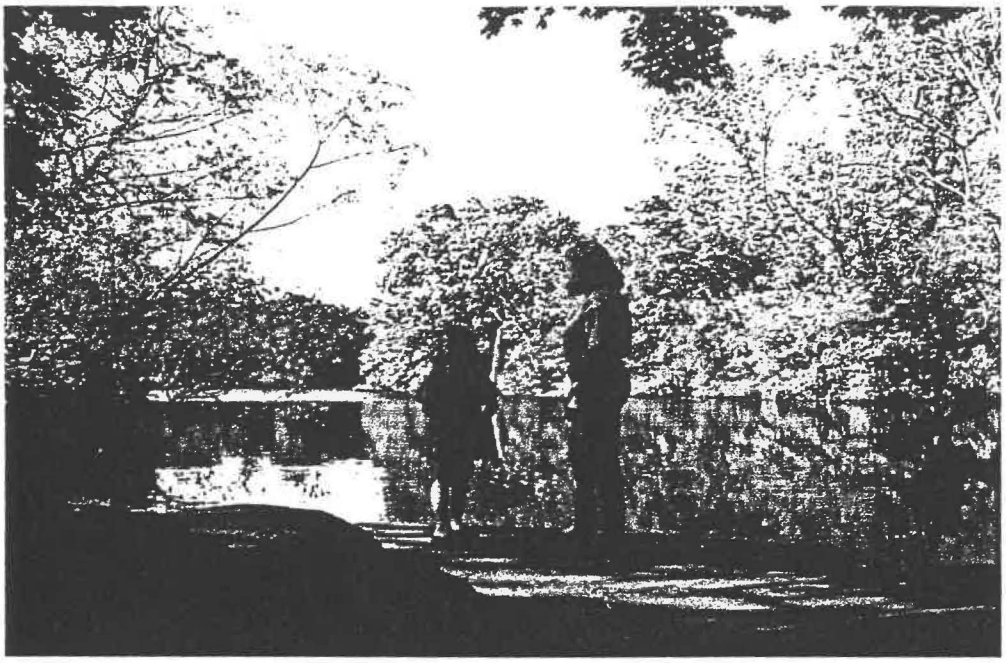
TOWN OF SWANSEA

OPEN SPACE PLAN



For
The Swansea Open Space Committee

June, 2002

By

Larry Koff & Associates

This was developed using funds provided pursuant to Massachusetts Executive Order 418

OPEN SPACE PLAN

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An Open Space Plan for the Town of Swansea

The following Vision Statement and goals reflect the town's open space and recreation priorities. The Action Plan recommendations have been developed by an Open Space Committee to address the stated needs and goals. A full analysis of these priorities and the towns open space resources is included in the Draft Open Space Plan 2002-2007. Copies for review are available at the library.

Your participation on the Open Space Committee is essential for this plan to be carried out. Contact Vanessa Farr, Town Planner (508) 324-6730 or Colleen Brown, Conservation Agent (508) 673-6467.

VISION STATEMENT

Double the amount of protected open space, preserve and protect Swansea's coastal and river resources and water by creating a greenbelt system of river, wetland and upland corridors, protected farms, pedestrian pathways, parks and scenic open spaces that will link and buffer commercial development, farms, improved village and neighborhood areas.

GOALS:

1. Protect the town's sensitive natural resource areas
2. Preserve Swansea's coastal, semi-rural character
3. Reduce threats to, and improve water quality
4. Revitalize shellfishing and agricultural industries
5. Improve access to open space areas, river and coastal waterfronts; and
6. Maintain and Improve recreation resources.

Action Plan Priorities

The highlights of the five year action program are to initiate negotiations and seek funding for land acquisition, purchase/transfer of development rights, and the phased implementation of a comprehensive program for the Four Rivers Greenway Trail and Coastal Resource Improvements Plan. Concurrently, the Open Space and Master Plan Committee will pursue a campaign of regulatory and management reform. Key to this initiative will be the active support and participation by The Executive Office of Environmental Affairs, the Department of Environmental Protection and the Narragansett Bay Watershed Team, SRPEDD, volunteer organizations, land trusts, as well as local leadership from parties noted below.

	Action	Responsible Party
1	**Open Space Acquisition**: Negotiation and purchase of key parcels/development rights: APR Baker Farm, Montaup Power Company surplus parcels, Bristol County, Water District, etc.	Planning Department Conservation. Comm., Heritage Farm Coastal Trust, Sewer District
2	**Watershed and Habitat protection**: Establish Resource Protection Overlay zoning to protect resources and reduce density	Planning Dept. SRPEDD, Mass. Watershed Initiative
3	**Four Rivers (Cole's, Lees, Kickamuit ,Palmer) Greenway Public Access Plan**: Recreation Trail planning (Covel Estate) and Improvements: walking, biking, canoeing, fishing	Planning Dept, Save the Bay, Mass. Watershed Initiative
4	**Improvements to Septic Systems & Coastal Resources:** Comprehensive Water Resources Management Study	Master Plan Comm., Sewer Comm, Capital Budget Comm.,Highway
5	**Public Awareness:** Education and increased participation in carrying out Open Space Plan	Land Trusts, Historic Preservation, Trail Committee, River-aware Committee, Open Space Committee

I. INTRODUCTION

The Town of Swansea has historically been considered rural, and therefore beyond the perceived range of environmental problems that afflict more urbanized areas. But like many small New England towns in southeastern Massachusetts, as Swansea exhibits the impacts of growth, there is an increasing concern for the quality of the environment. This concern is broad based and quite deeply felt among the residents of the town, yet the government lacks a base of volunteers and the human and financial resources required to effectively deal with the concentrated pressures of existing and new development. The Town of Swansea has sought through the preparation of this Open Space Plan and Master Plan to devise a variety of planning strategies to manage existing impacts, and limit and shape the type, quantity and location of new development.

While traditional methods of planning control, such as zoning, may have been effective in less demanding times, are now found to be somewhat inadequate when confronted with the impacts of growth to the water supply, coastal resources, farms, historic structures, and scenic areas. It is quite clear that a much more multi-facetted planning strategy is required. This strategy must unite the citizens of Swansea and their elected and appointed boards behind a common vision. This vision has been developed in response to an understanding of the town's unique natural and historic resources

An Action Plan has also been prepared to direct the efforts of local and regional citizen groups and town departments in addressing the barriers to achieving the open space vision. This Action Plan includes a broad range of activities to be undertaken. Property needs to be acquired in fee or easement. Negotiation rather than outright purchase might be possible in several cases. New regulations must be adopted and enforced by a team of local departments to protect water supplies and coastal resources. Opportunities for improved public access to rivers, ponds, and coastal resources must be identified and planning undertaken to convert these ideas into real projects of benefit to local citizens. Finally, public education must proceed at all levels to gain the awareness, interest, and participation of students and adults alike. Without this interest, the Open Space Plan will remain a static document rather that a vision and "Green Print" for action.

Working over a three year time period, the Open Space Committee initiated the latest phase of the planning effort in January, 2002. The Open Space Committee, with the support of a consulting firm, Larry Koff & Associates, Colleen Brown, Conservation Agent and Town Planner, Vanessa Farr, provided the critical leadership to shape the direction and respond to the call to action. These members include:

Lela	Farrell	Dori	Andrews
Lorna	Gregory	Jean	Wadleigh
Thomas	Econopoly	Jackie	Robbins
Judith	Eddy	Chris	Watson
Richard	Rego	Pam	Kirkpatrick
Kevin	Lawton	Wayne	Webb

III. COMMUNITY SETTING

REGIONAL CONTEXT

The Town of Swansea, comprising a total of 22.8 square miles, is located in Bristol County on Mount Hope Bay, some 50 miles south of Boston, 12 miles cast of Providence and 4 miles west of Fall River. The Town has undulating topographic features, a myriad of inland and coastal wetlands, several large rivers and a decidedly suburban/small town character. Swansea shares common borders with the towns of Warren and Barrington in Rhode Island, and the Massachusetts communities of Dighton, Rehoboth, Seekonk and Somerset.

Swansea is situated at the upper end of Mount Hope Bay, which runs into Narragansett Bay. Several rivers that run through Swansea drain into Mount Hope and Narragansett Bays, and the town is part of the Narragansett Bay Watershed.

HISTORIC OVERVIEW

Swansea was first mentioned in the Plymouth Colony records of 1668. Traditional accounts make reference to the existence of several native American settlement sites, such as Gardner's Neck, occupied by the Pocassets in the early 1620's. One account claimed a large native village was located in the vicinity of Margaret's Rock at the time of the first English settlement in the Swansea area. This initial colonial settlement occurred in the late 1660's when a band of Baptists, led by the Reverend John Myles, settled in the area we now know as Swansea and Barrington, after being forced to leave Rehoboth because of their dissident religious beliefs.

In the Colonial period (1675-1775) Swansea suffered during King Phillip's War and these unsettled times hampered development until well into the 18th century. Swansea's proximity to Mount Hope Bay and the eastern shore of Narragansett Bay meant that its early 18th century economy fell within the sphere of colonial settlements in this region, particularly those that were engaged in shipbuilding.

The Federal period (1775-1830) was a time of slow growth, based primarily upon agriculture and fishing. Regional settlement patterns consisted mainly of dispersed farmsteads strung along the colonial road system, with no distinct civic core. Fishing continued to be a significant element of the economy, especially on Gardner's Neck. By the early part of the 19th century, small cotton mills on the Cole'ss River were the prototypes for the larger mills that were to be built later in Fall River.

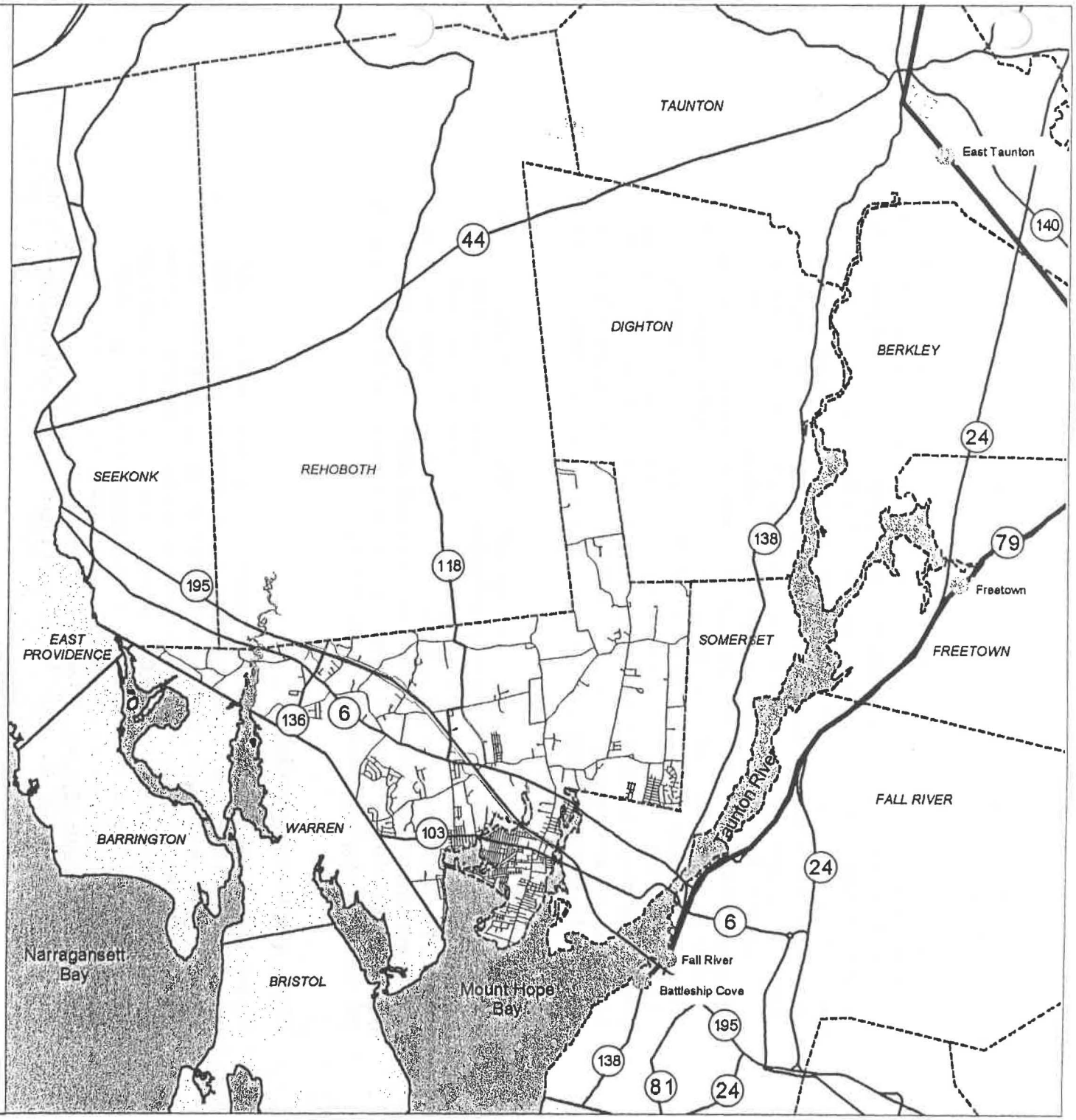
During the Early Industrial period (1830-1870) transportation routes were improved and the Fall River, Warren, Providence railroad was opened in 1866. Agriculture continued to be the dominant form of economic activity, supplemented by fishing and shipbuilding. (Mason Barney's Yard on the Palmer River closed in 1861.)

In the late Industrial period (1870-1915) the population increased by 97%. The building of the South Swansea Station on the Fall River, Warren and Providence Railroad opened Gardner's Neck to summer residents, particularly wealthy Fall River industrialists and merchants. By the end of this period, Touisset Park developed as a summer colony for wealthy residents. Concurrently, major development occurred in the Ocean Grove area as a settlement of summer cottages for middle income residents of Fall River. No provisions were made for year round

Town of Swansea Master Plan

Region

Prepared by Larry Koff Associates



Proposed Commuter Rail

1 0 1 2 Miles

Map 2

occupancy including, in particular, septic systems. The remainder of the Town continued as a rural agricultural district.

The 20th century has seen most of the dramatic changes in the physical and economic character of Swansea. In the early modern period (1915-40) the road systems were improved (Route 6 was opened in 1930) and the Town started to experience suburban growth in relationship to Fall River and the Rhode Island urban communities. It is perhaps the late modern period (1945 to the present) that has seen the most dramatic growth in the development of Swansea. The opening of I-195 has placed Swansea firmly in the path of suburban growth and has induced regional commercial and service industries on a large scale as a suburb of Fall River and Providence. The construction of the Swansea Mall and the resultant spin-off ventures continue to create development pressures that have never confronted the Town on such a scale before. Furthermore, demand for housing in an increasingly expanding market has also exerted enormous pressures for extensive land use change in Swansea. The pace of suburban commercial and residential development has, in the last decade or so, made it abundantly clear that Swansea must assume a posture of predicting its future rather than reacting to imposed pressure. A Comprehensive Plan and its critical sub-component, the Open Space Recreation Plan are the principal tools that must be developed to give the Town both the incentive and the instruments to gain control of its future as it heads into the 2lst century.

Like other towns that exist in close proximity to major urban centers, Swansea continues to face intense developmental pressures. As demand for residential and commercial sites continues to accelerate, greater attention must be paid to the preservation of the community's natural resources. The town's open spaces and recreational facilities must be protected and maintained in order to provide adequate passive and active recreational opportunities to an expanding population. The town must also look to the future and fashion a strategy that will preserve natural and cultural resources for the benefit of future generations.

POPULATION CHARACTERISTICS

The population of Swansea in 2000 was 15,901 persons. The Town of Swansea experienced tremendous growth in both home construction and population between the 10-year period of 1970 and 1980 (a population increase of 2,821 persons or 122%, and an increase in households of 1,290 or 135%). Since 1980, however, growth appears to have been tempered by a number of factors, many of which have also become regional and national trends. These include a decrease in the number of persons per household as the number of single-person and single-parent households has increased; an overall increase in life span allowing residents to remain in their homes longer than in the past; and a decrease in the number of children per household. Most forecasters predict that these demographic trends will continue at least for the foreseeable planning period (10-20 years).

Swansea's population has increased approximately 25.8% or 3,261 persons since 1970. Swansea's increase in population since 1980 has been lower than that of many of its neighbors.

Table 4-1, Population and Household Growth

	Population	% Change	Households	% Change	Total Additional Units	Persons per Household
1970	12,640	27.5	3,738			3.38
1980	15,461	22.3	5,028	34.5	1,290	3.07
1990	15,411	-0.3	5,252	4.5	224	2.93
2000	15,901	3.2	5,888	12.1	636	2.70
2010	16,435	3.4	6,574	11.7	686	2.50

Source: U.S. Census, SRPEDD

Swansea's median age of 40.5, as reported in the 2000 Census, has been steadily climbing (up from 31.6 in 1980). This increase in median age is in part due to the residents having fewer children than in the past, having children later in life, and remaining in their homes longer after their children have moved; and may also be due in part to residents being older when moving into the community than in the past.

Table 4-2, Town of Swansea Age Profile 1980 – 2010

	1980	%	1990	%	2000	%	2010	%
0 – 19 years	5,188	33.6	4,156	26.9	3,897	24.5	3,435	21.7
20 – 34 years	3,522	22.8	3,224	20.9	2,645	16.6	2,431	15.3
35 – 59 years	4,469	28.9	5,142	33.4	6,169	38.7	6,050	38.1
60 – 74 years	1,689	10.9	2,104	13.7	1,949	12.2	2,772	17.5
Over 75	593	3.8	785	5.1	1241	7.8	1,178	7.4
Total	**15,461**		**15,411**		**15,901**		**15,866**	
Median Age	31.6		36.3		40.5			

Source: U.S. Census, SRPEDD

It is projected that by 2010 the population over the age of 60 will have grown substantially, while the other age groups will remain at approximately the same level they were in 2000. In 1980, Swansea's senior population age 60 and over represented 14.7% of the total population. By 1990, those 60 years and over represented 18.8% of the total population, increasing by 2000 to 20.0%.

The median household income in Swansea in 1989 was $40,117. This is the latest year for which town-level data is available. Incomes in Bristol County rose by 24% between 1989 and 1995.

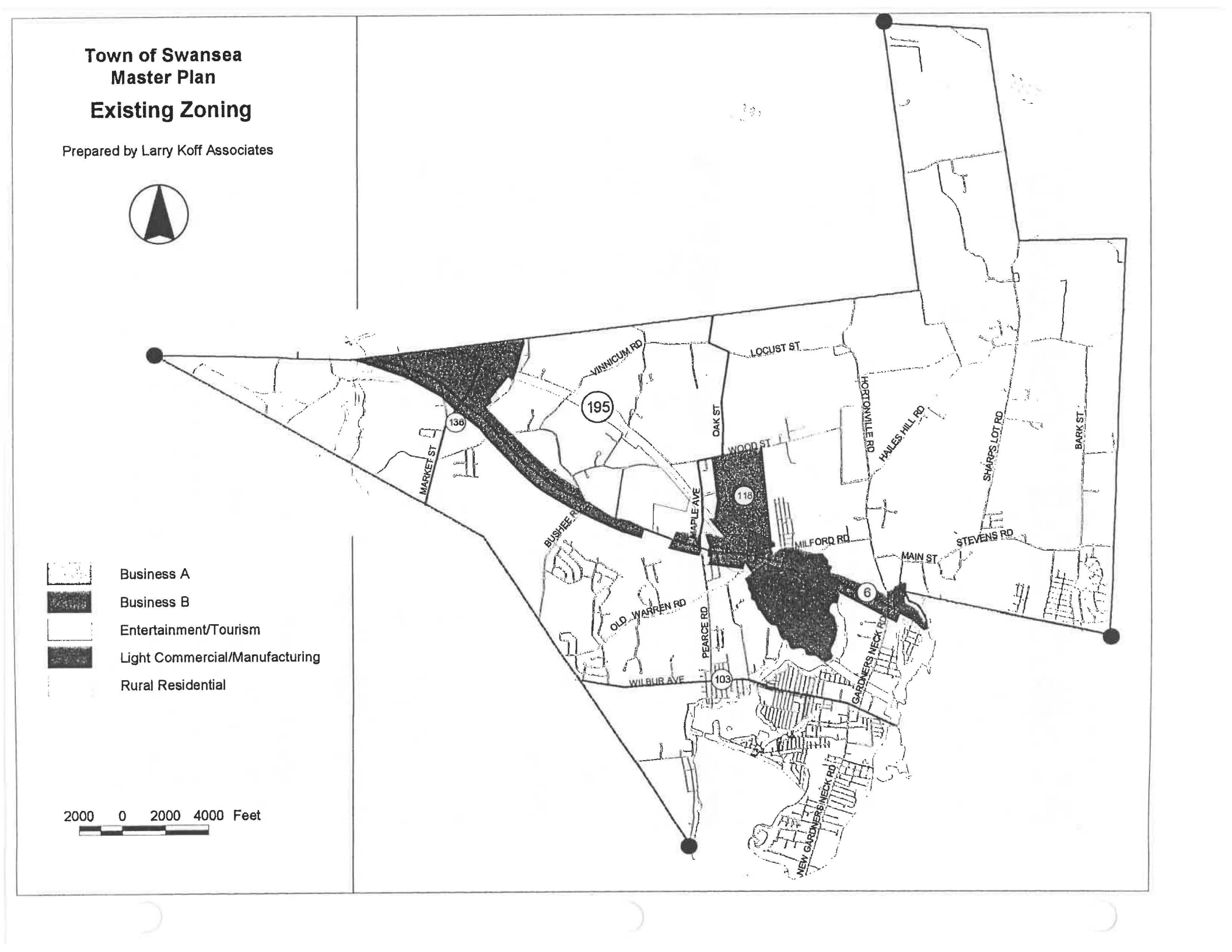
GROWTH & DEVELOPMENT PATTERNS

Patterns and Trends

Swansea has developed both as a coastal community and a rural agricultural town. The southern part of the town, especially in the Gardner's Neck area, is dominated by dense residential development on very small lots. Many of these homes were built as seasonal cottages, but most have now been converted to year-round use. North of Route 6, the community still has a fairly rural character, with several farms still in operation. There are currently around 6,000 homes in Swansea, 90% of which are single family. Along Route 6 there is a substantial amount of commercial development.

Town of Swansea
Master Plan
Existing Zoning

Prepared by Larry Koff Associates



Other than the Two Mile Purchase Area, most of the town is served by town water, which is drawn from public wells located in Swansea. There are no sewers serving residences. The Swansea Mall has its own treatment plant which was recently up-graded to accommodate additional commercial activity. Currently there is a ban on water connections which will be lifted when the Hornbine well (#8) is brought back into service because of the construction of a treatment plant. The town is also contemplating the construction of a bedrock well. Neither of these improvements would have a significant long term impact on water supply to accommodate future growth.

Over half of the homes in Swansea were built between 1940 and 1980, at a rate of about 80 homes per year. Since then, home construction has slowed considerably, with an average of 40 new homes built each year. The base rate of growth is expected to increase in coming years. The regional planning agency, SRPEDD, is more conservative than local residents who anticipate significant growth in the future.

A key factor impacting the need for open space is derived from an analysis of the projected buildout. As indicated in the graphs below, the projected build-out will double the amount of commercial and residential land uses. Under this scenario, the ratio of protected open space to built area will fall from 2:1 (9,732 to 4,406 acres) to 1:5 (2,3220 to 11,816 acres). Meanwhile, approximately 7,400 acres of open land that is currently unprotected open space will convert to urbanized use unless steps are taken to preserve some of this land area as open space.

Table 4-3, Residences at Full Build-out

	Existing	Potential Additional	Total at Full Build-out
Single Family	5,458	4,578 – 6,572	10,036 - 12,030
Multifamily	446	0	446
Mobile Homes	4	0	4
Other	24	0	24
Total Homes	**5,932**	**4,578 – 6,572**	**10,510 - 12,504**
Population	**15,901 persons**	**8,109 - 15,469**	**29,040 - 31,370 persons**

Source: Swansea Water District, 1999 (lower estimates) and SRPEDD (higher estimates)

Table 4-4, Commercial Space at Full Buildout

	Existing Space (2000)	Potential Additional Space	Total At Full Buildout
Retail/Service	2,692,600 square feet	156,200 square feet	2,848,800 square feet
Manufacturing	256,600	1,650,600	4,22,200
Total	**2949267 square feet**	**3,702,200 square feet**	**3,271,000 square feet**

Source: SRPEDD

IV. Environmental Inventory & Analysis

GEOLOGY, SOILS & TOPOGRAPHY

Surficial Deposits

The Eastern New England landscape resulted from relatively recent glaciation and deposits that accumulated during the various recessions of the ice sheet. Swansea's surficial geology is generally unconsolidated, made up principally of till, gravels and sands laid down in complex tilting beds. These deposits are underlain with parent bedrock at variable depths. In many locations, this bedrock appears at or near the surface. This type of landscape is typically characterized by gently rolling hills and valleys, somewhat dendrite hydrologic patterns, extensive wetlands caused by impervious layers of clays at or near the surface, considerable erratic rock deposits and very extensive sub-surface water held within the loosely compacted geologic deposits.

The low-lying areas of the town, especially along the coast and the Palmer and Cole's Rivers, are underlain with sand and gravel deposits, while till or bedrock dominate the central portion of the town (along the Kickamuit River), and the east. (See Map 3.)

Soil Types

The product of thousands of years of slow degradation of parent rock, supplemented by glacial deposition, hydrologic conversion and deposition and general weathering, has formed a comparatively thin layer of soil over the surficial geology. These soils have physical and chemical characteristics that can be translated into potentials for effective use. It is therefore critical to know the type and location of all soils within Swansea.

The Natural Resources Conservation Service (NRCS) is in the process of developing an updated soils map for all of Bristol County. GIS soils data for the southern part of Bristol County is expected to be released in 2003. In the mean time, the published Soil Survey released in 1981 is adequate to identify soil types and characteristics throughout the town.

NRCS has established groupings of soils with potential for certain uses. Areas with potential for development can be estimated using the hydrologic soil grouping, which is based upon runoff potential. Four groupings distinguish soils having A) high infiltration rates (low runoff potential), B) moderate infiltration rates C) slow infiltration rates, and D) very slow infiltration rates (high runoff potential). Although based on a single characteristic, these groupings also capture other conditions that contribute to a soil's development capacity, for instance slope, water table, presence of large stones, and erosion. Generally, soils in group A have the best development potential, while soils in group B have some moderate limitations on development which may be overcome at a higher cost and/or with appropriate technology. Soils in groups C and D are unlikely to be developed without prohibitive cost to remediate soil conditions and/or off-site wastewater treatment. Soils with the highest infiltration rates (Group A), are also typically associated with aquifer recharge, and care should be taken to avoid contamination in these areas.

Map 4 shows soil quality in Swansea according to hydric groupings. Based upon the classification, areas with the highest development potential are located along the Cole's and Palmer River corridors, and throughout the Aquifer Protection Districts. This can be taken as an indication that development pressures may be the greatest precisely in some of the areas which are most desirable to protect.

Town of Swansea Master Plan

Geological Features

Prepared by Larry Koff Associates

3-Meter Contours

- -2 - 6 meters
- 7 - 12 meters
- 13 - 20 meters
- 21 - 29 meters
- 30 - 38 meters
- 39 - 56 meters

Surficial Geology

- Sand & Gravel
- Till or Bedrock
- Floodplain Alluvium
- Fine-Grained Deposits

2000 0 2000 4000 Feet

Map 3

Town of Swansea
Master Plan

Soil Quality

Prepared by Larry Koff Associates

Hydric Soils Classification
Soils with Development Potential

- Group A: Best Development Potential
- Group B: Moderate Development Limitations

Map 4

Soil types have also been grouped to identify potential use for agriculture. Prime farmland soils are those that have the best combination of physical and chemical characteristics for producing agricultural crops, based on soil quality, growing season, and moisture supply. Important farmland soils are those that fail to meet one or more of the requirements of prime farmland, but are important for the production of food, feed, fiber or forage crops. Map 5 shows the location of these soils in Swansea. Pockets of prime farmland soils and substantial quantities of important farmland soils are scattered widely throughout the town. Unfortunately many areas with the best agricultural soils have already been developed, most notably the areas surrounding Mount Hope Bay. Many soils with development potential (hydrologic groups A and B) are also prime or important farmland soils.

Topography and Slope

The town varies in elevation from -6 feet above sea level to 187 meters above sea level. The areas of lowest elevation in Swansea run along the coast and around the Cole's and Palmer Rivers. Areas of higher elevation lie between these rivers, with a ridge running north/south between Sharps Lot Road and Bark Street.

Slope is extremely important in deciding what land uses should occur where. In certain circumstances disruption of sensitive sloping areas can lead to extensive erosion, subsequent flooding and a possible disruption of the hydrological cycle. In combination with both surficial geology and soil knowledge, it is possible to assign specific developmental prohibitions to areas of excessive slope and easily erodable soils. It is also apparent that such areas have traditionally been the least available for development and have therefore sustained a fairly rich ecosystem in which a wide range of native plans and animals exists. As the availability of prime developable land diminishes, however, Swansea is likely to see an increase in development in such marginal areas.

LANDSCAPE CHARACTER

The rolling, sloping topography is characterized by a series of drumlins, undulating hills of glacial till which subdivide this coastal town into 8 river basins. Each of the sub basins contain headwater areas of swamps and wetlands which feed a river corridor which generally flow in a north/south direction into coastal estuaries located in Mount Hope Bay. The coastal areas of Mount Hope Bay contain salt-water shores and beaches. The exception to this drainage pattern are basins numbered 6-8 (see Map 4-6) which drain into the Kickamuit River and Narragansett Bay. From the high point in town, Wild Cat Rock located in Village Park, to Mount Hope Bay, there is a drop of approximately 200 -feet in elevation

WATER RESOURCES

The rolling, relatively flat land formation and porous soils in Swansea serve as an ideal environment for containing water resources including surface water (streams, rivers, ponds, vernal pools, and the adjacent coastal bays), groundwater, wetlands, and floodplains. These water resources are easily impacted by the actions of homeowners and businesses with serious consequences for public health, safety, and physical environment.

Flooding, pollution of drinking water supplies, and destruction of natural habitats, recreation areas, and water bodies can result from inappropriate development and use of the natural environment. It is therefore important to carefully assess these water resources and the role they play in maintaining a quality of life for the citizens of Swansea as well as those from adjacent towns in the watershed.

Town of Swansea
Master Plan

Agricultural Soils

Prepared by Larry Koff Associates

Prime Agricultural Soils

Important Agricultural Soils

Map 5

Watersheds

The Town of Swansea is located within the Taunton River and Narragansett/Mt. Hope Bay Watersheds. (See Map 4-6.) The watershed boundary is located along the high elevation ridge in the eastern part of the town. All water from within the town of Swansea flows directly toward Mount Hope and Narragansett Bays, or toward the Taunton River, which eventually feeds into the adjacent bays. The watershed basin is also divided into numerous sub-basins.

The **Taunton River** sub-basin is located on the eastern boundary of town. High quality agricultural soils are located in this rural district. A tributary of the Taunton River drains east through this area into Somerset and the Taunton River

The Cole'ss River connects the **Upper Cole'ss River** sub-basin, a rural area of town known as Two Mile Purchase, to the **Lower Cole'ss River** sub-basin and Mount Hope Bay. Fields, woodlands, and swamps characterize the Upper Cole'ss district. The Lower Cole'ss River sub-basin contains about one-third of the town's public water supply points. Both these sub-basins are the locus of a number of subdivisions in various stages of being permitted.

The **Narragansett Bay** sub-basin is formed by the Lees River which has its headwaters in the swamps and wetlands. This sub-basin contains the greatest variation in topography as the landscape is broken up by a dense series of relatively steep drumlins. It also contains some large expanses of open land, Village Park, a town conservation area, and properties owned by the Montaup Electric Power Company.

The **Touisset Neck** sub-basin, which runs north/south into Mount Hope Bay opposite the Town Beach, is dominated by tributaries to the Cole's River.

The adjacent **Kickamuit River** sub-basin extends north from the Rehoboth town line and drains west into Narragansett Bay, Rhode Island. This sub-basin contains two-thirds of the town's public water supply points. It also includes the town's largest surface water body, the Warren Reservoir.

The **Palmer River** sub-basin drains north into Rehoboth. The adjacent **Warren River and Barrington River** sub-basins are relatively undeveloped due to the presence of swamps and wetlands. The Palmer River sub-basin is dominated by the presence of several large golf courses. The future of some of these recreation properties is currently the subject of possible change.

Surface Water

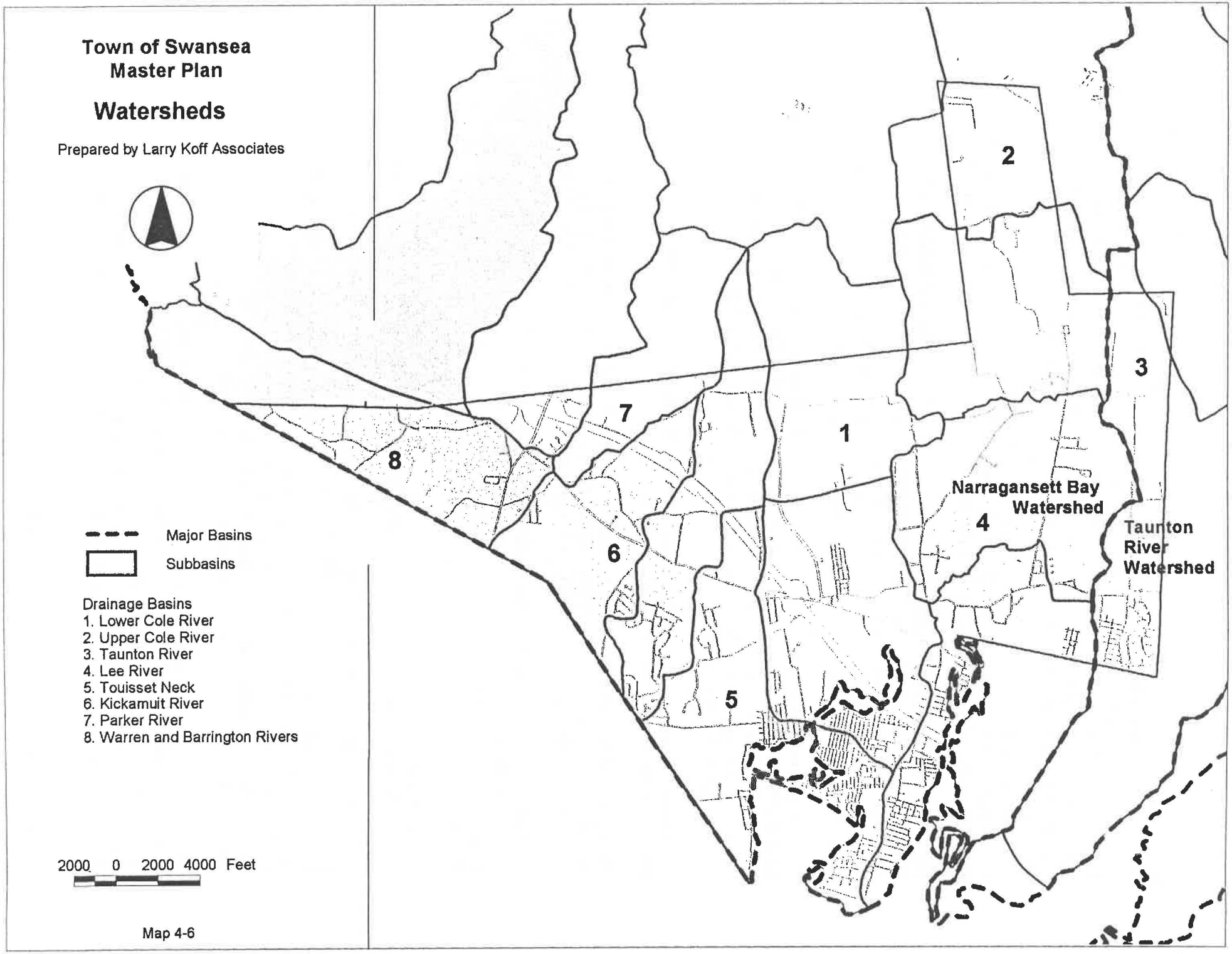
The town's surface water resources which comprise the watershed are identified on Map 4-7. The most visible water resources are the brooks, streams and ponds, which feed into Mount Hope and Narragansett Bays. The Cole'ss River runs from the northern tip of the town down into Mount Hope Bay, which extends into the southern portion of the town. The Lees River and its estuary forms the southeastern boundary of the Gardner's Neck, also emptying into Mount Hope Bay. To the west, the Palmer River cuts across the town, eventually leading into Narragansett Bay in Rhode Island. The Kickamuit River has numerous tributaries running West from Warren Reservoir into Narragansett Bay. Lewin Brook drains into the Lees River which drains the area located to the rear of Swansea Village where Lewin Pond is located.

The two main ponds located in Swansea are the Milford Pond and the Lewin Pond (located next to the Middle School). Milford Pond, which consists of an upper and lower pond, was created to serve the water needs of the Montaup power plant in Somerset. The Warren Reservoir, spanning 200 acres, is the largest open body of water in town, located in the north central part of the town. A portion of the reservoir land is owned by Bristol County, Rhode Island, and provides public

Town of Swansea
Master Plan

Watersheds

Prepared by Larry Koff Associates



Map 4-6

Town of Swansea
Master Plan

Surface Water Resources

Prepared by Larry Koff Associates

Map 4-7

water to the Briston county Water Authority in Warren, Rhode Island. Several important town wells abut this reservoir.

Floodplains

The areas that border streams, rivers, lakes and other water bodies subject to flooding are designated as floodplains. The 100 year and 500 year flood zones and the probable damage to property in such zones are recognized by the Federal Flood Insurance Act, which will underwrite insurance costs for properties that are located in delineated zones prior to the date of the enactment of the Act, providing the community takes positive zoning/planning action to prevent further development of a vulnerable nature from taking place in such zones. In addition, FEMA also identifies areas that are prone to "velocity hazard" or wave action in certain severe storms or floods. In order to protect the property owner as well as the Town, construction should be restricted within the floodplain areas so as to minimize the impact on water flow and storage capacity.

The **Massachusetts Wetlands Protection Act** defines wetlands as:
Marshes, swamps, bogs, areas where groundwater, flowing or surface water or ice providing a significant part of the substrate for a plant community for at least five months of the year...emergent and submergent plant communities in the inland waters...that portion of any bank which touches an inland water.

Inland Wetlands

Wetlands, found primarily along streams and brooks, are scattered throughout the town. The most significant expanses of wetlands are located along the Cole's River and its tributaries in the northern part of the town (the "Two Mile Purchase"), and along the Palmer River.

As noted in the 1982 Comprehensive Growth Policy Plan, (Southeastern Regional Planning and Economic Development District), "It is important to identify wetlands and preserve them in their natural state for a number of reasons:

- Wetlands help minimize the adverse impact of heavy rainfall and melting snow by holding water and slowly releasing it into a river system;
- Wetlands act as aquifer recharge areas and help maintain a high groundwater level
- Wetlands provide habitats for wildlife, and
- Wetlands help purify pollutants that enter the watershed or streams."

Wetlands serve a variety of natural resource and public health needs including storing water during storms of high intensity, releasing water slowly into the ground to recharge the groundwater aquifer, filtering out contaminants from the water stream, providing habitats and breeding places for wildlife, and adding to the diversity of the landscape.

Coastal Wetlands and Beaches

Extensive coastal wetlands are located in the estuaries of the Palmer, Cole's and Lees Rivers, composing valuable wildlife habitat areas.

Salt marshes are generally characterized by salt meadow cord grass and/or salt marsh cord grass. Salt marshes are generally flat, open grassy areas along tidal waters and are found in areas protected from open water (salt ponds, estuaries, etc). Salt marshes provide key habitat areas for plant and aquatic life and are important to the base of the marine food chain as well as for natural pollution mitigation. Swansea contains some 185 acres of salt marsh and some 11 acres of tidal flats. These flats, the only ones within the Narragansett Bay Watershed, are located along the Palmer River between Route 195 and Old Providence Road and the Cole's River north of the Barrier Beach.

Tidal flats are nearly level parts of coastal beaches which may extend from the mean low water line land-ward 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.

Tidal shoreline extends for some 13.5 miles and includes 33 acres of barrier beaches. The two areas in town that have been identified as barrier beaches are the Town Beach and Cedar Cove. The Town Beach, located along a former rail road right of way traversing Mount Hope Bay south of Wilbur Avenue was recently restored with a $0.5 million improvement project undertaken by the Army Corps of Engineers. The channel was dredged and the beach restored from years of storm damage.

For purposes of the Rivers Protection Act, the line between river and ocean frontage has been delineated at Bay Point. North of this line along both the Cole's and Lees Rivers, the Conservation Commission assumes a riverfront buffer of 200 feet. South of this line in the Ocean, the Conservation Commission is limited to regulating a 100 foot buffer.

Groundwater

Rainwater from within the watershed sub basin soaks into the soil and flows downwards until it reaches an impermeable rock or soil layer which in this case are stratified, unconsolidated glacial drift deposits. The groundwater deposits build up over time in a process knows as recharging. The water within the aquifer eventually discharges to the surface; the adjacent swamps, rivers, and streams.

About 95% of Swansea's population obtains its drinking water from municipal wells located off Bushee and Vinnicum Roads and along the northern portions of the Cole's River. (See Map 4-8) The remaining population utilize private wells. In addition to existing water supply areas, potential high and moderate yield aquifers are located in the areas of town which have the most well-drained soils, particularly along the Cole's River and in the low-lying area around the Palmer River. The Massachusetts Department of Environmental Protection identifies these as areas that could potentially be used for potable water, and therefore any remediation of environmental contamination within those areas must meet drinking water standards.

VEGETATION

Much of the undeveloped land in Swansea is potentially valuable for water, natural resource and wildlife protection and recreation, as well as contributing to the town's character. This land includes wetlands, open fields, and woodlands. The Town of Swansea contains approximately 389 acres of wetlands, 499 acres in open fields, and 3,605 acres in woodlands. Together, these areas comprise 4,493 acres, or 31% of the town. Of this open space, only 578 acres, or 4% of the total town area, is protected from future development.

Open Fields

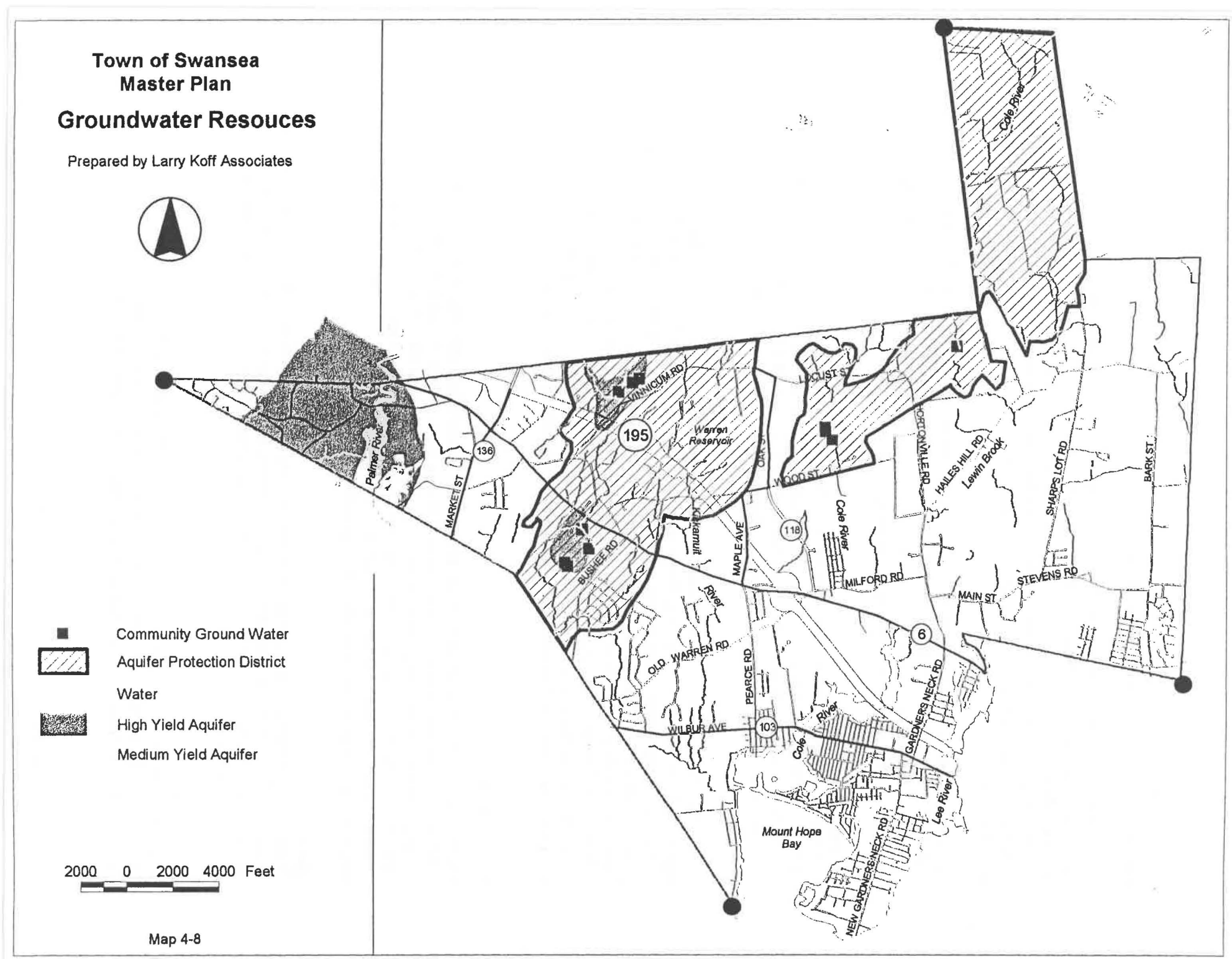
Open fields that were previously used for farming activity present opportunities for recreation and conservation sites. Many of these open fields have become habitats for local wildlife. These open fields preserve the rural character of Swansea by allowing the passerby an unobstructed view of the greater landscape.

Woodlands

Woodlands are forested plots of land that help to preserve the quality of the groundwater. They slow down rapid runoff, which could cause pollution and siltation of the streams and ponds in Swansea. Woodlands also allow water to percolate into the groundwater to replenish it; and they

Town of Swansea
Master Plan
Groundwater Resouces

Prepared by Larry Koff Associates



Map 4-8

are excellent sites for recreational activities like hiking. Swansea's woodlands are mostly hardwood forests or a combination of hard and softwoods including mostly White Pine. The dominant hardwoods include White and Black Oaks, Red Maple, Norway Maple, Hickories, American Elm, and Beech .[1]

Agriculture

Swansea has had a long history of farming; both dairy and vegetable farms. There are currently some nine farms in Swansea. Farming is an important contributor to the diversity and complexity of Swansea's visual landscape. A number of these farms are located on what are considered prime agriculture soils. The State is recommending that areas with this special soil type be protected. It is important to support the existing farming operations and to minimize the irreversible loss of valuable agricultural land to other uses so that this industry can be maintained..

There are a number of strategies to protect agriculture. Examples of strategies that have been employed in Swansea include the use of Chapter 61 tax status, which provides temporary protection, and Town ownership and private ownership under Conservation Restriction.

Under Chapter 61 designation, property is assessed at a fraction of its market value for a fixed period of years as long as the owner continues with agricultural activity. If the property is to be sold, the town has a right of first refusal and may, depending upon the number of years it has been in agriculture, the opportunity to recapture lost tax revenue. Three are three types of Chapter 61 designations: Ch.61 is for forested land, Ch.61A is for agricultural/ horticultural use, and Ch.61B is for recreational land. All of the town's existing farms (except for those which have permanent protection) operate under Ch.61A tax status. This strategy provides some support for its continued use but does not ensure any long term land protection.

The following farms have been permanently protected through Town ownership or Conservation Restriction programs:

Paquette Farm - The Town owns 82 acres of land known as Paquette Farm. Originally part of a privately held farm, the land was acquired in 1977 with Massachusetts Self-help Program funds. While the land remains under the management control of the Conservation Commission, it is leased for private farming operations.

Village Park - Among its many other uses, the Town-owned land known as Village Park consists of woodland that is periodically harvested, the returns accruing to the Town. In 1983, the Conservation Commission developed a woodland management plan for this site while it was still owned by the Episcopal Diocese of Massachusetts. When ownership was transferred to the Town, that management plan remained in effect and is continued by the Village Park Commission on behalf of the Town.

The Hale Farm, a 44-acre vegetable farm, and the Mello Farm, a 37 acre vegetable are both protected with Conservation Restrictions meaning that the development rights have been permanently removed. Two dairy and vegetable farms, Dallesandro farm, 68 acres, and the Chase farm, 92 acres, have been protected through the State APR program which provides funding for the purchase of development rights. Under both programs, the property is protected in perpetuity for agricultural use.

[1] Natural Resource Program of the Town of Swansea, Phase I Study, Bristol County, 1974, p7.

FISHERIES & WILDLIFE

Areas Important to Biodiversity

Natural Heritage and Endangered Species Program (NHESP) recently completed a state-wide biodiversity mapping project, the BioMap, which is intended to identify areas that if protected would protect the biodiversity of the state. As shown in Map 4-9, extensive areas of "Core Habitat" have been identified in Swansea, especially in the eastern/central area north of Main Street between Sharps Lot Road and Hortonville Road extending north into the relatively undeveloped area called Two Mile Purchase. This Core Habitat area is comprised of important natural ecosystems, mostly wetland complexes interspersed with upland areas, which are estimated to contain 75% of the state's rare and endangered species. Within the center of this district is a triangular shaped area designated as "Priority Habitat for State-Protected Rare Species" under the States Natural Heritage Endangered Species Program (NHESP). A second Priority Habitat Area is located at the tip of Mount Hope Bay in the area of Cedar Cove. The boundaries include private estate residences located adjacent to both a barrier beach as well as a portion of the Cedar Cove residential area. Within this resource district are located Tern Colonies and a major breeding ground for eels. This area is prone to flooding and thus has also been designated an Undeveloped Coastal Barrier. The 1988 Open Space Plan also noted that the Palmer River, south of the point at which it crossed Route 6, was the location of a nesting area for osprey; a previously designated Priority Habitat Area.

The BioMap also identifies "Supporting Natural Landscapes" which include natural areas that provide a buffer to Core Habitats, and very large contiguous natural areas. A large contiguous area is located along the town boundary with Rehoboth.

Core areas and Supporting Natural Landscapes located on the BioMap are not protected through any State or Federal Regulation. Areas designated as Priority Habitats have some very limited State and Federal protection.

Wildlife

Several rare and endangered species are currently known to occur in the town of Swansea.[2] These species have been designated by the NHESP. The Eastern Box Turtle and the Spotted Turtle (both species of "Special Concern"), and Wood Turtle("Threatened" species) all depend upon both uplands and wetland systems which occur in Swansea for their habitats. The Marbled Salamander is largely terrestrial, and can live in both dry as well as moist areas, but requires vernal pools or shallow depressions such as occur in Swansea for breeding. The Least Tern, a ground-nesting coastal water bird, is found along coastal beaches and barrier islands. Cedar Cove has been identified by NHESP as a habitat for Least Terns. This species is threatened by predators, competition for nesting areas, and disturbance from humans and dogs.

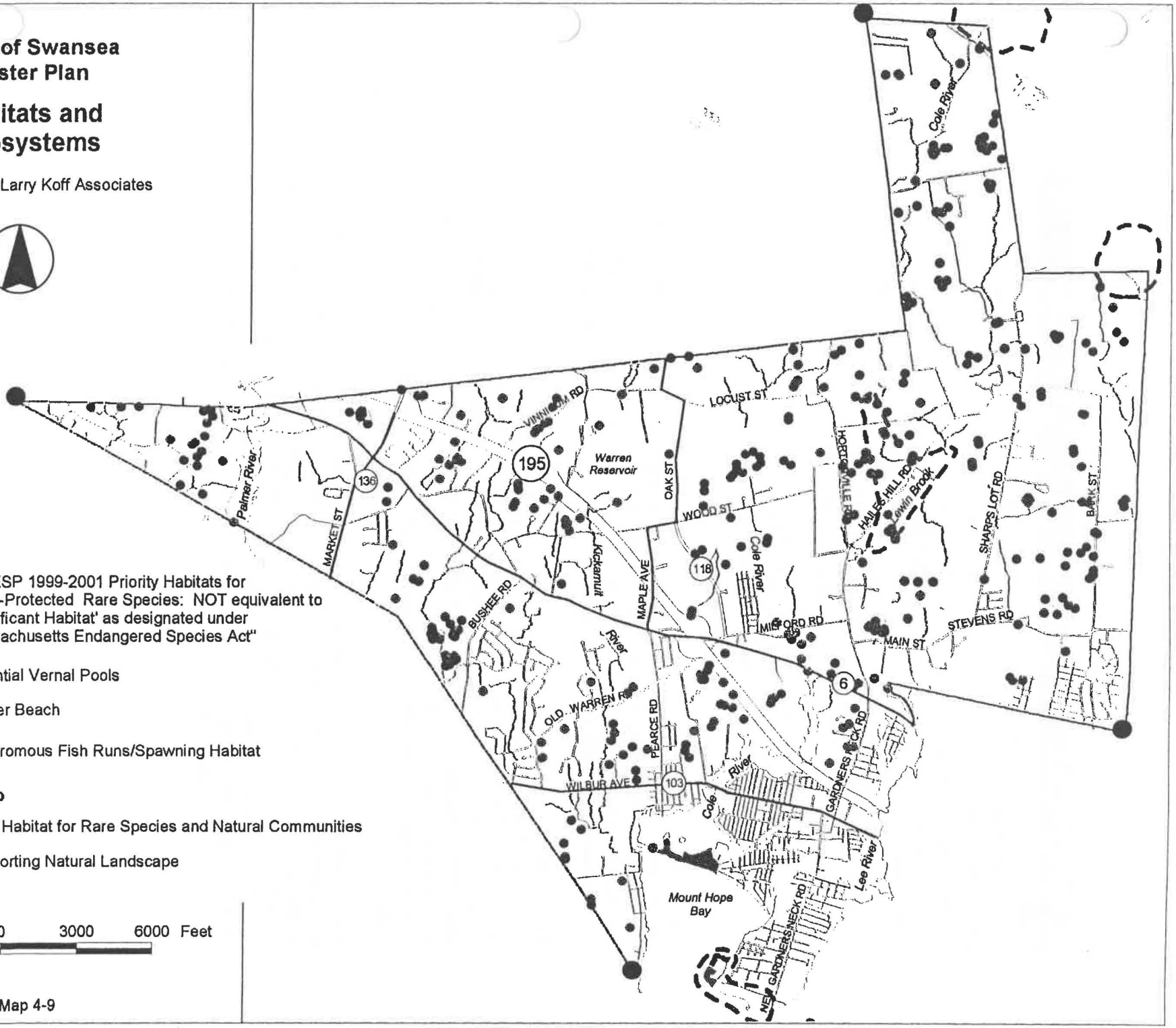
The 1988 Open Space Plan also noted that the Palmer River, south of the point at which it crossed Route 6, was the location of a nesting area for osprey; a previously designated PSRH. This nesting area may have moved further south to the point at which the power lines traverse the Palmer River.

[2] Natural Heritage & Endangered Species Program, Letter of February 25, 2002, Appendix

Town of Swansea
Master Plan

Habitats and Ecosystems

Prepared by Larry Koff Associates



"NHESP 1999-2001 Priority Habitats for State-Protected Rare Species: NOT equivalent to 'Significant Habitat' as designated under Massachusetts Endangered Species Act"

Potential Vernal Pools

Barrier Beach

Anadromous Fish Runs/Spawning Habitat

NHESP BioMap

Core Habitat for Rare Species and Natural Communities

Supporting Natural Landscape

3000 0 3000 6000 Feet

Map 4-9

Table 4-5, Rare and Endangered Species Found in Swansea:

Scientific Name	Common Name	Status
Plants		
Suaeda calceoliformis	American Sea-Blite	SC
Sanicula canadensis	Canadian Sanicle	T
Myroiophyllum pinnatum	Pinnate Water Milfoil	SC
Cardamine longii	Long's Bitter-Cress	E
Vertebrates		
Sterna antillarum	Least Tern	SC
Clemmys insculpta	Wood Turtle	T
Ambystoma opacum	Marbled Salamander	SC
Clemmys guttata	Spotted Turtle	SC
Terrapene canolina	Eastern Box Turtle	SC

Note: SC = Special Concern, T = Threatened, E = Endangered. Source: NHESP

Vegetation

Several rare plants which were known to be located in Swansea have not been recently confirmed to exist include the Canadian Sanicle and the Pinnate Water-milfoil. These plants may have disappeared from Swansea due to fragmentation and loss of habitat, and competition with invasive species. See Table 4-5 for a complete listing of rare and endangered species in Swansea.

Vernal Pools

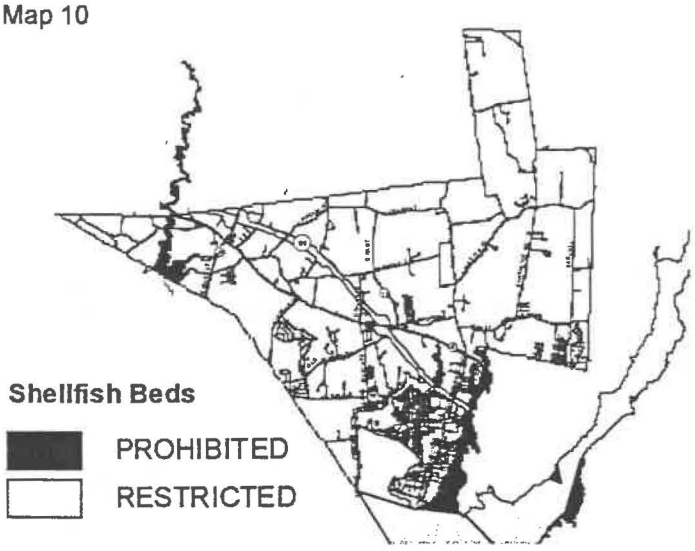
The town of Swansea is located in the Narragansett/Mt. Hope Bay Basin, a large geographic area referred to as the Southern New England Acidic Basin Fen, which extends into Fall River. Within this area, wetland communities are characterized by acidic conditions which combine with the soils structure, 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 predominately by sedges, tufted marsh plants, which often are the locus of vernal pools.

Vernal pools are areas which are seasonally inundated with water. These sites are important habitat areas for many plant and animal species. They locate in forested areas near streams and wetlands. The Core Habitat Area is dominated by this resource as are the wetlands of the various river corridors. A substantial number of potential sites of vernal pools have been identified by NHESP, scattered throughout the town. Although on-site studies have not been conducted to confirm the existence of vernal pools at these sites, the methodology for identifying potential sites of vernal pools is usually very accurate.

Fisheries

The marine fisheries in Swansea consisted of approximately 647 acres of shellfish producing tidal areas in Cole's River. Of this total, some 560 acres were for quahogs and 87 acres for soft shell clams. In addition, at the mouth of the Lees River, 746 acres of quahogs and 2 acres of soft shell clams were available. These beds have been closed since the mid 1970's due to pollution in the river from failed septic systems, agricultural activities and stormwater run-off.

Map 10



Sport Fishing in Mount Hope Bay for striped bass, bluefish, Squeteaque, and Winter Flounder is still possible. Deterioration of water quality, on the other hand, may threaten fish consumption. In addition, the Lewin and Milford Ponds are stocked each year for trout and bass.

SCENIC RESOURCES & UNIQUE ENVIRONMENTS

Swansea is an area that is rich in scenic and historic resources a well as unique natural environments. These resource are located within the coastal areas as well as inland rural landscapes. Taken together they create that special town character and quality of life reflected in the vision goals established for the town's Open Space Plan. Map 4-11, Special Landscape Features. Many of these resources are threatened by inappropriately located and/or designed commercial and residential development which will further impact an increasingly fragmented landscape.

Scenic Resources and Open Spaces

The prime scenic resources derive from the rolling landscape of rural farmland and wetlands which serve as the headwaters of five rivers that traverse primarily in a north/south direction terminating in estuaries and coastal beaches. Included are the Palmer, Kickamuit, Cole's, and Lewin Brook/Lee River. The Cole's is the longest river in town, connecting the rural area known as Two Mile Purchase to Milford Pond and then Mount Hope Bay. Lewin Brook drains a rolling landscape located to the rear of Swansea Village where Lewin Pond is located. All of these water bodies attract diverse wildlife species including fresh water vegetation, birds, mammals, reptiles, fish, and amphibians. Swansea also has 13.5 miles of tidal shoreline, including two designated barrier beaches (total of 33 acres), of which Cedar Cove has been identified as a habitat for rare and endangered species. The major areas of open water in town are the Lewin and Milford ponds and the Warren Reservoir.

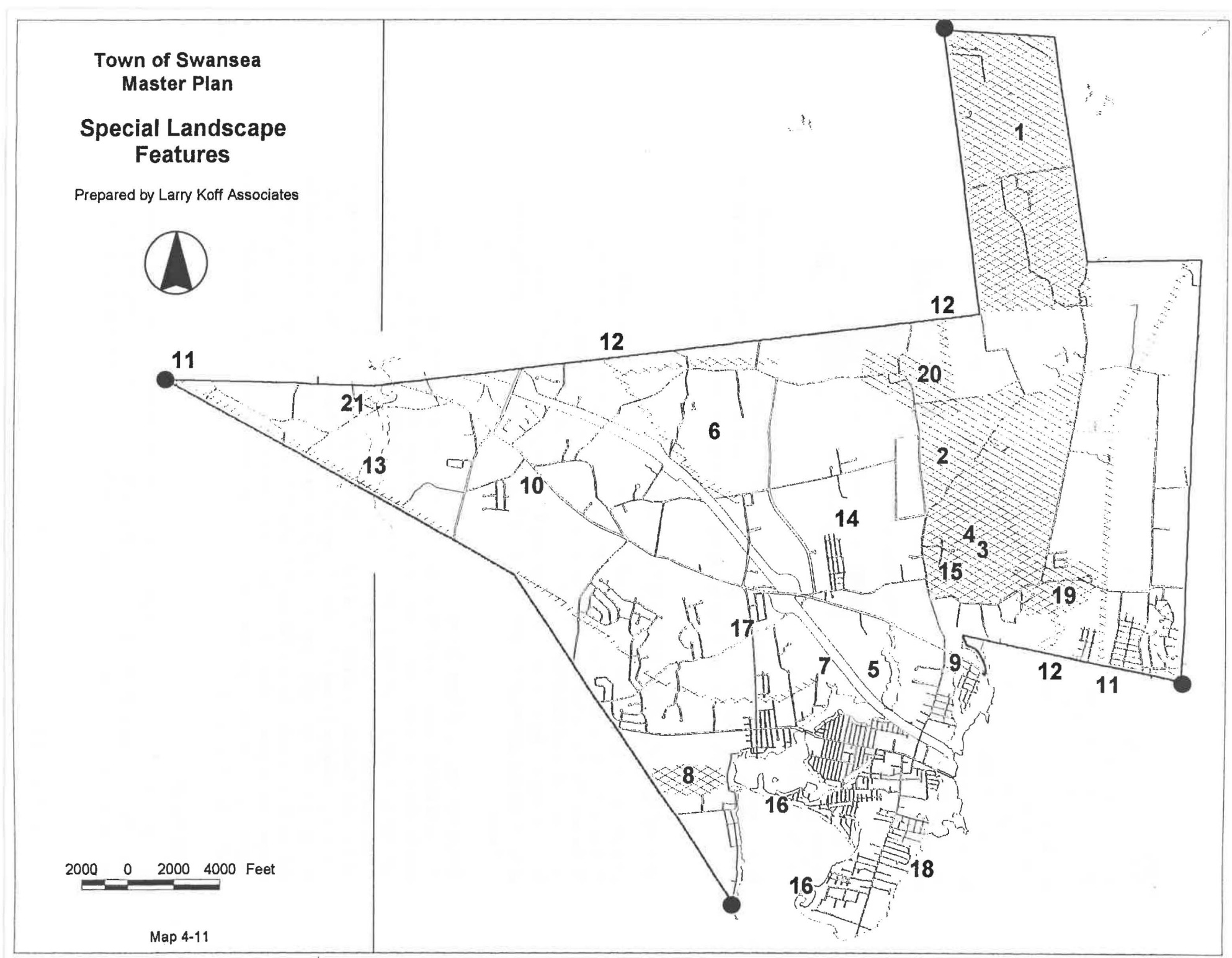
Open Spaces

Two Mile Purchase (1) is a large, relatively undeveloped and inaccessible rural area extending into Rehoboth in the north of Town. The headwaters of the Cole's River are located in the swamps which comprise this rolling landscape. Three farms are still in operation. There is no

Town of Swansea
Master Plan

Special Landscape Features

Prepared by Larry Koff Associates



2000 0 2000 4000 Feet

Map 4-11

public water and the soils which are composed of till cannot easily accommodate septic treatment. This area has been designated as part of the town's Aquifer Protection District as well as the NHESP Bio-Map Core Area. In spite of the area's rural character and its designation as part of the Aquifer Protection District, there is substantial development pressure here with a new 29 house lot subdivision under plan review.

Hailes Hill Road/Hortonville Triangle (2) The swamps and headwaters of Lewin Brook characterize this hilly, relatively undeveloped area. This is the largest locus for priority habitats of rare species in town. Box turtles, salamanders, and unusual vegetation are found here. There are also herds of deer as well as three farms. In spite of these unique resources, a significant number of Form A lots and several new subdivisions are under review.

Village Park and the Montaup Power Company Parcels Two large open space parcels, Village Park and property owned by the Montaup Power Company, are located just to the south of the Hailes Hill Road/Hortonville Triangle area between Sharps Lot Road and Hailes Hill Road. This area is an extension of the core Habitat Area for Rare Species identified by the State.

Village Park (3) is a large forested area of wetlands and upland owned by the Town and managed by the Village Park Commission. It contains a significant amount of wildlife, hiking trails, and numerous Vernal Pools. From Wild Cat Rock formation, a high point in town, one can see all of Mount Hope Bay. An archaeological survey of various locations in Swansea was carried out in 1980 as a preparatory component of the Wastewater Facilities Plan that was prepared for the Town. Most of the archeological sites of interest in the town that were identified are located within Village Park. Abram's Rock, in particular, contains hieroglyphics from earlier Indian tribes who wintered in this area. The purchase of Village Park for conservation purposes was an important acquisition in terms of resource and historical preservation. The protection of this land is essential to prevent fragmentation of habitat areas as well as to preserve these historic and scenic resources for public enjoyment.

Montaup Power Company Parcel (4) Some 100 acres owned by the successors to Montaup Power Company are to be sold as the property is no longer needed for retaining control of the water rights. This land includes a substantial number of unique resource areas. There are two ponds, an Upper and Lower Pond. These ponds provide trout fishing and attract a significant amount of wildlife including ducks, geese, swans, owls, and hawks

Sears Farm (5) is a vacant, 56 acre parcel owned by the town located on the banks of the Cole's River. The estuary embankment includes fresh and saltwater vegetation and a variety of wildlife. This is a very scenic location. Access is limited due to a narrow, shared right of way from Route 6. Issues of access, resource protection, and re-use, i.e., open space, municipal, commercial or some combination, have to be resolved.

Warren Reservoir (200 acres in public and private ownership) (6) While this reservoir serves the water supply needs of Warren, Rhode Island, a small area (40-50 acres) near the dam and east side of the reservoir (owned by the Bristol Water District), could be developed for a town park. This improvement has long been resisted by the town of Warren. The Swansea Water District is now in the process of developing the Reed Street well near the dam, which is located at the southern end of the reservoir.

Jarabek/Santos Land Trust property between 195 and the Cole's River (7) This parcel of some 100 acres, located near the estuary of the Cole's River, with access off a local street from Wilbur

Avenue, was once a gravel pit. The presence of wetlands and fresh water ponds attracts diverse wildlife including fish and inland birds, and vegetation including a number of rare species. Walking paths are maintained by the Swansea Land Trust.

Wetlands near Wilbur Avenue/Touisset (8) This area contains a dense cedar forest in overgrown fields south of the railroad grade. Three perennial streams run through this area into Mount Hope Bay. Soil consists of rocky, glacial till.

Open Spaces on Gardners Neck (9) Located off Gardner's Neck Road and Route 6, is a 2 acre, privately owned parcel, a former gravel pit, currently used as a supply depot for a private company. Adjacent to this property is the Almeida Farm. Together these properties represent one of the last remaining coastal landscapes with a beautiful view of the Lees River.

Little Neck, south of Fifth Street, is a publicly owned Rocky landscape consisting mostly of conglomerate. This point of land, once a proposed sub-division, has a small baseball field. The property provides boat access to the Lees River and estuary.

Devils Rock (200 acres, public and private ownership) (10) A portion of area was once a gravel pit while the other portion of the area is owned by the Town Water Department and is site of the Bushee Well field. This site was recommended in the 1964 Master Plan as a town open space recreation area. A study should be undertaken to assess ability to use the former gravel pit for playfields and playgrounds.

Power Line Corridors (11 & 12) A large number of power line corridors traverse the town carrying power from the Brayton Point and the Montaup (Somerset) power plants. These corridors are currently utilized by wildlife as well as informally for walking and dirt bikes. A more formal public use of this property for recreation could be explored.

Unique Environments

The unique environments include significant rural and coastal resource areas that often are a locus of biodiversity. These special places are located in wetland and river corridors, in the coastal estuaries and beaches found in Swansea. Because of their environmental and biological complexity, these areas are able to attract a diverse variety of wildlife including birds, plants, fishes, amphibians, and mammals. **It is of utmost importance to both man and nature that these unique environments be protected.**

Palmer River Corridor (13) This river corridor is located primarily within Rehoboth and what is know locally as "North Swansea."[3] As the Palmer River opens into Narragansett Bay in Rhode Island, both tidal freshwater and brackish salt water marshes are located on the river banks in Swansea. Cedar trees line the banks of marshes which are home to several rare and endangered plant species, including one that is globally rare. The stream is inhabited by a rich diversity of aquatic habitat. This is also the locus of the Diamond Back Turtle's habitat.

Cole's and Lewin Brook Corridors (14 & 15) A second river corridor includes both Cole's and the Lewin Brook/Lee Rivers. This watershed incorporates the prime undeveloped wetland and habitat areas of Swansea including the Two-Mile Purchase district, ponds, vernal pools, aquifers, and a Priority Habitat Area. This river corridor also supplies several public wells. Town and Land Trust property have preserved some of this special landscape as Route 195 traverses the Cole's River.

Barrier Beaches (16) Two Barrier Beaches are located within town, Town Beach and Cedar Cove. Both beaches are prone to flooding and thus have been designated an Undeveloped Coastal

[3] A regional Open Space and Recreation Plan 2001-2005, EOEA, SRPEDD, 2001, pps. 21-29.

Barrier. The former, Town Beach, is located along a former railroad trestle. The later, Cedar cove, is located at the tip of Gardiner's Neck. Cedar Cove is also designated by NHESP as a Priority Habitat, containing Tern colonies and a major breeding ground for eels.

Historic Areas

Five historic districts and one area of significant archeological settlement have been identified. In total these areas capture Swansea's evolution from an Indian to colonial to a rural farming and early industrial to a summer resort community. These changes are recorded in the landscape and architecture of these areas. Their preservation gives the town a sense of identity and direction as it adjusts to the many challenges of accommodating new growth.

Luther Corner (17) This is the local of an early colonial village settlement. A number of homes from the early 18th and 19th centuries still exist. The town's historic museum is located in this area.

Gardiner's Neck (18) This property was once utilized by local Indian tribes as a summer encampment. Fishing and hunting were relatively easy as the bluffs and coves were surrounded by wildlife. With colonization, a land grant extending from King Philips time led to the parcelization of this property. During the 19th century this area became a popular summer colony. Within the last 40 years, homes have been converted for year round use.

Swansea Village (19) This 18th century village was the center of town. At one time, a mix of residential and commercial structures such as dry goods, clothing, and groceries were located here. The Montaup Power company built the dam here and owns the water rights. A number of fine residential estates have been converted to residential schools. In addition, the town has built its town hall, library, and more recently, a police and highway department as well as more recently a fire station in this village.

Hortonville/Hornbine (20) A grist mill was developed along the Cole's River. An early village was developed around this mill.

Barneyville (21) This was the location of the town's ship building industry. In the 19th Century the Mason Barney Shipyard located along the Palmer River was a significant location for the construction of three-masted ships. The Mason Barney Yard closed in 1861.

ENVIRONMENTAL CHALLENGES

Coastal areas are particularly susceptible to contamination because they receive water from the immediate watershed as well as more distant watersheds through groundwater flows, rivers, and streams. In general, the longer water has to travel to reach the coast, the more opportunity there is for contaminants to filter out. However, in seaside communities such as Swansea, dense development is typically located close to the shore.

Therefore, even where septic systems are not an issue, as they are in Swansea, the amount of impervious ground cover means that more polluted runoff will flow directly into coastal waters. Map 4-12.

Shellfish beds are particularly sensitive to E-Coli contamination as well as nutrient and other contaminants.

Older failing septic systems can contribute significantly to bacterial and nutrient-loading. Conventional systems are not designed to reduce nitrogen inputs to groundwater, therefore even when fully functional they can impact shellfish habitat in the Bay.

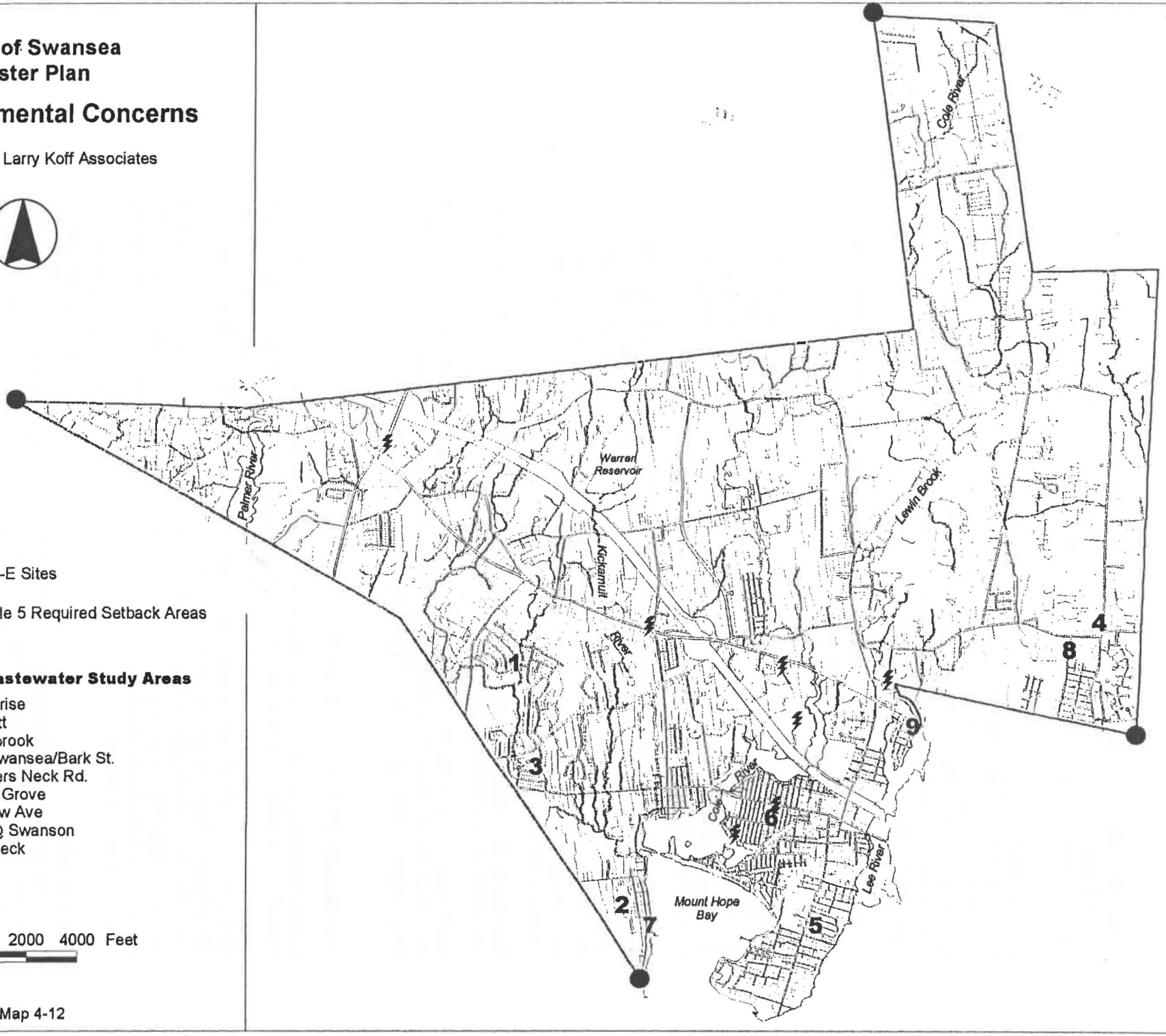
Water quality

A major issue impacting the health of the shellfish beds as well as local real estate values is the issue of water quality. The Commonwealth of Massachusetts and the State of Rhode Island, and EPA working with various

Town of Swansea
Master Plan

Environmental Concerns

Prepared by Larry Koff Associates



21-E Sites

Title 5 Required Setback Areas

Priority Wastewater Study Areas

1. Smokerise
2. Touisett
3. Cedarbrook
4. East Swansea/Bark St.
5. Gardners Neck Rd.
6. Ocean Grove
7. Seaview Ave
8. Bark @ Swanson
9. Little Neck

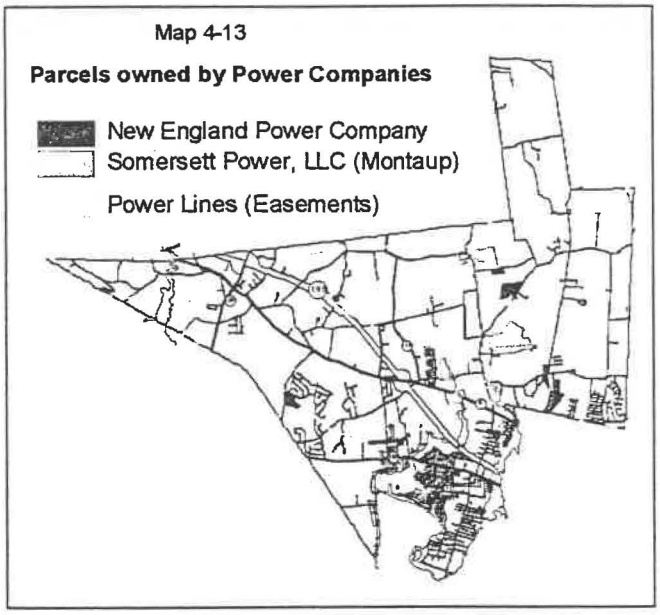
2000 0 2000 4000 Feet

Map 4-12

grassroots and government efforts, are addressing this issue. There are numerous point sources of pollution which are impacting water quality including failed septic systems, non-point source pollution, erosion and sedimentation. Three studies, the first two prepared by Rhode Island Department of Environmental Management (RIDEM), The Fecal Coliform TMDL for Palmer River and Narragansett Bay Water Quality, and a third study on water quality on the Kickamuit River prepared by the Massachusetts Department of Environmental Management, (MADEM) are seeking to understand and address water quality issues along the coast including Swansea. Addressing the issues of stormwater and failing septic systems will be critical to addressing these water quality problems.

Power Lines

Power line corridors from the Brayton Point Power Plant (New England Power Company currently owned by PG&E) as well as Montaup (Somerset Power Company) traverse in a north/south direction the Lewin Brook and Bark Street areas of town. These are rural, environmentally sensitive areas which include Village Park, Vernal Pools, Priority Habitat areas, farms, wetlands, and streams. The support of the power company in protection of these resource areas is important. Additional power lines from the New England Power Company traverse in an east/west direction north of Wilbur Avenue. Aside from the power line easements, the New England Power Company and Somerset Power LLC both own a significant amount of open space in Swansea, much of which is located along river corridors and other areas of environmental significance. These lands are not protected, and for the most part could potentially be developed.



Dams

These structures are important for flood control. Issues of structural integrity, erosion and sedimentation, barriers to fish conveyance, unknown ownership and the related problems of liability need to be addressed. Four of the five dams in Swansea are owned by power companies, including two along the Lewin Brook and two along the Cole's River. The Lower Dam of the Cole's river near Route 6 has been proposed as a site for a fish ladder. Warren Reservoir has a dam which is maintained by the Bristol County Water Authority.

Flooding

The major areas impacted by flooding are located within the FEMA designated Flood zones and the FEMA designated High Velocity flood zones. During seasonal storms, these coastal areas and the abutting residences are impacted by high winds and flooding. In addition, the lower portions of the Cole's and Lees river are subject to flooding including portions of Route 6 near these rivers.

Development Impacts

The Regional Open Space and Recreation Plan identified three impacts that are of particular concern. These include

- 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.

The Open Space Plan will, along with the preparation of the Master Plan, address these concerns. Strategies for resource protection and the adoption of a Greenbelt Protection corridor are being identified and incorporated into the town's planning process.

V. Open Space Inventory & Analysis

Open space plays a very vital role in any community. Permanent designation of open space can preserve unique natural features, fulfill a sense of self-identity for a community and perpetuate the rural character. It can provide habitats for local or transient wildlife, protect groundwater supplies, help to define discrete neighborhoods, assist in the integration of abutting land uses or serve as a neutral buffer, separating incompatible land uses. Finally, and perhaps most importantly, open space can exist alongside the built environment to provide the opportunity for passive recreational pursuits that ease the stresses of daily life.

Each community across the Commonwealth has unique open space needs. Rural towns may be motivated to preserve extensive areas of open space as a means of protecting natural resources. Quality of life concerns may prompt another community to keep large areas of the town open, in an attempt to retain that "pastoral" look that first attracted the residents to live there. Protection of natural resources may be site-specific and generated by the existence of such irreplaceable assets as prime farmland, groundwater resources or rare and endangered flora and fauna. Whatever the specific reasons, the preservation of open space based upon such tangible resources leads to a plan that is both practical and sustainable.

The town of Swansea, often referred to as a rural community by local residents, exhibits in certain areas a visual sense of low-density rural countryside. The low-key nature of the town's infrastructure also would suggest that Swansea be considered a rural community. The town completely relies upon sub-surface aquifers for its water supply system. The only surface impoundment is the Warren Reservoir, supplying the neighboring Bristol County Water Supply Company of Rhode Island. Both water agencies have expressed considerable concern about protecting these vulnerable and finite sources of drinkable water for the future.

Swansea has no wastewater treatment system. It relies entirely upon on-site septic tank systems. Although several neighborhoods are clearly beyond the point where such systems can safely sustain the load (e.g., Ocean Grove and Smokerise areas), the Town continues to search for a strategy which Town Meeting will be willing to financially support. Efforts are again underway to prepare a revised scope for the funding of a Comprehensive Water Resources Management Plan through a low interest State Revolving Fund Program managed by DEP. Issues of water supply, alternative decentralized wastewater treatment, and stormwater systems will be addressed concurrently with the priority problem areas being considered. Support is needed from local residents for a program which will effectively and economically deal with this problem.

Presently the relatively sparse development of much of Swansea is the only guarantee that these systems will work. In view of the relatively poor ability of Swansea soils to absorb septic discharge (See Map 4-4) and as increased development occurs and more residential lots are created, (especially considering the relatively small minimum lot size of 30,000 sq.ft.) this delicate balance will soon be upset and the incipient environmental problems will become serious health concerns. This already appears to be happening in certain locations due to increased subdivision of the land, traffic congestion, the continued development of strip commercial uses, decline of farming, and degradation of water supplies. In a few limited cases, such as the Swansea Mall, developers have installed their own treatment facilities.

PARCEL INVENTORY

Open space parcels that are owned by the Town or State or some other public agency are not considered permanently protected unless they have been designated for conservation purposes. These lands require an act of state legislature in order to dedicate them to some other use. Other lands owned by the town may be disposed, developed or put into other use at any time.

To be considered permanently protected, privately-owned open space must have some kind of deed restriction such as a CR (Conservation Restriction) or APR (Agricultural Preservation Restriction). Land owned by organizations or institutions which have the intention of protecting the property but have not secured a permanent deed restriction would be considered semi-protected. Map 4-14.

Two parcels have been protected through the Agricultural Preservation Restriction (APR) program, including the 68 acre Dallesandro farm on Market Street, and the 92 acre Chase farm adjacent to the Bushee Road well field. Under this program the State and the Town together purchase the development rights to a farm, allowing it to continue in agricultural use in perpetuity. In addition, the 37 acre Mello farm located near Baker Road and the 44 acre Hale Farm north of Swansea Mall Drive have been protected through a Conservation Restriction (CR). No additional parcels have been added to these programs in Swansea since 1988. Under both of these programs, the land remains in private ownership but is protected from future development.

Two land trusts own land in Swansea which is considered to be semi-protected. The Swansea Land Trust owns 105 acres, including the Jarabek/Santos parcel and the Bell Barney marshland while the Barrington Land Trust holds open space parcels totaling six acres. The land trusts accept donations of land with the intention that they will not be developed, however there is no permanent title restriction on these properties.

Land over 5 acres in size which has been assessed under Chapter 61 for forest (Ch.61), agricultural/ horticultural (Ch.61A), or recreational purposes (Ch.61B), is able to qualify for a lower tax assessment than residential or commercial uses, provided the Town is granted the right of first refusal to purchase the property if it is to be sold. Chapter 61 uses are not considered protected as the property owners are free to sell them at any time.

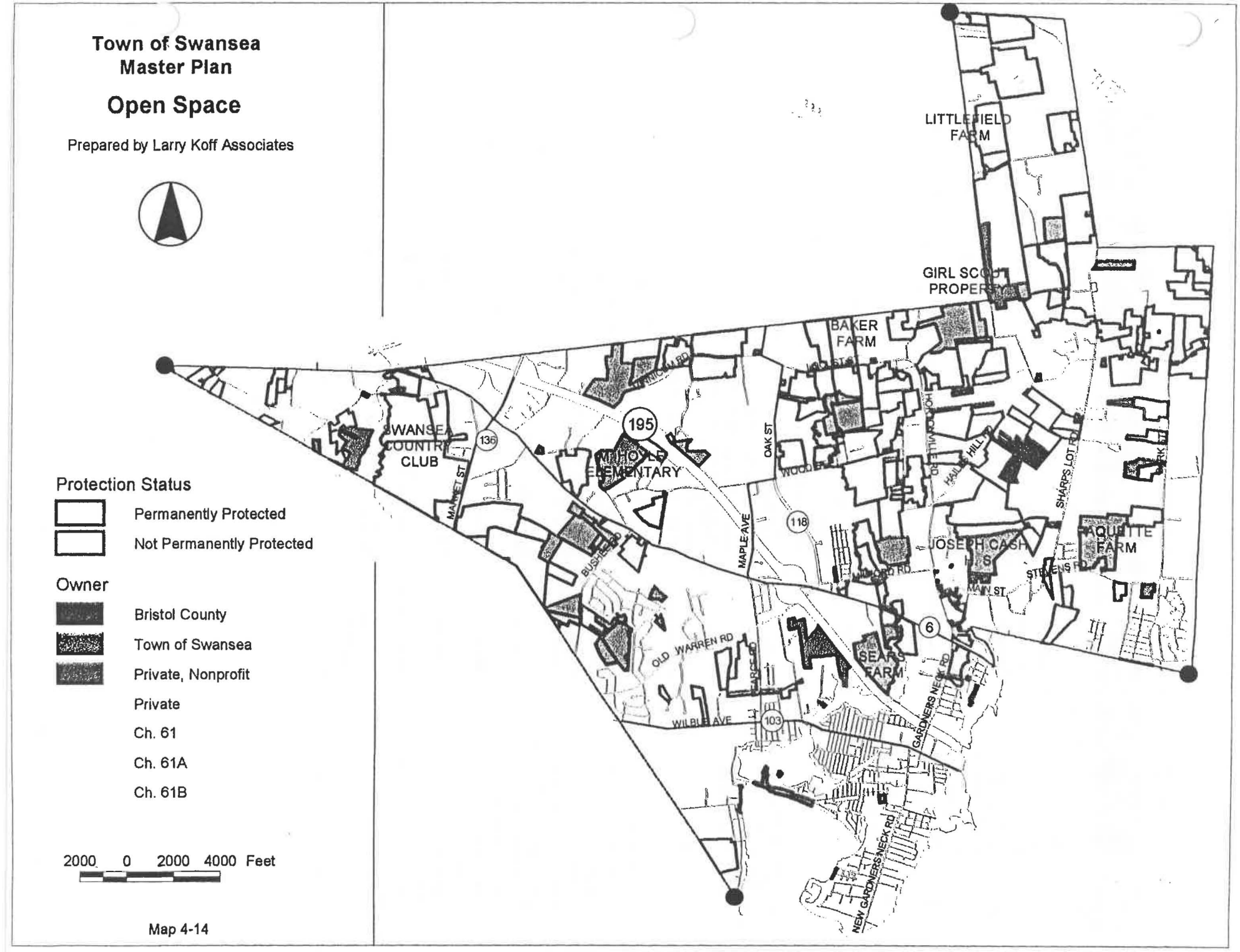
Appendix 1 provides a detailed inventory of properties classified under the Chapter 61 program. The majority of parcels under this provision are agricultural/horticultural uses under Ch. 61A which total some 1,248 acres owed by 39 individuals/families. According to data provided by the Assessor, the major agricultural use is tillable land. There are five dairy farmers in town and one farmer who raises horses. There are also a couple vegetable farmers. Recreational activities (Ch.61B) including two golf clubs account for 288 acres, and forested lots (Ch.61) owned by four individuals account for 120 acres.

Privately-owned recreation sites (Table 4-7) are not included as open space because these parcels all have intensive indoor/outdoor recreation uses. Nevertheless, some of these contain land which may qualify as semi-protected or unprotected open space.

Town of Swansea
Master Plan

Open Space

Prepared by Larry Koff Associates



Protection Status

- Permanently Protected
- Not Permanently Protected

Owner

- Bristol County
- Town of Swansea
- Private, Nonprofit
- Private
- Ch. 61
- Ch. 61A
- Ch. 61B

2000 0 2000 4000 Feet

Map 4-14

Table 4-6, Public and Nonprofit Parcels, Protected and Unprotected

Site	Jurisdiction	Description	Area	Protection Status*
State-owned Open Space			**4.01 acres**	
Myles Garrison Monument Old Providence Road	Commonwealth of Massachusetts	Zoning: RR	0.06 acres	?
Total Additional State-owned parcels (See Appendix __)	Commonwealth of Massachusetts	Zoning: ? Use: ?	3.95	?
County-owned Open Space			**60.89 acres**	
AM 16 & 17, Lot 35 Off Hailes Hill Road	Bristol County	Zoning: RR Use: ?	60.89	N
Town-owned Open Space			**730 acres**	
AM 42 Lots 46 & 47 West Promenade Street	Recreation Dept.	Zoning: RR Beachfront erosion, little land remaining	0.50	N
AM 60 Lot 133	Recreation Dept.	Zoning: RR Filled in wetland	0.15	N
Sears Farm Off GAR Highway	Town	Zoning: LCM Undeveloped	*56	N
AM 2 Lots ,D Off Mountfair Circle Rear lots, near Warren Town line	Town	Zoning: RR Use: Passive Recreation, not offered to Conservation Comm. Wetland, bisected by power line	*59.28	N
AM 85 Lot II Parcel Off Rosewood Ave.	Conservation Commission	Zoning: RR Part of Smokerise Development, wetland	*24.46	N
Paquette Farm Off Old Stevens Road	Conservation Commission	Zoning: RR Use: Agriculture	81.94	P
Village Park Off Main Street	Conservation Commission	Zoning: RR Use: Passive Recreation	60	P
Maker/Borge Well Field East of Old Fall River Road	Water District	Zoning: ET	96.0	P
Hornbine Well Field East of Hornbine Road	Water District	Zoning: RR	85.0	P
Midwood Well Field Off Midwood Drive	Water District	Zoning: RR	10.0	P
Vinnicum Well Field West of Vinnicum Road	Water District	Zoning: RR	89.0	P
Additional Water District Parcels	Water District	Zoning: Varies	96.97	P
Additional Town-Owned	Police, Highway, Cemetery, School & Adm.	Zoning: Varies	70.79	N

Private/Non-Profit Open Space			**2,064 acres**	
Halle Farm	24/ 12, 12C, 12D	Conservation Restriction	44	P
Dallesandro	Map 4/Lot 3	APR	68	P
Chase		APR	92	P
Swansea Land Trust Inc.	Total Parcels	Includes Jarabek/Santos parcel at 195/Cole's River and the Bell Barney marshland on the Palmer River	*105.30	P/S
Barrington Land Conservation Trust	Total Parcels	Zoning: Use:	5.99	P/S
Girl Scouts of RI		Zoning: Use:	38.53	N
New Hope Christian Church		Zoning: Use: much of site vacant; includes 2 ballfields.	54.09	N
Total Chapter 61 Lands	See Appendix __	Use: Forestry	120.4	N
Total Chapter 61A Lands	See Appendix __	Use: Agriculture	1,248.04	N
Total Chapter 61B Lands	See Appendix __	Use: Recreation	288.40	N
Total Unprotected			**2,021 acres**	
Total Protected and Semi-Protected			**834 acres**	
Total Unknown			**4 acres**	

P = Permanently Protected, P/S = Semi-protected, N = Not Protected
*Note: Sites contain a high percentage of wetland areas

RECREATIONAL RESOURCES

The town of Swansea has a range of recreational resources, including public and private facilities for both passive and active recreation, as well as a number of properties which are undeveloped. These sites are identified on Map 4-15.

Swansea's public recreational land area is comprised of 20 sites, managed by the Recreation Commission or the School Department, totaling some 200 acres, of which approximately one half or 100 acres is considered useable recreation land area. The balance of this land is often wetland. The majority of the public recreation sites include playgrounds and playfields and are located in the southeastern area of the town adjacent to the middle and high schools. Almost all of the school sites contain a variety of activities. Swansea Memorial Park, located within walking distance of three public schools, offers baseball, tennis, and basketball and open play areas.

As a coastal community, beaches are a popular form of recreation. Town beach, which has parking for 80 cars, as well as the adjacent Sandy Beach are the public beach facilities. The Town also has several boat landing sites most notably at the gut (at the old railroad trestle adjacent to the Town beach) and at Long Point.

In addition, the town owns five substantially undeveloped parcels containing 131 acres, most of which is under the care and custody of the School Department or the Recreation Department. Although some of these properties such as the Covel Estate, are of valuable conservation and potential recreation interest, they are not permanently protected. Furthermore, as noted in the table, a number of these sites contain a large percentage of wetlands. Listed below is a summary of both publicly and privately held recreational lands and facilities in the Town. None of these sites are permanently protected.

Private recreational facilities include 3 golf courses, a sportsman club, and some areas owned by nonprofit organizations which have active or passive recreational facilities. In addition, a new indoor/outdoor golf facility has been proposed for the area off Route 195 in the Recreation zoning district.

Table 4-7 Recreation Sites

Map #	Site	Facilities	Area
	Privately-Owned Recreation Sites		**646.56 acres**
A	Grace Gospel Church	2 Baseball fields	0.99
B	Somerset Sportsman Club		153.75
C	Touisset Golf Course	18 Hole	61
D	Swansea Country Club	18 Hole + 9 Hole	196.64
E	Wampanag Country Club	18 Hole	40
F	Dome on the Range	22 acres proposed for in and outdoor driving range, miniature golf course; permitting underway	122
G	Cole's River Family Fun Center	Batting cage, driving range, miniature golf	33.65
H	Girl Scout site		38.53

Map #	Location	Dept.	Facilities	Acreage
Town-owned Recreation Sites				**203.78 acres**
1	The Bluffs Ocean Grove Avenue	Recreation Dept. and Council on Aging Map 48, Lot 76	Zoning: RR Use: Elderly Day Care program Condition: Mixed-Elderly facility good, rear public assembly wing in poor condition Equipment: Bluffs building with function rooms, Council on Aging Office,	2.0
2	Boat Launch/ Long Point Off Ocean Grove Ave	Recreation Dept. and State Boat Ramp (DEM???)	Zoning: RR Use: Passive Recreation - Town Beach and Boat Landing Condition: Good	7.5
3	Town Beach (The Bluffs)	Map 48, Lot 88/7B	Use: Beach, 80 parking spaces Condition: Good	1.8
4	Sandy Beach	Map 45, Lot 129-A	Public Beach	2.41
5	AM 44 Lot 3 Off Seaview Ave; Davis and Tod Ave's	Recreation Dept.	Zoning: RR Use: 3 separate boat landings, access to Cole's River	0.45
6	AM47 Lot 34 Off Pearse Road	Recreation Dept.	Zoning: RR Use: Boat Landing	0.29
7	AM 51 Lots 134 & 140 Off Circuit Drive	Recreation Dept.	Zoning: RR Use: Boat Landing and Beach	0.26
8	Off Birchwood Drive	Recreation Dept.	Zoning: RR Use: water access for canoe and fishing	0.29
9	Little Neck: AM 60 Lot 72 Off Front Street	Recreation Dept.	Zoning: RR Condition: good Use: Canoe access to Lees River, ball field	0.20
10	Gardner School Nichols Street	School Dept.	Zoning: RR Use: Elementary School Condition: good Equipment: ballfield, playground with slides, jungle gym	*4.0

11	Brown School Gardners Neck Road	School Dept.	Zoning: RR Use: Elementary School Condition: good, Equipment: playground, 2 ballfields, 1 soccer, basketball court	*3.0
12	Case Jr. High School Main Street	School Dept.	Zoning: RR Use: Jr. High School Condition: good Equipment: open field	*8.75
13	Case Sr. High School Milford Road	School Dept.	Zoning: RR Use: High School Condition: very good Equipment: football stadium with track, 1 baseball and 1 soccer/football field with lights and bleachers, gymnasium	*35.5
14	Covel Estate Off GAR Highway	Recreation Dept.	Zoning: BB, RR Backs up to Memorial Park, Parking, tennis, undeveloped	*15.0
	Swansea Memorial Park GAR Highway	Recreation Dept.	Zoning: RR, BB Use: Active Sports Recreation Condition: good Equipment: 5 baseball fields, 1 basketball court, 4 tennis courts, 1 soccer field, playground	29.25
15	Luther School Pearse Road	School Dept.	Zoning: RR Use: Elementary School Condition: good Equipment: swings, jungle gym, basketball hoops, 1 field	*9.46
16	Nike Site, Missile Loop –Off Sharp's Lot Road	Recreation Dept.	Zoning: RR Use: Active Sports Recreation Condition: good Equipment: 4 baseball fields, office and clubhouse	8.9
17	Mason Barney School Old Providence Road	Recreation Dept.	Zoning: RR Use: Recreation Department Condition: poor (under renovation) Equipment: playing field	*5.0
18	Bark Street School Stevens Road	Town Police Dept.	Zoning: RR Use: Town Hall Annex, Animal shelter Condition: fair Equipment: field	*6.25
19	AN4 Lot 84 Off Smoke Rise Circle	Recreation Dept.	Zoning: RR Parker Baseball field	1.10
20	Hoyle School East of Old Fall River Road	School Dept.	Zoning: ET 4 ballfields, 2 tennis, playground, basketball, nature trail	*62.37 (about 10 acres used for recreation)

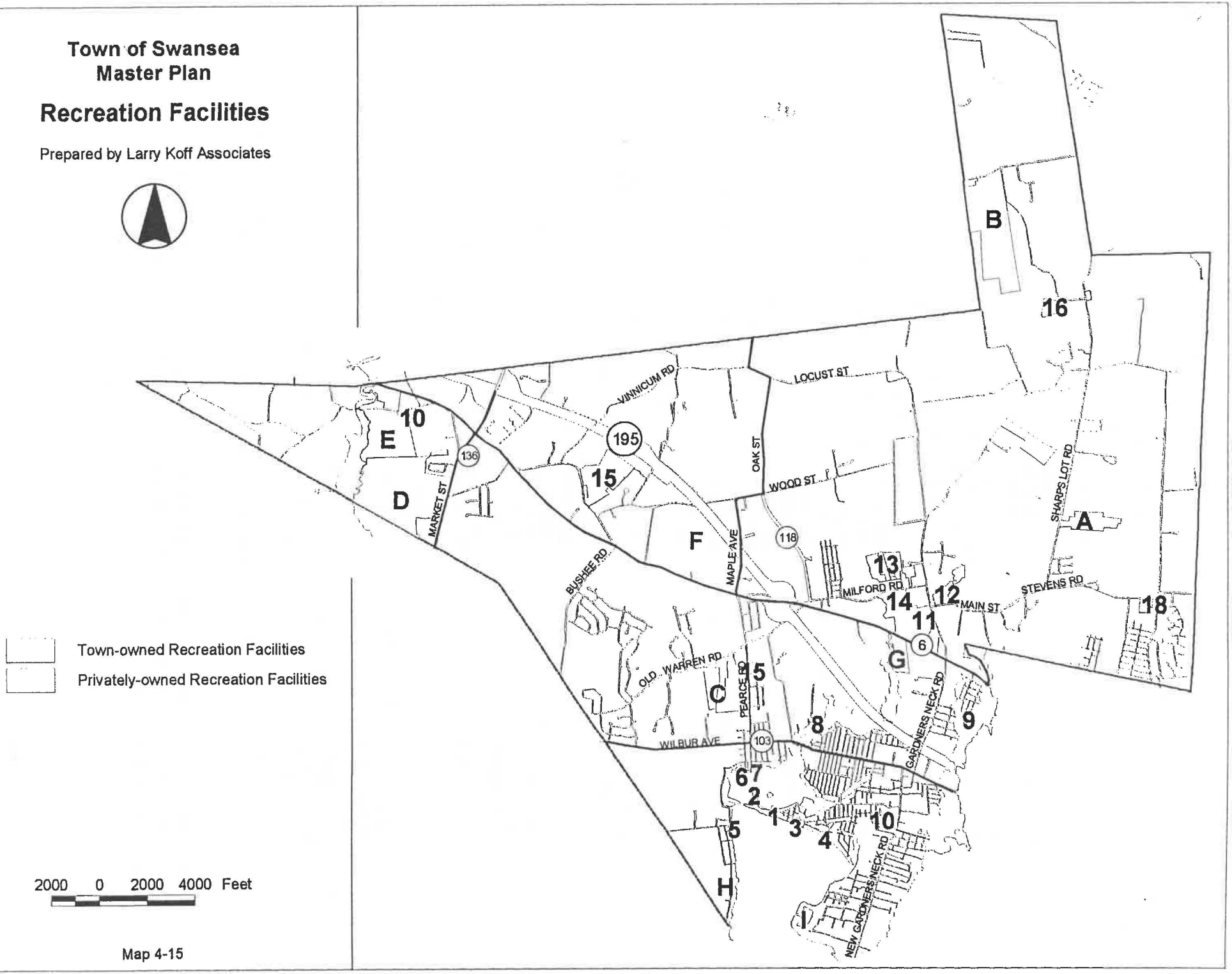
*Note: Acreage for these facilities includes school as well as substantial wetlands

There are 612 acres of public and private land that house recreation facilities in the Town. While this appears to be a lot of acreage, much of this acreage consists of wetlands which are not suitable for active recreation purposes.

Town of Swansea
Master Plan

Recreation Facilities

Prepared by Larry Koff Associates



Map 4-15

Town recreational facilities include four tennis courts, seventeen baseball diamonds, three soccer fields, four playgrounds, three basketball courts, a football field, and a track. In addition, the Town also has two town beaches and five boat landings of which Long Point can accommodate power boats. Private recreation facilities include three 18 hole golf courses, a driving range/miniature golf, and a private gun/sportsmen club. A large year-round recreation golf facility (Dome on the Range) to be located off Route 6 west of Swansea Mall Drive has been approved. by the Conservation Commission and the Planning Board. This facility is proposed to offer an indoor/outdoor driving range and a miniature golf course.

Trails

There are a number of public/private trails within Swansea. With the exception of the proposed bike trail, these walking trails exist on isolated parcels, such as Village Park, and are not part of a larger system. There is a desire to have more off road, crushed gravel paths which could be used for bikes, walking and jogging.

The Swansea bike trail which has been in planning since 1997 is now under construction. For the most part, it involves enlarging, where possible, the shoulder in order to accommodate a bicycle. This project will provide a central hub for a major east/west and north/south system of bike trails. Some 8.3 miles of road improvements (shoulder widening, stripping, and signage) are being undertaken within Swansea. Access is to be provided from Warren at Old Warren Road, along Maple Avenue, down Wood, Oak, Locust, and Plain Street to Milford Road, Bark Street, Chance Street, Main Street, Steven Street, Swansea Mall Road and into Somerset. This will enable the town bike path to link to the 14.5 mile East Bay trail which connects Bristol to Providence, Rhode Island. It will also permit connections to a planned bike path extending from Wrentham, through Attleboro and Rehoboth to Swansea and Fall River.

Breslin Path, an old road, traverses the Somerset Rod Sportsmen Club property.

Access to Water Resources

Public access to riverfront and beach areas is a major issue in town. In regards to beachfront, there are 13.5 miles of tidal shoreline in Swansea. Beach access is limited to the Town Beach and Sandy Beach which are both open for public swimming. An adjacent beach, Long Point, serves as a power boat landing. .

Approximately 100 miles border the four ponds and major riverfronts (Palmer, Cole's, Kickamuit, and Lees/Lewin) Only Milford Pond is publicly accessible for canoeing as there is a small town owned parcel off Milford Road which abuts the Pond. Lewin Pond is also accessible to the public. As this property is under the jurisdiction of the School Department, its use is not protected. Riverfront access is limited to three small parcels along the banks of the Cole's River and a parcel on Little Neck south of Fourth Street for access to the Lees River.

Mount Hope Bay and the outlet of Cole's River is a popular location for boating. The Cole's River and the Cedar Cove Boat clubs each have moorings and docks for about 25 private boats. Prior to the closure of the shellfish beds, there were a substantial number of commercial fishing boats docked in the cove. Private residences along the Neck also have their own docks and moorings. The "gut" located at the Town Beach is relatively shallow at low tide. Larger boats lack the clearance to access the neck of the Cole's River.

Due to the narrow channel and the limited depth of the Lees River south of Wilbur Avenue, there is a limited amount of boating in the Lees River basin. The Palmer River marshes continue to be a major location for crab fishing.

VI. Community Goals

PLANNING PROCESS AND PUBLIC PARTICIPATION

The Town of Swansea has been working since 1997 on a vision and action plan to address the protection of natural resources and manage growth. These workshops are listed below.

- Community Priority Workshop, October 1997, SRPEDD
- Opinion Survey June 1999, Center for Policy Analysis, U. Mass. at Dartmouth
- Neighborhood Planning Workshops June 2000
- Neighborhood Planning Workshops, March 2001
- Vision Workshop, Swansea Master Plan, February, 2002

Of most relevance to the identification of goals and objectives for the town's Open Space Plan is the Comprehensive Opinion Survey which was filled out by over 1,000 residents in May, 1999 as well as a small number of business owners. This document addressed five issues:

1. Character of the Town
2. Services
3. Priority Issues
4. Growth and Development
5. Recreation

The highlights of this survey are summarized below:

- *Character of the Town*
  While one-half of the respondents indicated that the town was rural, a higher percentage noted that Swansea was either a suburb of Fall River or to a lesser extent Providence. More than half of the respondents also indicated that Swansea was a town in transition.

  What attracted residents to Swansea reinforce these diverse attitudes. The most important qualities were " a good place to raise children" and "housing cost/availability". Character of the town, Coastal waters/beaches, and access to open space were also highly rated.

- *Services*
  The rating of town services from excellent to poor provided some clear attitudes about the resident's rating of open space and recreation areas. Unlike public safety services which were highly rated, the quality of the beaches, open space, and recreation facilities received the poorest rating of any town service. Recreation programs were also poorly rated. Subsequent to this survey, Town Beach was improved, i.e., the channel was dredged and new sand was deposited on the beach, with a $500,000 grant from the Army Corps.

- *Priority Issues*
  Residents were asked to identify as critical, important or minor/not important some 22 issues. Again it is interesting to note that environmental issues were viewed as a critical problem in the community. Following widespread concerns noted about the lack of sewer for septic areas (64%) and traffic congestion on Route 6 (48%), were the following issues ranked below from a high of 44% to 28 % of the respondents as the most critical concerns:
  - ✓ Loss of land to development
  - ✓ River/coastal pollution

- ✓ Need for zoning enforcement
- ✓ Groundwater pollution
- ✓ Need to protect historic areas
- ✓ Lack of sidewalks/bike paths

- *Growth, Development, Preservation*

Respondents were asked a series of questions relating to growth and development issues. Again the highest responses related to support for resource protection issues.

- ✓ 81.6% "Town should acquire open land to reduce overall development and provide more protected open space"

With respect to preservation, respondents were asked to indicate the importance of preserving a variety of resources. The responses prioritized the following resources:

- ✓ 81.8 % "Open spaces to meet our water and conservation needs"
- ✓ 58.5% "Farmlands"
- ✓ 52.6% "Buildings of historical or architectural interest"
- ✓ 51.6% "Places of historical value"
- ✓ 45.5% "Open space to meet our recreation needs"

Strategies to preserve open space were ranked as follows:

69 % Limit development (commercial and residential)
55 % Zoning for open space conservation
51% Property tax reduction programs for farm, forest, and recreation land
40% Public purchase of private land
38% Donation of Conservation Restrictions by private landowners

- *Recreation*

There appeared to be a significant minority of residents who were dissatisfied with both youth and adult recreation programs. In general the older adults were less concerned with this issue. Facilities that were rated a high priority are listed below in no particular order:

- ✓ Bike trails
- ✓ Children's playgrounds
- ✓ Conservation areas
- ✓ Hiking trails
- ✓ Family picnic areas
- ✓ Boat access
- ✓ Both large and small neighborhood parks

From this Opinion Survey, a discussion of issues with the members of the Conservation Commission and Planning Board, and the Vision Workshops, the following theme and priority goals have been identified.

VISION STATEMENT

Double the amount of protected open space, conserve Swansea's coastal, water, and agricultural resources by creating a greenbelt system of river, wetland and upland corridors, pedestrian pathways, parks and scenic open spaces that will link and buffer improved commercial development, farms, village and neighborhood areas.

GOALS:

1. Protect the town's sensitive natural resource areas
2. Preserve Swansea's coastal, semi-rural character
3. Reduce threats to, and improve water quality
4. Revitalize shellfishing and agricultural industries
5. Improve access to open space areas, river and coastal waterfronts; and
6. Maintain and Improve recreation resources.

VII. Analysis of Needs:

Growth management issues characterized the concerns of the Open Space Committee in undertaking the Master Plan. These concerns supplement a listing of issues noted below, many of which had been previously identified in the 1988 Swansea Open Space and Recreation Plan. Of critical concern today is to establish momentum in successfully addressing long-standing problems. Of greatest priority is the need to identify an open space vision and to adopt various tools to protect the resources, address community needs, and provide the management required to support this vision. This system of resource protection and recreation must be built on an understanding of the following needs and carried out as part of the Open Space and Town Master Planning process.

Resource Protection

- Water resources
- Environmentally Sensitive Areas
- Infrastructure
- Land Acquisition

Management

- Staff
- Maintenance
- Inter-departmental coordination
- Public support

Community Needs

- Access to coastal resources, rivers and ponds
- Recreation
- Agriculture and shellfishing
- Historic Preservation
- ADA (Americans with Disabilities Act)

RESOURCE PROTECTION

SUMMARY

Resource Protection Vision:
The Open Space Vision identifies three levels of protection; *Extremely Sensitive Areas* where no development should take place, *Very Sensitive Areas* where buffering from resource areas needs to be required, and *Sensitive Areas* which need to be managed.

Resource Protection Needs:
Four strategies are identified below:

1. Resource protection planning;
2. Regulatory reform, (primarily zoning), to protect resource areas;
3. Infrastructure planning including septic, water, stormwater; and
4. Land acquisition to protect critical resource areas.

There is a need to protect the Town's surface water, groundwater, wetland resources, estuaries and bays. Surface waters such as rivers and brooks are important because they provide drainage and flood protection for upland areas, act as habitats for fish and other wildlife, and serve as recreational lands for fishing and boating. They also provide scenic vistas and visual relief to the man-made environment. In addition, lakes and ponds channel and retain storm water, provide important scenic and recreational environments, and directly or indirectly serve as sources of municipal water. Estuaries and bays provide key habitat, flood control, and are important to the base of the marine food chain as well as for natural pollution mitigation. The town needs to continually assess the condition of these resources and adopt local measures to protect them.

The Resource Protection vision highlights the interdependence of water resources, wetlands, bays, and environmentally sensitive areas. The Open Space Plan focuses on an understanding of the overlapping of these resource areas and the need for a multi-pronged strategy to address their protection.

Extremely Sensitive Areas	The wetlands, surface water areas, i.e., streams, rivers, lakes, and ponds, FEMA Velocity Hazard areas (areas affected by wave action), Wellhead Protection Areas, and Priority Habitats of Rare Wildlife. The Town should seek to prevent development or encroachment within these resource areas, and the quality of their natural environments should be protected and restored.
Very Sensitive Areas	Includes 300 foot buffers around ponds, streams, and rivers, FEMA 100 year flood Zones, Water Resource Protection zones, and BioMap Core Areas. Growth management and development restrictions should be employed to substantially protect these resource areas.
Sensitive Areas	The mapped aquifers which may or may not contribute to a current public water supply as well as BioMap Supporting Natural Landscapes, potential vernal pools, and agricultural lands. Preservation of all sensitive and natural resource areas should be encouraged through public awareness and implementation of growth management strategies to allow flexible development practices with Town oversight.

Wetlands and Surface Waters

The Wetlands Protection Act (M.G.L. Chapter 31, Section 40) charges the Conservation Commission with the task of defining and protecting wetlands from damaging development or alteration. This is in recognition of their fundamental ecological importance in the natural system as well as their role in preventing flooding, purifying water, and providing breeding grounds for a great variety of wildlife.

Apart from the protection offered by the Wetlands Protection Act, Swansea has enacted a Wetland Protection By-law, reinforcing the provisions of the Wetlands Protection Act and the Rivers Protection Act and providing the Conservation Commission with additional tools for the enforcement of wetland regulations which limit development within these resource areas. Included in the definition of resource areas are vernal pools, ponds, habitat areas, and a wetland scenic view shed. The Conservation Commission has a 'no build" buffer zone area of 25 feet which it enforces as a set-back from most resource areas. Regulatory protection of wetlands and waterways is the key to avoiding further damage to these valuable resource areas including the habitats and aquifers of which they are a part.

Water quality remains a serious problem in all of the coastal areas in Swansea, including Mount Hope Bay, and the Cole's, Lees, and Palmer Rivers. Shellfishing has been completely halted due to unacceptable levels of fecal coliform bacteria. Fish kills and noxious odors have been reported during the summer months. A recent water quality survey issued by the Department of Environmental Quality Engineering (DEQ) cites failing septic systems as the primary cause of such water quality problems in both rivers[4]. Other major sources of contamination include runoff from cropland, pasture, and dairy farms, as well as fecal matter from domestic animals, wildlife, and waterfowl.

[4] Mass. Department of Environmental Quality Engineering: "Summary of Water Quality - 1988", pp A-111-101-104. 14

The Narragansett/Mount Hope Bay Watershed Team has identified restoration of the Palmer River as a highest priority issue impacting water resources in the region. The Palmer River is regionally significant as a habitat and shellfish resource, supporting hard and soft-shell clams, blue crab, and oyster fisheries. It was listed in Rhode Island's 1998 List of Impaired Waters for not supporting its designated uses: shellfish harvesting for direct human consumption, recreational activities, and fish and wildlife habitat. The Watershed Team's current Workplan (FY 2003) calls for water quality monitoring along the Palmer River and specifically the Barneyville Saltmarsh in Swansea. In order for the goal of 14 fc/100 ml to be reached, fecal coliform concentrations at the Massachusetts/Rhode Island border must be reduced by 98%. The upper reaches of the river (in Rehoboth and Swansea) and its tributaries are considered to be the predominant sources of fecal coliform bacteria contributing to high concentrations of bacteria downstream.

Narragansett Bay

Narragansett Bay covers approximately 147 square miles extending throughout eastern Rhode Island. The Narragansett Bay watershed includes an area of 1,657 square miles, including 100 cities and towns in Rhode Island and Massachusetts from which waters flow directly into Narragansett Bay. In addition, the Blackstone and Taunton Rivers, and many smaller rivers, empty into Narragansett Bay.

Substantial improvements in water quality throughout the Bay have been achieved since 1970, mainly due to reductions in point source pollution, especially wastewater treatment facilities. However increases in development throughout the watershed over that time has exacerbated the problem of non-point source pollution from septic systems, road run-off and lawn fertilizers. Many inlets and rivers that run into the Bay, especially Mount Hope Bay, are still severely impacted.

Major Forms of Contamination

Pathogens - includes bacteria and viral agents. Sources are fecal matter and untreated wastewater that run directly into a water resource. Results in closure of shellfishing and recreational areas, as well as endangering drinking water supply.

Nutrients - includes nitrogen and phosphorus. Sources are fecal matter, post-secondary treatment wastewater, fertilizers, and cleaning agents, which enter water resources both via runoff and infiltration through soils. Even when functioning properly, most onsite septic systems do not remove nutrients from wastewater. They continue to contribute to algae and plant overgrowth, leading to oxygen-depletion, which kills aquatic life, and eutrophication, or the gradual filling of water resources with organic matter. Fish kills and noxious odors may be observed. Also implicated in the loss of eelgrass habitat and other sensitive species, especially shellfish and flounder.

Organic Waste - primarily human waste from untreated sewage disposal. Decomposition causes oxygen depletion and related impact on aquatic life, and noxious odors.

Metals - include lead, silver, copper, and other metals. Sources are industrial waste, runoff from pavement, and auto exhaust. Large concentrations can be toxic to plants and animals and can represent a health threat to people eating them.

One of the major causes of water quality contamination impacting drinking water, surface water, and the estuaries and shellfish beds is the impact of **stormwater**. The Federal Government is requiring states and municipalities to update their stormwater regulations starting in FY 2003. In order to assist the Town of Swansea meet this deadline, the town has applied for and received a Section 604b Stormwater Management Plan grant. Stormwater run-off issues have to be identified, surveys undertaken of existing conditions, and a plan developed which will correct illegal drains and connections. The Planning Board, Conservation Commission, and Board of Health, furthermore, need to adopt a similar model by-law to ensure a consistent regulatory strategy.

The Conservation Commission has jurisdiction over 100/200 feet around perennial streams, 100' around ponds. Wetland Scenic Viewsheds, defined as wetlands which are "expansive, a mix of

colors and textures created by interactions among the water, sand and different types of vegetation" which offer visual linkage for the public to "views of ponds, beaches, harbors and the ocean, are also protected"[5] The Commission has a no build buffer requirement of 25 feet from the resource areas. The State mapping of wetland areas needs to be updated. No vernal pools have been positively identified or certified through the State, despite recent NHESP mapping which shows a substantial number of sites in Swansea where vernal pools are likely to be found.

The town's floodplain regulations are more strict than the minimum definition of "lands subject to flooding". On the other hand they do not provide sufficient performance standards for evaluating impacts and requiring mitigation. These regulations should be up-dated.

Priority Habitats and Ecosystems

Two Barrier Beaches and four Priority Sites of Rare Species Habitats (PSRH) have been identified in the Town of Swansea. (See Map 4-9 for the location of these areas.) The designation of Barrier Beaches is managed by the Massachusetts Coastal Zone Management Office. The Massachusetts Division of Fisheries and Wildlife is responsible for managing Priority Habitat areas. Unless State action is involved, the designations offer limited protection. Therefore, Town bylaws and staff need to ensure that the plant and animal habitats are adequately protected from harmful activities.

Other important habitats and ecosystems present in Swansea are not protected by any town, state or federal regulations. These include BioMap Core Habitat areas and Supporting Natural Landscapes. Some limited state protection is given to vernal pools under the Wetlands Protection Act and other state regulations *if* they are certified by NHESP, or *if* citizens can provide sufficient evidence of a vernal pool's existence. Although a great number of potential vernal pool locations have been identified in the town, none have been certified as of this time. To certify a vernal pool, the Town or any private individuals or citizen's groups can submit an application, providing evidence of specific biological conditions at the site.

Groundwater

Protecting aquifers from contamination is critical to securing the quality of the town's groundwater, given that town's residents rely entirely on Town water for drinking and other household uses. Population growth is expected to place additional demand on the groundwater resources. One way to protect water resources is to restrict the types of land use on the land overlying the aquifers. The Swansea Water District owns and maintains conservation land around all of its wells, exceeding DEP's requirement for a 400 foot buffer zone.

The Town, meeting DEP requirements, has a protective zone that restrict uses in the recharge areas for aquifers that supply public wells. The Town recently enlarged the boundary of the Aquifer Protection District and revised the by-law with respect to the granting of Special Permits. Further improvements can be made. For example, limitations on clearing, grading, institution of best management practices for lawn care, etc. could be instituted.

The issue of wastewater treatment must be given high priority in the Town of Swansea. The provision of water and the treatment of wastewater are not separate issues; they are simply opposite ends of the same process. Swansea relies almost entirely upon on-site septic tank disposal of its waste water. New development, resulting in a combination

Areas which provide the best soil conditions for septic system drainage frequently are also important for groundwater recharge, and are very sensitive to contamination.

[5] Rules and Regulations Under the Swansea Wetlands Protection Bylaw, p. 15

of increasing water demand and loss of open space, means that the Town can expect the issue to steadily grow more urgent as time passes. The solutions to this problem will require a mix of regulatory reform, infrastructure improvements, and land acquisition.

DEP requires that water quality be protected in aquifers that do not currently supply public water but might provide medium or high yield water supply in the future.

Adopting the Resource Protection Vision

The issues around water quality contamination and resource protection must be addressed by a broad range of strategies, all of which the town has avoided for at least 40 years (since the 1964 Master Plan which identified the need for the Planning Board to provide leadership on this issue). At this time, it appears that progress is needed on four broad levels. First, more information must be developed on priority problems areas. For example, a systematic analysis of Board of Health records currently underway for the Smokerise residential area by students from Brown University must be expanded to other areas of town in order to understand and develop a range of solutions for septic system failures. A Comprehensive Water Resources Management Study to assess alternative wastewater strategies would address this concern. Issues of stormwater run-off must likewise be studied and an appropriate plan of action developed.

Second, new regulatory reforms must be undertaken. A number have been previously mentioned concerning stormwater, aquifer and resource protection. In addition, the town might want to consider adopting a new Resource Protection Zoning District that would incorporate the Very Sensitive and Sensitive Resource Areas. Site Plan review and buffers would be adopted to ensure that water quality is protected, public access provided, and resource and habitat areas adequately protected.

Third, infrastructure must be developed to protect various resource areas. Decentralized septic systems need to be considered to correct problems in various areas of town. Likewise, stormwater infrastructure improvements will need to be adopted in certain problem areas. This infrastructure must be carried out at the same town that the town is seeking to locate additional sources of water and address long term solutions to septic treatment for the town.

Fourth, the town will need to acquire critical resource areas. Prior actions such as the purchase of the development rights of agricultural land, obtaining gifts through the local Land Trust, and land purchases by the Water Department should be supplemented by the acquisition of additional land and development rights. The support of the town and other non-profit organizations interested in conservation will be needed.

A comparison of the amount of protected land in Swansea versus neighboring communities highlights the fact that the Town lags behind its more urban neighbors in protecting open land. While the rural communities have counted on no growth and agriculture to protect their open land, these assumptions no longer hold.

Table 4-8, Comparison of Protected Land in Neighboring Towns

Town	% Land Area Permanently Protected
Somerset	3.7
Fall River	30.0
North Attleboro	10.2
Dighton	.2
Rehoboth	2.8
Seekonk	6.3
Swansea	***5.7***
Average	**8.4%**

COMMUNITY NEEDS

SUMMARY

Community Open Space Vision
Map ---represents the elements which underlay the Community Vision: the availability of recreation facilities, preservation of historic and scenic areas, access to coastal resources and river frontage, the protection of agriculture and shellfishing.

Community Needs
Five barriers must be addressed in order to achieve this community vision:

1. Provision of public access and recreation facilities
2. Protection of rural character and historic resources
3. Protection of agriculture and shellfishing
4. Address ADA deficiencies
5. Increase Public awareness

Recreation activities are one of the most valued public activities the citizens of Swansea enjoy. Team sports, especially baseball, children's playgrounds, biking, fishing, swimming, bathing, boating, walking, picnicking, are some of the most desired activities of local residents. Another major component of this open space vision is the preservation of scenic and historic areas. Access to coastal resources and river frontage contributes to the preservation of community character as well as the provision of recreational activities such as hiking, biking, and picnicking. Likewise, the protection of agriculture and shellfishing maintains a traditional way of life while at the same time protecting the town's scenic character.

In order to support the community open space vision, a number of barriers must be addressed. Five of these needs are described below.

Community Recreation, Open Space, and Public Access Needs
Establishing and maintaining adequate open space within a town serves two primary functions: conservation of natural resources and the provision of recreational facilities and activities for residents. Some ways to consider the existing and projected need for open space acreage for these purposes include

1. An analysis of land use and population growth, i.e., build-out and its impact on recreation needs
2. An assessment of recreation facility availability in terms of service area
3. An assessment of other recreation priorities which the community values; in this case, public access, vest pocket parks, and recreation programs for the elderly.

Projected Build-out and Recreation Needs
A key factor impacting the need for open space, both conservation and recreation, is derived from an analysis of the projected build-out. As indicated in Section III and in the graphs below, the projected build-out will double the population, and more than double the amount of commercial and residential land uses. Under this scenario the ratio of open space to built area will fall from 2:1 (9,934 to 4,406 acres) to 1:5 (2,524 to 11,816 acres). **Meanwhile, approximately 7,400 acres of open land that is currently unprotected open space will convert to urbanized use unless steps are taken to preserve some of this land area as open space.**

Table 4-9, Land Use/Build-out

	Existing	% of Town Area	Potential Increase	Total at Full Buildout	% of Town Area
Residential	3,381 acres	23.6	6,675 acres	10,056 acres	70.1
Commercial	360	2.5	736	1,096	7.6
Unprotected Open Space	9,150	63.8	(7,410)	**1,744**	12.2
Protected Open Space	**782**	5.5	???	???	???

In addition to land conservation, the Town should also provide its current and future population with adequate recreational sites and facilities. This includes setting aside park land for passive recreational activities as well as for active recreational facilities. While existing active recreation facilities, as discussed below, generally meet current standards for team sports, there is a substantial need to expand public access, now being developed in a regional bike trail, to the provision of public access to coastal areas and river frontages as well as to set aside land to meet the recreation and open space needs of a growing population.

Guidelines have been formulated by the National Recreation and Parks Association (NPRA) which establish an approximate number of recreational facilities to provide adequate recreation opportunities for the town's residents. Table 4-10 compares these standards with the Town's current facilities[6]. Although the national standards do not reveal the need for conservation lands or other passive recreation resources, they do point to the need for additional facilities. Currently, based upon NPRA standards, close to home playgrounds and playfields and other active recreation facilities such as tennis courts are needed. By full build-out, at the projected population of 31,370 residents in contrast to 15,900 current residents, a doubling of additional playfields and playgrounds will be needed to serve the different age groups.

Members of the Open Space Committee have pointed out that there are two deficiencies which need to be addressed; the provision of vest pocket parks on a neighborhood basis and recreation programs to serve the elderly. There are a number of small, tax foreclosed parcels throughout the town. Those well located sites which might contain sufficient upland areas to provide space for a sitting area or vest pocket park should be transferred to the care and custody of the Parks Commission. In addition, if the Recreation Commission is able to obtain staff support and funding, they could easily organize programs which would benefit the elderly.

[6] National Recreation and Park Association. *Recreation, Park and Open Space Standards and Guidelines.* National Recreation and Park Association, Alexandria, VA: 1983.

Table 4-10, Recreation Facilities in Swansea and National Outdoor Recreation Standards

Activity	National Standard	Present Swansea Capacity	Additional facilities needed for Current Pop.	Additional facilities needed for full build-out
Tennis	1 court per 2,000 residents	4 courts	4 courts	4+ 7 courts
Golf Course	1 per 50,000 residents	3	0	0
Driving Range	1 per 50,000 residents	1	0	0
Playfield	1 acre/800 residents (between the ages of 13-65) within a 1/2 mile radius (11,093 yr 2000)	21 playfields @ 50 acres		21 playfields @ 50 acres
Playground	1-2 acres/1,000 residents (under age 13) (2,289 children yr 2000)	4	0	2-4 acres
Swimming	1 private & 1 public pool for every 7,500 residents		2	4
Fishing	One lake with 3 acres per 20,000 residents within a one hour drive	1	0	0
Ice-skating	1 public and 1 private facility/15,000 residents	1	1	1
Total Park/Rec. Area Standard: 6.25 to 10.5 acres of developed "close-to-home" open space per 1,000 pop.				
		Existing	**Standard**	**Deficit**
	Current Population: 15,901	100 acres*	100-168 acres	**0-68 acres**
	Full Build-out Population: 31,370 residents			**93-225 acres**

* Note: While town owns approximately 200 acres of recreation related site, approximately 100 is allocated to this use. The balance is either wetlands or school facilities.

According to NPRA, a local park system should be composed of a "core" system of park lands with a total of 6.25 to 10.5 acres of developed "close-to-home" open space per 1,000 population. The local park system should include mini-parks, neighborhood parks and larger community parks. Based on this standard, Swansea should have between 100 and 168 acres of developed open space set aside for parks and recreation areas to meet current needs. Swansea currently has about 100 acres of useable, publicly-owned recreation land, plus over 400 acres of privately-owned recreation land. At full build-out the town should have, assuming these standards, approximately 93-225 additional acres.

Table 4-11, NRPA standards for Parklands

Park Type	Land Needed	Service Area
Mini-Park (1 acre or less)	0.25-0.5 acres/1,000 residents	Less than a 1/4 mile radius
Neighborhood park (+15 acres)	1.0-2.0 acres/1,000 residents	1/4 to 1/2 mile radius
Community park (+25 acres)	5.0-8.0 acres/1,000 residents	1-2 mile radius
Regional Metropolitan Park (+200 acres)	5.0-10.0 acres/1,000 residents	1 hour driving time

Facilities

Most of the public recreation sites in the town include playgrounds and ballfields connected with schools, and are concentrated in the southern and central areas of the town. While school sites might be classified as neighborhood parks, here is a notable absence of what would be considered mini-parks. There is also an absence of neighborhood parks in various areas of town experiencing growth including Bark Street, Two Mile Purchase, Locust Street, and Market Street. The northern and western areas of town, which had traditionally been more rural in character, lack facilities.

Due to the traffic and physical impacts of Route 6, these outlying areas are less accessible to the center of town.

Analysis of town-wide acreage does not address where there may be areas in the community that lack access to recreation opportunity at the neighborhood level. Equitable distribution of recreational opportunity is as important a measure of need as total land area devoted to recreation, especially in communities with limited or no public transportation systems.

Each type of recreational area referred to in the table above serves a specific user population and may be assigned a geographic service area. Based upon the facility need standards summarized above Swansea should have at a minimum approximately 100 acres of parkland allocated between mini parks, (under one acre in size and less than 1/4 mile radius), neighborhood parks (up to 15 acres, 1/4 - 1/3 mile radius), and community parks of up to a 2 mile radius.

Table 4-12 examines the availability of recreational opportunities at the precinct level. Precinct populations are, as might be expected, very similar. However, the precincts vary a great deal in size, density and available recreational facilities. Map 4-16 locates the precincts.

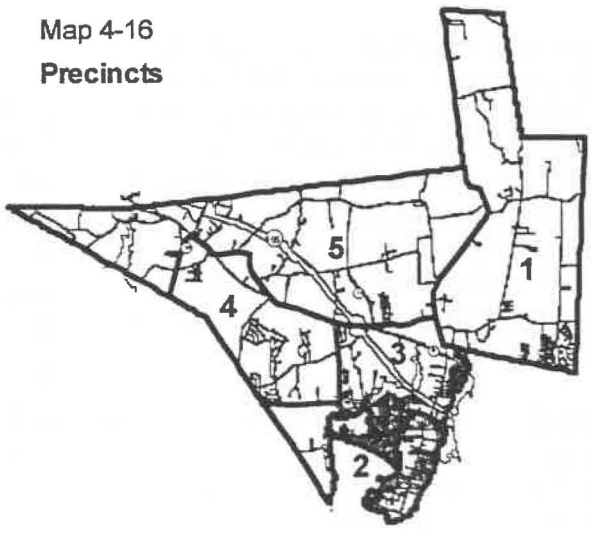
Table 4-12, Population and Recreation Land Area by Precinct.

Precinct	Population	Recreation Land Area (total acres)		Net useable Acres/1000 Persons	National Standards (6.25 acres/1000) Total Acres
		Gross	Net*		
1	3,164	17.0	14.0	5	20
2	3,195	16.5	16.5	5	20
3	3,055	68.2	54.0	18	20
4	3,200	1.1	1.1	0.33	20
5	3,287	98.2	15.0	5	20
Swansea	**15,901**	**201.0**	***100.6**	**6.2**	**100**

Source: National Recreation and Parks Association, Office of the Town Clerk.
*Note: Estimate of useable acreage devoted to recreation purposes

As noted in the above table, the distribution of facilities throughout the community is uneven. Town-wide, Swansea has the minimal amount of acreage considered acceptable for a community of its population.. However, the inequities created by the uneven distribution of recreation opportunities must be addressed. Facilities are concentrated in the center of town, Memorial Park and the Luther School. At the other extreme, Precinct 4 which is located south of Route 6 between Maple Avenue and Market Street, has the least amount of public open space; Parker field off Smokerise Circle is the only recreation facility. The other precincts have about the same amount of recreation space/1000 residents.

Map 4-16
Precincts



SCORP (Massachusetts Statewide Comprehensive Outdoor Recreation Plan) Assessment of Conservation and Recreation Needs. This state-wide regional needs survey carried out for the period 1988-1992 identified a number of deficiencies in Southeastern Massachusetts. Although there were not large deficiencies, the report noted the importance of "the acquisition, protection, and expansion of recreation opportunities was significantly higher than most of the other regions". Specific areas of need which were noted included development and expansion of recreation facilities:

- Maintenance of recreation facilities
- Acquisition and protection of water supply area
- Acquisition and protection of recreation areas
- Acquisition and protection of conservation areas

Regional Open Space and Recreation Plan 2001-2005. The Municipalities of the Ten Mile River and the Narragansett/Mt. Hope Bay Watersheds prepared a regional plan under the direction of Andrea Langhauser, Executive Office of Environmental Affairs. This plan provided background information on the regional setting and an environmental inventory of important resources, identified regional open space goals, analyzed needs and created a regional action agenda. As indicated in the Action Plan, page54, local priorities relate to the proposed framework for a regional open space plan.

Public Access to Riverfront and Coastal Areas

The Open Space Committee identified the issue of public access as a priority concern which should be addressed. Public access for walking and more active use involves a system of trails as well as the location of specific facilities for boat access as well as picnicking. A review of the existing facilities indicates, with the exception of a bike trail which is currently being implemented, severe limitations in the provision of public access to riverfront and coastal areas. The need for a system of trails as well as improved public access to water and scenic areas should be addressed in future land use and open space planning.

Public open space with access to a river is limited to four "park"sites, the Junior High which borders on the Lewin Brook, Milford Rd "park" which borders Milford Pond, Sears Farm, the Jarabek/Santos Land Trust property which borders on the Cole's River and five sites restricted to boat landing use.

In the case of the four "park" locations, public access has severe limitations. At the Junior High, public access is not protected as it is under the control of the School Department. At Sears Farm, the site is not currently protected and access has not been developed in a formal way. And the Jarabek/Santos Land Trust property, while protected, lacks public investment in trail improvements.

Public Access to Water Resources

Rivers:	**Access**
Palmer	None
Kickamuit	From Smokerise
Cole's	Sears Farm, Land Trust
Lewin/Lees	Junior High (School Dept)
Cole's	Birchwood Drive, Pearse Rd, Circuit Drive, Seaview Ave, Ocean View Avenue
Lewin Brook	Front Street
Ponds:	Access
Lewin	Canoe access
Milford	Canoe & pedestrian
Warren Reservoir	None
Coastal Resources:	**Access**
The Bluffs	Beach
Sandy Beach	Beach
Long Point	Power Boat access

Four of the five public boat landing sites are located at various points along the neck and bay of the Cole's River and the Lewin Brook near the junction with the Lees River. The parcels average about 13,000 square feet, providing sufficient room for canoe access. There are no picnic facilities at these locations. Ocean View Drive also provides access to the Cole's River.

A number of private parcels have river frontage which is restricted to use by patrons of these facilities. These facilities include the Wampanag and Swansea golf courses which border the Palmer River and the Family Fun Center on the Cole's River.

Public access to ponds is limited and not protected. Public access to the Lewin Pond is limited to the School Department property at the Case Junior High. Access to Milford Pond is available from a small town owned parcel next to Milford Road. Parking is limited and this property is not protected open space.

Beach access is limited to two adjacent parcels, the Town Beach and Sandy Beach. Parking for these location is limited to 80 cars adjacent to the Council on Aging facility. Sandy Beach, which is also owned by the Town, has not been developed as a beach site.

The provision of a town-wide system of walking and bike trails would be a major recreation asset for town residents. The Swansea bike route is a case in point. This route, built with Federal funds, will facilitate recreation and commuter bicycle access around town as well as connecting to Providence, RI. The shoulder that has been developed in certain locations, can also be used by joggers.

Walking and Bike Trails	
Swansea Bike Route	In construction
Swansea Bike Route Extension to Somerset/Fall River	In planning (Somerset/FR)
Village Park/Trust land	Walking paths
Sears Farm	Potential paths
Somerset Sportsman Club	Potential paths
Palmer and Cole's River Greenbelt Corridors	Potential paths

Village Park and the Trust land have extensive walking trails for recreation use. The disadvantage of these trails is that they do no connect to the larger adjacent system of habitat and greenbelt trails, which has been identified in the Vision Plan. The Palmer and Cole's River shore lines provide opportunities to establish such a continuous trail.

Linkages: The acquisition of open space is an effective means of preserving natural resources. Linkages between open space parcels are important to provide a sufficient area for wildlife habitats, as well as access for the public. The Town should examine the possibility of acquiring/maintaining wildlife corridors and/or buffers along lakes, ponds, streams, or wetlands. An ecologist could perform a wildlife analysis to determine which wildlife corridors would maximize the migration of wildlife.

Types of Conservation Buffers

Filterstrips are strips of grass or other vegetation used to intercept or trap sediments, organics, pesticides and other potential pollutants before they reach a body of water.

Riparian forest buffers are strips of streamside vegetation consisting of trees, shrubs and grasses that can intercept contaminants from both surface water and groundwater before they reach a stream.

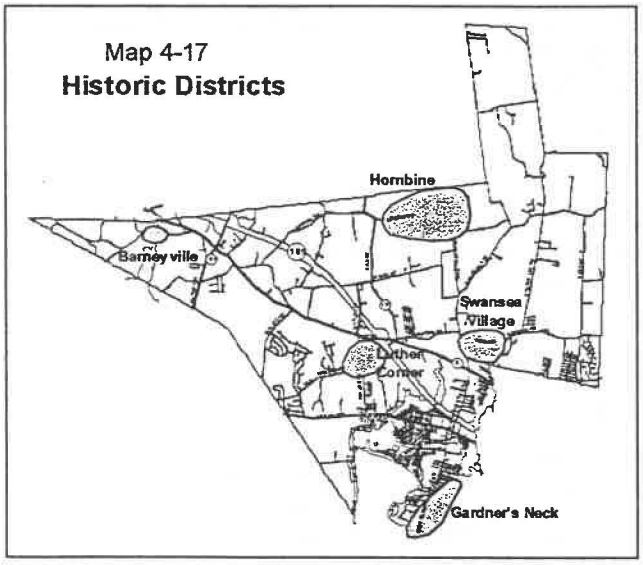
Buffers are a good way to protect surface water, groundwater, and habitats for wildlife and vegetation from contaminated nonpoint source water. They can also act as valuable wildlife habitats, providing wildlife with shelter, food sources and nesting sites, thus increasing species diversity. Buffer strips can be established along almost any lake, pond, or wetland. Conservation buffers are strips of land permanently maintained in vegetation such as grasses, trees or shrubs, that act as a filter to help landowners protect and improve their land and water. There are several

types of buffers. The United States Department of Agriculture can provide assistance on how to implement conservation buffers. [7].

Protection of Rural Character and Historic Resources

In the mid 1980's the town retained the services of a historic preservationist. Research was undertaken town-wide on evaluating 158 historic properties and six districts. On the basis of this work, five historic districts received national recognition as being worthy of preservation in addition to 24 individual properties some of which are located outside the districts. These designations provide a limited form of protection. Federal or State actions will require environmental review of a property which is listed in the National Register of Historic Places if the action impacts any of the designated properties under their purview. To advance the protection of these districts and properties, the Swansea Historical Commission needs the active support of other Town agencies and Boards. The Historical Commission should be assisting the Building Inspector on a review of demolition permits for older structures. Design guidelines for the protection of these districts might also be prepared and the Town might also consider amending the zoning by-laws to reflect this change and to appoint Commissioners to administer and monitor the Historic District regulations.

Historic Districts
Swansea Village
Hortonville/Hornbine
Barneyville
Luther Corner
Gardner's Neck



Village Park is a sight of archeological significance due to its importance of being one of the earliest settlements in the area. Abraham's Rock is located within a unique conglomeration of pudding stone within the Park, which contains pre-Colonial hieroglyphic writings of Algonquian proverbs and script. Village Park is now under the jurisdiction of the Conservation Commission, which will protect Abraham's Rock and Lion's Head Rock (both within Village Park), because of their geological and archeological significance.

Protection of Agriculture and Shellfishing

Two industries which account for Swansea's early history and which continue to contribute to the town's rural character, agriculture, and shellfishing, have the chance of being protected through the efforts of the Open Space Committee. Issues which need to be addressed in this plan include the uncontrolled development of sub-divisions and the failure to address the impacts of water pollution.

Where would Swansea residents be during the summer if they could not get their fresh lettuce, corn, and tomatoes at John Mello's stand? The continuation of agricultural activities will require that the town address a diverse variety of issues from protecting prime soils to assisting farmers with the sale of development rights, to the buffering of potentially harmful land uses.

[7] For assistance from the United States Department of Agriculture (USDA) in deciding which type of buffer is appropriate or any other questions, contact the local USDA Service Center or call (413) 253-4351.

There are currently some 1,352 acres of farmland and woodland (9.4% of the town land area) which receives an agricultural use exemption and therefore a break in their local taxes. While this land is not protected, the town does get the first right of refusal if farmers intend to sell their property for development.

The soil map identified a number of areas in town which are still relatively undeveloped and which contain Prime and Important agricultural soils. These areas include Two Mile Purchase, Bark Street and Sharps Lot Road, Locust Street, Wood Street and the western point of the town. Efforts must be made to work with farmers in these areas.

The Town has successfully protected agricultural land in the past by assisting farmers apply for a state program which purchases the development rights through the Agricultural Preservation Restriction (APR) and Conservation Restriction (CR) programs. The drawbacks to these programs are that they are so procedurally time-consuming and that available funds to implement them are very limited. In spite of these limitations, the town is currently working with a local farmer to submit an application for 190 acres in Swansea and an additional 30 acres in Rehoboth. This farm is used to grow silage and cattle. It is located at the confluence of several barnches of the Cole's River in an important resource area proposed as part of the Greenbelt.

Local land trusts such as the Swansea Land Trust and the Barrington Land Trust may take an active role in acquiring agricultural land or helping farmers find public and private resources to protect land from development, however these groups do not currently have the resources to undertake such activities.

Where there are agricultural lands in use, every effort should be made to ensure that best management practices are employed. Pesticides and fertilizers are often used on agricultural lands, which during a precipitation event, run off the land and contaminate the underlying aquifers. Efforts should be made to educate the agricultural workers in Swansea regarding less polluting options, especially those who operate lands above a drinking water aquifer.

As with agriculture, the town has a unique environment for shellfish farming. Shellfishing in the Lees River was recently downgraded from Restricted to Prohibited due to fecal choliform pollution. Shellfishing in the Palmer River has been prohibited for some 16 years for the same reason. Strides are now being undertaken in both Massachusetts and Rhode Island to clean up the Palmer, Cole's and Lees rivers. While point source pollution, i.e., from a specific location such as a factory sewer outlet, were once the major sources of pollution, efforts to improve water quality are now focused on non-point sources. Stormwater runoff, agriculture and road runoff, septic systems, and fecal matter from pets and waterfowl are now the issues which need to be addressed[8] The Town of Swansea must join in these efforts to clean up these waterways so that these shellfish beds can be re-opened.

Address ADA Deficiencies

According to the 1980 US Census figures, the special needs population for Swansea is in the vicinity of 350 people. Recreation programs, both within and without the Town, are coordinated by the School Department and the Council on Aging. Both organizations report that facilities and transportation are available for such programs. They also report that Swansea's recreational facilities are, in general, adequately accessible to the handicapped.

[8] Providence Journal, April 24, 2002, DEM Officials Offer Plan for a Cleaner Palmer River

The Town of Swansea contains more than 503 acres of conservation and recreation land located in approximately 28 public sites. In general Swansea's open space and recreation sites are well maintained, handicapped accessible and in good condition. Equipment, where it exists, is for the most part in good condition. Moreover, many sites are fenced or otherwise insulated from vehicular intrusion and in most cases adjacent land uses are compatible. As in many active communities, Swansea's public recreation facilities are in great demand and are subjected to intensive use.

Increase Public Awareness

Why have Swansea residents not made more progress in preserving the town's open spaces and addressing the problems of wastewater pollution? These were two key priorities identified in the Opinion Survey carried out in 1999. In spite of broad support for these concerns, an action plan has not been developed which captures these interests. In order to build needed public support, it is evident that the action plan being developed as part of the Open Space Plan must include a major focus directed at public education. Local citizens, boards, and community groups must commit to building interest and support for this plan.

MANAGEMENT NEEDS

SUMMARY

Retaining the town's unique rural qualities and recreation assets will require the continued dedication of a hard working staff and a base of volunteers as well as additional funding to address a range of difficult operational and capital investment problems which have long been neglected. Some of the priority management needs are highlighted below.

Vision

Improved coordination between departments as well as citizens is essential to build support for the Open Space plan

Needs

The following barriers will need to be addressed:

1. Improved coordination between Parks and Recreation Commissions
2. Expansion of Water Department to include Wastewater planning
3. Improved coordination between departments on water resource protection issues including stormwater management, Board of Health enforcement, Zoning/site plan review

Improved Coordination Between Park and Recreation Commissions

The lack of funding and coordination between the Parks and Recreation Commissions has long been apparent. Limitations in funding, staffing, and facilities and on over-reliance on volunteers have reduced the town's capacity to provide programs and facilities to meet the needs of the youth and the elderly.

The Recreation Commission is responsible for running a variety of programs. Because of the town's fiscal condition, their budget has been reduced to $3,000. All programs are supposed to be self-supporting. The only program the Recreation Commission currently operates is a Judo class

which operates out of St Michael's Church. The Recreation Commission was recently voted by Town Meeting the care and custody of the Mason Barney School. This facility must be fixed up in order to provide space for an After School program as well as a variety of programs for the youth to replace the space which the department had in the Bluffs municipal facility. The State and Federal government have limited funding for the renovation of recreation space in a former school facility.

The Superintendent for Parks is the only staff person in either department and now has to spend most of his time on maintenance issues; primarily the Covel Estate. Other outlining fields including Smokerise (Parker field), Mountfair Circle, and Front Street are not being maintained. The department relies solely on the support of volunteers to manage the town sports programs. The Parks Commission has a budget of $68,000 including salaries, expenses and equipment.

Table 4-13, Comparison of Parks and Recreation in Neighboring Communities

Town		Parks		Recreation	
	Population	Budget	Personnel	Budget	Personnel
Dighton	6,175	$13,500	0	0	0
North Attleboro	27,143	$500,000	5+ (Park and Rec Commission)	Revolving funds	(Park and Rec)
Rehoboth	10,172	$800	0	0	0
Seekonk	13,425	$14,5 00	(DPW)	$8,000	Part time
Somerset	18,234	0	(Highway Dept)	$ 71,000	2
Swansea	*15,901*	*$68,000 staff, expenses, equipment*	1	*Revolving funds $3,000*	*0*

The majority of the towns around Swansea operate their parks and recreation systems in a similar fashion as Swansea. Most of the towns have an appointed Park Commission that works on a volunteer basis. A department budget is used for staff and in some cases maintaining open spaces, including baseball or soccer fields, playgrounds, and open fields. The fields are usually maintained by a variety of departments including Parks, the DPW and/or the School Department. A separate Recreation Commission staffed mostly by volunteers, manages the programs which are usually funded out of a revolving fund from fees.

The town of Rehoboth has an appointed Park Commission of five people, who meet once a month to work on raising funds for the parks and recreation facilities in the town. They are working with local youth to create a skate park, to be funded by individual donations and grants. They recognize the need for more open space in the town, but the limited budget constrains them. The town received the Heritage Landscape Grant from the state of Massachusetts to upkeep their parks. An additional source of income comes from the Redway Plain field, which the town rents out to people in the town to grow crops on a rotating basis.

Some of the ideas that Rohoboth has implemented, such as applying for grants and using some open space to create revenues (the crop program at Redway Plain), are possible ways to increase the budget and help promote Swansea's parks and recreation systems. Assuming there was more funding for staff, the town might want to consider merging the two commissions such as exists in North Attleboro. In any case, the town might want to consider consolidating field and cemetery maintenance.

Expansion of Water Department to Include Wastewater Planning

The town's Sewer Study Committee was able to obtain Town Meeting funding of a Sewer Facility Planning Study. This report, Wastewater Facilities Plan Update, prepared by Earth Tech, Inc in October, 2000 recommended that the town undertake a more comprehensive study of the town's wastewater needs to address the 50% failure rate of residential septic systems. Fearing the cost of this initiative, Town Meeting turned down funding for the study. It is essential that this study, in a modified format as suggested below, proceed. A strategy now being considered is for the Water Department to assume this responsibility and fund this effort possibly in conjunction with the Town.

Recognizing that problems of induced growth might occur if a "central" wastewater treatment plant were built, it is proposed here that smaller, more location specific plants be studied to serve the areas already in critical need. Alternative on-sight wastewater treatment systems can overcome excessive density and soil limitations in areas experiencing septic system failures. The URI Cooperative Extension in Rhode Island is currently applying this approach to retrofit areas such as Block Island. Such a program could be combined with a town-wide septic management program to ensure that septic systems throughout the town are maintained and replaced as necessary. Tying-in to neighboring Town systems is another possibility that should be considered for areas where it is practical. It is also suggested that the residential zoning density be modified so that minimum lot sizes are varied in response to the site-specific ability of the soils to effectively absorb septic discharge. In the meantime, the Conservation Commission wholeheartedly endorses recent efforts to initiate a study of the problem, in cooperation with the D.E.Q.E.

Improved Coordination Between Departments and Boards on Water Resource Protection Issues

A number of departments must work together to address the series of interrelated resource protection issues. These efforts could be further coordinated with the formation of an ongoing Open Space Committee with representatives from all "stake-holder" groups including Park and Recreation, Conservation Commission, Water District, Wastewater Committee, etc.

The Narragansett Bay Watershed Team is seeking funding to prepare an updated needs analysis by reviewing the Board of Health Records in Swansea and Rehoboth in areas which have been identified as having significantly high rates of failures. This would include purchasing and installing computer software for the Town of Swansea to input Board of Health Records. After prioritizing needs, action can be taken to update failing septic systems through increased use of low interest loans for homeowners or investigating alternative treatment methodologies for neighborhood solutions.

Aquifer Protection: The Town should support the Swansea Water District in its effort to acquire additional land. The Water district is currently seeking funding to acquire a 35 acre parcel on Vinnicum Road utilizing 60% funding from the DEP Aquifer Land Acquisition Program.

Public Water Supply: As the population grows, the town will be under increased pressure to develop new wells or a desalinization plant. Well sites should be identified as soon as possible so that they can be protected either through land acquisition or regulation.

Some additional regulatory tools to aid in the protection of groundwater and surface water resources include the following:

Large lot zoning: By reducing the number of buildings and septic systems within a parcel of land, less pollution is released into an aquifer.

Cluster development: In some areas the Town may choose to mandate cluster subdivision development.[9] The same number of buildings can be developed, except that the developments will be clustered in suitable areas. Besides preserving open space, this strategy will reduce road impervious surface creating less stormwater pollution and flooding problems and reducing the cost for Town road maintenance. Alternatively a cluster development bylaw could be developed that provides some incentive for developers to use cluster provisions, while ensuring that development provides adequate public benefits in return.

Growth controls: In order to slow down the rate of growth in a region, the Town may choose to adopt growth controls which limit the rate of development. This will allow the town time to assimilate the high cost of providing services to new residential growth, and also help an area maintain its rural character.

Environmental impact assessments(EIA): The Town may choose to request that developers within aquifer recharge areas undertake environmental impact assessments of their projects. Developers will need to identify needed mitigation measures to address these impacts. The EIA would identify potential harmful effects of the proposed development. Town would then review those plans to ensure that the impact to the aquifers is kept to a reasonable level.

Increased support by town for Conservation Commission and/or Parks Commission holding in trust key public open space parcels

A number of town owned parcels of important conservation interest, some tax foreclosed, remain under the control of the Town. Consideration should be given to transferring the care and custody of the following parcels to the Conservation Commission or the Parks Commission.

Table 4-13b: Town owned property to be conveyed to other departments

Name	Current town Department	Size
Sandy Beach	Town	
Case Junior High (Frontage on Lewin Brook)	School Department	
Front Street/Little Neck	Town	??
Other tax foreclosed	Town	

[9] See A Guide to Wellhead Protection by Jon Witten and Scott Horsley for more information. (page 37)

VIII. Goals & Objectives

To give order and priority to the preceding analysis as well as to provide a framework for an Action Plan, the Open Space Committee ranked the issues they saw as being critical to the future of the Town's open spaces, historic and natural resources. Objectives to address these concerns were subsequently identified. This goal setting process was also utilized to rank in importance resource areas which should be protected as well as to identify alternative resource protection strategies. These decisions provide the background for the series of implementation tasks identified in the Action Plan.

GOALS AND OBJECTIVES STATEMENT

To protect the public water supply system, wetlands and waterways.

OBJECTIVES:

1. Assess strategies to develop additional supplies
2. Undertake analysis of alternative water protection and wastewater treatment strategies including additional land purchases, new zoning, managed infrastructure investment
3. Modify regulations to ensure enhanced protection and coordinated regulatory approach with Water District and relevant town departments.

To protect and preserve open lands, river and habitat corridors, scenic views, public access, and historic sites

OBJECTIVE:

1. Negotiate the protection and purchase of important conservation lands
2. Seek regulatory changes to increase protection of resource areas.
3. Work with state agencies and environmental action groups on habitat and resource protection strategies
4. Improve public access to riverfront and coastal resources
5. Establish greenbelt corridor plans for the Palmer, Cole's and Lees rivers

To protect agriculture and shellfishing industries

OBJECTIVE:

1. Pursue both the agricultural preservation restriction program and the conservation restriction program
2. Develop a program to restore shellfishing in the Palmer, Cole's and Lees rivers

To provide staffing and adequate facilities to meet the recreational needs of all town residents; the youth, young adults, elderly, and handicapped

OBJECTIVE:

1. Establish a department staffing plan
2. Develop a plan for improving recreation programs
3. Prepare a facility improvement plan
6. Meet the accessibility needs of Swansea residents
7. Plan a system of sidewalks
8. Plan a system of hiking trails
9. Expand the system of bike trails(on and off road)
10. Improve canoe and boat access

To preserve areas of significant historical/cultural integrity

OBJECTIVES:

1 Protect scenic, historic, and unique natural environments and open spaces

2 Consider alternative protection strategies

3 Work with the Historic Commission to address priority concerns

To carry out the Open Space and Recreation Plan goals and objectives

OBJECTIVE:

1. Support the completion of the town comprehensive master plan
2. Institute a capital budget process for recreation, agriculture, and conservation land acquisition
3. Formalize the responsibilities of the open space committee
4. Appoint a Citizen Access Facilitator (sidewalk/trail planning/boating)
5. Adopt road and sidewalk standards
6. Undertake a program of public education

Protecting Open Space

The preceding goals and objectives as well as the table below were utilized to establish criteria for identifying acreage that should be set aside for conservation, i.e., passive open space, recreation, public water supply, and agriculture or protected through regulation.

The total acreage which the town, State, private individuals, and non-profit groups currently own for recreation and conservation purposes is 730 acres. This plan identifies on Table 4-14 some 3,035 additional acres for acquisition, or regulation, almost a doubling of the amount of dedicated open space. Of this total, approximately 928 acres have been have been proposed as priority parcels to be protected through Town, State or land trust purchases for water resource protection and conservation purposes. The balance of an additional 4,966 acres may be protected through a

combination of private conservation, agricultural deed restrictions, easements, and new zoning regulations.

As discussed on page 36, **the ratio of open areas to built areas is currently 2:1, i.e., 9,934 unbuilt acres to 4,406 built acres. Without any intervention, this ratio which gives the town its rural "feel' could dramatically fall to a ratio of 1:5 under full buildout, i.e., 2,524 unbuilt acres to 11,816 built acres. On the other hand, if the protection strategies indicated below on Table 4-14 are implemented, the ratio at full build-out would approach one acre of open space for every two acres of built area, i.e., 5,357 acres of open space to 8,781 built acres. This shift in open space protection would dramatically preserve the town's rural character.** Newly protected open space would be added to existing protected and unbuildable open spaces, as identified on Table 4-6, to provide the town some 6,549 acres of open space, almost double what currently exists.

Table 4-14, Goals For Open Space Recreation And Protection

Method of Protection	YR 2000 Current Acreage	YR 2020 Proposed Additional Acreage	YR 2020 Proposed Total Acreage
Protected	**859**	**1,776**	**2,635**
Town (including Water District)	544	928 (1)	1,472
State	0		0
Permanent conservation and agricultural restrictions	204	848	1,052
Land trust	111	(1)	111
Semi or Unprotected	**2,655**	**1,259**	**3,914**
Town	186	(5) (2)	181
Town (Recreation)	201	(5) (2)	196
County	61	(61) (3)	0
State	4		4
Private (Chapter 61, 61A)	1,368	323 (4)	1,691
Private for profit (recreation including. Ch. 61B)	410		410
Private for profit (power companies)	332		332
Private/non profit (religious/recreation)	93		93
Private, protected through Growth Management Zoning and other regulations		936	936
Total Protected and Semi or Unprotected	**3,514**	**3,035**	**6,549**

(1) Active Land Trust may acquire some of the acreage listed as being acquired by Town.
(2) Land transferred to jurisdiction of Conservation Commission or Water Department.
(3) Land acquired by Town or by Land Trust.
(4 Includes easements through properties under any type of private ownership.

The Open Space Committee, working with the key stakeholders in town including departments and boards with an interest in resource protection and growth management, will need to develop a range of strategies to protect priority parcels. A first step is the identification and evaluation of priority parcels for protection. Properties that serve a variety of purposes such as aquifer recharge,

habitat protection, scenic resource, surface water, trail connection, are most valued. The following table identifies a range of criteria to be used in prioritizing open space parcels.

Aside from acquisition, which could be in fee or an easement such as an APR for agriculture, alternative methods for preserving open space to be discussed herein include non-profit land trusts and voluntary actions by private landowners. In addition, open space can be protected through cluster development utilizing the Open Space Residential Design by-law. The Town may wish to encourage developers through regulatory incentives to set aside open space within the context of a predefined open space plan.

A simple cost/benefit analysis can be prepared to determine the fiscal impact of acquiring a specific open space parcel. A model is provided in Appendix 2. As demonstrated in the illustration provided in Appendix 2, the acquisition of open space can often result in a short-term fiscal savings over the alternative of allowing land to be developed. Over the long term the economic benefit of open space preservation may be even greater.

Table 4-15, Priority parcels:

Name	Acres	Protection Strategy
Bristol County, MA	48.5	Acquisition
Girl Scouts Of Rhode Island	39.2	Acquisition
PG&E	91.9	Acquisition
Somerset Power LLC	215.1	Acquisition
Total of 7 farms	503.4	APR/CR
Total	**898 1**	

A total of 898 acres has been identified for acquisition. Of this total, some 7 farms totaling 504 acres currently in Chapter 61-A are recommended for permanent protection through the purchase of Agricultural Protection Restrictions (APR) or Conservation Easements (CE). The two power companies currently own approximately 307 acres. Some of this land might be surplus, i.e., have no direct relationship to the primary corporate purpose of generating power. Many of these parcels are located within unique environmental and scenic areas. In other cases, the Town might be able to obtain easements in order to utilize these parcels for hiking and off road biking. Additional parcels are in some cases now being considered surplus such as a Girl Scout camp and property owned by Bristol County which had been acquired as a site for a County jail.

The matrix on the following page has been developed to assist the Open Space Committee identify priority parcels for protection. The various parcels would be evaluated against a set of criteria as shown. Those parcels with the highest value would be those considered for protection.

Table 4-16, Land Protection Priorities

Comparing Open Space Values	Priority Open Space Parcels												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Protect/Enhance Town Character													
Historically significant													
Retain agricultural activity													
Protect shellfishing													
Enhance scenic vistas on streets or trails													
Protect familiar, valued open parcels													
Provide active/passive recreation													
Protect Natural Resources													
River, lake/pond or stream frontage													
Well site recharge areas; Zone II													
Unique ecosystem (ACEC, or PSRH)													
Multiple use areas													
Connect New and Existing Open Space													
Links to existing and future open space													
Improve public access to existing open space													
Make regional trail connections													
Make local trail/sidewalk connections													
Economic Impact													
High risk liability or contamination													
High build-out potential													

IX. Five Year Action Plan

Recommendations have been developed by the Open Space and Natural Resource Committee and Larry Koff & Associates which address the Town's stated goals. These recommendations reinforce the goals and local actions developed as part of the Regional Open Space and Recreation Plan developed last year by the municipalities of the Ten Mile River and Narragansett/Mount Hope Bay Watersheds.

	Action	Responsible Party
1	**Open Space Acquisition**: Negotiation and purchase of key parcels/development rights: APR Baker Farm, Montaup Power Company surplus parcels, Bristol County, Water District, etc.	Planning Department Conservation. Comm., Heritage Farm Coastal Trust, Sewer District
2	**Watershed and Habitat protection**: Establish Resource Protection Overlay zoning to protect resources and reduce density	Planning Dept. SRPEDD, Mass. Watershed Initiative
3	**Four Rivers (Cole's, Lees, Kickamuit ,Palmer) Greenway Public Access Plan**: Recreation Trail planning (Covel Estate) and Improvements: walking, biking, canoeing, fishing	Planning Dept, Save the Bay, Mass. Watershed Initiative
4	**Improvements to Septic Systems & Coastal Resources:** Comprehensive Water Resources Management Study	Master Plan Comm., Sewer Comm, Capital Budget Comm.,Highway
5	**Public Awareness:** Education and increased participation in carrying out Open Space Plan	Land Trusts, Historic Preservation, Trail Committee, River-aware Committee, Open Space Committee

These action items are briefly summarized below. A more detailed work plan identifies a series of tasks for accomplishing these actions.

1. **Open Space Acquisition/Growth Management**
   The Committee needs to pursue a number of strategies to manage growth. Strategies include: acquisition of priority parcels (especially the Montaup/Somersett Power LLC and Bristol County properties); protection of privately-owned farms through APR and CR programs (especially Baker farm), and growth management strategies allowing a mix of protection and possibly new development. Growth management strategies would entail new zoning requiring larger lot sizes within Resource Protection Area; encouraging the use of cluster/flexible subdivision design; limiting water extensions in the Two Mile Purchase Area; as well as other regulatory tools which may be considered. Carrying out these strategies will require the support of a number of groups including the Swansea Land Trust, regional and state environmental planning groups.

2. **Watershed and habitat protection: Interdepartmental support**
   The Planning Board, the Town Engineer, the Water Department, the Conservation Commission, and the Board of Health must work together to address issues of water resource and habitat protection. It is recommended that the Water District consider assuming some of the responsibility for funding a Comprehensive Water Resources Management Study of water, wastewater, and stormwater issues. Concurrently, the Planning Board should consider adopting a Resource Protection Overlay to address a series of natural resource issues. Lot sizes would be increased, open space cluster zoning encouraged, and site plan review enhanced. This approach will be refined during the preparation of the Master Plan. Additional regulatory strategies are identified in Appendix 3.

3. **Four Rivers (Cole's, Lees, Kickamuit, Palmer) Greenway Public Access Plan**
A number of the adjacent communities are developing greenways, "natural resource corridors of land and water and the historical, natural and recreation areas they link or "knit" together.[10]" Four corridors have been identified in Swansea, the Cole's, Lees, Kickamuit, and Palmer Rivers. Each of these four rivers affords ***unique opportunities to link with broader regional efforts*** as well as to address a range of access, recreation, and resource protection issues.

The *Palmer River Corridor* extends from the Town of Rehoboth through Swansea into Warren and the Narraganset Bay. This corridor traverses wooded, agricultural, and suburban areas linking various sized parcels of federal, state, town, and privately owed open space which abound in animal and plant species. The river provides opportunities for fishing, shellfishing, and canoeing, and because of the presence of diverse habitats, the corridor provides scenic views, vistas, and landscapes of interest for active and passive recreation interest. Much of the eastern bank of this river corridor in Swansea is bounded by golf courses. However, a major housing development is now in the conceptual planning stages. Buffering from the river and the preservation of public access are two important objectives which should be negotiated. In addition, the town needs to work with the Palmer River Watershed Alliance, Save the Bay, the Town of Rehoboth, and the Interstate TMDL for fecal coliform cleanup to address water quality and greenbelt planning issues in the Palmer River Corridor.

The *Kickamuit River Corridor* extends from Warren Reservoir south around the Smokerise development into Warren, Rhode Island and Mount Hope Bay. This river basin includes the Heath Brook which also runs into Warren. Two thirds of the town's public water supply points are located within this sub basin which is also the water supply for the town of Warren, Rhode Island. There is need, as with the Palmer River, for inter-state cooperation to address water quality issues.

An unnamed tributary of the Kickamuit River runs east through the Touisset neighborhood into Mount Hope Bay near the abandoned railroad trestle.

The *Cole's* and adjacent *Lees River* is the largest and longest of the corridors extending over some 5,000 acres and connecting to an adjacent rural area in Rehoboth and Dighton The Cole's River portion of the corridor within Swansea is currently the most threatened from development. The area includes some 2,500 acres incorporating the most diversity in resources and landscapes. This corridor links together rural, agricultural areas in Two-Mile Purchase to the Hornbine Historic area, to ponds, rare habitat, and undeveloped areas to the coastal resources of these two rivers. Major parcels to be connected include the Montaup (Somerset) Power Company and the Sears Farm properties. These parcels need to be incorporated into a development and resource protection strategy which takes into account the towns' need for water, resource protection, economic development and recreation.

A major focus of Greenbelt planning will be the provision of public access to river corridors for walking, biking, canoeing, and fishing. The Needs Section discussed a number of public access issues. The Open Space Committee will work with other property owners, town staff, and committees, both town and regional, to develop a public access plan. The Somerset (Montaup) Power Company property, the Sears Farm, and the Palmer River Corridor are three opportunities within the Four Rivers Corridor where one might begin to initiate planning.

[10] A Regional Open Space and Recreation Plan, Office of Environmental Affairs, 2001

4. **Improvements to Septic Systems, water quality, and Coastal Resources**
Of priority concern is the need for the Water District and/or the town to fund the Comprehensive Water Resources Management Study. This analysis will identify the alternative septic treatment strategies and a phasing and funding plan to minimize its impacts upon local residents. This proposed study will build on the DEP 604b Stormwater Management Planning grant that the town received to undertake an assessment of stormwater contamination issues in town. (See Appendix 4 for stormwater management practices.) In addition, the 604b study will identify a remediation strategy for stormwater contamination in Compton's Corners, Ocean Grove. A separate study is also underway of Board of Health records in the Smokerise neighborhood. These initiatives will provide background information to assist in developing a scope of work and budget for undertaking the Comprehensive Water Resources Management Study. The adoption of water supply and wastewater strategies will over time lead to the re-opening of the local shellfish beds. The Massachusetts Narragansett Bay Watershed Team as well as Save the Bay are two groups the town can work with to support local efforts at improving water quality.

5. **Public Awareness**
The Open Space Plan will need the broad support and participation of a number of groups including the Open Space Committee, the Land Trust, Historic Commission, a Trail and Riverwatch Committee. Public education and support will be essential.

The six goals identified in the Regional Open Space and Recreation Plan and the annual Work Plan of the Narragansett Bay Watershed Team (NBWT) provide a framework for relating the local action plan priorities with regional priorities.

Regional Goals	Local Actions
1. *Improve water quality*	
	➢ Pursue Comprehensive Water Resources Management Grant funding ➢ Study expanding role of Water Department to include wastewater planning and management. ➢ Work with Basin team on efforts to improve water quality of the Palmer, Cole's and Lees Rivers
2. *Increase amount of permanently protected open space particularly within focus areas, water resource areas, and along river and stream corridors*	➢ Priority Acquisition parcels include Montaup Power Company property and Baker Farm APR purchase; both located within proposed Resource Protection District ➢ Plan proposes two protection strategies; establishing of Greenbelt Corridor and a Resource Protection District
3. *Develop regional "through trails" for walking, biking, canoeing*	➢ Regional Bike Trail under construction ➢ Plan proposes Greenbelt corridor and improved public access
4. *Adopt regionally consistent zoning, land use and conservation strategies, and regulations*	➢ Zoning by-law reforms being studied
5. *Create a permanent Regional Open Space Committee*	➢ Swansea has a designated representative on Committee

Town of Swansea 5 Year Open Space and Recreation Action Plan
DRAFT

Objective	Action	Responsibility	Funding	Year 2002	3	4	5	6
Goal 1. To protect the public water supply , wetlands and waterways								
A. Assess strategies to manage/develop additional supplies	1. Review Water District's needs analysis	WD,MPC		X				
	2. Support acquisition of additional land area around existing and proposed wellheads. Alternative strategy might be to consider adoption of a penny a gallon tax on water consumption for land acquisition	WD, TP, BOS, MPC, PB, CC, OSC	Tax levy	X	X	X	X	X
	3. Consider limiting water service extensions in the Two Mile Purchase Area	WD, SC, BOS			X	X	X	
B. Undertake analysis of alternative water and wastewater protection strategies	1. Work with Water District on funding Comprehensive Water Resource Management Plan (CWRMP) study	DPW, CC, SC			X			
	2. Build public support for study in impacted neighborhood areas	BOH, PB, KWC, NBWT, RA, MPC		X	X	X		
	3. Ensure participation of other Departments including BOH, Planning, Engineering, Building,	NBWT, STB, DPW, BOS		X	X	X		
	4. Address land use threats to water quality	PB, NBWT, LUC, CC, WD		X	X	X		
	5. Undertake a RiverAware program of public education in conjunction with Save The Bay for Palmer, Lees, Cole's, Kickamuit	CC, OSC, PB, BH	NBWT, EOEA	X	X			

Objective/Parcel	Action	Responsibility	Funding	Year 2002	3	4	5	6
C. Modify regulations to enhance protection and coordinate regulatory approach	1. Work with Planning Board and Water Department on modifying existing regulations to provide improved protection	SRPEDD, STB, PB, WD	Public/ Private	X	X	X		
D. Address stormwater management issues	Carry out stormwater study to conform with Phase II Federal Guidelines	DPW, PB, CC			X			
E. Improve mapping of resource areas	With support of various State agencies, up-date Wetland mapping and undertake mapping of vernal pools	SRPEDD	319? DEP		X			
Goal 2: To protect and preserve open lands, river and habitat corridors, scenic views, public access, and historic sites								
A. Negotiate the protection and purchase of important conservation lands	1. Establish committee of Town and State officials to work with Mantaup Power Company owners to negotiate town acquisition of sites for open space	NBWT,STB, TPL, SCC, OSC, CC, PB		X				
	2. Negotiate APR for Baker Farm	HFCT, BOS, TP, CC	TM, SLT	X				
	3. Seek conveyance of Bristol County parcel to Town for Open Space	STB, NBWT, GC, CC, OSC,		X	X			
	4. Increase volunteer support for Swansea Land Trust so it can accept donations of land, easements, and funding	OSC, SLT, MPC	N.E. Grassroots fund	X	X	X	X	X
	5. Increase role of regional and national open space groups such as Wildlands Trust	TP, CA, CC, OSC, SLT		X	X	X	X	X
	6. Have Town convey key open space parcels to the care and custody of the Conservation Commission so that they will be protected from sale or development (Page 49, Table 13b)	TP, CA, CC, OSC, BOS		X	X			
	7. Seek adoption of OPCPA by Town Meeting & & ballot vote	CC, OSC, HC, TP, SHS			X	X	X	X

Objective/Parcel	Action	Responsibility	Funding	Year 2002	3	4	5	6
B. Seek regulatory changes to increase protection of resource areas	1. Prepare Resource Protection overlay	PB, SRPEDD, ZBA, OSC	NBWT, WD		X			
	2. Amend site plan by-law	PB, ZBA	Private Donation	X	X			
	3. Work with Con. Comm. on improved buffer regulations for resource areas	PB, CC, FSA, BC, MACC, DEP		X	X			
C. Work with State agencies and environmental action groups on resource protection strategies	1. Conduct fieldwork and certify vernal pools	NBWT, CC, RA	NBWT grant		X	X		
	2. Strengthen Wetland regluations; both riverine and tideland	CC, STB, MACC			X			
D. Improve public access to riverfront and Coastal Resources	1. Coordinate with Economic Development Committee on preparation of development plan for the Sears Farm and adjacent property which preserves public access	PB, PC, RC, BOS, CC, OSC		X	X	X	X	X
	2. Form a Public Access Committee to prepare plans for improving access to river and coastal resources	OSC, NBWT, PC, RC, CC, PB, BOS			X			
	3. Develop a roadside signage system of streams to identify their names and characteristics	OSC		X	X			
E. Establish Greenbelt Corridor Plans	1. Work with Rehoboth on plans for extending greenbelt corridor in Swansea	TP, NBWT, CC,GC, OSC			X	X		
	2. Undertake with property owners and the Water Department planning for the Palmer/Kickamuit/Cole's/Lees Rivers Greenbelt	KRWC, Rehoboth, TP, CA, STB, NBWT, CC, RA			X	X	X	

Objective/Parcel	Action	Responsibility	Funding	Year 2002	3	4	5	6
F. Identify Town owned parcels which should be under the protection of the Conservation Commission.	1. Review status of Lewin Pond parcel currently under the control of the School Department.	TP, CA, CC, SD		X	X			
	2. Review status of recreation facilities under the School Department jurisdiction for permanent protection.	TP, CC, SD, RC		X	X			
	3. Review protection status of parcels under Parks Department jurisdiction, such as Covel Estate.	TP, CC, PC		x	X			
Goal 3: To Protect Agriculture and Shellfishing Industries								
A. Pursue APR and Conservation Restriction programs	1. Form committee in conjunction with groups such as the Barrington Land Trust, Irene Winkler, USDA, the Southeastern Massachusetts Agricultural Partnership (SEMAP) and the UMass-Dartmouth Small Family Business Assistance Center to assist local farmers and encourage new agricultural activities on prime soils.	TP, CC, MPC, OSC, LUC, HFCT		X	X			
	2. Meet with owners of agricultural lands	TP, CA, OSC, CC		X	X	X	X	X
	3. Discuss ranking of agricultural properties	TP, CA, OSC, CC			X			
	4. Establish protection programs on specific parcels	OSC, TP, CC			X			

Objective/Parcel	Action	Responsibility	Funding	Year 2002	3	4	5	6
B. Develop a program to restore shellfishing in the Palmer and Cole's/Lees Rivers	1. Establish a shellfish restoration committee	SEMAP, HFCT, NBWT, STB, RA, BOH, CC		X	X			
	2. Work with regional groups to establish a program to restore shellfishing within the Palmer River within the next 5 years	NBWI, STB, see above		X	X			
	3. Develop a shellfish restoration program for the Cole's and Lees river working in conjunction with Save the Bay	STB, see above			X	X	X	
A. Establish a Department staffing Plan	1. Work with Recreation and Parks Commissions on alternative strategies to increase funding and improve staffing and facility management	TA, PC, RC			X			
	2. Seek Town support	TA, PC, RC			X			
B. Develop a plan for improving recreation programs	Analyze & expand existing and establish new programs for elderly	PC, COA, RC, MPC						
Goal 4: To provide staffing and adequate facilities to meet the recreational needs of all town residents								
C. Prepare a facility improvement plan	1. Assist in identifying funding for renovation of the Mason Barney School as a recreation center	PC, RC			X			
	2. Identify parcels of recreation potential, especially in under-served areas, for playgrounds and neighborhood parks	TP, RC, PC, FOBOGNA			X			
	2. Identify acquisition strategy	TA, RC, PC			X			
D. Meet Accessibility Needs of Swansea residents	1. Utilizing accessibility survey, identify priorities for addressing needs	ADAC			X			
	2. Identify funding, possibly in conjunction with other suggested improvements	ADAC, CFPC			X	X	X	X

Objective/Parcel	Action	Responsibility	Funding	Year 2002	3	4	5	6
E. Plan a system of sidewalks		DPW, TP				X	X	
F. Plan a system of hiking trails	1. Seek DEM planning grant for a trail around Covel Estate	CR, TP, RC, CC, PC		X	X			
	2. Incorporate hiking trails into the Greenbelt plan	NBWT, GC, TP, OSC			X	X		
	3. Formalize use of power lines for hiking	NBWT, GC, TP, OSC				X		
G. Expand the system of bike trails	1. Explore potential for formalizing use of power lines for a system of bike trails	NBWT, GC				X		
H. Improve canoe and boat access	1. Assess current deficiencies, work with recreation groups to promote improved access and parking areas	CC, RC, PC, SD, STB, NBWT				X	X	
Goal 5: To preserve areas of significant scenic, historical, and cultural integrity								
A. Protect scenic, historic, open space, and unique natural environments	1. Conduct a Heritage Landscape Inventory of important scenic and cultural landscapes	HC, OSC	DEM Grant		X			
	2. Develop the Greenbelt Plans for the Palmer and the Cole's/Lees Rivers	STB, NBWT, GC, TP, OSC, PC			X	X	X	
	3. Work with regional groups in the planning and funding of these efforts	TP, CC, (see above)		X	X	X	X	X
B. Consider alternative protection strategies	1. Zoning By-law changes such as a Resource Protection Overlay District	SRPEDD, PB, CC, ZBA			X	X		
	2. Modify Conservation Commission Regulations	CC, MACC			X			
C. Work with the Historic Commission to address priority concerns		TP, HC, SHS						

Objective/Parcel	Action	Responsibility	Funding	Year 2002	3	4	5	6
D. Support the completion of the town Comprehensive Master Plan	1. Work with Town Planner on revisions to Open Space section	OSC, WD, All Town Depts and Boards		X	X			
E. Institute a capital budget process for recreation, agriculture, and conservation land acquisition	1. Work with the Finance Committee and Selectmen to ensure that reserve fund is established for an annual set-aside for recreation and open space acquisition	TA, PC, RC, PB, CC, BOS, OSC, MPC, TP			X	X		
F. Formalize the responsibilities of the Open Space Committee	1. Committee to be charged with responsibility of plan implementation i.e. working with other town and regional staff and organizations, grant writing, planning	TP, CA, BOS, CC, OSC		X	X			
G. Appoint Citizen sidewalk/trail planning/boat access Facilitator	1. Facilitator to work with Boards, Commissions, Staff, funding Agencies to coordinate Town effort at planning system of trails, bikeways, sidewalks, boat access	BOS (recomm. of OSC)			X			
Goal 6: To carry out the Open Space and Recreation Plan goals and objectives								
A. Adopt road and sidewalk standards	1. Have Planning Board, Highway Superintendent, Water Department, and Selectmen approve standards	PB, DPW, WD, BOS, HD			X			
	2. Sidewalk/Trail/Boat Access Facilitator to develop plan, identify funding in concert with appropriate town departments	BOS, TP			X			
	3. Coordinate planning with the Historical Commission, SRPEDD, and adjacent towns	TP, PB			X	X	X	

Objective/Parcel	Action	Responsibility	Funding	Year 2002	3	4	5	6
B. Undertake a program of public education	1. Circulate Action Plan Summary	PB			X	X	X	
	2. Establish Riverwatch groups	CC			X			
	3. Work with Manomet Center for Conservation Services	PB, CC			X	X	X	X
	4. Hold a public forum on issue of public support for establishing a reserve fund to finance open space protection	MPC		X				

Town:

CC:	Conservation Commission	RC:	Recreation Commission	WD:	Water District
CA:	Conservation Agent	PC:	Parks Commission	HD:	Highway Department
PB:	Planning Board	OSC:	Open Space Committee	DPW:	Department of Public Works
TP:	Town Planner	HC:	Historical Commission	COA:	Council on Aging
TM:	Town Meeting	SC:	Sewer Committee	ZBA:	Zoning Board of Appeals
BOS:	Board of Selectmen	CFPC:	Capital Facilities Planning Committee	SD:	School District
TA:	Town Administrator	ADAC:	ADA Committee	LUC:	Land Use Committee
BOH:	Board of Health	MPC:	Master Plan Committee		

Regional/State Government/non profit

GC:	Greenway Coordinator	NBWT:	Narragansett Bay Watershed Team	FSA:	Farm Service Agency
SRPEDD:	Southeastern Regional Planning and Economic Development District			BC:	Bristol County
SEMAP:		MACC	Mass. Assoc. of Conservation Commissions		
DEP:	Department of Environmental Protection				

Private/Non-Profit Agencies

RA:	RiverAware	KWC:	Kickamuit Watershed Council	STB:	Save the Bay
HFCT:	Heritage Farm Coast Trust	SLT:	Swansea Land Trust	SHS:	Swansea Historical Society
FOBOGNA:	Friends of Bluff Ocean Grove Neighborhood Association			TPL:	Trust for Public Land

Appendix A - Division of Fisheries and Wildlife National Heritage & Endangered Species Program

X. Public Comments

Commonwealth of Massachusetts

Division of Fisheries & Wildlife

Wayne F. MacCallum, *Director*

February 25, 2002

Larry Koff, AICP
Larry Koff & Associates
20 Harrison Street
Brookline, MA 02146

Re: Open Space Plan; 02-10065
Town of Swansea

Dear Mr. Koff:

Thank you for contacting the Natural Heritage and Endangered Species Program regarding the Open Space Plan for the Town of Swansea. We would like to offer the following information on the rare species and ecologically significant natural communities that we have documented in the town.

We have prepared and enclosed a printout from our database of all rare species currently known to occur in the town of Swansea. Of these species, the Eastern Box Turtle is primarily a species of upland forests—usually oak—that will use wetlands within its habitat. Swansea has both adequate areas of upland habitat and wetland resources for this species, the Massachusetts distribution of which is focussed in the southeastern part of the state, including Swansea. The Spotted Turtle and Wood Turtle also use uplands for much of their lives, including foraging for food and nesting, but are predominantly associated with wetlands and riparian zones. Swansea contains several wetland systems that support these species. The Marbled Salamander, another rare species found in Swansea, is largely terrestrial, occurring in deciduous forests and mixed woods dominated by oak and hickory species. They can live in both dry areas as well as moist. Wooded vernal pools or shallow depressions are necessary for breeding. The Least Tern, a ground-nesting coastal waterbird, is found along coastal beaches and barrier islands. Least Terns nest on these barrier islands and beaches on dry, exposed, unvegetated areas between the drift line and the upland. The success of this species is limited by predation, competition, and disturbance. Common predators include gulls, owls, raccoons, skunks, coyotes, and feral cats. Competition for nesting areas is primarily with gulls. Disturbance from visiting humans and wandering dogs can have an impact on their nesting success. Several rare plants have not been relocated in Swansea recently, the Canadian Sanicle and Pinnate Water-milfoil, are two of these species. The Canadian Sanicle is found in moist or dry open woods, preferring rich, mesic slopes in stream valleys or lake margins. The Pinnate Water-milfoil inhabits coastal salt pond communities. These plants may not have been relocated again recently due to fragmentation and loss of habitat, and competition with invasive species.

Natural Heritage & Endangered Species Program
Route 135, Westborough, MA 01581 **Tel:** (508) 792-7270 x 200 • **Fax:** (508) 792-7821
An Agency of the Department of Fisheries, Wildlife & Environmental Law Enforcement

Also enclosed is a preliminary copy of the new BioMap for Swansea. We encourage the inclusion of these materials in your Open Space Plan. Larger maps for each town, with narratives about the polygons are being prepared and will be sent to the towns when ready, probably next spring. The BioMap is intended to identify areas that if protected would protect the biodiversity of the state. In Swansea, there are several BioMap areas – the areas of most importance to protect in order to maintain the biodiversity of the town, region, and state. The northeast corner of town is predominantly BioMap Core habitat with some areas of Supporting Natural Landscape (SNL) (areas that serve to buffer and connect BioMap Core polygons). This area is mostly wetland complexes interspersed with upland areas. There are some small areas of Protected Open Space within this region, and by using these protected areas and connecting separate pieces within the BioMap Core and SNL polygons, the viability of rare species populations will continue over the long term and the biodiversity in the town of Swansea will be maintained. There are several areas throughout the middle and western sections of the town that are currently Protected Open Space, but contain no BioMap Core or SNL. These areas would serve as good focus areas for further biological inventory. Using these areas as a focal point and extending them into areas of SNL and BioMap Core could enhance the continuity of habitat for rare and more common species.

The BioMap layers are now available on the MassGIS website for free download at http://www.state.ma.us/mgis/biocore.htm and http://www.state.ma.us/mgis/biosnl.htm. These are GIS layers, so it is necessary to have some access to GIS to view them, such as ArcView, Arc Info, or the runtime MassGIS dataviewer. The Natural Heritage and Endangered Species Program strongly urges that efforts be made to preserve and protect the BioMap areas shown on the map. There are a number of ways a town can accomplish this goal. These include conservation restrictions or easements as well as acquisition. Special zoning regulations and districts are other options.

The NHESP also produces maps for use under the Wetlands Protection Act (Estimated Habitat maps, provided to the Conservation Commission and shown in reduced form in the *Natural Heritage Atlas,* copies of which are enclosed, and the Massachusetts Endangered Species Act (also in the *Natural Heritage Atlas,* and enclosed with this letter). These data layers are also available from MassGIS, again requiring access to some form of GIS to view them, at http://www.state.ma.us/mgis/wethab.htm and http://www.state.ma.us/mgis/prihab.htm. These two sets of maps are created for regulatory use, and we encourage the town to use the BioMap for prioritizing areas for land acquisition. Early planning and review of development projects under the Wetlands Protection Act regulations and Endangered Species Act does play a very positive role in protecting rare species habitats and ecologically significant natural communities. Town commissions and boards are encouraged to request the assistance of the Natural Heritage and Endangered Species Program in reviewing any project proposed in the habitat areas of the regulatory areas of the maps in the *Natural Heritage Atlas*.

Management and monitoring of conservation lands become important as acquisition and protection are accomplished. All wetlands particularly need to maintain their natural water regime, including normal fluctuations and connections with the uplands and other wetlands. Water quantity and quality are ongoing issues for wetlands. Another aspect of managing conservation lands that is important in many areas is controlling invasive non-native species that alter the habitat and occupy space that native species would otherwise use. We strongly recommend monitoring conservation land, and removing non-native species before they become a problem and impact native species.

Please note that this evaluation is based on the most recent information available in the Natural Heritage database, which is constantly being expanded and updated through ongoing research and inventory. Should new rare species information become available, this evaluation may need to be reconsidered.

Please do not hesitate to call me at (508)792-7270 Ext. 154 if you have any questions.

Sincerely,

Christine Vaccaro

Christine Vaccaro
Environmental Review Assistant

cc: Joel Lerner, Director
EOEA, Division of Conservation Services

This response to your request for rare species information has been prepared for you as a free service. However, one -third of the Natural Heritage and Endangered Species Program's annual operating budget (and thus funding for this service) comes from voluntary contributions. Those wishing to help support the program's work, including the preparation of responses to requests for rare species information such as this, can do so by making out a check to the "Natural Heritage and Endangered Species Fund" and sending it to: NHESP, Division of Fisheries & Wildlife, Rte 135, Westboro, MA 01581. Contributions are tax deductible on federal and state income tax returns. Thank you for your support.

APPENDIX B - STATEMENT OF AGENCY PARTICIPATION.

The local agencies and citizens groups listed below participated in developing this Open Space and Recreation Plan. In addition, Swansea's citizens and members of the following organizations played a vital role in formulating proposed open space and recreation goals and priorities by identifying recreation needs and providing background information and data.

Board of Selectmen
Conservation Commission
Planning Board
School Department
Historic Commission
Recreation Commission
Village Park Commission.
Swansea Water District
Southeast Regional Planning and Economic Development District (SRPEDD)

Although the responsibility for planning, providing and maintaining the open space and recreation sites within the Town is the working charge of various commissions and departments, the ultimate authority rests with the citizens acting through Town Meeting.

Appendix 1 - Chapter 61 Parcel Inventory

Owner	State Use Code	Parcel Size (acres)	Total Value ($)
Chapter 61: Forest Land	**Total**	**120.4**	
DUMONT RAYMOND A JR	601	18.8	2600
LAPOINTE WILLIAM H & DONNA M	601	31.3	11900
BAKER ROBERT D – FRANK BAKER JR LIFE EST	601	32	11900
ORZECHOWSKI ARTHUR R TRUSTEE	601	38.3	10300
Forest Land	**601 Total**	**120.4**	
Chapter 61A: Agricultural/Horticultural Land	**Total**	**1,248.04**	
FOUR TOWN FARM INC	712	1	1800
FOURTOWN FARM INC	712	2	3600
SIMCOCK JAMES R & BEVERLYANN P	712	4.49	8100
MELLO JOHN ALMEIDA	712	5.66	10200
CARREIRO MARY J	712	7.2	13000
ANDRADE ANTHONY R & MARGARET S	712	7.27	151300
MELLO JOHN ALMEIDA	712	8.34	255000
MUSTAFA AZHAR Q & PENNY	712	16.03	485700
SILVIA THOMAS	712	16.36	71000
SILVIA WILLIAM & THOMAS	712	17	30700
SIMCOCK JAMES R & BEVERLYANN P	712	20.79	85900
MAGAN PAUL H JR & DIANE	712	34	61400
SILVIA WILLIAM & THOMAS	712	40	72200
SILVIA WILLIAM & THOMAS SILVIA	712	40	27100
SILVIA WILLIAM & THOMAS	712	58	104700
Truck Crops--vegetables	**712 Total**	**278.14**	
FOUR TOWN FARM INC	713	6.75	12200
WIGHTMAN RICHARD P & JOANNE J	713	10.2	4400
PONTES LEWIS V & BARBARA PONTES	713	22.58	4900
BERARD ROBERT O	713	23.09	10700
PONTES LEWIS V & BARBARA	713	27.6	9600
DALLESANDRO GERTRUDE J	713	68.81	68600
Field Crops—hay, wheat, etc.	**713 Total**	**159.03**	
BELTRAN GRACE A	714	2	2300
BELTRAN GRACE A	714	34.19	26200
Orchards—pears, apples, etc.	**714 Total**	**36.19**	
SIMCOCK JAMES R & BEVERLYANN P	716	0.29	10500
BAKER HERBERT E	716	0.32	100
SIMCOCK JAMES R & BEVERLYANN P	716	0.58	1200
BARNEY MARY S & AUGUSTA B GRANT	716	0.68	1200
CHACE DORIS V & NORA CHACE FISHER	716	1	400
BAKER KENNETH E	716	1.25	400
SIMCOCK JAMES R & BEVERLYANN P	716	1.63	600
SIMCOCK ARNOLD B & LOUISE	716	1.98	3600
BAKER HERBERT E	716	2.5	800
CHADWICK WILLIAM T	716	3.5	1500
CHIAVETTONE NATILINO & GERADO	716	4.97	2200

MARSDEN THOMAS E		716	5.5	4400
NOONS ROBERT J & NANCY L		716	7.05	3100
BAKER HERBERT E		716	12.39	3700
CHACE DORIS V & NORA CHACE FISHER		716	14	4200
FARRELL LELA D & RONALD G CHAGNON		716	14	3900
CHACE DORIS V & NORA CHACE FISHER		716	20	6000
BAKER KENNETH E		716	20.5	8900
ROUSSEAU GERALDINE C		716	20.72	114100
BAKER KENNETH E		716	31	9500
MARSDEN THOMAS E		716	32	14500
BAKER KENNETH E		716	37	14700
BAKER KENNETH E		716	37	11100
MANCHESTER WILLIAM A		716	37	28200
MASON THOMAS A & ANDERSON MABEL E M		716	38	12200
SIMCOCK GEORGE E & ARNOLD B SIMCOCK		716	39.25	28400
HALE RICHARD W & MARIA		716	43.9	19100
CHADWICK WILLIAM T		716	48.43	20900
FERRY EDWARD F & BARBARA J		716	54.65	68500
CHACE DORIS V & NORA CHACE FISHER		716	92	43600
Tillable Forage Cropland	**716 Total**		**623.09**	
TIBALDI FRANK		718	2.66	800
HOWARD SCOTT & GILBERT A HOWARD		718	19.14	5700
DOUGLASS JOHN W JR		718	21	6300
SIMCOCK JAMES R & BEVERLYANN P		718	22.99	6900
DOUGLASS HOPE L		718	29	8700
SIMCOCK JAMES R & BEVERLYANN P		718	41.2	12400
Pasture	**718 Total**		**135.99**	
MARSDEN THOMAS E		720	0.75	200
MARSDEN THOMAS E		720	1	300
MASON THOMAS A & ANDERSON MABEL		720	2.39	700
PELLETIER PAUL		720	11.46	3400
Necessary related land—farm roads, ponds, land under farm buildings	**720 Total**		**15.6**	
Chapter 61B: Recreational Land		**Total**	**288.4**	
ROTHWELL FAMILY TRUST		801	33.65	60100
Hiking—trails or paths	**801 Total**		**33.65**	
CONWAY BARRY C		805	40	69300
BRIGHAM RAYMOND H & VILMA		805	61	471400
Golfing—areas of land arranged as a golf course	**805 Total**		**101**	
SOMERSET SPORTSMAN CLUB		807	153.75	245400
Hunting—areas for hunting of wildlife	**807 Total**		**153.75**	
		Grand Total	**1656.84**	

Appendix 2 - Economics of Open Space Preservation

The most effective way to protect natural resources is through means of ownership. Regulations do not provide sufficient protection in many cases because they may be changed, over turned, or violated if not well enforced. It can also be difficult to target regulations to cover specific parcels which contain valuable natural resources. Hence, an essential element to a natural resources protection plan is the formulation of a strategy to acquire open space.

Such a strategy is not necessarily beyond the means of a community such as Swansea. Recent analyses have demonstrated that open space acquisition may have a positive impact on a town's finances, especially in relation to the alternative development that could take place instead. Certainly in the long run, and even in the short run, the cost of acquiring a parcel is likely to be less than the cost of providing services to new residents of a residential development, depending on the value of the homes that are constructed. Commercial uses, especially retail use, may also require municipal services that balance the cost of acquisition. Besides the direct impact on the Town's budget, the acquisition of open space has additional potential economic benefits. The preservation of open space may have a positive impact on surrounding property values, which would partially or totally offset the loss of the open space parcel from the tax base. The acquisition would also be a cost-effective way to protect the Town's water resources, avoiding or reducing the need for future infrastructure improvements.

A methodology for a fiscal impact analysis for open space acquisition follows. After a list of priority parcels for acquisition has been developed, such an analysis can be undertaken for specific parcels to support a decision by Town Meeting to finance an acquisition. This would be especially valuable to prepare for Chapter 61 parcels, so that the Town can decide and act quickly in the case that one should come on the market. In determining whether open space acquisition represents a net fiscal benefit for the town, consideration should also be given to the possibility of obtaining State funding toward the cost of acquisition.

Aside from acquisition, other options for obtaining permanent protection exist, which can also help to limit the cost to the Town. Land trusts or other nonprofit organizations may also acquire land for conservation purposes, and can work with the Town to identify and support common objectives. Private owners may be persuaded to donate or sell the development rights to their land through Conservation Restrictions or Agricultural Preservation Restrictions (APR), while retaining title to the land, itself. (Such an arrangement currently exists in the Dallesandro farm property.) Federal inheritance taxes favor the donation of conservation easements or full title to portions of large properties to minimize the tax obligation owed by beneficiaries. A public education campaign could target large landowners who do not intend to develop their properties to plan for the optimal protection of their estates through open space preservation[11].

[11] See Preserving Family Lands Book II by Stephen J. Small.

Cost/Benefit Analysis of Open Space Acquisition

In many cases, when land is developed, the cost to the Town to provide services to new residents or businesses outweighs new tax revenues.[1] The potential negative fiscal impacts of development should be taken into consideration when the Town considers acquiring land for open space. Especially when alternative sources of funding are available to help cover the cost of acquisition, the preservation of open space can potentially pay for itself by reducing the potential for new development. Besides the direct fiscal benefit of reducing development, open space can also generate economic benefit to the Town by raising the value of neighboring properties, protecting drinking water resources, and reducing the need for future infrastructure improvements.

The following example shows a methodology for determining the direct fiscal impacts from a) allowing land to be developed for single-family residential use; or b) acquiring land for open space. (The indirect impacts are not considered in this analysis.) The fiscal cost for land that is developed includes the cost of added services that will need to be provided to the new households less the increase in tax revenues that results from the development. The fiscal costs for acquiring land include the cost of financing the purchase and the loss in tax revenue. Although hypothetical figures are shown for illustration, the unique circumstances of a particular parcel under consideration for acquisition (or some other protection program such as APR) should be applied.

Comparison of the Tax Rate Impacts After Development/Acquisition of Land

Land Use Scenario	Tax Rate Increase	Annual Tax Increase for Average Homeowner
Development of 50-acre parcel[2]	$0.10/1000[3]	$14.23
Acquisition for open space of 50-acre parcel under Chapter 61A	$0.01/1000[4]	$1.92

Fiscally Neutral Development

The same calculations were used to determine the value of a new home which would produce just enough revenue to cover the cost of services to the new residents. If the tax shift is reduced, the cost of a break-even house would increase.

Break-Even House	Value
With children	$436,750
With no children	$71,600

[1] The cost of development has been documented in many studies, including the Cost of Community Services study commissioned by the Southern New England Forest Consortium in 1995.
[2] With a minimum lot size of 60,000 square feet, 29 homes could be constructed, adding 63 school children
[3] This does not include the fiscal impact of the repayment of back taxes in the case of the sale of Chapter 61 land.
[4] The fiscal impacts from the purchase of open space vary dramatically with the sale value of the land being purchased and the terms of a bond used to finance the purchase. See Part 2 for details.

Inputs:

a) 1999-2000 school enrollment (School Dept.)	2,419	
b) Total number of homes in 2001 (assessor)	5,258	
c) School children per unit	2.17[1]	(b / c)
d) Average assessment of new homes	$ 230,000	
e) Average single-family assessment	$ 140,000	
(From FY00 Town Budget)	$.	
A) Tax levy	15,025,714	
B) Residential tax levy	10,488,034	
C) Total valuation of residential property	783,273,608	
D) School portion of appropriation	13,060,474	
E) State aid for Schools	5,260,978	
F) School portion of residential tax levy	5,444,093	[(D – E) / A * B]
G) Residential tax rate	13.39/1000	
H) Commercial tax rate	22.98/1000	
I) Non-school portion of residential tax levy	5,043,941	(B - F)
J) School tax (residential) per student	2,251	(F / *a*)
K) Non-school services tax (res.) per household	959	(I / *b*)

Part 1 – Cost of Development

If the land were developed, it could accommodate up to 29 single-family homes, yielding 63 additional school children.

I. The total assessed value of new homes is $6,670,000 (*d* * 29).

II. The net cost for the new development is $169,604 (IIa + IIb).

IIa. The school cost for new development is $141,785 (J * *63*).

IIIa. The non-school cost for the new development is $27,819 (K * 29).

III. The new residential tax levy is $10,657,638 (*II* + B).

IV. The new total valuation is $789,943,608 (*I* + C).

V. The new tax rate is $13.49/1000 [(*III* / *IV*) * 1000].

VI. After new development, the tax rate increases by $0.10 (*V* - G).

VII The average homeowner's taxes will increase by $14.23 [(*e* * *VI*) / 1000].

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(1) This estimate differs from the estimate provided by DHCD that is used for the buildout analysis. For the buildout analysis a lower estimate is used that is closer to the projected average household size. For the purposes of this exercise an estimate is used that more closely approximates the size of families that occupy new homes in the present market.

Part 2 – Cost of Acquisition

Assume the land is worth $500,000 ($10,000/acre), and can be purchased at that price. Under Chapter 61A the taxable value of the parcel is $75,000. Further, assume that the Town receives State and Federal aid to cover 75% of the purchase, so that the total cost to the Town to purchase the land is $125,000.

I. The annual bond payment on the land acquired would be $13,700 ($125,000 over a 20 year term at interest rate 4.5).

II. The residential portion of the bond payment would be $9,563 [*I* * (B / A)].

III. The residential portion of the impact from the loss of tax revenue is $1,203 [*IIIa* * (B / A)

IIIa. The reduction in tax revenue from the loss of taxable land is $1,724 [(75,000 * H) / 1000]

IV. The new residential tax levy is $10,498,800 (*II* + *III* + B).

V. The new residential tax rate is $13.40 [(*IV* / C) * 1000].

VI. The increase in the tax rate from acquiring the land is $0.01 (*V* - G).

VII. The average homeowner's taxes will increase by $1.92 [(*e* * *VI*) / 1000]

Appendix 3 - Additional Growth Management Regulatory Strategies

Five major types of resource need protection: water, open space, sensitive areas, recreation, and agricultural areas. These resources are identified below. The following table summarizes the existing regulatory framework governing these resource areas. Supplemental protection strategies are suggested.

Proposed Natural Resource Protection Strategies

Natural Resource	Existing Conditions	Supplemental Protection Strategies
Water Resources		
Surface Water	S,M	Acquisition, public access improvements, regulations along pond frontage, General Wetlands Bylaw (GWB)
Groundwater	P,S,M,L	Improved mapping, update regulations for Zones II, cluster zoning, performance standards for stormwater runoff, GWB
Wetlands	P,S,M	Improved mapping, performance requirements, GWB
Floodplains	M	Improved mapping, GWB, Zoning
Open Space		
Open Space	P,L,T,X	Acquisition, cluster zoning, incentives to encourage permanent restriction under private ownership
Fields	T,X	Acquisition, cluster zoning, back lot zoning, incentives to encourage permanent restriction
Sensitive Areas		
Coastal Resources	L,X	Acquisition, cluster zoning, low density zoning, performance requirements under site plan review, incentives to encourage permanent restriction, GWB
PSRH	L,X	Acquisition, cluster zoning, performance requirements under site plan review, incentives to encourage permanent restriction, GWB
Recreational Resources	P,L,T,X	Acquisition, incentives for trail development
Agricultural Areas	P,T,X	Cluster zoning, back lot zoning, encourage use of APR restrictions

Existing Conditions Key:

P Permanently protected via public conservation ownership or permanent restriction
S Protected via state regulation
M Protected via local regulation
L Limited protection via state/local regulation or non-conservation public ownership
T Temporarily Protected (i.e., Chapter 61)
X Unprotected or Protection Status Unknown