
- Loss of cultural landscape (historical, architectural, etc.), scenic views and vistas and, as a result, part of the regional character.

These issues, as well as the aforementioned environmental problems, can be addressed through cooperative planning. Communities are attempting studies like the North Attleborough-Plainville "West Side Study," funded under an EOEA Planning for Growth Grant, can serve as a model for such cooperative growth management planning efforts. "The Attleboro Land-Use Growth Management Study"

TRIBUTARY

Wrentham: "Sitting at the Head of the Shed"

One of the most frequently used phrases when discussing water quality with watershed areas is, "we all live downstream." Indeed, what proceeds from the headwaters of a river or stream can establish subsequent trends in water quality and water resource management.

Wrentham, although occupying a relatively small portion of the Ten Mile River Watershed, sits directly at the headwaters (the head of the shed). The 1995 Wrentham Open Space Plan contained a number of conservation and recreation initiatives which lend themselves to planning in a regional context. From solidifying connections to the Warner Trail, to mapping and assessing ecologically important lands; from working with state agencies and neighboring communities to purchase and preserve mutually beneficial lands, to develop zoning bylaws that encourage permanent protection of land, Wrentham was anticipating regional trends.

In 1999, the town formed a new Open Space Study Committee to help enact the initiatives and achieve the goals of the Open Space Plan. The Open Space Study Committee was also assigned to look at and target larger initiatives, such as regional open space and conservation planning.

Not only is the mission of the Open Space Study Committee consistent with what the Regional Open Space Committee has been doing over the past twelve months, but by participating on the Regional Committee, creates the link to the larger initiatives which support local actions. The purpose and commitment of the Wrentham Open Space Study Committee can, with continued state and regional support, ensure that the head of the watershed is being well cared for.

V. THE STATUS OF OPEN SPACE

The individual open space inventories for the Ten Mile River and Narragansett/ Mount Hope Bay Watershed communities are contained within their respective Open Space Plans (collectively, numbering several hundred, the list and narrative would occupy dozens of pages of text). While not all individual community open space plans are up-to-date, SRPEDD, in conjunction with Mass GIS has developed an up-to-date open space database (compiled while completing build-out analyses for the cities and towns in southeastern Massachusetts) which is represented on the Regional Open Space Map contained in this document. As individual open space plans are updated, the regional map will be corrected accordingly.

The Regional Open Space Committee had the opportunity to review the Regional Open Space Map and had several observations on the quantity, classification and ownership/ investment in the region, specifically:

- While local land trusts have holdings in excess of 5,000 acres in the Ten Mile and Narragansett/Mount Hope Bay Watersheds, state and federal holdings (aside from the Federal Fish Hatchery land in North Attleborough) are sorely lacking; and, while a potential East Fall River purchase may remedy this situation somewhat, the municipalities along the Rhode Island border seem to be overlooked, perhaps due to their geography as much as anything else (despite some unique and outstanding natural resources);
- Regional Land Trust and Conservation organizations also lack significant holdings in the region; only Audubon in Attleboro (Massachusetts Audubon Society) and Seekonk (The Audubon Society of Rhode Island, 167 acres) have large refuge areas; recently, the Wildlands Trust of Southeastern Massachusetts has begun to focus more on the Ten Mile and Narragansett Bay area (working with property owners in Rehoboth, and, more recently, working with the Town of North Attleborough);
- The need to lock-up open space, through conservation restriction, deeded easement, direct purchase, partnerships, etc., is necessary in order to knit some of our important open space and focus areas together, and;
- The Committee felt that lands held by local land trusts, regional land trusts and regional conservation organizations should be considered as "permanently protected," as many of these lands have been held for

long periods of time and have strict conditions attached with their conveyance to said groups.

The Regional Open Space Committee also felt that "permanently protected" land was really the bottom line in evaluating the condition of and potential for expansion of a regional open space system. One of the fears arising amongst Committee members, when reviewing the Regional Open Space Map, was that due to the number of Ch. 61A and Ch. 61B properties, a great deal of open space could disappear if land owners failed to continue their enrollment in these programs (this reinforces the idea that local officials involved with open space planning should work closely with their respective Assessor's Offices, and work to develop an agricultural land ranking and prioritization list for acquisition purposes; also, in working with the Assessor, local Open Space Committees should inform land owners of and promote new and continued enrollment in the Ch. 61 programs; these principals may also be applied on a regional basis).

Table V-1: Permanently Protected Lands*

<u>Community</u>	<u>Total Land Area (Acres)</u> <u>(Not including water)</u>	<u>Permanently Protected Lands (Acres)</u>	
		<u>1999</u>	<u>Percentage</u>
Attleboro	17,413	1,861	10.7%
Fall River	21,417	6,454	30.1%
North Attleborough	12,178	1,243	10.2%
Plainville	7,126	605	8.5%
Rehoboth	30,147	839	2.8%
Seekonk	11,814	741	6.3%
Swansea	<u>14,608</u>	<u>838</u>	<u>5.7%</u>
Regional Sub-Total	114,703	12,581	11%

Source: Regional Build-Out Analyses, SRPEDD for EOEA, 2000.

Table V-2: Lands Held by Conservation Organizations and Land Trusts

<u>Name</u>	<u>Total Acres</u>	<u>Location</u>
Massachusetts Audubon Society	30	Attleboro
Audubon Society of Rhode Island	167	Seekonk
Seekonk Land Trust	287	Seekonk
Plainville Land Trust	57	Plainville
Attleboro Land Trust	220	Attleboro
Swansea Land Trust	108	Swansea
Greater Fall River Land Conservancy	50	Fall River
Rehoboth Land Trust	---	Rehoboth
Regional	919 acres	

Source: Local land trusts and Assessors.

* Land is considered protected if it falls into one or more of the following categories:

State land purchased with the use of federal funds, therefore covered by PL 88-578

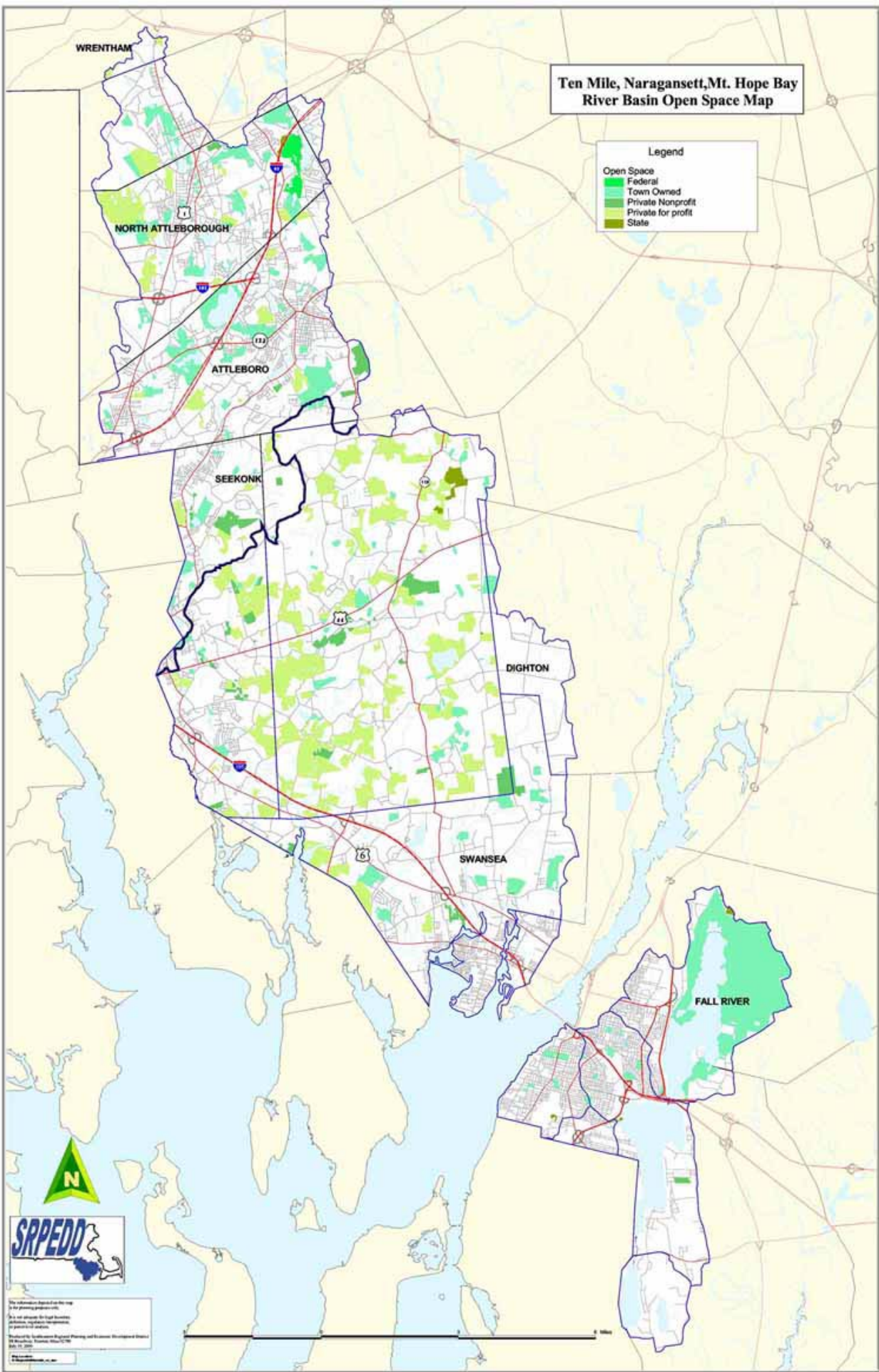
State land owned by a state conservation agency, therefore covered by Article 97 of the Massachusetts Constitution (See Appendix B)

Town land owned by or under the jurisdiction of:

- a. Conservation Commission
- b. Water Department
- c. Any town department if dedicated to open space/conservation by a permanent deed restriction.

Private land:

- a. Owned by a non-profit organization dedicated to land conservation (i.e. land trust)
- b. Protected in perpetuity by a conservation or deed restriction
- c. Protected by the Agricultural Preservation Restriction (APR) program
- d. Protected by a conservation restriction (CR) under the DEP's Wetland Restriction Program



Ten Mile, Naragansett, Mt. Hope Bay River Basin Open Space Map

Legend

- Open Space
- Federal
- Town Owned
- Private Nonprofit
- Private for profit
- State



This information is provided for informational purposes only. It is not intended to be used for legal purposes. For more information, please contact the appropriate agency. Prepared by: Sustainable Regional Planning and Economic Development Bureau, 100 Water Street, Providence, RI 02903. Date: 11/2019.



Ten Mile River and Narragansett/Mount Hope Bay Watershed Focus Areas and Corridors

The "Focus Areas and Corridors" mapping was developed from a number of sources. Brian Reid, of the Wildlands Trust of Southeastern Massachusetts, had been at work on a study of potential core conservation areas as part of a habitat atlas project for southeastern Massachusetts. In the course of his initial mapping, Brian had worked with many municipal, state and local environment groups. As a guest at one of the scheduled Committee meetings, Brian shared some of his observations on mapping and evaluating regional focus areas and provided the Regional Committee a starting point from which to build a regional "Focus Area and Corridors" map.

At subsequent meetings the Regional Committee also heard presentations and received comment and insight from Joan Pierce of the Massachusetts Executive Office of Environmental Affairs Department of Fisheries Wildlife & Environmental Law Enforcement and Carl Mellberg of the US Fish & Wildlife Service (regarding USF&W's "Great Meadows" Comprehensive Conservation Plan update). The Committee based its mapping activities on a format used by Brian Reid. Committee members worked individually and collectively to develop a draft map during a scheduled working meeting. Comments on the mapped areas and their attributes were discussed and a final version of the map was created, by SRPEDD, in a GIS format. The "Focus Areas and Corridors Map," final draft version, was presented publicly at a Regional Open Space Plan meeting (on May 4, 2000) in Attleboro hosted by the Ten Mile River Watershed Alliance and the EOEA Basin Team.

The importance of mapping the regional focus areas and corridors is not only to display the unique environments, landscapes and ecological attributes of the watersheds, but to show how these areas are or can be retained or connected through cooperative conservation planning. The retention or restoration of these connective areas can help to offset the impacts of development, such as altered landscapes and fragmented habitat, and the resultant consequences for all living things in the proximity. The Committee regarded the connective or linkage functions of the focus areas and corridors as the "cartilage" between the "special bones" in the physical make-up of the watersheds (corridors carrying

the connotation of more or less linear configurations of natural riparian communities, buffers, aesthetic and landscape features, rather than solely being regarded as pathways).

The "Focus Areas and Corridors" map is organized by color code according to the primary mapper or mappers. Each area on the map is also numbered to correspond to the following descriptive text.

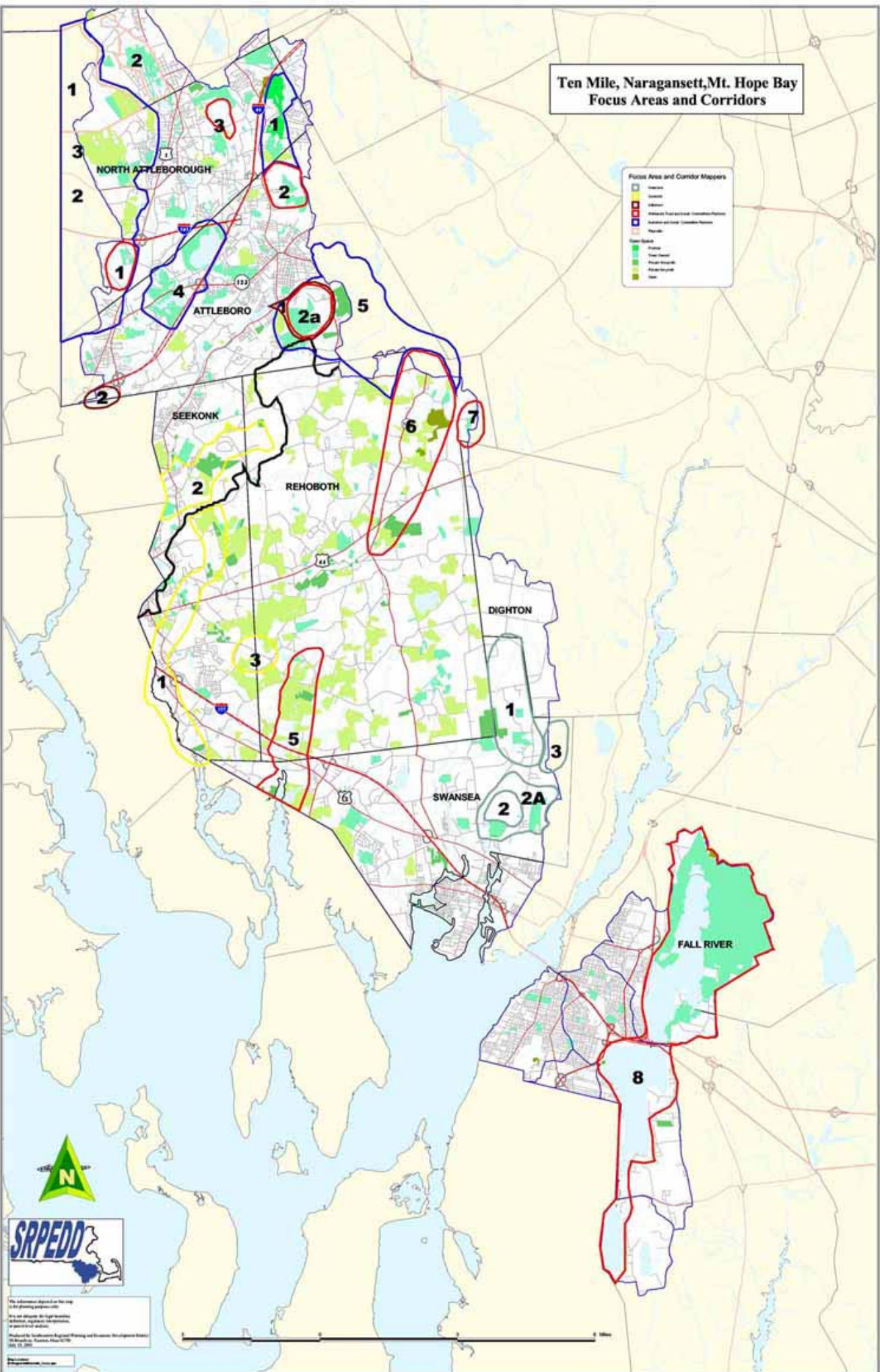
Ten Mile, Naragansett, Mt. Hope Bay Focus Areas and Corridors

Focus Area and Corridor Mappers

- Towns
- Corridors
- Focus Areas
- Interstate and State Corridor/Route
- Roadside

Water Bodies

- Pond
- Fresh Water
- Salt Water
- Wetland
- Other



SRPEDD

The information depicted on this map is for planning purposes only. It does not constitute the legal boundary of a town or other jurisdiction. It is provided for informational purposes only. Produced by the Southeastern Regional Planning and Technical Assistance Center, 100 Main Street, Swansea, MA 01978. 06/25/2014

(RED) -- Wildlands Trust and Committee and local partners

1. Attleboro Ledges - North Attleborough:

Unusual red felsite ledge formations, which are a very limited occurrence in Massachusetts and Rhode Island; several very uncommon and high priority natural communities, including Rich Mesic Forest (with Sycamore and Basswood), Seepage Swamps, Rock Outcrop Pine Barrens, Circumneutral Rock Outcrop Community, Circumneutral Talus Slope, Hickory-Hop Hornbeam Forest, and several potential vernal pools (need to be certified); two rare plant species, and potential rare animals. This is one of the most important natural areas in the basin.

2. Bungay River - Attleboro:

Unusual Coastal Atlantic White Cedar Swamp; very mature Red Maple swamp forests.

2a. Attleboro Vernal Pools:

High concentration of certified vernal pools.

3. Ten Mile Headwaters

Two rare plant and two rare animal species; high quality vernal pool (and several potential VPs); Chestnut Oak Forests; Native grasslands; large undeveloped parcel has potential to connect two potential natural areas (Memorial Park and backlands behind dump); 170+ acre parcel threatened with development.

4. Dighton Ledges - Dighton: (NOT SHOWN)

5. Palmer River - Rehoboth:

Good quality Tidal Freshwater Marsh and Tidal Brackish Marsh; several rare plants including one of the largest known populations of Long's Bittercress (globally rare); Northern Diamondback Terrapin.

6. East Branch of Palmer River - Rehoboth:

Native Eastern Brook Trout. Unusual stream-side Cedar Swamps; rich aquatic habitat, perhaps one of the most undisturbed streams in southeastern Massachusetts.

7. Taunton Ledges - Taunton, Dighton, Rehoboth:

Unusual rock outcrops; two rare plants.

8. Watuppa Ponds - Fall River:

One of the largest natural lakes in the state, used as primary water supply for City of Fall River; over 3,000 acres of land, largely unfragmented forest habitat; globally rare Plymouth Gentian and other rare plants and invertebrates; Bald Eagle (nesting), potentially significant waterfowl area. Long term protection status of land outside of 400' limit of reservoir is uncertain, although not immediately threatened; potential part of greenway connecting Freetown-Fall River State Forest and Acushnet Cedar Swamp.

(BLUE) -- (Audubon and local Committee partners)

1. Bungay to Fish Hatchery to Cooper's Pond
2. Abbott Run Watershed (Plainville, Cumberland RI, North Attleborough)
3. Cumberland Farms Property to Red Rocks area (described above)
4. Area around and including Orr's Pond and Manchester Pond
5. Chartley Brook to Hemlock Swamp area (which extends into the southwest corner of Norton) to Upper Palmer

(YELLOW) -- Seekonk

1. Upper Runnins River area
2. Lower Ten Mile River area
3. Property proposed for purchase with DCS funds in 1999 (extends into Rehoboth)

(BROWN) -- Attleboro

1. Locust Valley (currently, 10 certified vernal pools)
2. Rare species habitat between Collins Street and Route 1

(GREEN) -- Swansea

1. Two Mile Purchase area
2. Land above Village Park area
- 2a. Additional linkage lands
3. Agricultural land below the Two Mile Purchase

(PINK) -- Plainville

1. West side study area
2. Central habitat/open space cluster area

VI. REGIONAL OPEN SPACE AND RECREATION GOALS

The Regional Open Space and Recreation Goals are the product of existing municipal Open Space Plans and the ongoing Regional Open Space Committee meetings and activities. All of the existing municipal Open Space Plans from the Ten Mile River and Narragansett/Mount Hope Bay Watersheds have been analyzed and their "Action Plans" analyzed to determine potential regional Goals (and action items). The municipal "Action Plans" were then distributed to the Regional Open Space Committee members in order to determine the continued relevance of any or all action items.

The goals listed below reflect both the existing documented regional goals of the municipalities and the subsequent work undertaken with the Basin Team Leader over the past year.

- Improve the water quality of the region's rivers, streams and waterbodies;
- Increase the amount of permanently protected open space, particularly within focus areas, water resource areas and along river and stream corridors;
- Plan for and develop regional "through trails," including walking, biking and canoeing;
- Develop, and, where feasible, employ regionally consistent zoning, land use and conservation strategies and regulations;
- Create a permanent Regional Open Space Committee;
- Create a singular geographic watershed identity for the municipalities in the Ten Mile River and Narragansett/Mount Hope Bay Watersheds.



VII. ANALYSIS OF NEEDS

A. Regional Community Needs

"A Regional Tool Box"

Regional Open Space Committee members identified a number of planning and growth related issues facing their respective communities. These issues ranged from loss of local character and the cultural landscape, to managing growth in terms of appropriate land use management and carrying capacity of the land.

In the course of discussion, both at Regional Open Space Committee meetings, public meetings and during visits to the city and town halls, a recurring theme emerged ... the need to develop or incorporate better tools by which to implement conservation, preservation, growth management and related strategies. Regional Open Space Committee members also realized that this may be a daunting task in that local regulations, human resources and financial resources vary from municipality to municipality. Further, in order to apply "better" planning tools on a regional basis, it is absolutely necessary that the communities work from a common understanding of the terms, concepts and "tools" to be utilized.

The advantages of working from a regional toolbox in addressing "planning for growth" issues were pointed out by various committee members and included: improved communication between municipal governments and departments; an ease of transition into dialogue on regional conservation and planning issues; improved ability to view and plan for the watersheds as singular ecological and geographic communities; an increased ability to procure funding for regional projects and studies related to conservation, natural resource and growth management planning.

Over the course of several planning sessions, the various tools and language and approaches to growth and land use management were discussed by the Regional Open Space Committee. The following is a summary of the most commonly discussed terms and tools which the Regional Open Space Committee felt would be useful in a "regional tool box" context. Hopefully, a common understanding of these tools and terms will allow for intermunicipal and regional applications and innovations over the course of time.

Zoning Tools

The zoning approaches discussed below are some of the more common tools to guide development to or away from designated areas. They are commonly

used to conserve resource lands. These zoning approaches are typically used as elements in an overall growth management program.

Nonexclusive zoning features typically include large minimum lot sizes and wide range of uses allowed by conditional permit.

Exclusive zoning prohibits non-farm activities in farming districts. These zoning districts typically include very large lot sizes that approximate the minimum farm size necessary to maintain viable farming operations.

Agricultural buffers are used to reduce conflicts between urban and agricultural land use activities by providing a buffer between agricultural and urbanized uses.

Exclusive farm or resource zones are designated to exclude uses that are incompatible with farming and natural resource conservation. These policies include reduced property taxes based on their use as resource lands not on development potential.

Upzoning/downzoning allows land to be rezoned to its appropriate use. Land is upzoned to encourage denser urban development patterns. Land is downzoned to very large minimum size to conserve resource uses. Within agricultural regions the intent behind downzoning is to maintain viable agricultural operations and discourage the development of resource land for large lot residential and hobby farms.

Nontransitional zoning policies establish moderate and high density/intensity land uses. These zones are designed to facilitate nodal development along transit routes, reduce the scale of low-density development within urban areas, restrict the size and location of low and very-low density development outside the urban containment boundary, and keep development away from natural resource and environmentally sensitive land.

Minimum density zoning policies are designed to ensure that project densities on land zoned at medium or high densities are not negotiated

downward to the point where they undermine urban containment policies and the economic provision of services.

Planned unit development (PUD) zoning is generally used with larger sites. It allows for more flexible site design by relaxing permitting and other site requirements. PUDs initially provide an overall general development plan that is implemented over time through a series of subdivision plans.

Overlay zoning applies additional development provisions in response to special conditions. Typical overlay zones include wetlands, wellhead protection, village and historic districts.

Floating zones include provisions for a district that is not identified unless certain project conditions are met. Floating zones are used to anticipate certain uses, which will not be determined until developers apply for zoning. Uses that may be considered for floating zones are retail centers.

Resource, Land Conservation, Critical and Special-Area Protection Tools

These tools are designed to provide a means for balancing the conservation and protection of resource lands and environmentally significant areas with the need to provide land development opportunities.

Transfer of development rights (TDRs) are meant to conserve resource and open space lands through a scheme in which the development rights for a piece of property in a sending zone are severed and sold to a property in an identified receiving zone. A sending zone is an area in which the development of land is considered less than desirable. A receiving zone is an area that is determined to be more suitable and desirable for development. Land owners who purchase these development rights are able to develop land at a density that is greater than what is typically allowed.

Purchase of development rights (PDRs) is the purchase of a property's development rights by a public or private institution. An economic

drawback to the use of PDRs is that when a government agency purchases development rights the tax payer essentially pays twice for that purchase. The first is through the infrastructure investments that create property value and then through the purchase of those development rights.

Conservation easements conserve resource land and open space through the transfer of development rights from a property owner to a third party such as the Nature Conservancy or a Land Trust. Under conservation easements, the owner maintains title to the land and uses it for resource purposes. This reduces the potential tax burden to the land owner that results when property taxation is based on its development value rather than resource land value.

Land Trusts are organizations that play a major role in the conservation of land. Land trusts are often local organizations that form a partnership with public agencies to purchase, protect and manage land as open space.

Right-to-farm laws are designed to protect farmers from nuisance suits on farming activities by declaring that farming practices are reasonable land uses. However, they do not protect farm operators from trespass suits. They do not prevent conversion of farmland. They also may not apply to succeeding owners, or if land is allowed to lay fallow, or if agricultural practices are changed.

Special area designations apply the concept of public-good protection to support delineating areas requiring protection. Public-good features protected include protecting urban environment from natural hazards and disasters, preserving endangered or threatened species habitats, maintaining air, land and water quality, maintaining scenic views or vistas, conserving historically or culturally significant areas outside urban development and protecting scientifically or ecologically significant areas.

Critical area programs are built around mandates to protect the environment and encourage economic development. Three general types of critical-area programs are:

- Generic areas in which special state regulations are applied to all similar areas.
- Geographic areas have special local regulations under state oversight that are applied to unique areas.
- Potential critical areas are areas that require negotiations to provide solutions that avert potential problems.

Scenic view protection areas are designed to protect special visual characteristics that are related to an area's sense of place such as special vistas, scenic roadways, scenic corridors and community entryways.

Rural cluster developments are designed to preserve open space through the use of conservation easements and by awarding land an underlying density that can only be used in planned arrangement that clusters development and conserves open space. There are limitations to the use of cluster developments. They can limit the intensive use of farmland. Major use of rural clusters can take enough land out of agricultural production to reduce the critical mass of commercial farming to a level that is insufficient to support a regional farm economy. Also, cluster development is a form of leap-frog development that serves to disperse the population through the countryside.

Performance evaluation techniques involve the use of a land evaluation system to determine the suitability of land for resource and more urban uses. These systems initially evaluate the soil quality for a variety of agricultural and forestry uses which is next modified by other land use, farm size, accessibility to public facilities and zoning characteristics.

(Source: SRPEDD, Vision 2020 Project, CPW Consultants)

TRIBUTARY

"Managing Woodlands for Water Supply Purposes"

(The following material was excerpted from The Forest Use Manual, University of Massachusetts Cooperative Extension System, 1993.)

Forests provide a very effective natural buffer that protects the purity of water in a reservoir. The trees, understory vegetation, and organic litter

that fall on the forest floor reduce the impact of falling rain and ensure that soil will not be eroded and sediment will not collect in the reservoir. The forest (and especially surrounding wetlands) acts as a buffer to prevent flooding and allows the gradual flow of water into the reservoir. The tree canopy and forest soil also act as a pollution sink, protecting the purity of water in the reservoir.

A watershed covered by unbroken forest may provide less water to a reservoir than a watershed with open areas. Trees intercept some incoming precipitation, which evaporates to the atmosphere without reaching the reservoir. Also, trees take up moisture from the soil and release it through leaves to the atmosphere. In a given watershed, there is an optimal mixture of forested and nonforested (but vegetated) land that will deliver the most water to the reservoir and maintain acceptable water quality. There is no simple rule that prescribes this mix. It depends on soils, bedrock geology, topography, and species composition of the vegetation.

If your primary management goal is to maintain a supply of clean water, your objective should be to keep the forest in the healthiest condition possible. Forests with a diverse mixture of vigorous trees of different ages and species can best cope with periodic and unpredictable stresses such as insect defoliation, hurricanes, tornados, diseases, drought, and the more chronic stresses of air pollution.

Timber harvesting on forested watersheds must be conducted with the utmost care. Whether the goal is to improve spacing between trees, initiate the growth of young seedlings and saplings, or create permanent openings, precautions must be taken to ensure that erosion is minimized and that sediment does not enter the reservoir. Sediment causes turbidity, lowering water quality and raising the level of treatment the water needs to meet public health standards. Fortunately, it is possible to harvest timber without affecting water quality if "best management practices" are followed.

A booklet prepared jointly by the Department of Environmental Management and the University of Massachusetts Cooperative Extension System outlines the practices required by the Massachusetts Forest Cutting Practices Act.

A Regional Open Space Committee

In order to truly take advantage of increased regional opportunities, Committee members also voiced strong support for the establishment of a permanent Regional Open Space Committee. It was suggested that the Regional Open Space Committee could meet three to four times annually, or as necessary, in order to keep abreast of relevant issues and to implement the recommendations of the Regional Open Space and Recreation Plan. The Regional Open Space Committee could also work with local members to support local activities and initiatives that are important to or have the potential for regional impact (such activities and initiatives might include demonstration grant programs; innovative or alternative strategies or programs; land acquisition opportunities; etc.). The most important charge of the Regional Committee, it was suggested, would be to supplement the action agendas prescribed in existing local open space plans and to provide a medium by which to work with federal, state or regional entities such as the EOEA Basin Team.

A Regional Identity

In the midst of the planning process, one of the most important "community" needs became very apparent to those around the table...the lack of a true "regional identity." Unlike its neighbors to the west (the Blackstone) and to the east (the Taunton), the area for which the Regional Open Space Committee was working to build a plan could not be described in a singular fashion. The connotation of the single watershed address...the Blackstone with its Heritage Corridor...the Taunton, home of the Wampanoag Commemorative Canoe Passage...did not apply to the geographic and ecological area which was being discussed in the Regional Open Space and Recreation Plan.

Although a part of southeastern Massachusetts, the municipalities within the Ten Mile and Narragansett Bay Watersheds themselves have periodically suffered the recognition problems afforded border towns (at times being mistaken by broadcast and print media as part of Rhode Island!). The identity crisis may also be part of the reason for the relative lack of investment of state and federal funding of open space in this area, rich in cultural, historical and natural resources. The region is more often characterized by its separate rivers, for various reasons, than by its principal watershed (the Narragansett) and sub-watersheds.

With the creation of the Regional Open Space and Recreation Plan

comes a unity of vision which regards the Ten Mile and Narragansett and Mount Hope Bay Watersheds as a single geographic and ecological entity; a common watershed address.

It has been suggested by members of the public and the Regional Open Space Committee that the Ten Mile and Narragansett/Mount Hope Bay Watersheds be henceforth referred to as the Narragansett Bay Basin (the geographically larger, encompassing watershed). Under this scenario, the Narragansett (which includes Rhode Island as well) would: afford the communities a large umbrella under which to plan (even on an interstate basis) and a true "regional identity"; maintain the important sub-watershed identities which characterize the Massachusetts portion of the Narragansett, and; erase the suggestion of a fragmented region as is implied by the current name(s).



B. Regional Conservation Needs

While the diversity of the municipalities within the watersheds creates a diversity of conservation related needs, in the context of the Regional Open Space Committee, a commonality of issues became apparent to all involved.

Farming and Agricultural Land Retention

With the onset of increased development, the loss of the rural and cultural landscapes, particularly in North Attleborough, Wrentham, Plainville, Rehoboth, Swansea and Seekonk, has become a major issue. While municipalities such as Rehoboth and North Attleborough have actively encouraged local farm enrollment in the Commonwealth's Chapter 61 programs, this does not protect the open land or guarantee agricultural use in perpetuity. And, while North Attleborough has used the Commonwealth's Agricultural Preservation Restriction Program (APR) extremely well to lock-up development rights and preserve agricultural land and active farming in the rural northwest corner of town, APR has limited funding. Further, the Regional Open Space Committee realized that not every agricultural parcel and working farm could be dealt with through federal, state or local tax relief acquisition programs.

From these discussions, two things became apparent to the Regional Open Space Committee: first, we, as a region, should be able to offer greater technical assistance or referrals necessary to help communities and farmers utilize value-added technology, access to long-term, low-interest capital, education and training, access to markets/marketing, to retain small farm viability, and; second, we must develop an open and agricultural land ranking and prioritization process by which those parcels which become available might be assessed for acquisition on the basis of their overall value to the community.

To address the first need, the Regional Open Space Committee suggested either meetings, workshops or individual sessions with groups like the Southeastern Massachusetts Agricultural Partnership (SEMAP) coordinated by the Pilgrim Resource, Conservation & Development Area Council and the Umass-Dartmouth Small Family Business Assistance Center. SEMAP has direct access to a number of USDA programs and services as well as the resources of Umass-Dartmouth.

To address the second need, the Regional Open Space Committee suggested developing an agricultural land ranking and prioritization methodology which could be applied throughout the Ten Mile and Narragansett Bay Watersheds. A sub-committee was established and several models used in both the Commonwealth and nationally were

evaluated for their completeness and applicability. The results of the sub-committee's work is contained in this plan and will be further scrutinized by the Regional Open Space Committee.

Fisheries Enhancement and Restoration

The enhancement and restoration of the regional fisheries was seen as another critical conservation need by the Regional Open Space Committee. The Committee cited shad and blueback runs in Rehoboth, anadromous fish runs on the Coles and Runnins in Seekonk and Swansea and anadromous fish runs along the length of the Ten Mile as priority concerns.

Planning is underway to address these priority concerns, with the EOEA Basin Team leader and Save the Bay having been a particularly strong and active advocate. The following is a summary of a proposed plan, with good local support, developed through the Basin Team and drafted by Save the Bay.

TRIBUTARY

"Herring Run Restoration on the Ten Mile River - Reclaiming an Historic Fishery"

The Ten Mile River is an historic fish run in southeastern Massachusetts and eastern Rhode Island. The construction of dams on the Ten Mile River over the last 200 years has prevented fish passage to upstream spawning habitat.

Restoring the anadromous fishery to the Ten Mile River would provide a wide range of benefits to the freshwater and marine fishery and to the surrounding communities.

The Ten Mile River originates in Plainville, Massachusetts, flows into Rhode Island in the community of Pawtucket and eventually drains into Narragansett

Bay in East Providence on the eastern side of the Seekonk River at the Omega Pond Dam. The river's length is approximately 20.7 miles and drains a watershed of approximately 53 square miles. Anadromous fish are prevented from spawning in the Ten Mile River due to a series of dams on the lower reaches of the river which prevent access to Omega Pond and the Turner Reservoir. Some river herring return each year to the mouth of the Ten Mile River and are carried over the first dam into Omega Pond by local fishermen.

The Rhode Island Department of Environmental Management's (DEM) Fish and Wildlife Division has conducted an assessment of the anadromous fish habitat that would be accessed by constructing fishways and/or dam removal at the three dams leading to the Turner Reservoir. Based on Rhode Island DEM's assessment of available habitat, if a fishway was constructed at the Omega Pond dam the estimated run size would be 40,000 herring. If fishways were also constructed at both the Hunts Mill dams and the Turner Reservoir dam, the estimated run size would be 205,000 herring. (There is no appreciable habitat between the Hunts Mill dams and the base of the Turner Reservoir.) The Ten Mile would rank as one of the highest priority fish run restoration projects in the state if fishways were constructed at all three dams thus allowing access to both the 33 acre Omega Pond and the 297 acre Turner Reservoir.

The Turner Reservoir can support river herring based upon stocking conducted by DEM Fish and Wildlife in the spring of 1996 and 1997. Spawning success was inferred by the fact that juvenile river herring were netted in the fall of each of those years. Also, the Ten Mile River could potentially support American shad according to the habitat assessment conducted by DEM Fish and Wildlife Division.

An Interstate Resource.....

The restoration of anadromous fish to the Ten Mile River would provide benefits to both Rhode Island and Massachusetts since the Turner Reservoir is a shared freshwater fishing resource. Approximately two-thirds of the Turner Reservoir is in Rhode Island and the remaining one-third in Massachusetts. Restoring the herring run would enhance this freshwater fishery in the Turner Reservoir. The EOEA Basin Team

Leader has contacted the Massachusetts Marine Fisheries Division about partnering on this anadromous fish restoration. Based on preliminary discussions, Massachusetts is interested in this project yet has limited financial resources available to dedicate to the restoration project. Massachusetts can provide help with the stocking of the run since Rhode Island has no such facilities. This will be facilitated by a letter of commitment from Philip Coates, Director of the Massachusetts Division of Marine Fisheries, dated January 4, 1999, to David Borden, Assistant Director of RI DEM Bureau of Natural Resources.

Strong Community Support.....

Restoring anadromous fish passage to the Ten Mile River has strong community support from a variety of community organizations, recreational user groups and environmental organizations. Save The Bay has identified the Ten Mile River as the highest priority fish run restoration project through its coastal habitat restoration campaign. The Slater Mill Fishing Club has been advocating for fish run restoration for a number of years and has been responsible for coordinating the efforts of local fishermen to scoop herring over Omega Dam to allow them to spawn. The Ten Mile River Watershed Alliance is interested in building support for this project to connect the Massachusetts section of the watershed with downstream Rhode Island.

Wenly Ferguson, Save the Bay

TRIBUTARY

"Quality Drinking Water in Adequate Supply"

Another critical need within the watershed is to provide drinking water to meet the current and projected population growth. Because of the small size of the watersheds, development of new water supply sources often involves transferring water into or out of the watershed. Such interbasin transfers of water are carefully reviewed at the Massachusetts Water Resource Commission to ensure that the disruption in the water balance does not have a negative impact on the downstream water uses and the water level in wetlands and streams.

In the Ten Mile River Watershed, a high yield aquifer is located at the headwaters of the Bungay River that is prized for development of public water supply wells. In the Witch Pond area, there are 8 public water

supply wells for the Towns of Foxborough and Mansfield and the National Fish Hatchery in North Attleborough. Two additional wells with the capacity to supply 1.2 million gallons per day well are proposed for the Town of Foxborough and are under review by the Water Resource Commission. Major issues of concern with the water supply development in this area have been noted in a recent Water Resource Commission Decision¹ that are related to the unique habitat in the immediate area of the wells, maintaining the stream flow, and minimizing need for additional water through conservation efforts. These wells are located in or adjacent to a unique habitat, an Atlantic White Cedar Swamp, that serves as a habitat for two endangered species (the Hessel's Hairstreak butterfly and the spotted turtle). To maintain this unique ecosystem, periodic inundation and near-surface water table is required, yet there is uncertainty regarding the affect the proposed well withdrawals will have. Conditional use of the Mansfield well includes developing a monitoring plan for the swamp and underlying aquifer that could restrict the operating schedule or allowable yield for wells in this area; and ensuring all practical water conservation measures are undertaken in the receiving area.

Growth in each municipality in the watersheds is straining the existing public water supply. The EOEА Watershed Team is committed to working with the public water suppliers to develop a Comprehensive Water Supply Plan that identifies ways to meet the future water supply needs including aggressive conservation measures, protecting the quality of existing and potential water supply sources, public education regarding outdoor water use, and balancing water supply and habitat needs.

Andrea Langhauser, EOEА

¹ See the WRC decision for the Town of Mansfield Morrison Well #10, dated June 8, 2000.

Greenways

Greenways are "corridors" of land and water and the cultural, historical, natural and recreational areas they link or "knit" together. Greenways may be combinations of public and private lands; as simple as an urban path between a downtown and park land, or; as complex as a regional multi-modal system connecting two or more municipal centers or resource areas. Greenways may take the form of canoe passages, rail trails, bike paths or riverwalks. Greenways provide us the opportunity to plan with the natural and cultural landscape to help preserve our regional character and unfragmented natural resource and habitat areas.

The potential for the development of greenways as part of a regional conservation, recreation and open space strategy was identified as a priority item by the Regional Open Space Committee. Greenway planning is seen as a way to enhance the quality of life within the region by providing passive and active recreational opportunities while addressing water quality issues, preserving scenic views, vistas and landscapes, and, preserving large areas of intact habitat in order to help maintain biodiversity.

Every municipal Open Space Plan written within the last decade, within the Ten Mile and Narragansett Bay Watersheds has promoted the idea of developing regional greenways or local greenways with the potential for regional linkage. From Rehoboth in 1990, to Attleboro in 1994, from Wrentham in 1995, to Seekonk and North Attleborough in 2000, greenways, planned predominantly around important waterways, have been key "Action Plan" elements of local Open Space Plans.

There are probably no better examples within the immediate area than the City of Attleboro's Balfour Riverwalk and Bungay Conservation Area. The Balfour Riverwalk reclaimed a former industrial site in the heart of the downtown. The site of the former Balfour Manufacturing facility, it is now a public park area providing connections from the downtown to the library and YMCA. The Balfour site has also "uncovered" the Ten Mile River, which flows through the downtown but was largely confined and obscured by the industry it served for so many years. The Bungay Conservation Area is a proposed environmental education center in the midst of a large tract of conservation area in the Bungay River Watershed. This area will provide opportunity for nature observation and study as well as maintain intact habitat around the river.

In both cases, Attleboro's strong municipal commitment, in terms of both planning and fiscal resources, was matched by the state's Division of Conservation Services in providing the match funding needed for the respective projects.

The greatest opportunities for creating river based greenways which link publicly and privately controlled open space, water bodies, and, contain large areas of intact habitat, are afforded along the Seven Mile, Bungay and Palmer Rivers (and appear on the Greenways, Trails and Bikeways Map created by the Regional Open Space Committee).

The Seven Mile River runs through the very rural/agricultural western portions of Plainville and North Attleborough into northwestern Attleboro. Much of the land along the course of the river constitutes a natural land riparian corridor containing several large tracts of public and private open space (including several Agricultural Preservation Restriction and agricultural parcels), particularly in North Attleborough. The terminus of the proposed greenway is in the northwestern portion of Attleboro in an area of open water and publicly controlled open space.

The Bungay River runs through eastern North Attleborough into eastern Attleboro. Much of the land along the course of the river constitutes a natural land riparian corridor containing publicly owned open space and the Federal Fish Hatchery land in North Attleborough and culminating in the Bungay Conservation area in Attleboro (to which the city recently added over one hundred acres of land).

The Palmer River corridor is virtually intact throughout the Town of Rehoboth. It is very wild and rural in spots and traverses wooded and agricultural areas in others. It truly links cultural, historical, agrarian and natural landscapes within the town. The land along the course of the river constitutes a natural land riparian corridor for much of its length. The river provides natural links to various sized parcels of federal, state, town and privately owned open space. The Palmer itself is one of the most pristine rivers in all of southeastern Massachusetts.

TRIBUTARY

Fall River: "The Start of the Big Walk"

Although the land around the Watuppa Ponds in Fall River appears geographically detached in any presentation map depicting the Ten Mile, Narragansett and Mount Hope Bay Watersheds, it is the potential lynchpin in a greater greenway vision for southeastern Massachusetts.

In 1997, the Fall River Open Space and Recreation Plan's first goal was to "increase protection of the North Watuppa and Copicut Water Supply and East Fall River watershed lands." Concurrent with the goal of water supply protection and watershed land acquisition was the objective of establishing a greenway and trail system linking the Fall River waterfront area with the pristine open space of the East Fall River watershed lands.

Fall River is unique amongst the cities in southeastern New England in that approximately half of its more than 24,000 acres, or all of East Fall River, is virtually undeveloped watershed land. In contrast, virtually all of the residential commercial and industrial development in Fall River occurs west of the Watuppa Ponds complex, between Routes 24 and 79 and the Watuppa Ponds themselves. The city has had the foresight to protect their watershed land through zoning.

One concept for a greenbelt in Fall River involves land along the Taunton and Quequechan River that would also include the city's shoreline on the Mount Hope Bay and the Watuppa Ponds corridor. The greenbelt would also complement the DEM Heritage State Park, the walking and biking facilities on the New Brightman Street Bridge and the proposed improvements to the Olmstead designed Kennedy Park, which overlooks Mount Hope Bay. This general design concept also appears in the 1997 Open Space and Recreation Plan.

In 1999, the Greater Fall River Land Conservancy (a private, non-profit organization founded to preserve and protect the natural heritage of Fall River and surrounding areas for the benefit and enjoyment of the public) proposed the idea of a major greenbelt, extending from East Fall River, along south coastal Massachusetts, to the Myles Standish State Forest in Carver and Plymouth. The new Brightman Street Bridge would also link this greenbelt to the west, most likely through planned biking and hiking routes. This "super regional" concept has come to be referred to as the "Southeast Kingdom," a regional bio-reserve.

In the Spring of 2000, a team of students from the Harvard University Graduate School of Design began work on a comprehensive assessment of this greenbelt area and the thirteen municipalities through which it traverses. A final report should be ready by the Fall of 2000.

Concurrently, the Secretary of Environmental Affairs was in the process of realizing a fourteen year dream in southeastern Massachusetts, the purchase of the East Fall River Watershed lands by the Commonwealth. While negotiations for this land had been going on-and-off since 1988, Secretary Durand negotiated a preliminary agreement that would create, in conjunction with the Fall River-Freetown State Forest lands, a 14,000 acre green reserve in East Fall River - the anchor in the proposed regional system.

Finally, during the Summer of 2000, the Coalition for Buzzards Bay, the Greater Fall River Land Conservancy and others, sponsored the "Big Walk," a trek along the proposed regional greenbelt from East Fall River, through the thirteen municipalities, to the Myles Standish State Forest. Perhaps, through continued state and regional efforts in open space and conservation planning, we can someday soon make the "Big Walk" a permanent feature in the conservation landscape of southeastern Massachusetts.

C. Regional Recreation Needs

We Need Through Trails.....

While creating a regional planning "toolbox" and "tools" were community consensus/ technical needs agreed upon by the Regional Open Space Committee, there was perhaps no more passionate issue than that of the need for recreational through trails and linkages throughout the watersheds. These proposed linkages include canoe passages and bike paths/bikeways as well as hiking/walking trails. Ideally, through trails should connect contiguous parcels of open space. Easements may be needed from private property owners in order to facilitate trail connections where direct connections of open space parcels do not exist.

During a trail planning exercise conducted as part of a Regional Open Space Committee meeting, members worked together to map proposed

or possible local trail projects (usually derived from municipal open space plans). This recreational trail planning exercise produced a regional trail map on a 34" x 44" GIS map base of the watershed areas. The Warner Trail, which traverses both Wrentham and Plainville en route from the rail station in Canton, Massachusetts to Diamond Hill State Park in Cumberland, Rhode Island, was considered an essential anchor to the north. The Warner Trail is a link to the Wrentham State Forest area as well as the "Wentworth Institute" property in Plainville via Wampum Four Corners. The Warner Trail is clearly marked by white discs attached to trees and telephone polls over its entirety. The trail is primarily maintained by Appalachian Mountain Club volunteers from the Boston, Narragansett and Southeastern Massachusetts Chapters.

In the course of the trail planning exercise, Don Doucette of the Ten Mile River Watershed Alliance worked with other Committee members to map a through trail from the Warner Trail in Wrentham to the City of East Providence, RI. Don explained how "possible" this trail was as he worked with the maps.....it was the product of a journey he had made several years before.

The enthusiasm, energy and hard work during this session resulted in the trails map contained in this report. As for the north-south trail from Wrentham to East Providence, Committee members now refer to it as.....

TRIBUTARY

"Don's Trail"...(described below in Don's own words)

During the month of June 1995 (June 17th & 18th to be exact), I walked with my friend, Mark Benoit, from the headwater of the Ten Mile River in Plainville, Massachusetts, to the river's outfall at Narragansett Bay in East Providence, Rhode Island.

Mark, an experienced backpacker, encouraged me to take on this adventure. I had been discussing the concept of walking the length of the small Ten Mile River Watershed with him for several years. I valued his friendship and his varied abilities - he was to be my mentor during this two day journey.

We began on Chestnut Street in Plainville near the Wrentham line on

Saturday morning. Our destination on that day was my house on the Seekonk side of Attleboro. On Sunday morning we started out again, our trek would end at Omega Pond on Sunday evening. This is where the river falls into Narragansett Bay. Our agenda proved accurate having allowed ample time for rest and exploration. We expected the trip to be a quiet and passive undertaking as we cut across the grain of a watershed populace going about their normal weekend pursuits.

We realized it was impossible to maintain a fixed route along the Ten Mile River corridor entirely; very often we found ourselves in urban settings following sidewalks and roadways. Our intent, however, was to parallel the river floodplain whenever possible.

Even today the experiences of that journey remain imprinted in my mind. For example the quiet beauty of the Ten Mile River as it flows toward Plainville Center, cold drinks at a sidewalk table at The Penguin Café in North Attleborough, the ear splitting caws of a disrupted evening crow roost on Dodge Island in Attleboro; Sunday morning church bells and carousel music as we passed through Slater Park in Pawtucket, Rhode Island. Later we arrived to a picnic lunch prepared and delivered by my wife, Nancy, to Hunt's Falls in East Providence, Rhode Island. We dined in the shade while listening to the falls. A little later we enjoyed an ice cream cone at the Sunshine Creamery on Roger Williams Avenue. Also, I will never forget the steady, cooling bay breeze as we arrived at our destination on Sunday evening. Throughout the two-day trek we walked through a living bouquet; the wild flowers were profuse. Bird song was our constant companion. Walking at a leisurely pace allowed our senses to experience the natural and cultural beauty of the watershed.

Mark and I fully experienced the sense of place that is the Ten Mile River Watershed. For too many years the river was considered an open sewer. Contrastly, we discovered a whole watershed, alive and kicking, contrary to its former reputation. Where there is tarnish there also exists the signs of rehabilitation.

As we walked along Central Pond in Pawtucket and Turner Reservoir in East Providence, we discussed earnestly the potential for a recognized footpath throughout the entire Ten Mile River corridor, indeed, we had walked the vision toward reality.

My colleagues associated with the Ten Mile River Watershed Alliance affectionately joke with me about my passion for the trail; they refer to it as Don's Trail. That's O.K., I enjoy the banter and, kidding aside, I seriously envision a completed Ten Mile River Heritage Trail. Someday it will happen. Hear me reader, if you can share this passion to develop this trail system, walk with us and please work toward making this vision a solid reality.

--Don Doucette, Ten Mile River Watershed Alliance

Bicycle Facilities

A second map created during the trail planning exercise was a map of bicycle facilities, proposed and desired, for the watershed(s) communities. Several of the proposed projects represent some of the most significant regional intermodal transportation efforts proposed in southeastern Massachusetts. Some of these projects have been in the public eye for a decade or more. Some are the products of extensive state and local planning and engineering studies, while others have existed as ideas since the 1970's. All are in various stages of development, pre-design, design or construction, some to be completed in the near future.

If fully realized, these projects could link two states, three counties and over one dozen municipalities. These projects would provide the Ten Mile and Narragansett Bay Watersheds with major east-west and north-south bicycle and multi-modal routes, paths and lanes. The major project areas, as mapped for this report are as follows:

- Brightman Street Bridge Replacement - More than just a means of conveying motorists across the Taunton River between Somerset and Fall River, the Brightman Street Bridge is also a key link in a regional bicycle plan. The approved bridge design has both a sidewalk and AASHTO standard bicycle lane. The Brightman Street Bridge (Routes 6 & 138) will allow east-west movement along SRPEDD's south coastal

area as well as create a link from the east into Somerset, Swansea and the East Bay Trail through a Warren, Rhode Island, link (which will bridge Bristol, RI with Swansea, MA). Construction on the new Brightman Street Bridge began in 1999 with a completion date projected in five to six years.

- Swansea Bike Lanes - Originally approved for construction funding in FY'97, through the Enhancements Program, this project was to have provided bicyclists with a link to the East Bay Trail by connecting with a two and one-half mile bike path being constructed in Warren, RI. The Warren Bike Path will tie into the East Bay Trail in Bristol, RI.

Following an almost two year series of public meetings and hearings regarding the design of the bike lane system, the town is now ready to proceed into the construction phase, contingent upon procuring the funds. The \$1.3 million project may have to wait several years because of cutbacks in federal funds to Massachusetts.

The bike lane system, when completed, will link Swansea and Warren at Old Warren Road, and travel along Maple Avenue, then down Wood, Oak, Locust and Plain Streets, to Milford Road, Bark Street, Chace Street and into Somerset. Part of the route will also go along Elm Street into Somerset.

- Fall River Bike Path - The city has recently procured the design funds necessary to begin planning the previously state-approved on and off-road bike path. This project will provide the key link between the city, via the new Brightman Street Bridge, the Towns of Somerset and Swansea to the west (and potentially to the East Bay Trail in Rhode Island), and the Town of Westport to the east.

- Seekonk Bike Path - This proposed mix of on and off-road lanes and paths would involve creating a loop trail along Newman Avenue and incorporating an abandoned rail line running by the McHale's Pond area. The route would also loop into East Providence, RI, and provide opportunities for other regional tie-ins.

- The East Coast Greenway - The East Coast Greenway (ECGC) will be a city to city multi-use trail system that connects existing and planned

trails with new corridors using waterfronts, park paths, abandoned railroads, rails with trails, canal towpaths, and parkway corridors. It will be an 80% off road route for cyclists, hikers, and other users, initially in the heavily populated Northeast between Boston and Washington, DC, but eventually all the way from Maine to Florida. Our route will be a more urban alternative to the Appalachian Trail, located in the shadows of skyscrapers, and suburban green spaces, but also in rural bucolic settings.

The ECGC has discussed a possible north-south route through the SRPEDD area from Wrentham and Plainville to Mansfield, down through Taunton to the Taunton River Trail, through Swansea and into Rhode Island through the Warren/East Bay Trail link. The ECGC is working very closely with the states of Connecticut and Rhode Island on preliminary route plans incorporating respective state bike routes.

Canoeing

The Ten Mile and Narragansett Bay Watersheds contain some interesting opportunities for both the weekend and experienced canoeist. Areas along the Palmer River in Rehoboth and Swansea are both pristine and very rural. There are several areas where one must portage depending on the length of the trip and the time of year the trip is undertaken. Some portions of the river are densely vegetated while some channels run shallow at times. The Town of Rehoboth (in its 1990 Open Space Plan) and the Palmer River Watershed Alliance, have supported the idea of a multi-purpose greenbelt area along the Palmer. This undertaking would involve federal, state and local conservation, recreation, historical, wildlife, agriculture and outdoors organizations and agencies.

The experience on the Ten Mile River is quite different. Largely seen as an industrial river, having served as a backbone of growth for the manufacturing trades for almost two centuries, the Ten Mile is not without its opportunities for the canoeist. While portions of the river are stone-channeled and literally run under manufacturing sites, roadways and behind buildings in the densely developed downtown areas of North Attleborough and Attleboro, there are lengthy stretches of flat, open water where there is little evidence of

development. Recent trips down these sections of the Ten Mile by canoeists and journalists have served to remind people of the forgotten

resource that is the Ten Mile River. The River is a key item in the 1999 North Attleborough Open Space Action Plan in terms of working with Plainville and Attleboro to restore the natural and scenic qualities of the Ten Mile as a centerpiece of a regional greenway network.



VIII CREATING A REGIONAL VISION

"Regional Accomplishments since 1995"

The following is a list of cooperative and individual accomplishments of regional impact based on work begun or completed in the Ten Mile, Narragansett and Mount Hope Bay Watersheds since 1995.

- Successful "Planning for Growth Grant" application, Plainville and North Attleborough; (West Side Study); IN PROGRESS
- Successful "Communities Connected by Water Grant," Plainville, North Attleborough, Ten Mile River Watershed, Tellus Institute (Watershed Action Plan); IN PROGRESS
- Flood Management Study of the Ten Mile through the Public Assistance to States Program (PAS) in conjunction with the Army Corps of Engineers (ACOE) and EOEA; Plainville, North Attleborough, Attleboro, Seekonk; IN PROGRESS
- Flood Plan - Emergency Response Agreement, Attleboro and North Attleborough; IN PROGRESS
- Bungay River Project, Attleboro (for the lower Bungay Watershed); land acquisition completed through a DCS grant, education center, IN PROGRESS
- The Massachusetts Audubon Society established a permanent sanctuary in the Attleboro area
- Land Trusts have become very active in Plainville, Attleboro, Seekonk, Swansea and Rehoboth
- Active historic preservation efforts in Rehoboth, Plainville, North Attleborough, Attleboro and Swansea
- The River Aware citizens monitoring program, Swansea (and Somerset)
- The completion of EOEA funded buildout studies for all Ten Mile and Narragansett/Mount Hope Bay Watershed municipalities
- TMRWA's successful "Capacity Building" and Kodak Environmental Program grant applications and subsequent public forums
- The continuing work of the Runnins River Task Force, Seekonk and East Providence, RI, with assistance from EPA and EOEA
- Successful Regional Bikeway Planning and Construction grants, through the ISTE/Enhancements Program, Fall River, Swansea (to connect with Somerset and the East Bay Trail in RI, via Warren, RI)
- Successful Municipal Incentive Grant (MIGS) application for Attleboro to work on growth management issues completed in June of 2000
- Series of successful ISTE/Enhancements and MCZM Coastal

Pollution Remediation grants, Seekonk, to install improved stormwater treatment structures along the Runnins River.

"Regional Goals and Objectives"

In developing a list of regional goals and objectives, we are in reality outlining a shared "regional vision." While past Municipal Open Space and Recreation Plans have contained elements of regional conservation and open space planning, this plan

has been constructed, by virtue of its process, as a Regional Open Space and Recreation Plan. The goals and objectives listed below have been developed in such a way as to complement local plans while providing local planners new opportunities to become involved with the regional process.

1. Improve the water quality of the region's rivers, streams and waterbodies:

· Continue to work with the EOEA Basin Team and Basin Team Leader through the five year Watershed Planning process;

- Continue to work with watershed alliances and local monitoring projects (such as River Aware and local stream teams) in order to keep up-to-date on the overall health of our rivers, streams and waterbodies;
- Work with the EOEA Watershed Initiative, through the Basin Team, to identify priority water quality-related projects and potential sources of funding and partners with which to plan and implement them;
- Complete the Ten Mile River Flood Management Study and Lake Como Restoration Assessment in conjunction with the Army Corps of Engineers;
- Complete and implement, where feasible, the Watershed Action Plan for the Ten Mile Watershed being developed through the Basin Team;
- Continue to work with the Runnins River Task Force.

2. Increase the amount of permanently protected open space, particularly within focus areas, water resource areas and along river and stream corridors.

- Continue to work with the Basin Team to bring potential land conservation, preservation and acquisition projects to the EOEA Land

Acquisition Committee;

- Continue to work with local and regional land trusts and conservation organizations to complement municipal efforts and help to knit together green space within the region (potential regional partners may include the Wildlands Trust of Southeastern Massachusetts, Audubon, Trustees of the Reservations, etc.);
- Utilize a consistent prioritization and ranking methodology to create an inventory of land for acquisition throughout the region (this will be particularly useful in developing and presenting acquisition projects to potential funding sources);
- Support municipal and intermunicipal land preservation and acquisition projects, particularly where regionally beneficial (i.e. - in focus areas, water resource areas and along river and stream corridors), or in prioritized areas.

3. Plan for and develop regional "through trails," including walking, biking and canoeing.

- Develop a plan for a north-south trail through the watershed with a tie-in to the Warner Trail in Wrentham (this could be facilitated through the Regional Open Space Committee in conjunction with the Friends of the Warner Trail and the Basin Team);
- Support continued multi-modal trail planning efforts in Fall River and Seekonk;
- Support the implementation of the Swansea Bike Path which will link Fall River, Somerset and Swansea with the East Bay Trail via Warren, RI;
- Support the East Fall River Greenbelt Plan in conjunction with the recent EOEA land acquisition in East Fall River;
- Work with EOEA, through the Basin Team, to help develop the East Fall River to Myles Standish State Forest (regional greenway) concept plan with a connection to the Narragansett Bay Watershed;
- Support local corridor planning efforts on the Ten Mile, Seven Mile, Bungay and Palmer Rivers.

4. Develop, and, where feasible, employ regionally consistent zoning, land use and conservation strategies and regulations.

- Review and evaluate the "tools" developed for zoning and conservation for the Regional Open Space and Recreation Plan;
- Review and evaluate the EOEA Build-Out Studies in order to determine how and where certain zoning and conservation tools may be

applied on a regional basis;

- Evaluate existing and proposed zoning and conservation tools in terms of regional trails, greenways and conservation goals.

5. Create a permanent Regional Open Space Committee

- Seek municipal commitments to appoint representatives to a permanent Regional Open Space Committee;
- Seek support and technical assistance from the Basin Team and RPA in terms of facilitation of meetings and assistance with procuring potential funding for further planning efforts.

6. Create a singular geographic watershed identity for the municipalities in the Ten Mile River and Narragansett/Mount Hope Bay Watersheds.

- Work with the Basin Team Leader to request of EOEA a single watershed "address" for the region in order to unify the region geographically and simplify regional watershed planning and related efforts.

IX. ACTION AGENDA

GOAL 1: Improve the water quality of the region's rivers, streams and waterbodies.

Objective 1: Continue to work with the EOEA Basin Team and Team Leader through the five year Watershed Planning process.

Action: 1a. Designate and send municipal representatives to the Basin Team meetings and activities

Who: Chief elected officials in conjunction with municipal boards, departments and commissions

When: Ongoing

Objective 2: Continue to work with watershed alliances and local monitoring projects in order to keep up-to-date on the overall health of our rivers, streams and waterbodies.

Action: 2a. Establish municipal points of contact for working with local environmental groups

Who: Conservation commissions, boards of health or appropriate municipal body

When: Ongoing

Objective 3: To work with the EOEA Basin Team to identify priority water quality-related projects and potential sources of funding and partners with which to implement them.

Action: 3a: Work with the Basin Team on assessments of critical areas to be nominated for funding under the Annual Plan of Work

Who: Municipalities and Basin Team members (who may also be potential partners)

When: Ongoing

Objective 4: Complete the Ten Mile River Flood Management Study and Lake Como Restoration Assessment in conjunction with the Army Corps of Engineers.

Action: 4a: Prepare final recommendations for the municipalities; provide technical documents and public forums, as necessary
Who: Army Corps in conjunction with the Basin Team
When: 2001

Action: 4b: Include a list of any potential funding options as part of the final study and recommendations
Who: Army Corps and Basin Team
When: 2001 and Ongoing

Objective 5: Complete and implement, where feasible, the Ten Mile Watershed Action Plan being developed through the Basin Team.

Action: 5a. Prepare final study and recommendations for the municipalities; provide technical documents and public forums, as necessary Tellus Institute,
Who: TMRWA and Regional Planning Agency
When: 2000-2001

Action: 5b. Work with the Basin Team to prioritize projects for funding in The Annual Plan of Work Basin Team, Tellus,
Who: TMRWA, Regional Planning Agency, municipalities
When: 2001 and Ongoing

Objective 6: Continue to work with the Runnins River Task Force.

Action: 6a. Develop and promote multi-jurisdictional strategies to affect the restoration of degraded areas of the Runnins River Watershed
Who: MA EOE, RI DEM, EPA, citizens, watershed groups, municipalities and other partners
When: Ongoing

GOAL 2: Increase the amount of permanently protected open space, particularly within focus areas, water resource areas and along river and stream corridors.

Objective 1: Continue to work with the Basin Team to bring potential land conservation, preservation and acquisition projects to the EOEALand Acquisition Committee.

Action Who When

1a. Promote viable Self-Help, Urban Self-Help, Federal Land and Water Conservation projects, etc., for regional support and consideration for acquisition or improvement Basin Team, municipalities, Regional Open Space Committee, Division of Conservation Services, appropriate EOEALand agencies and others
Ongoing

Objective 2: Continue to work with local and regional land trusts and conservation organizations to complement municipal efforts and help to knit together green space within the region.

Action: 2a. Explore potential links between public and private lands through networking and mapping

Who: Local municipal boards, commissions and committees; Audubon, Wildlands Trust, Trustees, local land trusts

When: Ongoing

Action: 2b. Use the Regional Open Space and Recreation Plan in conjunction with local Open Space and Recreation Plans to help develop a common strategy for creating large contiguous areas of greenspace

Who: Local boards, commissions, committees; private conservation partners; EOEALand Basin Team; watershed groups; Regional Planning Agency

When: Ongoing

Objective 3: Utilize a consistent prioritization and ranking methodology to create an inventory of land for acquisition throughout the region.

Action: 3a. Apply existing, or develop additional, land ranking criteria to lands deemed critical for acquisition, preservation or retention in order to develop a priority list for municipal and regional planning purposes
When: EOEBA Basin Team; municipalities; potential conservation, recreation and agricultural partners; Regional Planning Agency
Who: 2001 and Ongoing

Objective 4: Support municipal and intermunicipal land preservation and acquisition projects, particularly where regionally beneficial or in prioritized areas.

Action: 4a. Through the Regional Open Space Committee process, and the Basin Team, provide written and/or technical assistance, as appropriate, on local projects and applications of regional significance
Who: EOEBA Basin Team; local municipalities; Regional Planning Agency; other partners as necessary
When: 2001 and Ongoing

GOAL 3: Plan for and develop regional "through trails," including walking, biking and canoeing.

Objective 1: Develop a plan for a north-south trail through the watershed with a tie-in to the Warner Trail in Wrentham.

Action:1a. Using the Regional Open Space and Recreation Plan "Trails Map," municipalities could work with the Friends of the Warner Trail, Basin Team members and other potential partners to assess and plan "doable" routes through the watersheds.
Who: Municipalities; EOEBA Basin Team; Friends of the Warner Trail; TMRWA; Regional Planning Agency; Narragansett Bay Wheelmen; Natural Resource Conservation Service, and others
When: 2001-2003

Objective 2: Support continued multi-modal trail planning efforts in Fall River and Seekonk.

Action: 2a. Supply written and/or technical assistance, as appropriate, to these two key potential east-west rail trail links within the watersheds

Who: EOEAs Basin Team; Regional Planning Agency; municipalities; others as necessary

When: 2001 and Ongoing

Objective 3: Support the implementation of the Swansea Bike Path which will link Fall River, Somerset and Swansea with the East Bay Trail (R.I.) via Warren, R.I.

Action: 3a. Supply written and/or technical assistance, as appropriate, to this key interstate/intermunicipal bike path proposal

Who: EOEAs Basin Team; Regional Planning Agency; municipalities; others as necessary

When: 2001-2002

Objective 4: Support the East Fall River Greenbelt Plan in conjunction with the recent EOEAs land acquisition in East Fall River.

Action: 4a. Work with the City of Fall River, Green Futures, The Bay Lands Conservancy, The Greater Fall River Land Conservancy and others, as appropriate, on planning and implementation issues

Who: EOEAs Basin Team(s); Regional Planning Agency; Westport River Watershed Council; listed partners and others, as appropriate

When: 2001-2005

Objective 5: Work with EOEAs, through the Basin Team, to help develop the East Fall River to Myles Standish State Forest (regional greenway) concept plan with a connection to the Narragansett Bay Watershed.

Action: 5a. Provide written and/or technical assistance, as appropriate, to EOEAs and group(s) spearheading this project (see: "The Big Walk" in the text of the Regional Open Space and Recreation Plan)

When: Municipalities; Bay Lands Conservancy; Regional Planning Agency; Harvard Graduate School of Design; Greater Fall River Land Conservancy;

Westport River Watershed Council; other potential partners
Who: 2001 and Ongoing

Objective 6: Support local corridor planning efforts on the Ten Mile, Seven Mile, Bungay and Palmer Rivers.

Action: 6a. Provide written and/or technical assistance, as appropriate, to municipalities and groups working on corridor planning projects within these sub-watersheds

Who: EOEAs Basin Team; municipalities; Regional Planning Agency; Watershed Alliances; other partners as necessary

When: 2001 and Ongoing

GOAL 4: Develop, and, where feasible, employ regionally consistent zoning, land use and conservation strategies and regulations.

Objective 1: Review and evaluate the "tools" developed for zoning and conservation for the Regional Open Space and Recreation Plan.

Action: 1a. Work together locally to determine the appropriateness and applicability of any of the regional "tools" in accordance with local needs assessments (from growth management studies, Master Plans, Open Space Plans, etc.) Municipalities (perhaps through a continuation of the Regional Open Space Committee's sub-committee process); Who: Regional Planning Agency; EOEAs Basin Team members, as requested

When: 2001-2004

Objective 2: Review and evaluate the EOEAs Build-Out Studies in order to determine how and where certain zoning tools may be applied on a regional basis.

Action: 2a. Work together locally to determine the appropriateness and applicability of any of the regional "tools" in accordance with local needs assessments (from growth management studies, Master Plans, Open Space Plans, etc.) Municipalities (perhaps through a continuation of the Regional Open Space Committee's sub-committee process); Who: Regional Planning Agency;

EOEA Basin Team members, as requested
When: 2002-2005

Objective 3: Evaluate existing and proposed zoning and conservation tools in terms of regional trails, greenways and conservation goals.

Action: 3a. Work together locally to determine the appropriateness and applicability of any of the regional "tools" in accordance with local needs assessments (from growth management studies, Master Plans, Open Space Plans, etc.) Municipalities (perhaps through a continuation of the Regional Open Space Committee's sub-committee process); Who: Regional Planning Agency; EOEA Basin Team members, as requested
When: 2001-2005

GOAL 5: Create a permanent Regional Open Space Committee.

Objective 1: Seek municipal commitments to appoint representatives to a permanent Regional Open Space Committee.

Action: 1a. Assemble a Regional Open Space Committee whose charge will be: to link regional and local planning, where appropriate and necessary, and; to implement the Regional Open Space and Recreation Plan in a manner complimentary to local planning.
Who: Mayor; City Council; Boards of Selectmen; other municipal boards, commissions and committees, as requested; watershed alliances; land trusts; other potential members
When: 2001-2002

Objective 2: Seek support and technical assistance from the Basin Team and Regional Planning Agency in terms of facilitation of meetings and assistance with procuring potential funding for further planning efforts.

Action: 2a. Continue the Regional Open Space Planning process as begun with this plan in terms of facilitation and technical assistance
Who: EOEA Basin Team; Regional Planning Agency; municipalities
When: 2001-2002

GOAL 6: Create a singular geographic watershed identity for the municipalities in the Ten Mile River and Narragansett/Mount Hope Bay Watersheds.

Objective 1: Work with the Basin Team Leader to request of EOEA a single watershed "address" for the region in order to unify the region geographically and simplify regional watershed planning and related efforts.

Action: 1a. Continue the Regional Open Space Planning process as begun with this plan in terms of facilitation and technical assistance
Who: EOEA Basin Team Leader; municipalities; watershed alliances; conservation groups; Regional Planning Agency; others
When: 2001

"Farmland Preservation Prioritization and Ranking Model"

Due to the importance of farmland protection, the following evaluation system, which was originally developed by the Pioneer Valley Planning Commission and modified by the Town of Westport, can be used as a model to help weigh and prioritize acquisition options.

A. Predominant land use (maximum 25 points) Points

1. Active food producer 25
2. Hay and pasture 12.5
3. Mixed woodlands, abandoned farm, hobby farm 5
4. Tree farm 10
5. Nursery or greenhouse 25

B. Size of farm (maximum 30 points) Points

1. 150 acres plus 15
2. 100-149 acres 12.5
3. 50-99 10
4. 25-49 7.5
5. 10-24 5
6. 0-9 2.5

C. Farmland soils (maximum 30 points) Points

1. Percent of parcel in Prime Farmland Soils

75-100% 25

50-74% 18

25-49% 12

10-24% 5

0-9% 2

2. Percent of parcel in Soils of Statewide Importance

75-100% 13

50-74% 9

25-49% 5

10-24% 3

0-9% 1

D. Collateral environmental objectives (maximum 27.5) Points

1. Adjacent to farmland 10

2. Adjacent to conservation land 5

3. Includes significant wetlands 2.5

4. Within FEMA 100-year floodplain 2.5

5. Includes historic home or building 2.5

6. Within an aquifer protection district 2.5

7. Parcel has scenic importance 2.5

E. Continuation of Agriculture (maximum 10 points) Points

1. Degree of threat to the continuation of agriculture 10

on project land due to contingencies such as, but not limited to, the owner's death, retirement, financial difficulties, development pressure, or to the insecurity entailed in the use of rented lands.

F. Total Weight/Priority for Preservation Points

1. High Priority 72-107.5

2. Medium to High 59-71

3. Medium 46-58

4. Low to Medium 35-45

5. Low 0-34

