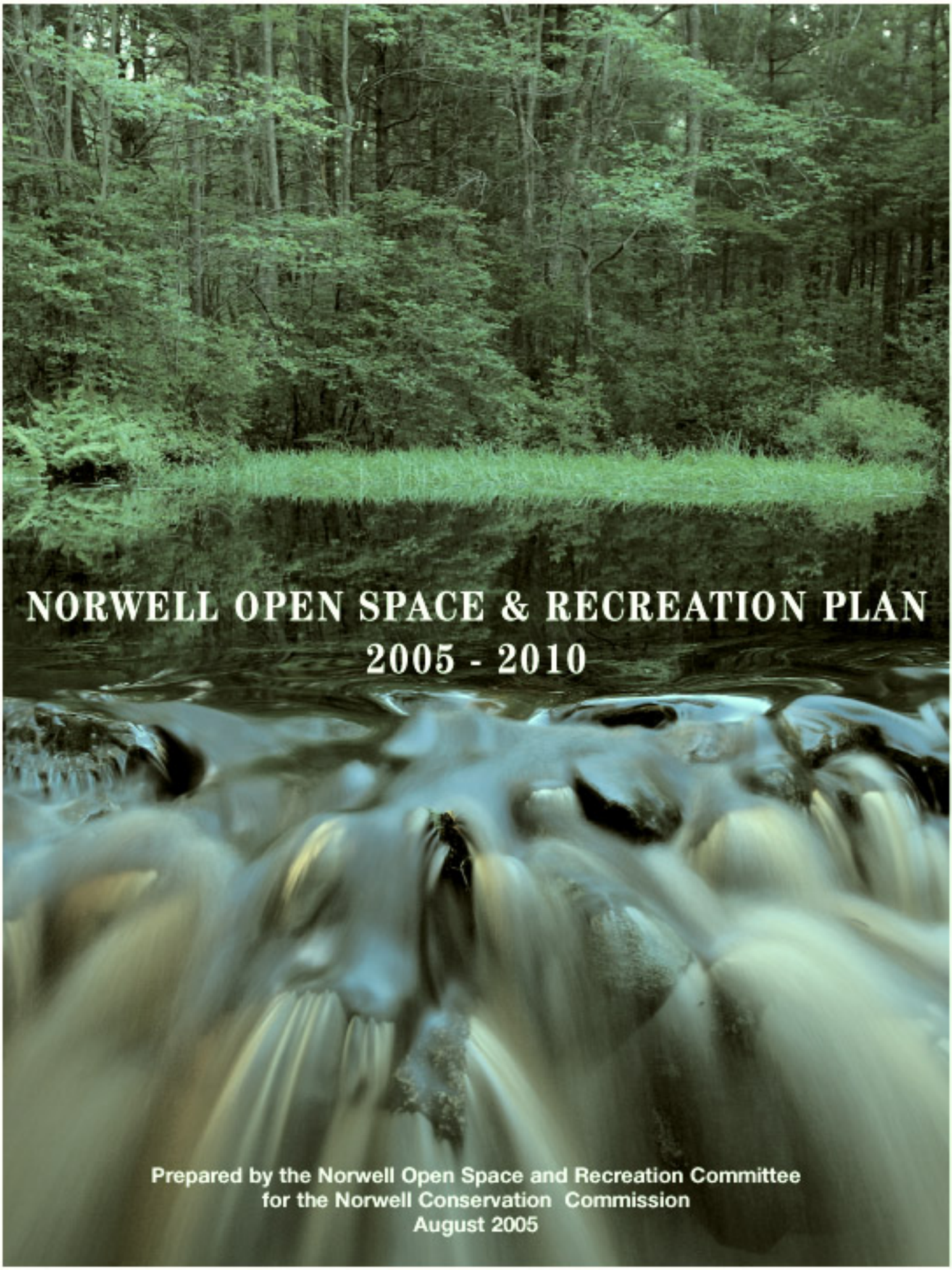


NORWELL OPEN SPACE & RECREATION PLAN
2005 - 2010

Prepared by the Norwell Open Space and Recreation Committee
for the Norwell Conservation Commission
August 2005

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Norwell Open Space and Recreation Committee
for the Norwell Conservation Commission
Norwell, Massachusetts

August 2005

"…collecting data
is only the first step toward wisdom,
but sharing data
is the first step toward community."

—Henry Lewis Gates

OPEN SPACE AND RECREATION PLAN COMMITTEE MEMBERS:

Deborah Lenahan, chair	At large
Richard Barry	Beautification Committee
Dale Connor	Recreation Director, Town of Norwell
Deborah Hill	Conservation Commission
Steve Ivas	Norwell Water Commission
Rosanne Joyce	At large
Michele Simoneaux, agent	Conservation Commission
Barbara Wolinsky, designer	At large

PROFESSIONAL SERVICES WERE PROVIDED BY NORWELL RESIDENTS:

Eliza McClennen, cartographer

Alison Demong, editor

The quotes appearing in this Open Space and Recreation Plan are from Norwell citizens, including 6th grade and high school students. They are responses to the Open Space Questionnaire.

Norwell Open Space and Recreation Plan

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1 Plan Summary

The 2005 Norwell Open Space and Recreation Plan is a five-year planning document that was developed in conformance with the 2001 requirements of the Massachusetts Executive Office of Environmental Affairs. It is an educational and informative document that describes the town's regional context, geographical and geological features, natural resources, and recreational opportunities. It lays out specific actions that should be taken in the next five years that will advance the realization of the following vision with respect to open space acquisition:

> *In order to retain the semi-rural character and preserve the ecological integrity of Norwell, the town should aim to protect 30% of its total area as open space in perpetuity.*

The citizen-led planning process fostered active public participation and communication among town boards. The Plan cites the need and citizen desire to protect our water supply. It aims to protect historic and scenic resources that contribute to the town's character, and addresses community recreational needs both now and for the future. The *Five-Year Action Plan* section lays out specific objectives and actions, and identifies responsible parties to lead implementation on the following four main goals:

- Protect the quality and quantity of Norwell's water supply
- Protect natural resources and promote biodiversity
- Protect Norwell's scenic quality and historic resources
- Support and enhance passive and active recreation with little impact to the environment

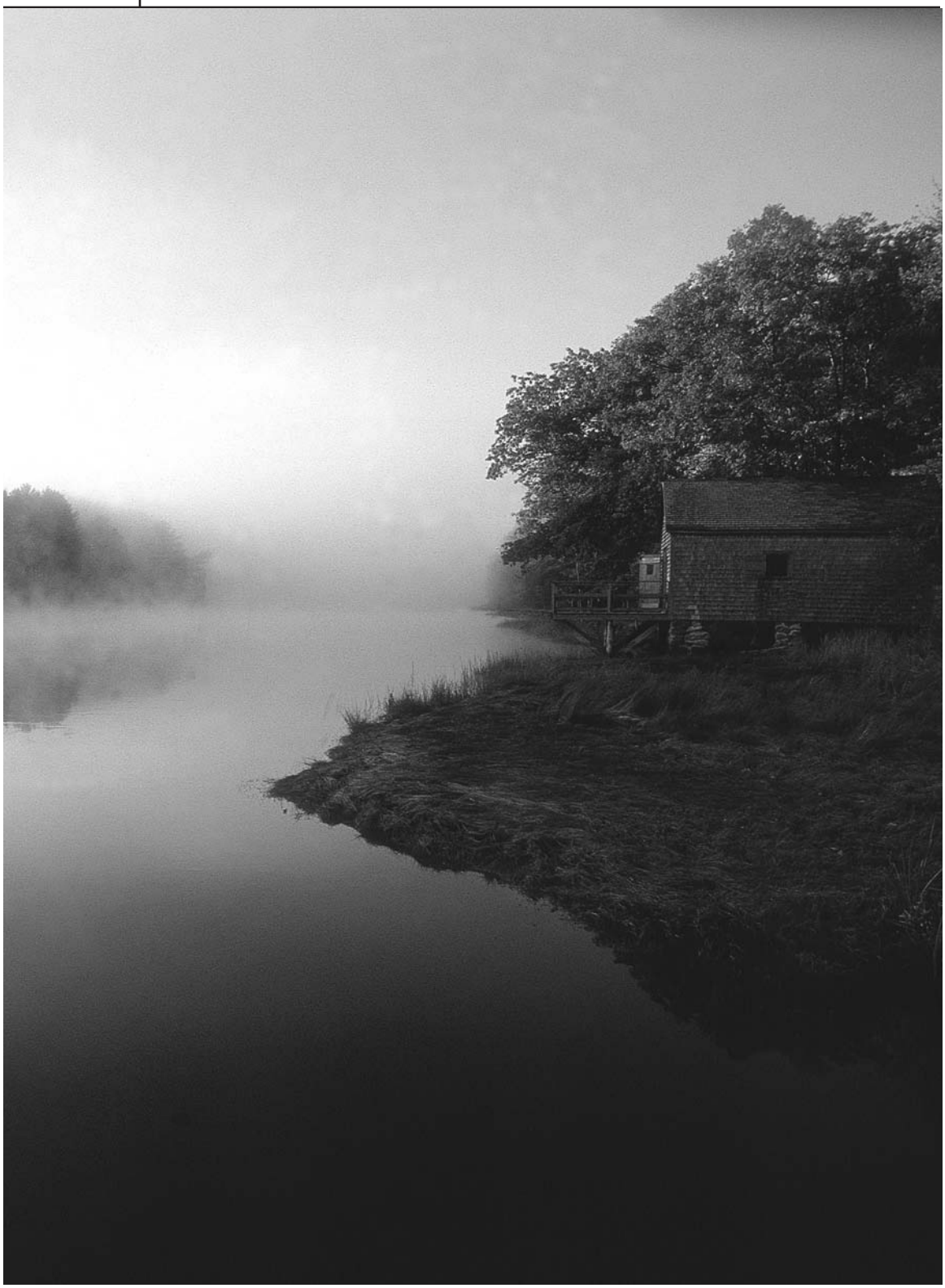


 Photo by Cary Wolinsky

2 Introduction

A STATEMENT OF PURPOSE

The *2005 Norwell Open Space and Recreation Plan* was prepared by the Norwell Open Space and Recreation Plan Committee, an eight member subcommittee of the Norwell Conservation Commission that was formed in late 2002. The Plan updates and expands upon previous Open Space planning efforts (completed in 1977, 1987 and 1997) and compliments the first-ever Norwell Master Plan (Draft 2004) and the South Coastal Watershed Regional Open Space Plan (2003). This document is consistent with the Draft Master Plan Vision Statement:

> *Norwell in 2021 is a predominantly residential town with a strong sense of community identity and semi-rural visual character.*

The Town of Norwell has benefited from the Massachusetts Division of Conservation Services grant programs in the past to purchase significant open space resources, and understands that in order to be eligible the town must have an updated and state-approved Open Space and Recreation Plan. The town is also undergoing heavy developmental pressures and views this planning process as an important tool in shaping the town's future.

This Plan is not only a valuable planning document; it is an outreach and education tool as well. It provides a wealth of information on the town's history, regional setting, demographics, and development patterns. It offers an impressive overview of important natural resources found in town, as well as a comprehensive parcel-based inventory of all lands that hold open space value.

The Plan was developed concurrently with the Norwell Master Plan and the South Coastal Regional Open Space Plan. The Committee was mindful of these planning efforts and has worked hard to ensure that the three Plans compliment one another. Actions listed in this plan that also appear in other plans are so noted.

B PLANNING PROCESS & PUBLIC PARTICIPATION

Committee members met from early 2003 through December 2004 at least twice a month. All meetings were posted with the Town Clerk's office. In the beginning of the process, the Committee members conducted interviews with the Norwell Mariner Newspaper and the Boston Globe to announce the development of the Plan and invite interested members of the public to attend the meetings and join the Committee. The Norwell Master Plan process

contributed to the development of this Plan through its "Open Space and Environment Working Group".

The Committee solicited public participation primarily through the distribution of a questionnaire about open space and recreational resources in town during the spring and summer of 2003. A copy of the questionnaire can be found in Appendix A. It was printed in the newspapers and handed out at various locations around town. There were 269 returned surveys, yielding a return rate of 27%. Citizen comments retrieved from the questionnaires can be found throughout the Plan.

OPEN SPACE AND RECREATION PLAN COMMITTEE MEMBERS:

Deborah Lenahan, serving as Chair and Board member of the North and South Rivers Watershed Association
Richard Barry, representing the Beautification Committee
Dale Connor, Recreation Director for the Town of Norwell
Deborah Hill, representing the Conservation Commission
Steve Ivas, representing Norwell Water Commission
Rosanne Joyce, representing the Conservation Commission
Michele Simoneaux, Agent for the Conservation Commission
Barbara Wolinsky, member of the Community and South Shore Natural Science Center Trustee

PROFESSIONAL SERVICES WERE PROVIDED BY NORWELL RESIDENTS:

Eliza McClennen created the GIS maps.
Alison Demong provided editing expertise.

3 Community Setting

A REGIONAL CONTEXT

The town of Norwell is situated in Plymouth County, 23 miles south of Boston. The town's land area is 21.17 square miles, or 13,548 acres. Adjacent towns include Hanover and Rockland to the west, Pembroke to the south, Marshfield to the south east, Scituate to the east and Hingham to the north. The town's eastern boundary with Marshfield is defined by the North River, a tidal estuary that is also a state designated Scenic River. While Norwell does not have any coastal waterfront, it is considered a "South Shore" town. It is found in the Massachusetts South Coastal Watershed, and is featured in the 2003 South Coastal Watershed Regional Open Space Plan. Several Norwell Open Space and Recreation Committee members were active participants in the planning process for that plan. Norwell is also a member of the South Shore Coalition, a subregion of the Metropolitan Area Planning Council, comprised of a group of communities that meet regularly to discuss issues of common interest and is a venue for discussing regional open space issues and opportunities. The following towns that surround Norwell have current Open Space and Recreation Plans: Marshfield and Cohassett. Hanover, Hingham, Rockland, Scituate and Pembroke do not have updated plans.

Norwell has many beautiful and ecologically valuable resources that extend beyond the town's borders. As population growth continues and South Shore towns lose more and more open space, it is imperative that towns coordinate their efforts to identify and protect important shared resources. While this is not always easy to accomplish, especially in New England which prides itself on home rule governance, it is an important and necessary goal that should be actively pursued. Norwell is cognizant of this fact and has worked successfully with neighboring towns in various municipal projects in the past, and will continue to do so in the future.

B HISTORY OF THE COMMUNITY

The town of Norwell has a history spanning over 350 years, but the town's name has changed over time. The land area that comprises Norwell today was originally part of the town of Scituate, later named South Scituate, then finally Norwell in 1888.

It is believed that the first inhabitants of the area were descendants of the Mattakeeset Indians from Pembroke. As settlers moved away from the core of Scituate in the late 1620's, they made their homes in the area east of Stoney Brook and harvested salt marsh grass and fished in the North River. In 1634, a man named Robert Stetson left Scituate and settled upriver thus becoming the

pioneer settler of South Scituate. In 1653, the Indian title to the lands comprising Scituate and South Scituate was purchased from Josiah Wompatuck, Chief of the Mattakeesets.

The history and development of Norwell has been shaped by the North River. The North River ferry was established in 1644 at what is now the Union Street Bridge, and the shipbuilding industry in Norwell began in 1670 with the establishment of the Wanton Yard. South Scituate was vulnerable to Indian raids and it did not begin to flourish until after King Phillip's war in 1676. Sixty area residents fought in the French and Indian War in 1754 and four hundred fought in the Revolutionary War. Life was church centered. The right to vote was restricted to freemen and freemen had to be church members. The Second Parish of Scituate was organized in 1642. In 1849, it became the First Parish of South Scituate and in 1888, it became known as the First Parish Church of Norwell where it still resides today on River Street.

During the Colonial Period (1675-1775) shipbuilding increased and more families settled on the North River. The South Scituate town village was established. Development began in the Assinippi area in 1730 when Joshua and Joseph Jacobs built Jacobs Pond and Jacobs Mills; grist and sawmills at the boundary of Hanover and Norwell. These mills operated for the nearly two centuries. The sawmill burned down in 1920 and the gristmill had been removed sometime earlier. Third Herring Brook was used to establish both saw and grist mills to support the growing shipbuilding industry and early farming. In 1783, the keeping of slaves was abolished in Massachusetts and former slaves settled in the Wildcat area.

Shipbuilding on the river peaked during the Federal Period (1775-1830) with five shipyards in operation. In 1815, *the Mount Vernon*, a 464-ton vessel and the largest vessel built on the North River, was built at the Wanton Yard. New industries included tanning and shoemaking. The North River ferry was replaced with a toll bridge at Bridge Street in 1802. In 1834, the Salmon Tack Factory was established.

As the demand increased for larger ships requiring deeper water, shipbuilding on the North River declined from 1830 to 1870. In fact, in 1871, with more than one thousand ships having been built, the last vessel, the 90-ton *Helen M. Foster*, was launched from Chittenden Landing. After the collapse of the shipbuilding industry, poultry farming became one of the primary industries along with other agricultural endeavors. The Late Industrial Period (1870-1915) saw the construction of a trolley line on Washington Street (Route 53) between Assinippi/High Street and Accord Pond in Hingham, increasing growth at Assinippi. In 1850, the town took over the North River bridge removing the tolls. It was replaced in 1917 with the present bridge, the cost of which was shared between Norwell, Marshfield and Plymouth County.

"…Norwell is one of the prettiest towns on the South Shore. It still has a rural feel to it. I think it is important to maintain this."

EMERGING NORWELL

In 1847, residents of South Scituate had different interests than those in Scituate proper and led different lives than those along the ocean shore. They had a bank, active (but waning) shipyards on the North River, farms and heavy pine forests and they looked askance at the barren Scituate beaches and wastelands. In 1848, 212 years after the incorporation of the Town of Scituate, the town voted to establish South Scituate as a separate town. In 1849, the Town of South Scituate was incorporated with land ceded by Scituate. The population of South Scituate in 1850 was 1,770.

In 1874, the James Library was constructed with $3,000 donated by Mr. Josiah L. James, a Norwell native who moved to Chicago. There were 135 men in the Civil War, 24 of whom were killed or died in the service. In 1878, the town voted $1,000 to complete the Soldiers Monument which can still be seen in the Norwell common. It was dedicated July 4, 1878, at the entrance to the old town hall, with the temperature 99° in the shade. In 1884, the town hall on the common burned down. In 1888, the town named was changed from South Scituate to Norwell after Mr. Henry Norwell, a Boston businessman and summer resident who had contributed $2,500 each year for 10 years to maintain the town roads. The first town seal was adopted in 1899.

In 1845, the Old Colony Railroad company built a train line from Boston to Plymouth. The South Shore Railroad was chartered in March 1846 to build a line from the Old Colony in Braintree through Weymouth, Hingham, Cohasset, Scituate, and Marshfield to Duxbury. It opened on January 1, 1849, and was equipped and run by the Old Colony. In March 1893, the entire Old Colony Railroad system was leased to the New York, New Haven & Hartford (New Haven) Railroad. Usage hit an all-time high in 1911, but started to decline soon after as service reductions were mandated during World War I to conserve fuel, equipment, and labor for the war effort. The decline continued with competition from the automobile in the 1920's, and ultimately ended in June of 1959, coinciding with the opening of the Southeast Expressway (Route 3).

In 1900, the town's population was 1,560. The population remained steady through World War II when the pace of residential construction picked up. In 1950 the population was 2,515 but this figure grew rapidly with the completion of the Southeast Expressway in the early 1960's. The character of the town gradually changed as new homeowners used the new roads to commute to Boston.

C POPULATION CHARACTERISTICS

The population of Norwell at the beginning of 2003 was 10,116 residents. Norwell population/density trends since the 1930's are shown on the following chart:

YEAR	1930	1940	1950	1960	1970	1980	1990	2000
POPULATION	1519	1871	2525	5207	7796	9182	9279	9765
% CHANGE		23.17	34.42	107.04	49.72	17.78	1.01	5.2

Source: US Census

There were less than 100 residents per square mile until the 1950's when the Southeast Expressway was completed and access to Norwell by vehicle became easier. GI Bill low home interest loans for veterans added to the building boom. From 1950 to 1960, the population increased 107% and from 1950 to 1980 it increased 277%. By contrast, during this same period (1950-1980) the population of Plymouth County increased only 114%.

With increasing development, the character of the town changed from small rural farms to a residential suburban community with workers leaving the town in the morning and returning in the evening. From 1991 to 1999, undeveloped land was reduced by 10.5% (42 acres), agricultural land reduced by 11.0% (37 acres) and forestry reduced by 2.3% (190 acres) for a total loss of 269 acres to residential development. In 2000, there were 189.9 housing units per square mile with an average household size of 2.94.

The population of the town is growing at a rate faster than official projections. In 1990, the Metropolitan Area Planning Council projected that the Norwell population in the year 2000 would be 9,406 (a 2% growth) while the actual year 2000 population was 9,765 (a 3.9% growth). By 2003, the town had already exceeded the year 2005 forecast: 10,116 actual residents in 2003 versus 9,883 forecast for 2005. The population growth has paralleled the town's improved transportation infrastructure as more residents commute to jobs and opportunities outside of town.

The impending restoration of the commuter rail from Boston to Scituate (2006) will undoubtedly cause yet another upswing in the population of the town, as development hot spots relate directly to the location of commuter rail. The terminus of the line will reside in the Greenbush area of Scituate, located less than a mile from the Norwell town line, at the intersection of Route 3A and Route 123. According to the Massachusetts Audubon Society, 10 of the top 20 cities and towns in Southeastern MA that have the fastest growth in new single-family homes lie at the terminus of commuter rail lines.

NORWELL
MEDIAN SALES PRICE
FOR SINGLE-FAMILY HOMES

2004	525,000
2003	474,000
2002	452,500
2001	393,650
2000	357,250
1999	330,000
1998	250,670
1997	264,450
1996	235,000
1995	220,000
1991	209,000
1990	196,500
1989	227,000
1994	202,750
1993	193,000
1992	185,900

Source: www.thewarrengroup.com

INCOME

Norwell is an affluent community with high median household income. Family income figures reflect both the growth in the economy and the character shift of the town's workforce. In 1985, the average annual wage was $16,954 and grew in just 15 years to $42,500 in the year 2000. That same year, the median household income was $87,397, one of the highest for the South Shore. (For Plymouth County, the median household income for the year 2000 was $55,615). The poverty rate is low and the number of residents below the poverty level has declined over the past 10 years. Of the 9,765 residents of Norwell in 2000, 179 individuals (1.9%) and 37 families (1.4%), had income below the poverty level ($17,603 for a four-person family). The year 2000 census shows this to be one of the lowest percentages of poverty for the South Shore. In Plymouth County in the year 2000, 6.6% of the individuals had income below the poverty level. Most of the workers are involved in the private sector (76.5%) with government workers the next largest group (13.6%). The majority of workers are employed in management (52.3%) with sales and office workers following (29.3%). The types of industries include educational, health and social services (21.8%), scientific (15.6%), retail trade (13.9%) and finance/insurance/real estate (13.8%).

The median sales price for a single-family home in Norwell has more than doubled in the past 15 years. Housing prices are on the rise in all of eastern Massachusetts and Norwell is no exception.

BUSINESS DEVELOPMENT

From 1985 to 2001, the number of businesses in Norwell recorded by the Commonwealth of Massachusetts increased from 268 to 522, a growth of 95%. The town has 695 acres zoned for business development with two large industrial parks with a commercial/industrial build out capacity of 639,647 additional square feet. The business districts have been located near high-speed access highways (Routes 3, 53 and 123). From 1985 to 2001, the finance/insurance/real estate sector had the largest increase in employment: 632%. In 2001, the Norwell unemployment rate was 2.2% versus 3.7% for the Commonwealth of Massachusetts. From 1983 to 2001, the unemployment rate for Norwell has been well below the statewide rate.

DEMOGRAPHICS

The majority of the Norwell population is white, college educated, managerial or professionally

employed in the private sector. The town's natural beauty coupled with its proximity to Boston has drawn an affluent population, many of whom commute to Boston for employment. Norwell residents are committed to maintaining the town's rural character as the voters approved the adoption of the Community Preservation Act in 2002 to address the need to protect more open space, preserve historic resources and create recreational facilities and affordable housing. There are 245 volunteer positions that exist to serve 82 Norwell administrative, planning and advisory boards and committees. Not all of the positions are filled at this time and many volunteers serve on more than one board.

As of the 2000 Census for Norwell, the population is 98% white and divided 49% male to 51% female. The median age is 40.1 years (up from 37.1 in 1990) and 17.2 % of the Norwell residents are 60 years of age or older. Twenty-nine percent of people 65 years of age and older have a disability. There are 1,424 (43.8%) households with individuals less than 18 years of age and 752 (23.1%) households with individuals 65 or older.

Of the population 25 years and older, 60.1% (3,945) have a college degree with 51.9% (3,407) having a bachelor degree or higher. With a very low dropout rate, Norwell schools rank very high in percent of students passing the MCAS tests. Of the civilian population 18 years and over, 13.2% (920) are veterans. Since 1985, 28.2% of the population has relocated in or to Norwell. The town's 9,765 residents have reported 11,702 total ancestries with Irish (39.4%), English (15.2%) and Italian (15.2%) comprising the majority.

AFFORDABLE HOUSING

The US Department of Housing and Urban Development (HUD) defines housing available to households that spend no more than 30-33% of their annual income on housing as affordable. Making housing affordable to a range of citizens depends largely on household income. According to the Citizens' Housing and Planning Association, the median income for Norwell in 2004 was $98,338, and the maximum amount affordable to a first-time homebuyer with that salary is $455,879. However, the median sale price of a Norwell home for that same year was $525,000 - shutting out many first-time home buyers, young professionals, service workers and others from the local real estate market.

Norwell has 126 subsidized, affordable housing units. This affordable housing stock comprises only 3.82% of Norwell's total housing units and is well below a 10% goal set for communities by the Commonwealth. For communities in Massachusetts whereby less than 10% of the total housing stock is not available for low- or moderate-income residents (households at or below 80% of median area income), housing proposals may seek exemptions from local zoning and other regulations under the Chapter 40B Comprehensive Permit Law.

"Acquire land for more housing for seniors and lower income people."

Typically, 40B developments include more units than would be allowed under conventional zoning in exchange for 25% of the units to be deemed "affordable". The Department of Housing and Community Development keeps a Subsidized Housing Inventory to track how communities are faring with respect to meeting the goal of 10%. Norwell's low percentage and lack of an affordable housing strategy makes the town vulnerable to 40B developments. This means that Norwell finds it difficult or impossible to shape or reject 40B projects that may be inappropriate for the town for legitimate reasons. There are several 40B developments in Norwell including the Silver Brook Estates subdivision and a development on Jacob's Pond for seniors. In 2004, in order for a unit to be eligible for the Inventory, it must be affordable to a household of four with a total income of $66,150 a year (80% of the area-wide median income) for moderate income families, or less for low-income families. The affordable units in Norwell 40B subdivisions start at $125,000.

POPULATION TRENDS

As is true in all of Massachusetts, our population is getting older. At present time, 12.6% of Norwell residents are 65 or older. However, the Norwell Baby Boom population (born 1946-1964) comprises 34.5% of the total population and as this generation begins to reach retirement age (around the year 2011), the size of the elderly population could accelerate quite rapidly thereafter to an estimated total of 47.1% of the population by the year 2029.

In addition, a large portion (nearly 44%) of Norwell households have children less than 18 years of age. The Commonwealth of Massachusetts projects a decline in the population of youths (less than 20 years) and also projects that the dependency ratio - the number of youths and elderly (ages 65 and over) for every 100 people of working age - could rise from 66.7 in 1995 to 77.1 in 2025. Therefore, the dependency ratio growth will be mostly in the elderly ranks. The town should begin to plan for this expected growth by working through the town's Council on Aging to examine services, recreational needs, and housing options for the elderly population.

D GROWTH & DEVELOPMENT PATTERNS

Shipbuilding along the North River was the primary industry beginning in the 1600's continuing through the early 1800's. As land was cleared and harvested of trees for shipbuilding, farms were developed. As shipbuilding waned, the sawmills continued, and tanneries, shoemaking and extensive poultry farming were pursued. Forested areas began to rebound. Sheep farming was favored over land-based agriculture due to poor rocky soils. The early character of the town was primarily light industry, but as the shipbuilding industry declined, the town's landscape was primarily defined by farms.

Although there were early initiatives that intended to provide rail service to the town and there was a trolley along Washington Street/Route 53, the town remained generally out of the mainstream of commerce. For many years the population remained fairly even, fluctuating slightly from year to year. In 1850, the Norwell population was 1,770 residents but dropped to 1,348 residents in 1920. This level of population continued until 1950 when it rose to 2,515 residents. Poultry and other farming, which had flourished since the 1800's, began to decline and the construction of new homes commenced in earnest. The population continued to increase sharply thereafter. Roughly 73% of the homes seen in Norwell today were built over a 50-year period (1940 – 1990). In contrast, from 1600 to 1940, a 340-year period, only 18.0% of the homes in Norwell were built.

This growth in residential homes is directly related to the increase in the economy and to the completion of high-speed road access to Norwell from Boston and surrounding areas for employment, goods and services. After the decline of shipbuilding, the town became attractive to new residents drawn to its accessibility, its affordable property and desirable life style.

The character of the town changed to a residential suburb with a rural atmosphere. The town infrastructure, particularly schools, had to be expanded to accommodate the increase in the number of residents. Residential growth first began in the section of town closest to Route 53, (Washington Street). Small houses typical of that era were built upon lots as small as 7000 square feet but in 1973, residential zoning was changed to one-acre lot minimum and has remained so ever since.

ZONING AND LAND USE

Norwell has a relatively simple zoning structure with two residential zoning districts, three business districts, and five overlay districts (Map 1: Zoning). All districts have a one-acre minimum lot size, and the town is primarily zoned for residential use.

LAND USE SUMMARY - 2001 ASSESSOR'S DATA

	# PARCELS	% TOTAL PARCELS	TOTAL LAND AREA	% TOTAL LAND AREA
RESIDENTIAL	3706	.84	8111.57	.61
COMMERCIAL	240	.05	390.95	.03
INDUSTRIAL	32	.01	94.36	.01
FOREST, AGRICULTURE, RECREATION	52	.01	818.48	.06
EXEMPT *	380	.09	3757.78	.28

**Tax exempt parcels are held by non profits such as churches, schools, land trusts, or held by a municipal, state, or federal entity.*

POPULATION DENSITY OF SOUTH SHORE TOWNS PER SQUARE MILE

TOWN	POPULATION
SCITUATE	1,057
HINGHAM	885
MARSHFIELD	858
HANOVER	851
COHASSET	736
NORWELL	466

Based on US Census Data 2000

Quickly developed and poorly planned land use can result in land fragmentation, often leaving other land uses (particularly open space uses) less viable. The Trust for Public Lands has found that since 1950, Massachusetts has developed land at a rate six times that of its population growth. Norwell is in 16th place in land consumed per new resident (.61 acres/resident between 1991-1999) among all the other 351 cities and towns in the Commonwealth. However, compared to neighboring towns, Norwell is growing at a relatively modest rate and maintains the lowest population density of the South Shore towns.

According to the Norwell Building Inspector, new houses in Norwell tend to be large, with 3,500 square feet or more. As the amount of vacant, buildable land decreases, developers are buying smaller existing homes and either tearing them down or undertaking major renovations on the order of $150,000 - $250,000. In these cases the land has become more valuable than the homes themselves.

In order to conserve more open space and allow for more creative site design, the town should consider adopting an "Conservation and Recreation Residential Design" bylaw that could be used in larger subdivisions. The use of this bylaw could potentially preserve more open space while creating neighborhoods.

BUILD OUT ANALYSIS

The Metropolitan Area Planning Council (MAPC) prepared a Community Profile for Norwell that projects development and infrastructure impacts that could occur if no changes were made to current Norwell zoning by-laws (Appendix B). Some of these projections are cause for concern. The MAPC projects that when all possible land is developed in Norwell ("build-out") the population could be 16,686 residents (a 71% increase from today's population) with 5,713 houses and 3,349 students (a 22% increase in students). An additional 41 miles of roads could be required. This increased population and development would strain the town's infrastructure and particularly its water supply.

The Trust for Public Land has concluded that town revenues from open land exceed their costs and that in the long term, contrary to the common perception that development will bring lower taxes, property tax rates are generally higher in more developed towns than in more rural towns. As Norwell loses most of it's open land to residential development, tax rates can be expected to increase to pay for the rising cost of the growing infrastructure.

INFRASTRUCTURE

Municipal Groundwater Wells and Drinking Water Norwell is served almost entirely by a municipal water supply system that relies on 10 wells that draw on groundwater resources (Map 4: Water Resources). The Norwell Water Department samples water on a continual basis and provides results of sampling to the Department of Environmental Protection and the residents of the Town. Every summer the results are summarized in an annual report that is mailed to all residents. Beginning in 2005, the report will be publicized on the Department's new website: www.norwellwater.org. For the years 2000 and 2001, the Department received a Public Water System Award and was honored in a ceremony at the Massachusetts State House on National Drinking Water Day, May 8, 2001. The Department was one of 20 systems (from a total of 522 Public Water Suppliers in the Commonwealth) to be recognized for overall excellence in key areas of operation.

The town has a permit from the Massachusetts Department of Environmental Protection to pump an average of 1.35M gallons per day. The system serves over 3,200 customers who collectively use roughly 1M gallons per day. The system pumps about 337M gallons per year, with peak demands in June that reach upwards of 2M gallons per day. The system is managed by a superintendent who reports to an elected 3-member Board of Water Commissioners. The town by-laws empower the Board to impose water restrictions during periods of high demand.

The town may face a water shortage problem in the future without good planning. The town's recently prepared Water System Master Plan found that without improvements to the current system the water supply would be inadequate by 2020 based on average build out of 35 new homes per year. In light of this, the Water Department is planning for a new well (Well #11) with a new 12-inch distribution line, planned for the South Street location. This well will provide an additional 800 gallons per minute and is expected to be on line in 2007. There are three major wellfield areas containing nine wells, and one additional well that stands alone:

SOUTH STREET / OLD POND MEADOWS WELLFIELD—WELLS 1, 6 AND PROPOSED WELL 11

GROVE STREET WELLFIELD —WELLS 2, 3, 5, AND 10

WASHINGTON STREET / RIDGE HILL ROAD WELLFIELD —WELLS 4, 7, AND 8

BOWKER STREET WELL —WELL 9

Wastewater The Town has no Municipal or Industrial Wastewater Treatment System. Wastewater disposal is on-site, except for the Accord Industrial Park on the south side of Route 3, a portion of which is tied into the Rockland Wastewater Treatment System.

"The town needs to be more aggressive about protecting the town wells. If the town is going to buy open land, it should consider larger easements to areas around wells."

Transportation Norwell has limited public transportation options. Presently, the majority of residents commute by private automobile. In the year 1990, Norwell had 6,964 registered vehicles. This increased to 8,666 vehicles in the year 2000; a 24.4% increase in registered vehicles in a 10-year period. Routes 123 and 53 are two main state highways passing through Norwell. Traffic data from the Mass. Highway Department showed a traffic increase on Route 123 from 9,600 vehicles per day in 2001 to 10,500 vehicles per day in 2002; a 9.4% increase in traffic in a period of only 1 year.

Many residents who work in Boston drive the entire way and can face hour-long commutes despite the 23-mile distance. Others drive a shorter distance up Route 3 to the Braintree and Quincy T stations, park, and ride the light rail train into the city. Other residents drive to Quincy or Higham where they park and then take a ferry to Boston's Long Wharf or Rowe's Wharf. In the year 2000, there were 4,869 employed civilian workers more than 16 years of age and 85.5% of these commuted to work by vehicle with only 7.1% using public transportation.

At present time, there are no rail services available in Norwel. However a Commuter Rail extension from Boston to Scituate's Greenbush area (located less than a mile from the Norwell border) is under construction which will reinstate a valuable transportation alternative for Norwell residents. The MBTA estimates that the train line will be functioning by the year 2006, however, the process has been expensive and fraught with legal issues and may possibly take longer than expected. Norwell should begin to plan for the arrival of commuter rail service to Greenbush by perhaps providing a shuttle service for residents to ease traffic, and to plan for a variety of housing options to accommodate expected growth.



16 *Photo by Cary Wolinsky*

4 Environmental Inventory and Analysis

A GEOLOGY, SOILS & TOPOGRAPHY

GEOLOGY

Norwell's bedrock is mainly Dedham Granite and its surficial geology was created by glacial and wind action. Glacial action and soft bedrock material are responsible for carved-out valleys that were later filled with a variety of materials, including till, clay, sand, gravel, and cobbles and boulders.

Norwell has no natural ponds, except for Black Pond, a kettlehole pond. There are a number of wetland areas that may have been historic ponds that are now characterized by many feet of peat, clay and sands, and gravel deposits. The deepest layer of these historic pond deposits discovered to date is an area of 90-foot thick materials in Old Pond Meadows, south of Route 3 and about a half mile east of the end of South Street. The second deepest layer of deposits above bedrock is at the end of South Street near the present course of Third Herring Brook at Municipal Pumping Well No. 1, where the deposits are about 60 feet deep. In some locations, there are ledge outcrops where bedrock reaches ground elevation.

ROCK OUTCROPS IN NORWELL

1. EAST SIDE OF DAMON POND
2. JUST WEST OF WILDCAT BROOK ON FOREST STREET (DIORITE, MAFIC ROCK)
3. GAFFIELD PARK
4. AT FAR END OF HIGH SCHOOL FOOTBALL FIELD (DEDHAM GRANITE)
5. THE RAPIDS ON THE NORTH RIVER
6. AT THE INTERSECTION OF MILL AND SOUTH STREETS (FORMER)
7. TIFFANY ROAD BY THIRD HERRING BROOK
8. MAIN STREET BETWEEN BRIDGE STREET AND DOWNTOWN
9. MAIN STREET BY WILSON HILL ANTIQUES
10. PLEASANT STREET NEAR SOUTH STREET

SOILS

Norwell's soils (Map 2: Soils) are predominantly in the Scituate-Essex-Merrimac soil association, which is characterized by nearly level to gently-sloping moderately well-drained soils formed in glacial till. Scituate soils tend to be very stony sandy loams, wet in spring and fall and most suitable for pastureland or woodland. Essex soils are also well-drained but stonier and tend to follow the higher elevations in town. Merrimac soils were formed in sand and gravel, and are very well-drained.

These soils usually present no major barriers to construction. However, because nearly 30% of the town is comprised of wetlands and there are areas with pockets of boulders and other obstacles, it is often necessary to try several locations to find a suitable site for a septic system for a private residence. This often results in a need for larger lots and sometimes limits the number of lots in a subdivision. For more detailed descriptions of the soils please see Appendix C: *Natural Resources Information*.

B LANDSCAPE CHARACTER

The Town of Norwell is located in the "Southern New England Coastal Plain and Hills" region as defined by the U.S. Environmental Protection Agency. Norwell's landscape character is defined by its tree- and stonewall-lined scenic roadways, open fields, man-made ponds, large swamp areas, and the North River that forms a portion of the Town's boundary. It can be characterized as a sloping coastal plain dotted with small hills and valleys. The hills are the creation of a town-wide drumlin field left over from the ice ages.

The lowest points in town are found along the North River (sea level) while the highest are Mt. Blue (220 ft) and Judge's Hill (240 ft) at the northern end of the town. The top of both Judge's and Paradise Hills are home to water stand pipes that create a gravity-pressurized municipal water system. Most of the rest of the town gently rises and falls between 75 foot and 150 foot elevations. The North River and its floodplain cuts a half-mile-wide channel through this sandy plateau, leaving fairly steep 50'-100' wooded bluffs in some areas. There are also 79 acres of cranberry bogs along Cross and Winter Streets that provide good views, passive recreation, and ice skating in the winter.

Norwell contains many broad, flat swamps, some of which are associated with streams, and one wetland southeast of the intersection of Grove and Prospect Streets that is completely isolated from any other surface waters. Work to understand which direction groundwater flows to and from this wetland has not been completed. Please see Appendix C for more information on swamps.

C WATER RESOURCES

WATERSHEDS

Roughly 30% of the town's area is comprised of water and wetlands. Norwell is part of the Massachusetts South Coastal Watershed, but more specifically, the town lies in two major watershed basins: the Weir River in the north, and the North River Basin for the remainder and majority of the Town (Map 4: Water Resources). The following lists the watershed sub-basins found in Norwell:

- *Accord Pond* along the westerly border of Norwell, which flows into the Wier River Basin to the north.
- *Jacobs Pond* (Upper Third Herring Brook), which drains to Third Herring Brook and the North River to the south and southeast, respectively.
- *Wildcat Brook* which includes, from west to east, Wildcat Creek, Margaret's Brook (just east of the Town Offices), and Wildcat Brook, all flowing into Third Herring Brook.

"It's important to protect animals, woods, and our water."

- *Upper Second Herring Brook* which flows southerly into the North River Basin at Norris Reservation.
- *Stony Brook* at the easterly end of Norwell, which flows southeasterly directly into the North River.
- *First Herring Brook* at the northeast portion of Norwell which flows south and then easterly into Scituate and into the tidal Herring River before merging with the North River estuary.
- *The North River Basin* which includes the creeks and streams along River Street, including Dwelley's Creek, Copeland Tannery Brook, and the un-named stream that crosses Lantern Lane and Tiffany Road before flowing into the Third Herring Brook at Tack Factory Pond.

Under the Massachusetts Rivers Protection Act, the first 200' of a permanent river is afforded special protection. The first 200' from the mean annual high tide line is "riverfront". This "riverfront" is considered a resource area itself, rather than a buffer zone. Some activities such as pruning for viewsheds and the installation of docks and piers are allowed with a permit, while other activities are restricted, such as clearing vegetation for lawn. The Conservation Commission has jurisdiction over any project proposed in the 200' riverfront area. The Norwell Wetlands Protection Bylaw Article XVI-a affords a 50' no-disturb zone around any jurisdictional wetland, including perennial rivers and streams. The River Protection Act zone can be found on Map 4: Water Resources.

The upper reaches of streams, or headwaters, are important habitats for the base of the food chain within aquatic systems. These areas also provide high species diversity which is a measure of system health. Additional understanding of land use practices show that when the amount of impervious surface in a watershed exceeds 15%, there is often a loss of species diversity (and therefore health) of rivers and streams.

PONDS

Due to the vagaries of glaciation and rapid eutrophication of a number of kettleholes that are now swamps, there is only one natural pond in the town: Black Pond Bog. This kettlehole pond was purchased by The Nature Conservancy (and was its first purchase in the Commonwealth), due to its unique features and surrounding habitats. The flows from this pond and wetlands complex reach the Second Herring Brook just below Torrey Pond.

There are 13 man-made ponds of varying sizes throughout Norwell that were primarily built for saw and grist mills in the 1800's (see Appendix C). None of the ponds are suitable for swimming,

but many are used as fishing spots, for ice-skating, and some are used for non-motorized boating. Jacob's Pond, located between Washington Street (Route 53) and Jacobs Lane, is the town's largest and most visible pond with over 50 acres. Unfortunately, Jacob's Pond is listed on the 1998 Massachusetts DEP 303d list of impaired waterways due to 'noxious aquatic plants'. The only other waterbody listed in Norwell is Bound Brook Pond, also because of 'noxious aquatic plants' and 'turbidity'. This list identifies surface water bodies that do not meet expected water quality standards.

The North River The North River is a tidal estuary that comprises most of the town's eastern border, and is one of the South Shore's most scenic and historically significant attractions. An estuary is a river that is heavily influenced by the tides and has both fresh and saltwater features. The headwaters of the river are in Pembroke, and the river and/or its tributaries pass through Hanson, Pembroke, Hanover, Marshfield, Norwell and Scituate before emptying into the ocean between 3rd and 4th Cliffs in Scituate. Many different habitat types are found in and around the North River estuary, including shallow open waters, freshwater and salt marshes, mud flats, wooded swamps, and even a freshwater Wild Rice stand. The North River is a unique natural resource and as such is afforded special protection:

- The North and South Rivers Watershed Association (NSRWA) was created in 1970 by a handful of concerned citizens. Since that time, the organization has grown to over 1,500 members and is one of the largest and most effective watershed organizations in the state. The mission of the NSRWA is to preserve, restore, maintain and conserve in their natural state, the waters and related natural resources within the watershed. The NSRWA headquarters is located on South Street in Norwell.

- In May of 1977, the North and South Rivers were designated a National Natural Landmark (NNL) by the Secretary of the Interior. There are only ten NNL sites in all of Massachusetts. Under the NNL program, the North and South Rivers are described as "*classic examples of drowned river mouth estuaries, supporting at least 45 species of fish and many species of birds . . . the site contains salt marsh, brackish marsh, and freshwater marsh areas*." The NNL Program encourages and supports preservation of sites that illustrate the geological and ecological history of the United States thus strengthening an appreciation of America's natural heritage.

- The North River is the only "Scenic River" in eastern Massachusetts, protected as such under the 1978 Scenic Rivers Protection Act (M.G.L. Ch. 21, s.17B). The North River Commission was established that same year to enforce protection of

"Norwell should have more access to the North River, for both educational children's programs as well as recreational enjoyment."

the river with the authority to regulate such actions as development and vegetative cutting within a 300-foot corridor of the river's natural banks. The Commission is comprised of representatives from each of the six towns that abut the river, including Norwell.

AQUIFER PROTECTION

The town of Norwell relies solely on groundwater for its municipal water system. As a result, actions occurring on lands above the groundwater aquifer must be monitored closely. The Town owns or exclusively controls a 400-foot diameter around each of its drinking water wells, called "Zone 1" (see Map 4: Water Resources). There are strict limitations on land use activities within these Zones due to the potential for contamination. "Zone II" is the theoretical area from which the wells draw water under drought conditions and "Zone III" is the area that contributes surface water to the Zone II soils under drought conditions.

The Town has mapped these zones into a series of Aquifer Protection Overlay Districts to assist with appropriate development. These zones outline the most sensitive areas for groundwater and surface water pollution in the Town of Norwell. The aquifer areas are composed mainly of sands and gravels that can allow pollutants to travel quickly to groundwater resources. The deepest well in operation in 2004 is about 60 feet; well #11 will be about 90 feet when it is built in the next few years.

The Town has also taken the step of identifying contributory areas to the town of Scituate Municipal Wells and surface water supply, and the town of Cohasset's Surface Water Supply. One of Norwell's Overlay districts in the eastern portion of the Town protects Town of Scituate well fields. The town of Scituate owns 28 acres off First Parish Road in Norwell for wellhead protection purposes. Additions to overlay zoning to protect these areas is cited in the Five Year Action Plan.

D VEGETATION

OVERVIEW

Freshwater resources and the tidal influence of the North River have helped create diverse natural communities in Norwell. There are extensive, intact fresh and saltwater marshes along the North River. White pine, red maple and various tree oaks, including red oak, black oak and white oak, are the predominant upland tree species. Red maples and water tupelo are common in the lowland and swampy areas. More detailed information on vegetation, mapping projects and natural communities in Norwell can be found in Appendix C: *Natural Resources Information*.

MAPPING PROJECTS

A number of vegetation and habitat mapping projects have been undertaken either regionally or statewide and include all or part of Norwell that have made valuable contributions to the base of natural resources knowledge in town:

- **Massachusetts BioMap** is a statewide map produced by the Natural Heritage and Endangered Species Program with funding from EOEA, and is designed to guide the protection of the state's biodiversity. Areas identified as crucial to the state's rare species and exemplary natural communities were mapped. The map itself represents the areas that are most viable exemplary natural communities and habitat for rare plant and animal species and depicts the surrounding landscape that buffers and connects habitat areas.

- **The North River Mapping Project**, produced by the North and South Rivers Watershed Association (NSRWA) with funding from the MA Riverways Program and the Trustees of Reservations, uses GIS technology to identify parcels targeted for future protection. The project focus area was defined as the first major road back from the river and included approximately 2,500 parcels in 5 towns: Scituate, Norwell, Marshfield, Hanover and Norwell.

  The project produced a base map in digital form that displays individual parcels in relationship to natural resources. Natural resource data were then overlain with the parcels and criteria were established to identify parcels of high priority for protection. The goal of this project is to work with land trusts and towns and to identify parcels of high priority to determine the feasibility of either acquiring the property or protecting it through a conservation easement.

- **Manomet Center for Conservation Sciences** (MCCS) conducted field surveys throughout southeastern Massachusetts in 2001 and 2002 for a satellite imagery analysis of vegetation. The end result was a course-filter natural communities map of southeastern Massachusetts. MCCS is in the process of refining the map and adding more ground data to the analysis.

FOREST LANDS

The total land mass in Norwell is 13,548 acres (21.17 square miles): 7,924 acres are considered upland forest, while wetlands comprise 3,884 acres (calculations done using ArcView, based on

MassGIS wetlands datalayer). Forested land occurs throughout the town but is a patchy mosaic interspersed and broken by large developments, open water, and farmland. Developmental pressures are leading to an ever-increasing loss of continuous forestland and therefore, a loss of biodiversity.

However, Norwell is fortunate to have some areas of large, uninterrupted, and protected woodland. Wompatuck State Park is situated in Norwell, Hingham, and Cohasset and has 3,467 acres of undeveloped land; 537 of those acres lie in Norwell. Wompatuck State Park contains many diverse natural communities including Successional White Pine Forest and many different types of wetlands. Almost half of the Norwell portion of Wompatuck State Park is considered an Estimated Habitat of Rare Wildlife by the National Heritage and Endangered Species Program (NHESP).

The Cuffey Hill and Judges Hill/Black Pond Bog complex provides approximately 230 acres of contiguous, undeveloped and protected open space. This open space is valuable because of its position in the landscape. It is situated at some of the highest elevations in Norwell and is therefore valuable for sub-watershed protection. An area of NHESP Estimated Habitat of Rare Wildlife is identified within this complex by the NHESP. It is also part of the BioMap's supporting Natural Landscape.

AGRICULTURAL LANDS AND OPEN FIELDS

Agricultural lands contribute both scenic and wildlife values to a community. As Norwell has become more and more residential, much of the farmland has been sold to development. There are still some active farms in Norwell today that farm hay and a variety of produce including 83 acres of cranberry bogs. Others maintain farm animals such as sheep, cows, llamas, chickens and horses. Many species of wildlife find the resources they need for all or part of their lifecycle on agricultural lands, including cranberry bogs. Migratory birds and ducks stop over in the open reservoirs of cranberry bogs, and spotted turtles have been shown to estivate on the bottom of the cranberry bogs. Other animals, such as white-tailed deer and foxes will often use the reservoirs for a water source.

There are not many remaining areas of open meadows or fields. In addition to the cranberry bogs, the Donovan Farms on Pleasant Street, the Whiting Fields on Main Street and Jacob's Farm on Jacobs Lane and Main Street are the major areas of open land. Some of these areas are already protected in perpetuity while others are in some type of conservation restriction. In all planning efforts to date, Norwell residents have made clear that the preservation of the Whiting Fields on Main Street is a high priority. These fields are currently held under Chapter 61A (see Chapter 5 for more details).

UPLAND COMMUNITIES

The following upland natural communities are located in Norwell. The state listed index of rarity is given beside each natural community and classifications are primarily referenced by "*Classification of Natural Communities of Massachusetts*" by Swain and Kearsley, 2001. The complete NHESP description is available for each rare and unique natural community in Appendix C: *Natural Resources Information*. Discussions with local naturalists Fred St. Ours and Steve Ivas helped to identify locations where these types of communities occur in Norwell.

White Pine-Oak Forests (S5) White Pine-Oak Forests are comprised of a mixed dominance of oaks and white pine in the canopy and dominate the upland forests of Norwell. This natural community usually has a prominent heath shrub layer, with lowbush blueberries (*Vaccinium angustifolium* and *V. pallidum*), huckleberry (*Gaylussacia baccata*), mountain laurel (*Kalmia latifolia*), and sheep laurel (*Kalmia angustifolia*). The White Pine-Oak Forest is probably the most common natural community in Norwell and the area in general. Good examples can be found on the town-owned Stetson Meadows property.

Successional White Pine Forest (S5) Successional White Pine Forest is defined as old-field (several decades) with a white pine overstory and other non-dominating co-occurring species. Other co-occurring species include white oak (*Quercus alba*), red oak (*Quercus rubra*), and red maple (*Acer rubrum*). The shrub layer varies from sparse to thick and usually contains elderberry (*Sambucus canadensis*), black cherry (*Prunus serotina*), maple-leaved viburnum (*Vibernum acerifolium*) and sometimes non-native species such as buckthorn, honeysuckle and multi-flora rose. This community can also be found throughout Norwell.

Oak/Hickory Forest (S4) Oak-Hickory Forest is defined as a hardwood forest dominated by a mixture of oaks with hickories mixed in at lower densities. The subcanopy can include hop hornbeam (*Ostrya americana*), flowering dogwood (*Cornus florida*), shadbush (*Amelanchier arborea*). This is a broadly defined and variable forest type. The Norris Reservation contains examples of this natural community.

Cultural Grassland (No state ranking) Cultural Grasslands are open communities created and maintained by humans that generally occurs on sand or other droughty, low nutrient soils. They are important for conservation of grassland bird communities. Donovan Fields, owned by the Conservation Commission and Jacobs Farm, owned by the Town are good examples of cultural grasslands. Hilltop Meadow, an upland area on Pine Street behind the soccer fields that was the former town landfill, provides habitat to a surprising diversity of wild flowers, red-tail hawks, saw-whet owls, Eastern meadowlarks, and migratory dragonflies.

CLASSIFICATION OF NATURAL COMMUNITIES OF MASSACHUSETTS

S1 Typically 5 or fewer occurrences, very few remaining acres or miles of stream, or especially vulnerable to extirpation in Massachusetts for other reasons.

S2 Typically 6-20 occurrences few remaining acres or miles of stream, or very vulnerableto extirpation in Massachusetts for other reasons.

S3 Typically 21-100 occurrences, limited acreage or miles of stream in Massachusetts.

S4 Apparently secure in Massachusetts.

S5 Demonstrably secure in Massachusetts.

SU Status unknown in Massachusetts.

WETLAND COMMUNITIES

Red Maple Swamp (S5) Red Maple Swamps are the most common forested wetland in Norwell as well as in Massachusetts. Red maple swamps are highly variable and occur in a variety of physical settings. Red maple is strongly dominant in the canopy overstory with a co-occurrence of a variety of species, which may include yellow birch (*Betula alleghaniensis*), black gum (*Nyssa sylvatica*), white ash (*Fraxinus americana*), white pine (*Pinus strobus*) and American Elm (*Ulmus americana*). The shrub story is often dense and well-developed (<50% cover but can be variable).

Red Maple swamps can be important vernal pool habitats in areas where there are two to three months of ponding and an absence of fish. Examples of Red Maple Swamp natural communities in Norwell include the wetlands along both sides of Bowker Street and the swamps of Miller Woods Conservation Area.

Emergent Marsh (S4) Both Deep Emergent Marshes and Shallow Emergent Marshes (both S4) occur along the North River in Norwell. It is difficult to separate these two natural communities but according to the DEP Wetlands Inventory 1:5000 datalayer, Norwell has both types of communities. As more information becomes available, we will better be able to determine exact locations of each type of community.

Wet Meadow (S4) A Wet Meadow is defined as a graminoid emergent marsh that is temporarily flooded. Repeated disturbances such as mowing keep this habitat open. Tussock-forming sedges are often dominant. An excellent example of a wet meadow is the Third Herring Brook valley below South Street as it enters Hanover.

The Conservation Commission recently acquired a parcel on River Street with Community Preservation Act funds. This parcel is most likely a wet meadow but needs a more complete inventory to determine if it meets the Swain and Kearsley definition.

Shrub Swamp (S5) Shrub swamps are highly variable communities that are shrub-dominated and occur on mineral or mucky mineral soils that are seasonally or temporarily flooded. Norwell has a number of good examples of this natural community, including Dead Swamp, Hoop Pole Swamp, and portions of Bound Brook Pond.

Hemlock Hardwood Swamps (S4) Hemlock Hardwood Swamps occur in poorly drained basins in bedrock and till and are found typically throughout the central and western portions of the state. Hemlock (*Tsuga canadensis*) is the dominant canopy species but is associated with white pine (*Pinus strobus*), red maple (*Acer rubrum*) and yellow birch (*Betula alleghaniensis*). Shrubs form in canopy gaps between the dense conifers and hardwoods. Common associated shrubs include alders (*Alnus spp.*), highbush blueberry (*Vaccinium corymbosum*), winterberry (*Ilex verticillata*), and mountain holly (*Nemopanthus mucronatus*). The ground layer is hummocky and covered with various moss species. Black Pond Brook, north of the powerline, contains an excellent example of a Hemlock Hardwood Swamp.

Freshwater Tidal Marsh (S1) Freshwater tidal marshes are natural communities that have a State Rank of S1, defined as "*Typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream of especially vulnerable to extirpation in Massachusetts for other reasons*". Patricia Swain, ecologist for the Natural Heritage and Endangered Species Program, states that the occurrence in Norwell is fairly large along the North River and in good condition. Freshwater Tidal Marshes occur along free-flowing coastal rivers and are comprised of mixed herbaceous marsh species. It occurs in the upper reaches of tidal influence. Dominant species include blue joint (*Calamagrostis canadensis*), sedges (*Carex stricta*), narrow-leaved cattail (*Typha angustifolia*), jewelweed (*Impatiens capensis*) and sweet flag (*Acorus calamus*). All efforts should be made to maintain the protection of this fragile and rare habitat.

Acidic Shrub Fen (S3) Acidic Shrub Fens are acidic peatlands dominated by mostly deciduous shrubs. They are less acidic and nutrient-poor than level bogs. In the eastern part of the state, they are usually found along wet pond margins. Black Pond Bog is a very good example of this type of natural community.

Level Bog (S3) Level bogs are acidic dwarf ericaceous shrub peatlands, typically with pronounced hummock-hollow topography. They are the most acidic and nutrient poor of Massachusetts's peatland communities. Leatherleaf (*Chamaedaphne calyculata*) is dominant with a typical mix of rhodora (*Rhododendron canadense*), sheep laurel (*Kalmia angustifolia*), bog laurel (*Kalmia polifolia*).

Inland Atlantic White Cedar Swamp (S2) The most significant area of Atlantic White Cedar swamp that is found in Norwell probably does not match the natural community description by Swain and Kearsley. In Norwell, vegetation compositions matching this description typically occur in small pockets within larger hardwood/conifer wetlands.

"Norwell is a beautiful town.
Please don't destroy it.
We need to preserve it for our future generations."

Old Pond Meadows might contain one of the only state-recognized examples of Inland Atlantic White Cedar Swamp in town. It contains a 3-5 acre stand of Atlantic White Cedar. Jacobs Pond, Bound Brook Pond, and Black Pond Bog also contain small pockets of Atlantic White Cedar.

Vernal Pools There has been some debate over what precise characteristics define a vernal pool but generally it can be defined as a depression where water is confined and persists during the spring and early summer of most years, where many species depend on vernal pools for all or part of their lifecycles, and where fish do not survive. (Burne, 2000). In Massachusetts, vernal pools vary widely in size, shape, depth and other characteristics. Wood frogs (*Hyla versicolor*), spotted salamander (*Ambystoma maculatum*), marbled salamander (*Ambysotma opacum*) and fairy shrimp are obligate vernal pool species, meaning they depend on vernal pool habitat to complete all or a portion of their lifecycle. All except the marbled salamander have been identified in Norwell. The marbled salamander is a state listed Threatened species and has not been confirmed in Norwell or Hingham.

As of the writing of this document, 12 vernal pools have been officially certified in Norwell. Efforts are underway to certify more. In the spring and summer of 2003, the South Shore Natural Science Center (SSNSC) ran a vernal pool identification and certification program for junior and senior students from Notre Dame Academy in Hingham, MA. The students identified and surveyed four vernal pools on the South Shore Natural Science Center property. These vernal pools are now certified through the Natural Heritage and Endangered Species Program.

In the spring and summer of 2004 the SSNSC continued their efforts to certify vernal pools and expanded the vernal pool educational program to certify vernal pools in other parts of town. The Conservation Commission is also in the process of certifying two additional vernal pools in town. These and other efforts to certify and protect vernal pools will be included in our Action Plan (Section 9).

RARE, THREATENED AND ENDANGERED PLANT SPECIES

The following list is of rare vegetation species identified and confirmed by the Natural Heritage and Endangered Species Program in Norwell (Appendix C).

COMMON NAME	LATIN NAME	STATUS
GYPSYWORT	*LYCOPUS RUBELLUS*	THREATENED
PALE GREEN ORCHIS	*PLATANTHERA FLAVA* (L.) *VAR. HERBIOLA* (R. BR.) LUER)	ENDANGERED
ESTUARY PIPEWORT	*ERIOCAULON PARKERI*	ENDANGERED

Gypsywort and Estuary Pipewort have been recently observed but the Pale Green Orchis has not been reported in Norwell since 1981.

INVASIVE PLANTS

A number of invasive species, both aquatic and terrestrial have been confirmed in Norwell. No scientific surveys have been done but local naturalists and scientists can confirm that Japanese barberry, pokeweed, Japanese bamboo, Tartarian honesuckle, Japanese honeysuckle, garlic mustard, European buckthorn, Phragmites (Common Reed), and purple loosestrife are all present to some extent.

The distribution of these species or the rate of invasion is not known. Most of the invasive species mentioned above can be seen at the large conservation parcels including Norris Reservation, Stetson Meadows, Jacobs Pond, and Fogg Forest. There is an extensive invasion of purple loosestrife just upstream of the Mill Pond Dam owned by the YMCA of Hanover. All of these areas could benefit from invasive species management.

E FISHERIES & WILDLIFE

The diversity of natural communities supports an equally diverse array of wildlife species. Norwell wildlife has been well documented from a variety of sources. The lists in the following categories are documented from a combination of sources. Local naturalists and experts Steve Ivas, Fred St. Ours, and David Clapp offered many helpful suggestions of where to find specific species as well as confirming the presence or absence of species that were previously theoretically listed in Norwell. The South Shore Natural Science Center (SSNSC) shared two years worth of Biodiversity Days information that their staff naturalists collected. The information describes the diverse habitats on the SSNSC property, Jacobs Pond, Stetson Meadows and Black Pond Bog conservation areas.

In addition, the First Herring Brook Watershed Initiative (FHBWI) conducted a comprehensive stream survey during the information-gathering phase of its watershed study. The final document, the FHBWI Watershed Report, was completed in 2003. The data on macroinvertebrates found in the FHBWI's report enhanced data previously collected by local naturalists. The information on aquatic invertebrates was particularly useful. The information about Rare, Threatened and Endangered Species comes from Patricia Swain of the Natural Heritage and Endangered Species Program (NHESP). A habitat analysis has not been undertaken for this Plan due to limitations in staff and resources.

In this section, the highlights for each group of wildlife is presented. The complete lists of confirmed and theoretical species and the sources mentioned above are listed in Appendix C: *Natural Resource Information*. Species included in these lists are often derived from a "theoretical list" based on the existence of certain natural communities. Species that have been observed in town are then confirmed with input from biologists and naturalists. The town should continue to add to all of these lists as more is learned about which species find habitat in Norwell.

BIRDS

There are over 70 confirmed species of breeding birds and 23 additional possible breeding species in Norwell. Many areas of town such as Bound Brook Pond on Mt. Hope Street provide excellent habitat for a diversity of birds and waterfowl. Local naturalists and residents confirm that this area provides habitat for a diversity of migratory waterfowl. The open land behind the Pine Street Hill soccer field provides habitat for screech owls, barred owls, great horned owls and American kestrels.

A section of the North River that extends from near to the Hanover town line to the Center of Norwell was one of the first areas recognized and nominated for an Important Bird Area (IBA) for the marsh wren (*Cistothorus palustris)* and is currently under review for acceptance into the IBA program. The North River is a very important stopover for migratory birds and is also important to resident waterfowl. The North River is incredibly valuable as wildlife habitat because its tidal influence maintains a diversity of habitats.

AMPHIBIANS

The Spotted Salamander (*Ambystoma maculatum*), Eastern Red-backed Salamander (*Plethodon cinereus*), American Toad (*Bufo americanus*), Spring Peeper (*Hyla crucifer*), Gray Treefrog (*Hyla versicolor*), American Bullfrog (*Rana catesbeiana*), Green Frog (*Rana clamitans*), Pickerel Frog (*Rana palustris*) and Wood Frog (*Rana sylvatica*) are all relatively common in Norwell. Some are obligate vernal pool breeders.

REPTILES

Snapping Turtle (*Chelydra serpentina*), Painted Turtle (*Chrysemys picta*), Eastern Box Turtle (*Terrapene Carolina*-Endangered), Spotted Turtle (*Clemmys guttata*-Special Concern), Eastern Racer (*Coluber constrictor*), Northern Watersnake (*Norodia sipedon*), Common Gartersnake (*Thamnophis sirtalis*) all find habitat in Norwell. Although Norwell has habitat appropriate for Wood Turtles, none have ever been confirmed and documented.

BUTTERFLIES

Butterflies are not only enjoyable to observe but they also serve a very important function in the environment in pollination of many species of plants. They are also very fragile because they often are dependent upon only one or two species of vegetation for their food source. If that food source becomes rare and hard to find, then the species of butterfly is also put at risk.

Black Swallowtail (*Papilio polyxenes*), Eastern Tiger Swallowtails (*Papilio galucus*), Cabbage White (*Pieris rapae*), and Spring Azure (*Celastrina ladon*) are just a few of the common butterflies that were identified by the South Shore Natural Science Center staff during Biodiversity Days (see Appendix C).

AQUATIC MACRO-INVERTEBRATES

The First Herring Brook Watershed Initiative's report entitled "Aquatic Macro invertebrates of First Herring Brook and its Tributary Streams" (September 2002) provides information on macro-invertebrate species that live in a system primarily found in Scituate, however, a part of the watershed subbasin is in Norwell. These species have not been officially confirmed in Norwell but the list found in Appendix C provides an excellent theoretical list.

FISH

Norwell has many freshwater brooks and streams as well as the tidally influenced North River. These factors contribute to a diversity of freshwater species as well as anadromous fish. The freshwater species include natives such as Brown bullhead (*Ameriurus nebulosus*), Chain pickerel (*Esox niger*), Rainbow smelt (*Osmerus mordax)*, and four different species of stickleback. Three species of anadromous fish have been confirmed in Norwell. The blueback herring (*Alosa aestivalis*), Alewife (*Alosa psuedoharengus*), and American Shad (*Alosa sapidissima*) all live in the ocean and undertake upriver spawning migrations in the spring. (See Appendix C.)

Every spring MassWildlife stocks Second Herring Brook (Norris Reservation Pond) with trout and the Third Herring Brook with rainbow trout. Smelt eggs have recently been reported in Second Herring Brook by Division of Marine Fisheries.

MAMMALS

Little Brown Bat (*Myotis lucifugus*), Virginia Opposum (*Didelphis virginiana*), Eastern Woodchuck (*Marmota monax*), Striped Skunk (*Mephitis mephitis*), Common Raccoon (*Procyon lotor*), Eastern Gray Squirrel (*Scurius carolinensis*), Eastern Cottontail (*Sylvilagus floridanus*), Eastern Chipmunk (*Tamias striatus*), Red Squirrel (*Tamiasciurus hudsonicus)*, Common Gray Fox (*Urocyon cinereoargenteus*), Red Fox (*Vulpes vulpes*) were all identified

"I don't like all the building that's going on in Norwell because it's destroying animal habitats so now they have no where to go…"

during Biodiversity Day 2002 and have been easily confirmed by many observers.

Norwell has most of the other mammals that are found commonly throughout southeastern Massachusetts (see Appendix C), but there are a few that are worth mentioning in more detail because they are either making a comeback or expanding their range. River otters (*Lutra canedensis)* have been spotted on River Street near Third Herring Brook. In order to survive, River otters require the first 200-300 feet of a riparian corridor to have healthy habitat. They were historically distributed throughout the state but have disappeared due to development along their river corridors. Pollution has also taken a toll on their ability to survive. In some areas they appear to be making a comeback.

Fishers (*Martes pennanti)* are a type of weasel, and have been sited crossing River Street. By the 19th century fishers had been eliminated from the state due to the extensive clearing of land for agriculture. Fishers made a comeback in the state as mature forests became re-established. Fishers need mature, dense, coniferous or mixed coniferous-hardwood forest with closed canopy and tend to avoid traveling in large open areas. Local naturalists have confirmed that they are present in Norwell. The extent of their range in town or if they spend their entire lifecycle in the forests of Norwell is not known.

RARE, THREATENED AND ENDANGERED WILDLIFE

Three species, two turtles and one beetle, of Special Concern have been documented in Norwell by the Natural Heritage Program. "Special Concern Species" are native species which have suffered a decline that could threaten the species if allowed to continue unchecked, or which occur in such small numbers or with restricted distribution or very specialized habitat requirements that they could easily become threatened within Massachusetts (Endangered Species Act). See Appendix C.

COMMON NAME	LATIN NAME	STATUS
SPOTTED TURTLE	*CLEMMYS GUTTATA*	SPECIAL CONCERN
EASTERN BOX TURTLE	*TERRAPENE CAROLINA*	SPECIAL CONCERN
ELDERBERRY LONG-HORNED BEETLE	*DESMOCERUS PALLIATES*	SPECIAL CONCERN

WILDLIFE CORRIDORS

Wildlife corridors are undisturbed areas of wildlife habitat that allow populations of animals to move freely through, disperse into new areas, and intermingle with other individuals of their species. "Wildlife corridors are necessary because they maintain biodiversity, allow populations to interbreed, and provide access to larger habitats." (ConservationEconomy.net).

Though a few large tracts of forestland and wetlands complexes are protected and mostly intact, Norwell does not have any documented terrestrial wildlife corridors. Habitat fragmentation is a growing problem for wildlife species that depend on intact areas of habitat for their survival. The North River serves as riverine corridor for three species of anadromous fish and is a likely corridor for river otters.

Habitat fragmentation is a major threat to the survival of many species. Not only are species up against fragmentation of their habitat due to dense developments, but physical barriers such as highways, dams, substandard culverts and large expanses of impermeable surfaces restrict the animals' ability to find the resources they need. Many species move out daily to seek food or shelter. Sufficient flexibility in their range is needed for adaptation and survival.

Norwell's major highways and state roads, including Route 3, Route 53 (Washington Street), and Route 123 (Main Street), act as barriers for many terrestrial and semi-aquatic species. Turtles, snakes, salamanders, frogs and many small mammals fall victim to vehicular mortality more often than the larger mammals. Dead gravid (bearing eggs) female turtles are often found on Grove Street, Prospect Street, Winter Street and Mount Blue Street. All of these streets have extensive wetlands on both sides and the turtles often cross to find appropriate habitat to lay their eggs. The town should attempt to protect large tracts of open space that can provide unfragmented habitat for a wide variety of species.

F SCENIC RESOURCES & UNIQUE ENVIRONMENTS

Norwell possesses features of great natural beauty engendering pride and appreciation in its citizens and admiration from visitors and neighbors. The beautifully-maintained colonial homes, historic village district, open fields, stone walls, and forests are truly impressive and reflect the pride its citizens have in its history. The North River, as seen through the eyes of a hiker or a boater, is simply enchanting. Although time, development and growth may have diminished the many scenic views enjoyed by our ancestors, Norwell remains one of the most beautiful towns on the South Shore. Please see Map 3: Unique Features for numerous points of interest in town.

THE NORTH RIVER

The North River is a beautiful tidal estuary, a unique and fragile habitat with salt and fresh water features. Because of its proximity to the ocean and the local availability of timber and other resources, the North River was the location of an active shipbuilding industry from the late 17th

to the mid 19th century. Plaques marking these historic sites can be found along the river's edge. Early use of the river also included the extensive harvesting of salt hay from the salt marshes and meadows to feed farm animals.

Many beautiful homes were built along the river by prosperous merchants and other settlers at a time when most of the area was farmland. Many of the homes situated on River Street would have had fantastic views of the river. Unfortunately many of these early views have since been obscured by secondary forest growth and development. However, the river is bordered by several large tracts of conservation land (most notably Norris Reservation and Stetson Meadows) that offer walking trails and beautiful views of the river. Norwell also has two public boat launch sites: the Union Street Bridge and the end of Chittenden Lane. These areas provide opportunities for walking, jogging, swimming, fishing and boating. The Union Street Bridge is an extremely popular (albeit unsafe) diving board for the local teenagers on hot summer days.

BLACK POND BOG

The 87-acre Black Pond Bog Nature Preserve was The Nature Conservancy's first purchase in Massachusetts in 1962. It is a very unique environment that contains a pocket of Atlantic White Cedar swamp, an upland forest, a meadow where one can see ecological succession, and a quaking bog surrounding Black Pond. The Pond itself is a glacial kettlehole filled with peat that has a limited water supply. The water is extremely acidic and low in nutrients. These factors, combined with the cool, coastal climate make the Bog plant community unusual.

Surrounding the Bog are concentric rings of plant communities beginning with a floating mat of sphagnum moss that contains the carnivorous plants sundews and pitcher plants, as well as sedges, cranberries, cotton-grass, wild orchids, Leatherleaf and swamp loosestrife. Around this mat is a wet shrubby zone with highbush blueberry, poison sumac, and Atlantic white cedar. A red maple swamp is outside the shrub zone, which grades into the nearby upland forest dominated by white and red oak, American beech, eastern hemlock and some American holly.

A boardwalk and trail system provide accessibility to the property and connect with the Town's Cuffey Hill Conservation Area to the west and north.

SCENIC ROADS

One way in which towns may protect other scenic vistas is through the Scenic Road Designation Program (M.G.L. Ch. 40, s.15c). This law allows a road other than a numbered route going beyond the town's boundaries, and not owned or maintained by the Commonwealth, to be designated as a

scenic road. After a road has been designated as a scenic road, any repair work that involves the cutting or removal of trees or stone walls must be approved by the Planning Board. There are six Scenic Roads in Norwell: Norwell Avenue, Jacobs Lane, Tiffany Road, Bowker Street, Stetson Road and Stetson Shrine Lane.

The Planning Board, Conservation Commission or Historical Commission may recommend such a designation, which then must be approved by the voters at a town meeting. Usually residents initiate the request for scenic road designation of their street. For example, the residents of Bowker Street, alarmed by a plan to widen their street, were instrumental in the designation of their street as a Scenic Road at a 1976 town meeting. It is apparent that the protection afforded by the Scenic Road designation has enabled these roads to retain much of their historic rural charm.

HISTORICAL SITES

Norwell has tremendous history and has many beautiful structures and sites that illustrate this in modern times. Beautiful old homes are marked with small but visible plaques and the sites of several historic shipyards are marked today by handsome signs along the river's edge. The State Register of Historical Places lists the following designated historical sites:

Jacobs, Joshua Farmhouse, 4 Jacobs Lane Upon entering Norwell via Route 123 from Route 53, the Jacobs Farm beside Jacobs Pond is a beautiful example of a historic colonial farm and homestead (1726). Open fields and ancient stonewalls characterize this quiet setting, and traffic has been halted more than once to allow for a chicken or goose passing. The Jacob's Farmhouse is now the headquarters for the Norwell Historical Society.

Village District, 536-894 Main Street, 7-49 Central St., West Dover and River Streets
The Historic Norwell Village area is included in the National Register of Historic Places and was designated a "National Register District" in June 1982. The overlay includes 34 buildings such as the Cushing Center (which was the old Town Hall), fire station, police station, several restaurants and small shops, a church and cemeteries, several homes, and also the town common and patriotic monuments. The James Library is also included in this district; it was built in 1873 and is one of the finest examples of Victorian architecture in Norwell. Other sites include:

STETSON/FORD HOUSE	2 MEADOW FARMS WAY
THE TACK FACTORY	49 TIFFANY ROAD (BURNED/DEMOLISHED 1983)
BRYANT, THOMAS-CUSHING H. HOUSE	768 MAIN STREET

"I think that we should keep fields open for kids who like to play sports. I also think they should protect more parks."

SOUTH SHORE NATURAL SCIENCE CENTER

The South Shore Natural Science Center is located on Jacob's Lane in Norwell, right next to Jacob's Farm. The Science Center is a nonprofit organization dedicated to educating the public about the natural and cultural environments of the South Shore through a variety of programs for people of all ages.

The Science Center sits on 27 acres and is surrounded by an additional 200 acres of town conservation and recreation land consisting of meadows, woodland, and Jacob's Pond. There are many trails and picnicking spots for residents and members to enjoy.

G ENVIRONMENTAL CHALLENGES

DISPOSAL SITES

There are no known Federal Superfund Sites in Norwell. There have been, however, 54 Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup disposal sites for oils and hazardous materials in Norwell. Forty-seven of these sites have undergone appropriate cleanup and have achieved regulatory closure in accordance with the Massachusetts Contingency Plan (MCP; 310 CMR 40.000). There are five phases of clean-up, beginning with Phase I being an initial site investigation, and culminating in a full-scale clean up in Phase V. There are seven active disposal sites that have not achieved regulatory closure in Norwell. Please see Appendix D for more information:

32 THE GLEN TRAILER PARK (OFF 214 WASHINGTON STREET), AN OIL SPILL THAT HAS BEEN IN PHASE II SINCE 1995

724 MAIN STREET, JOSEPH'S PONTIAC, AN OIL SPILL THAT IS IN PHASE IV

10 POND STREET, AN OIL AND HAZARDOUS MATERIAL MATTER THAT IS IN PHASE II

32 POND STREET (FABRICARE HOUSE), AN OIL MATTER THAT IS IN PHASE V

JUNCTION OF RT 228 AND 53 (FORMER QUEEN ANNE'S ARCO), AN OIL MATTER THAT IS IN PHASE V

72 WASHINGTON STREET (FORMER SHELL STATION), AN OIL MATTER THAT IS IN PHASE II

4 WEST STREET (STATE POLICE BARRACKS), AN OIL MATTER THAT IS IN PHASE V

NORWELL LANDFILL

The Pine Street Landfill, located at the intersection of Pine and Circuit Streets, was capped and closed in 1986. A leachate collection system was not constructed to collect direct leachate from the facility. The reclaimed landfill is currently used as a soccer field. The field has a fine view of the sky and is often used by the South Shore Astronomical Society during many of its monthly field meetings.

RECYCLING

The Town formed a Recycling Committee in 1989, and its program has grown and flourished since then. In 2002, the most recent year for which data are available, residents recycled 839.21 tons of newsprint and cardboard, 223.15 tons of glass, metal cans and plastics, 535 units of white goods, 312 Cathode Ray Tubes (CRTs) such as televisions and monitors, 350 gallons of waste oil, 351 tons of leaves and brush, 400 propane tanks, 110 gallons of spent antifreeze, and six cubic yards of surplus latex and oil-based paint.

Mercury in thermostats and thermometers and elemental mercury was also collected, as were household batteries. One hundred thirty four (134) surplus tires were collected on one day in 2002. The Town has a composting operation, and there are regular drop-off days for white goods, CRTs, propane tanks, antifreeze, waste oil and paint products.

The Town is a member of the South Shore Recycling Cooperative (SSRC), a group of 15 towns that work together to maximize their solid waste programs. Better pricing is available through the economy of scale of the SSRC, particularly in the area of administration and bidding contracts. The SSRC contracted for brush grinding twice in 2002 in Norwell.

EROSION AND SEDIMENTS

Erosion from construction sites is problematic and requires considerable diligence in the implementation of erosion control measures. For the upland areas, construction sites that are adjacent to wetlands are managed in accordance with Town of Norwell Wetlands Bylaw, Article XVI of the Norwell General Bylaws, and the Massachusetts Wetlands Protection and Rivers Protection Act. Erosion controls are standard conditions in all Orders of Conditions under the above-referenced bylaw and the Act. Additionally, the new regulations put forth by the NPDES Phase II Program[1] will trigger a permitting process for any development that disturbs more than one-acre of land. This process will force developers to consider a plan for how they will control runoff and sediment erosion.

[1] The Clean Water Act authorizes the EPA and states to regulate point sources that discharge pollutants into waters of the United States through the National Pollutant Discharge Elimination System (NPDES) permit program. "Point sources" are generated from a variety of municipal and industrial operations, including treated wastewater, process water, cooling water, and storm water runoff from drainage systems. The NPDES Phase I Storm Water Program (in place since 1990) regulates cities and counties with populations of 100,000 that operate a municipal separate storm sewer system (MS4), specific industrial operations, and construction activities that disturb 5 or more acres of land. The Phase II Storm Water Program (effective March 2003) regulates MS4s located within "urbanized areas" as defined by the U.S. Census Bureau and construction activities that disturb between 1 and 5 acres.

Stormwater is one of the largest sources of sediment loading into wetland resources. Many of the stormwater drainage structures in Norwell discharge directly either into wetlands or water courses and discharge large amounts of sediments to these waterways.

In the North River Estuary, erosion of banks of the River and tidal creeks can be caused by recreational boating. River speed limits have been set at six miles per hour for over two decades to mitigate the erosion.

CHRONIC FLOODING

Although the Town has many streams and wetlands, due to its elevation, topography, number of streams, and large wetland areas that provide flood storage during non-frozen months, Norwell does not contain many areas subject to flooding. Some of the wetland areas that contain streams during most of the year find streams that expand to the entire wetland during spring snowmelt periods. A good example is the Old Pond Meadows wetlands complex, which contains water a foot or more deep during some spring runoff and storm events.

A small residential community (King's Landing) is situated very close to the North River banks. With anticipated global warming and rise in sea level, this community is in danger of flooding at the present and even more in the future.

GROUNDWATER AND SURFACE WATER POLLUTION

Norwell's water system is completely dependent upon groundwater wells. Please see Section 3, page 18, Water Resources for details. Ten of the 11 wells are less than 60 feet deep, resulting in a high potential for contamination from ground or surface water. Wells that are greater than 60 feet deep are more likely to have clay layers between the surface and the water-bearing sands and gravels, thus reducing pollution risks.

Since the Town has no Municipal or Industrial Wastewater Treatment System, the aquifer or water-bearing areas may be subject to contaminants that flow off the streets through catch basins and into wetlands and streams, or substances that are poured down a residential or industrial drain. Additionally, increased development will adversely impact the protected areas around the wells and will reduce the land available to develop potential additional water sources. The efficiency of older septic systems will be reduced over time and could further adversely impact the town's drinking water supply by the addition of fecal coliform bacteria and nitrates. Road salt intrusion from winter snow and ice clearing operations will also adversely impact the shallow well drinking water supply. To enhance wellhead protection, the Town has

approved Aquifer Protection Overlay Zoning and Town Wetlands Zoning to provide guidance on local sensitive areas.

There are two surface water bodies in Norwell that are listed on the 1998 Massachusetts DEP 303d list of impaired waterways: Jacob's Pond for 'noxious aquatic plants' and Bound Brook Pond, also for 'noxious aquatic plants' and 'turbidity'. This list identifies surface water bodies that do not meet expected water quality standards.

5 Inventory of Lands of Conservation and Recreation Interest

The term "open space" can refer to a wide range of land uses from school athletic fields to conservation lands held specifically for wildlife habitat management. This section will identify lands in Norwell that are protected in perpetuity as well as other lands that contribute to the town's current open space and recreational resources but are not protected as such because their use can easily change. Please see Map 5-1: Open Space for all lands with open space and recreation interests for more details.

For the purpose of this plan, the term "protected lands" will refer to land that is permanently committed for conservation. On the municipal level, lands that are acquired through the town's Conservation Commission or Water Department for conservation purposes are protected under Massachusetts Constitution Article 97 (Appendix E). To change the use of lands held under Article 97 requires a two-thirds vote at Town Meeting followed by a two-thirds vote of the state legislature, making it very difficult for a municipality to sell or transfer those lands for other purposes. Parcels held by a state or federal conservation agency are also protected under Article 97. There are 3,258 'protected' acres in Norwell comprising 24% of the town's area. The Open Space and Recreation Committee proposes that 30% of the town should be protected in order to maintain its semi-rural character and ecological integrity. Properties that fall into the protected lands category include:

- Town-owned land held in fee simple by a municipality for natural resource protection (Article 97).
- Town-owned historical land protected through a historical restriction held in perpetuity.
- State-owned park lands (Article 97).
- Private Land Trust-owned lands, held outright, or with deed restrictions or Conservation Restrictions (CR) held in perpetuity.
- Private lands that have enrolled in the state's Agricultural Preservation Restriction Program (APR).

The term "unprotected lands" refers to properties that currently hold some conservation or recreational interest but are not protected as such in perpetuity and could be developed for other purposes in the future. Unprotected lands include:

- Town-owned lands not protected under Article 97, such as lands held by the Recreation Commission. School athletic fields are valuable as open space at the moment but might be needed to accommodate future building additions.

- Private lands that restrict land use for a short term (5-30 years) under a Conservation Restriction (CR). The most common program restricts land use to forestry, agricultural/horticultural or recreational uses under Massachusetts General Law Chapter 61, 61A and 61B respectively. Landowners who chose to put a CR on their property do so in exchange for a sizeable reduction in property taxes on that land. If the landowner wishes to sell the property or make a change in the CR, the town must be given the right of first refusal. These lands are vulnerable to development and should be considered potential lands for conservation and/or recreation purposes.

Included in this section is an inventory of all known protected and unprotected lands of conservation and/or recreational value in Norwell. The information used for this inventory was obtained from the town assessors' records. Through the preparation of this matrix, it has become apparent that there are some discrepancies in the assessors' records with respect to lands held by the Conservation Commission. Specifically, the Conservation Commission believes it controls 131 parcels while the Assessor's office only identifies 80 parcels under Conservation Commission jurisdiction. The *Inventory of Lands* matrix included in this plan lists all 131 parcels but notes which parcels are protected under Article 97 according to the Assessors' record and which parcels the Conservation Commission claims are protected but not recorded with the Assessors records. In order to better understand the conservation potential for municipal lands, the Open Space and Recreation Committee recommends that the town legally investigate property ownership for all questionable parcels.

The data for this section was acquired from Norwell's Conservation Commission, Assessors records for 2003 and the Commonwealth's Division of Conservation Services.

A PROTECTED LAND

Roughly 24% of the town's land area is protected for conservation purposes in perpetuity; the town owns 15% under Article 97.

MUNICIPAL

Conservation Commission The Norwell Conservation Commission was established in 1958 and acquired its first piece of property in 1965. The Commission acquires lands by purchasing and through gifts, and manages activity that takes place on those parcels. The Commission believes

"We've been participating in pre-school and summer recreation activities for two years. The staff is great. Thanks for a great job! It has really made a difference in our sons' life."

that it owns 131 parcels totaling roughly 1522 acres, representing roughly 11% of the town's total area (Map 5-2: Town Owned Conservation Land). Data from the Assessor's Office shows the Conservation Commission owning a total of only 80 parcels, totaling 947 acres.

The Conservation Commission has established rules and regulations governing the use of its land (see Appendix F). Many of these conservation lands provide for passive recreation such as walking and horseback riding trails, cross country skiing in the winter and boating and fishing. Management plans are available for Stetson Meadows (144 acres) off Stetson Shrine Lane, Jacobs Pond (335 acres), and Donovan Farm (125 acres managed under the plan).

Water Department The Norwell Water Department currently services over 90% of the total population with municipal water. The Norwell Water Department currently has 10 well pump stations that lie in four well field areas: South Street (356 acres), Washington Street (16 acres), Grove Street (135 acres), and Bowker Street (46 acres). The town of Scituate owns 28 acres off First Parish Road for wellhead protection. In total the Norwell Water Department owns and manages approximately 602 acres including wells, aquifer protection buffer lands, water treatment plants and water storage tanks. With their specific permission, the Board of Water Commissioners allows passive recreation, such as walking and hiking, on the land under their care and control.

Historical and Recreation Commissions Two properties in town are protected by a historical deed restriction held by the Society for the Preservation of New England Antiquities (SPNEA), now known as Historic New England: The Woodworth Athletic Fields (13 acres) located on the south side of Route 123 across from Jacobs Pond and Jacob Farm Homestead (15 acres) located at the intersection of Route 123 and Jacobs Lane.

Other Town Owned Property Gaffield Park, located at the intersection of River St. and Forest St., is a children's playground located on 8 acres. The land was deeded to the town in 1896 to be used as a public park.

COMMONWEALTH OF MASSACHUSETTS

State Park Land Wompatuck State Park lies within the towns of Hingham, Cohasset, Norwell and Scituate. The land was previously used as a Federal storage depot. In 1967, the Federal Government's General Services Administration sold 2,900 acres to the Commonwealth's Department of Environmental Management. An additional 604 acres of federal property at the northeastern boundary of the park were donated to the state in 1985.

Approximately 537 acres (or 15% of the total park acreage) are within Norwell. In the southern portion of the park in Norwell there are two ponds, Holly Pond and Boundary Pond that are used by hikers and birdwatchers. Mount Blue springs is a beneficial source of spring water used by many visitors. There is a 12 acre cleared field used for ball games and other activities. There are 12 miles of bicycle trails within the park that are located in Norwell.

PRIVATE AND NON-PROFIT CONSERVATION AND RECREATION LAND

The Trustees of Reservations The Norris Reservation is a 130-acre parcel owned by the Trustees of Reservations with frontage on the North River. It is an exquisite piece of land that features small mill ponds, river views, an old boathouse on the North River, wooded upland and salt marsh.

The Nature Conservancy The 87-acre Black Pond Bog Reserve was the first parcel acquired in Massachusetts by the Nature Conservancy. The reserve is leased and maintained by the Massachusetts Audubon Society. The property includes a pond and peat bog, a unique feature in this area. The property is mostly wooded and has trails including a boardwalk around part of the bog. This parcel abuts several other large parcels managed by the town's conservation commission.

The Massachusetts Audubon Society The Massachusetts Audubon Society owns a 12-acre parcel of marsh along the North River. There are no facilities and no public access other than from the river. The land is known as the Chase Garceau land.

The South Shore Natural Center The South Shore Natural Science Center offers natural history programs for children and adults. The 27-acre parcel features self-guided nature trails through woodlands and wetlands. There are four certified vernal pools on the grounds. One trail, the Tupelo Trail, is for people with disabilities.

Permanent Conservation Restrictions A Conservation Restriction or CR is a legally binding agreement between a landowner and a public agency (usually a land trust or a town's conservation commission) where the landowner agrees to keep the land undeveloped. Public access may be permitted but is not required. CR's are permitted under the Conservation Restrictions Act (M.G.L. Ch. 184) and must be approved by the Secretary of Environmental Affairs. CRs have a number of advantages: (1) they cost less than a fee simple acquisition (2) the owner still pays real estate taxes (although at a lower rate) and (3) the owner continues to maintain the land.

"Our children have a better quality of life living in Norwell. We would hate for that to change in the name of development. We do need to preserve the farms and forests."

There are currently seven CRs in Norwell totaling 253 acres. They range in size from 8 acres to 106 acres. The largest CR is held by The Trustees of Reservation for 106 acres located along the North River. This property, referred to in the past as "The Hollow", has open fields, salt marsh, woodlands and a historical home. Dwelley's Creek flows through the property to the North River. The Wildlands Trust of Southeastern Massachusetts holds a CR to an additional 9 acres adjoining this parcel. The Barque Hill Neighborhood Association owns 64 acres abutting the North River with a CR held by the town.

Agricultural Preservation Restrictions An APR is a variation of a CR whereby the purpose is to preserve agricultural land. The APR program pays farmers the difference between the fair market value and the agricultural value of their farmland in exchange for a permanent deed restriction that precludes any use of the property that will have a negative impact on its agricultural viability.

There is only one APR in the town of Norwell; the 71-acre Loring Farm property. The restriction is held jointly by the town and the Department of Food and Agriculture and prohibits any construction or activity detrimental to retaining the agricultural use. It allows only the construction of houses for family members and employees and structures related to the sale of agricultural products, but only with the prior approval of the holders of the restriction.

B UNPROTECTED LAND

WITH CONSERVATION/RECREATION INTERESTS

Recreation Commission Norwell's Recreation Commission owns and manages several public recreational areas totaling about 41 acres. These lands include Reynolds Playground on Prouty Avenue, the Woodworth Park on Main Street, Stetson Meadows recreation area off River Street, and the Ed White recreation area on Green Street. Only the Woodworth Park is protected for recreational uses in perpetuity.

Schools Norwell's five school sites have approximately 27 acres of playing fields.

Historical Commission The Norwell Historical Commission manages two properties owned by the town. Although the Jacob's Farm is protected by a historical restriction, the Stetson Ford House at Stetson Meadows, a 3-acre parcel with a 1700's historical colonial, is not.

Cemeteries Norwell has seven cemeteries: Washington Street Cemetery, Old First Parish Cemetery, First Parish Cemetery, Stockbridge Cemetery, Bowker Cemetery, Church Hill Cemetery, Pinehurst Cemetery and a proposed cemetery site on Wildcat Lane.

These cemeteries total almost 55 acres with one of the largest being the recently acquired 15 acres on Wildcat Lane. There are other small, family cemeteries throughout town. Cemeteries have the potential for recreational use. The Wildcat cemetery is a potential site for walking paths similar to cemeteries like Forest Hills in Boston and Mount Auburn Cemetery in Cambridge.

Public Access to the North River There are two town owned public access landings along the North River: the Bridge Street town landing and the Chittenden Lane landing. The Bridge Street landing has space for about 10 parking spots, and allows for both motor and non-motorized boats to be launched. The Chittenden Lane has space for two parking spots and the landing allows for only non-motorized boats. The Chittenden Lane landing is primarily used as a local fishing spot.

Chapter 61 Land Chapter 61 of the Commonwealth's General Laws relates to the classification and taxation of forest land and forest products. Under this taxation program, parcels of 10 or more contiguous acres under an approved management plan are taxed at 5% of fair market value. If the forestry use is discontinued, a penalty must be paid. When land under Chapter 61 is put up for sale, the municipality has 120 days in which to exercise its right of first refusal to purchase the land at full market value. This provision allows municipalities the opportunity to plan for acquisition of parcels with conservation and recreation value. Within Norwell, there are nine parcels totaling 113 acres of forest land under Chapter 61.

Chapter 61A Chapter 61A is the Farm Assessment Act that provides for the use-value assessment of agricultural and horticultural land of at least five acres. There are provisions similar to Chapter 61 regarding the penalty for discontinuing the use and the option of first refusal when the land is put on the market. In Norwell there are 35 parcels in the Chapter 61A program totaling 495 acres. Several of the fields on Main Street are held in this program. This would offer the town an opportunity for acquiring parcels that are a priority for maintaining its much valued rural scenic quality. Both conservation and recreation uses would apply.

Chapter 61B Chapter 61B provides for a reduction in tax assessment of a least 75% on parcels 5 acres or more that are classified as recreational, wild or open land. There are five parcels in Norwell totaling 125 acres.

Wetlands Norwell has an abundance of wetlands and salt marsh totaling roughly 29% of the town's land area. There are about 3,884 acres of wetlands and salt marsh along rivers, on municipal lands, and in people's backyards. Wetlands are currently protected from development under the Norwell Wetlands Protection Bylaw and the Massachusetts Wetlands Protection Act but laws can change and technologies may be developed in the future to allow for greater development of these fragile resources.

Other Town Owned Property There are a number of other town owned properties that offer some conservation protection. These are lands managed by the Fire Department, Police Department, the Highway Department and the Board of Selectmen. The Board of Selectmen oversee two soccer fields: Pine Street Fields and the Osborne Fields with 23.7 acres. It is unknown in the assessors' records what department manages which lands. These town-owned lands total approximately 590 acres. None of these parcels offer any kind of long-term conservation protection other than the fact that they are owned by the town. These lands are mostly developed but some have land that could be evaluated for conservation and/or recreation uses.

Lands of Interest: Norwell's Islands, Clam Flats, and Other Land in Scituate In 1849 Norwell (then called South Scituate) separated from Scituate and the two towns agreed upon a division of so-called "common" land. For the sum of $1,350 Norwell acquired an amount of real estate that included the town common and other parcels such as the land where Cushing Hall (the old town hall) sits today.

The town was also granted sections of salt meadow or flats on North River. More precisely, the deed names the land: "*The Gulph Island, the Middle Green Island and sunken flat, the Jacob Flat, the Northey Flat, the Great Green Island…The Great Green Flat and Hummock Flats, they being all the flats that have been annually let at auction*" apparently for the purposes of shellfishing and salt haying.

Scituate renounced any claim to the land: "*To them, the said inhabitants of South Scituate, their successors and assigns to their own exclusive use and behoof forever so that neither the said inhabitants of Scituate nor any person nor persons claiming by, through, or title to the above named real estate or its appurtenances or to any part or parcel thereof forever*".

The land was very valuable property in 1848, and remained so for many years. After the Great Storm of 1898 (nicknamed *the Portland Gale* after the steamship that foundered during it) the configuration of the North River changed dramatically, creating a new mouth, today known as the "New Inlet". New beaches, channels, islands and flats appeared changing the appearance of the

Norwell property. Unfortunately it does not seem that either town established clear boundaries after the storm, and as a result, over time, it became unclear which flats belonged to Norwell and which ones did not.

For years Norwell residents could obtain parking stickers to be able to use Scituate beaches, and a few "old timers" still remember the free clam licenses Scituate used to provide Norwell residents. For 137 years the townspeople of Norwell have paid taxes to Scituate on the islands and flats in the North River; the payments finally stopped in 1986. A competent title search would establish boundaries, and Norwell residents could potentially enjoy claming, picnicking, swimming and fishing on Scituate beaches as earlier generations once did.

6 Community Vision

A DESCRIPTION OF PROCESS

The town of Norwell has been through the public Open Space planning process three times with completed Open Space Plans in 1977, 1987 and 1997. This committee was charged with evaluating previous plans and creating an updated plan that reflects changes or shifts in community goals with respect to open space and recreational resources.

To accomplish this, the committee initiated a range of activities intended to evaluate and rank the importance of open space and recreational resources to Norwell residents including:

- Distributing and analyzing a questionnaire to gauge public opinion
- Reviewing actions and recommendations outlined in previous Norwell Open Space Plans, and the Norwell Draft Master Plan
- Interviewing representatives of various town departments
- Using information gleaned from three meetings held by Norwell Master Plan Committee to create the "Green Network" section
- Holding open meetings and forums to discuss open space and recreational needs, including two meetings to present a draft version of this Plan: one at a regularly scheduled Conservation Commission meeting and another for the general public
- Referencing Regional Open Space Plans, the Massachusetts Statewide Comprehensive Outdoor Recreation Plan and other South Shore municipal Open Space Plans

The Committee used a slightly modified version of the questionnaire that was developed for the 1997 Open Space Plan, so as to easily compare results and identify shifts in public opinion over time. The new survey contained several additional questions that targeted recreational needs. Unfortunately there were no funds available to send the questionnaire in a mailing, but committee members distributed the surveys in the following locations in the spring and summer of 2003:

- Outside the Norwell Post Office on 4 Saturday mornings
- Town Meeting, Spring 2003
- Published in the July 24th, 2003 edition of the Norwell Mariner Newspaper
- The 2003 Norwell Fishing Derby
- Public Meeting presentation of the Norwell Draft Master Plan
- Norwell High School Environmental and Student Government Club meetings

- Norwell Middle School 6th Grade Science and Math class
- Posted in the library and Conservation Commission office

The committee distributed roughly 1,000 surveys, and residents were asked to fill it out on site, drop off the completed survey at Town Hall, or send it to the Conservation Commission. There were 269 returned surveys, yielding a return rate of 27%. Twenty-one respondents were 6th graders and 33 were in high school. Of the people who responded, most have lived in the town for at least 10 years, some up to 50. Very few people responded who have lived here for just a few years. Although the 1997 planning effort distributed 3,200 surveys via mail, the return rate was only 8%, and interestingly, the actual number of returned surveys was nearly the same: 256.

B STATEMENT OF OPEN SPACE & RECREATION GOALS

The committee has determined that the vision of the community remains the same as it has for the past 20 years: to retain its unique and beautiful semi-rural character while maintaining a healthy environment and water supply. The goals stated in previous plans are still relevant today but have been focused for clarity, and aim to take a holistic approach to open space features that contribute to Norwell's community character. The four main goals are as follows:

- Protect the quality and quantity of Norwell's water supply
- Protect natural resources and promote biodiversity
- Protect Norwell's scenic quality and historic resources
- Support and enhance passive and active recreation with little impact to the environment

7 Needs Analysis

In addition to reviewing relevant studies and planning documents, the Open Space and Recreation Committee (OSRC) conducted a survey to solicit public input on the town's open space and recreational needs. The results showed that residents want to maintain the rural character of the town and 80% felt that "open space in Norwell is in danger from development". Seventy-four percent of respondents said that there was an ambiance about Norwell that contributed to their decision to move here, and 86% said that they have noticed great physical change since they arrived. In addition, 55% said that they didn't approve of these changes. Of the people who responded, most have lived in the town for at least 10 years, some up to 50. Questionnaire and survey results can be found in Appendix A.

A RESOURCE PROTECTION NEEDS

WATER SUPPLY

According to the survey results, the top natural resource concern is the protection of the town's drinking water supply (73%). Additionally, according to the results of the Master Planning process, citizens felt that protecting the town's water supply was the second most important issue that should be addressed in the next 20 years (first was relieving the tax burden). Norwell maintains its own water supply, and while the town currently draws less than its permitted level, the town could possibly face a water shortage at build-out, as suggested by the Metropolitan Area Planning Council. As a result, all efforts must be made to protect lands that contribute to the health of the town's groundwater resources. This could come in the form of outright purchases or conservation restrictions on undeveloped land, or in management practices on already developed land that prevent unwanted pollutants from entering the groundwater supply.

GREENWAYS

When asked what types of open space Norwell should acquire, residents responded first with "woods" (70%) followed by a tie in "agricultural fields" and "parcels next to conservation lands (57%). These answers reflect the town's interest in maintaining its rural character and perhaps either an understanding that larger parcels of undeveloped land can provide improved wildlife habitat, or that larger parcels may provide improved recreational opportunities. These answers support the creation of "Greenways" as outlined in the Norwell Draft Master Plan (see Map 6-2: Natural Resources Action Plan). The need for the creation and maintenance of Greenways is also highlighted in the Massachusetts Statewide Comprehensive Outdoor Management Plan (SCORP).

"Greenways" are defined as protected continuous open space corridors that contain diverse natural resources, historic sites and landscapes, and opportunities for recreational trails. There are two potential "Greenways" in Norwell that could be developed as determined by the Master Plan process. The first, and most important, should encompass the Third Herring Brook from Church Hill to Wompatuck State Park because it drains the largest and least-disturbed area, and also because it contains the wells and recharge areas for most of Norwell's drinking water. The second Greenway could be developed along the North River and Second Herring Brook from Stetson Meadows to Black Pond. These areas provide great aesthetic value but also important environmental services such as flood control, filtering and recharge of water supplies, and absorption and treatment of contaminated runoff.

2 COMMUNITY & RECREATION NEEDS

Norwell residents are fortunate to have numerous recreational opportunities available to them. The Norwell Recreation Department develops and oversees numerous recreation programs for residents and even non-residents when space is available. Every spring the Department gets a large volume of calls (from mostly newcomers or those considering a move to Norwell) on the average of 5-10 a week, asking for a Recreation Department brochure. The most common inquiries are about the existence of a town hockey rink or swimming pool (of which Norwell has neither). Activities sponsored by the Recreation Department range from toddler gymnastics to adult volleyball to ski trips for all ages. Other non-sports activities include oil painting and digital photography. The Recreation Department recognizes a growing elderly population and is interested in working with the Council on Aging to better determine senior recreational needs and to develop programs to target this population. All recreation and community needs stated in this plan are also highlighted in the SCORP. The plan addresses the needs of the disabled members of the community in great detail in the ADA Access Self-Evaluation in Appendix H.

WALKING PATHS

A large majority of people who responded to the survey said that 'walking' was the biggest use of town-owned open space (91%). Other high percentages included nature appreciation and education (59%), bicycling (53%), sports and games (42%), and jogging (41%). Norwell is fortunate to have many areas that offer walking trails, but many are underutilized. Thirty-one percent of respondents said that they would use a map if it were available, and the Recreation Department receives numerous calls asking if a map exists that depicts all of the outdoor recreation facilities and sites.

"It would be great to be able to walk safely in Norwell – sidewalks and bike trails are very much needed."

PLAYING FIELDS

The need for more recreational athletic fields was highlighted by 32%. At this time, the fields at Vinal school, Cole school and the 'East Field' behind Town Hall are all unusable and are in need of major repair work. Top priority should be given to upgrading all existing fields to safe conditions and to set aside irrigation and maintenance funds. Irrigation for the new Middle School fields and improving irrigation for the High School fields are also high priority to maintain their good condition. Even after all existing fields are reconditioned, the Athletic Fields Committee and the Recreation Commission project that three additional fields are needed by 2010 to meet usage demands, growing participation of various sports leagues, and the need for field rotation.

BICYCLE PATH

The survey asked what types of open space are most sought after and the number one answer was "bicycle paths" (57%). Similarly, a reoccurring theme that emerged through the Master Planning process was that Norwell should create more ways to walk and bike safely, to link neighborhoods and improve retail areas. Additionally, one of the goals of the previous Open Space Plan was to create a new Bicycle Path through town that will link several parcels of conservation land and the public schools. Finally, the Massachusetts Statewide Comprehensive Outdoor Recreation Plan (SCORP) states that road biking was the highest recreational need for the Southeast Region.

There have been several initiatives in past years to create a town-wide "Bikeway", culminating in the creation of a full proposal to the Commonwealth for funding in 1995. Unfortunately, the proposal was never submitted because of several landowners that were unwilling to grant easements to the town for the bikeway to pass on their property. The project stalled. However, so much of the groundwork has been done and the desire for a bikeway is so strong that this Committee recommends that the initiative be reinvigorated. Over the past ten years, land has changed hands and perhaps the few obstacles can now be overcome. If not, alternative routes may be considered. The proposed bikeway would link conservation areas, recreation areas, all schools and retail centers. The OSRC recommends that the new Greenbush commuter rail station located in Scituate just over the Norwell town border be added to the proposal.

3 MANAGEMENT NEEDS

LAND ACQUISITION APPROACH

Historically, the Conservation Commission has led the negotiations on most if not all of the town's conservation land purchases and has made many important acquisitions with little or

no cost to the town. By passing the Community Preservation Act the town has increased its available funding for open space acquisition, and the newly formed Community Preservation Committee (CPC) has recently taken the lead in reaching out to landowners and brokering negotiations. Both boards are comprised of dedicated volunteers that are extremely busy. As part of the planning process to create this Plan, the OSRC convened all of the town boards that are involved in land protection on November 30, 2004 to present its vision for open space preservation and discuss how these boards may better work together. Nineteen members were present representing the following boards: OSRC, Conservation Commission, CPC, Board of Selectmen, Advisory Board, Recreation Commission, Planning Board, Historical Commission, Assessors' Department, Water Department, Master Plan Steering Committee and Beautification Committee.

At that meeting, the OSRC presented it's vision: "*In order to retain the semi-rural character and preserve the ecological integrity of Norwell, the town should aim to protect 30% of its total area as open space in perpetuity*." This vision was based on a study done in the town of Duxbury whereby a Land Acquisition Task Force was asked to identify options for financing open space acquisition. Through this process, it became evident that the town did not have a specific plan in place for how much land it wanted to acquire, which made it impossible to determine whether or not the town could meet its achieved goals. The goals set forth by the town of Duxbury are very similar to those stated in this plan by the citizens of Norwell: To protect the semi-rural character of the town, protect natural resources and water supply, improve recreational opportunities, and increase the amount of protected open space.

In Duxbury, roughly 30% of the total land use had already been in some form of open space, municipal or recreational use. The Task Force then applied this same ratio to the amount of existing 'acres to be developed' to set forth a goal of protecting 30% of the remaining developable land. This committee has applied the same logic to Norwell. At the time of this writing, roughly 30% of the town land holds some open space value, thus affording a 'semi-rural character'. However, only 24% (3,258 acres) of that land is permanently protected. According to the Norwell Master Plan there are 2,323 acres of potentially developable acres under current zoning. Norwell should aim to protect 3 out of every 10 acres of that developable land for a total of 700 additional acres for protection. These additional 700 acres would allow the town to permanently protect roughly 29% of the town's area for conservation purposes in perpetuity. The OSRC has rounded up this number to 30% as a 'high-end' target that would safeguard the town's semi-rural character and protect natural habitats; 30% of the town's land area is 4124 acres. The town does not need to purchase all of this land; other entities such as land trusts may acquire lands while other lands may be put under a Conservation Restriction.

"I hope now that the CPA has passed that Norwell actively pushes to conserve land each and every year."

Typically, landowners have initiated the process by approaching the town with a donation or potential sale. This has worked well for the town and many marquee parcels such as the Menzies property (South Street next to the high school) began in this fashion. However, as the price of land rises and the amount of open space decreases, the town should consider a more proactive approach whereby the town seeks out properties it wishes to see protected. This is a delicate process that would necessitate leadership by a special volunteer or staff person with extensive knowledge and experience in negotiating land deals. In the mean time, the OSRC will work with local non-profit organizations to educate Norwell residents on land preservation options and related tax benefits.

How will the town determine which lands are worth the price? The OSRC proposes that the town utilize a ranking system whereby a set of criteria can be applied and evaluated on any given parcel. The OSRC found several good examples of ranking criteria, and has chosen to use a slightly modified version of the criteria developed by Plymouth Community Preservation Committee. This set of criteria can be amended over time to better suit the town of Norwell if necessary. By working with qualified field scientists, all parcels being considered by the town for acquisition should be ranked using the criteria very early on in the consideration process and the findings should be a starting point for discussion among town boards. Please see Appendix G for a copy of the criteria.

To facilitate a proactive approach, the OSRC has contracted with a University of Massachusetts-Boston graduate student to use Geographical Information System (GIS) technology to analyze and prioritize all of the 16 properties - totaling over 733 acres - that are held under the Chapter 61 lands program in Norwell. These parcels are currently held in some form of an agricultural restriction, and when the owner intends to sell the property, the town is given the right of first refusal by law. By having these lands prioritized ahead of time, the town will be able to enter into the Chapter 61 process with some knowledge of the parcel and a general sense of whether or not the town believes this parcel is worth pursuing. Additionally, the OSRC recommends that when a Chapter 61 parcel is up for consideration, the Board of Selectmen convene an ad-hoc 'study group' consisting of members from at the very least the Conservation Commission, Community Preservation Committee and Open Space and Recreation Committee to assist with the process. Depending on potential use of the site, members from other boards should be asked to participate in the study group (i.e. Recreation Commission, Cemetery Committee).

CONSERVATION AGENT

Almost 30% of Norwell is wet. These wetlands are protected under the Wetlands Protection Act (M.G.L. Ch. 131, s.40) which prevents the alteration of these lands without permission from a

municipal Conservation Commission. The Norwell Conservation Commission is an appointed volunteer board that works with the assistance of a part-time Conservation Agent. This Agent is unable to meet the requirements of the job description due to the high demands placed upon her time. Duties include meeting numerous legal deadlines and filings, management of the Commission's 2,000 acres of land, conducting site visits for each property that files for a permit, finding funding for numerous projects, approving every building permit, certifying vernal pools and assisting with the updating of the Open Space and Recreation Plan. The position of Conservation Agent is full time in most other South Shore towns including Hingham, Marshfield, Hanover, Duxbury and Scituate. Norwell needs a full-time Conservation Agent.

LAND MANAGEMENT PLANS

Norwell owns several special parcels of open space that can support more than one activity. Plans for these areas, prepared by volunteer effort, encourage use while preserving natural function and beauty. Following up the successful efforts to create Management Plans for Stetson Meadows, the Donovan Farm, and Jacobs Pond, the 2005 Open Space and Recreation Plan seeks action to create Plans for the Fogg Forest, Miller Woods, Hatch Lots and Cuffey Hill properties.

CONSERVATION RESTRICTIONS

The Community Preservation Committee is evaluating using one of the local land trusts to hold conservation restrictions on the properties the town acquires through CPA funding. The Maxwell Trust, Ltd. primarily focuses on protecting land in Scituate. They have expressed an interest in working with the town of Norwell. Wildlands Trust of Southeastern Massachusetts focuses, as the name says, on lands in Southeastern Massachusetts and has also expressed an interest in working with the town of Norwell.

OPEN SPACE RESIDENTIAL DESIGN BYLAW

Norwell has primarily relied on on-site wastewater management and one-acre zoning to maintain its rural character. However, zoning bylaws that require new homes to be built on lots of one acre or more with the intent of controlling sprawling development actually encourage poorly designed subdivisions that consume and fragment large tracts of land. Although the lots may be large, the wildlife habitat and other environmental, recreational and aesthetic elements that open space provides are usually consumed by lawns, driveways and other paved surfaces that contribute to environmental degradation and diminish community character. Conventional subdivision zoning offers little flexibility in the planning process and often leads to time-consuming, costly and antagonistic proceedings. (*Greenneighborhoods.org*).

"Preserving wooded areas is important to me and housing development should be done with preservation of the environment and our wooded areas in mind."

Norwell should adopt some type of cluster or "open space residential design" (OSRD) bylaw to promote better site design, create more attractive developments, and preserve open space. OSRD uses a four step planning process that reverses the typical subdivision planning process. First, the open space is designated; second, the houses are sited; third the roads and trails are planned; and fourth, the lot lines are drawn. The Planning Board has expressed interest in developing and adopting this type of zoning tool and should review the many available models in neighboring towns. In addition, the Master Plan Steering Committee has identified parcels in town that could benefit from this type of development and has mapped them in the Master Plan.

4 POTENTIAL CHANGE OF USE

In preparing the *Inventory of Lands* section of this Plan, it was discovered that information from the Assessor's Office differs from what some of the departments reported with respect to land ownership. Specifically, there is a discrepancy between the lands held by the Conservation Commission: the Commission believes it holds 131 parcels totaling approximately 1,522 acres while the Assessors only have data showing the Conservation Commission holding 80 parcels totaling approximately 947 acres. This presents a problem with determining if lands are truly protected or not under Article 97, and raises questions over the property management.

A related subject is that of reviewing current use of town-owned land not held under Article 97 to see if some lands could be better managed or developed to meet town goals. Town land that abuts neighborhood areas could be developed for small community parks. Other lands could be developed for bridle paths or more walking trails. Town land with unique or rare environmental features could be transferred to the Conservation Commission to be held under Article 97. It would be greatly beneficial to the town to conduct a thorough title search to settle land ownership questions and review management and use status.



 Photo by Matt Teuten

8 Goals and Objectives

In order to realize the community vision of maintaining a semi-rural town with a healthy environment and water supply, the Open Space and Recreation Committee has stated four main goals with the following objectives. The 2002 Plan stated two very broad goals of protecting natural resources and promoting recreation. Building upon those same ideas, this Plan aims to narrow the focus by creating four main goals that are more specific.

OPEN SPACE & RECREATION GOALS & OBJECTIVES

Goal 1 Protect the Quality and Quantity of Norwell's Water Supply

- Acquire land to protect water supply
- Promote water conservation
- Protect drinking water quality

Goal 2 Protect Natural Resources and Promote Biodiversity

- Improve wetlands protection
- Acquire land or conservation restrictions to protect natural resources and biodiversity
- Protect unique habitats

Goal 3 Protect Norwell's Scenic Quality and Historic Resources

- Acquire land or conservation restrictions to preserve rural character
- Preserve historical areas & scenic roads
- Promote appropriate and environmentally-sensitive development

Goal 4 Support and Enhance Passive and Active Recreation with little Impact to the Environment

- Acquire land or conservation restrictions for recreation
- Improve public awareness of and involvement in recreational resources
- Enhance recreation opportunities
- Enhance North River access

9 Five-Year Action Plan and Action Plan Maps

A REVIEWING ACCOMPLISHMENTS

The town of Norwell has completed many of the actions outlined in its 1997-2002 Open Space Plan and is proud of its accomplishments. The most noteworthy initiatives include:

DONOVAN FARM PROPERTY

In the year 2000, the Conservation Commission acquired the 180-acre *Donovan Farm property* that borders Forest, Circuit and Pleasant Streets and Wildcat Lane. The Donovan family offered their property to the town at a sale price of $4,000,000. The Town bought 180 acres outright with a town meeting vote for a Prop. 2 1/2 override on an 18-month short-term bond anticipatory note. There were a number of charettes and public meetings held with interested citizen groups to develop a very detailed proposal for the land.

The town received a $300,000 grant from the state's SAND (Scenic and Natural Diversity) Program and sold two lots with existing houses on them for $800,000, which recouped some of the expenses. The town set aside 125 acres for conservation, 15 acres for a cemetery and an additional 40 acres for a development for seniors aged 55+. The senior housing was designed to a very detailed level to reflect exactly what the town wanted to see on the site and required special zoning in the form of a village overlay district. The plan was then put out to bid, and Modern Continental purchased the land for $4,000,000. The town has completed a management plan for the remainder of Donovan property, a portion of which is actively used for agricultural purposes. (see Appendix I for newspaper article)

JACOB'S FARM AND POND

In 2001, the Conservation Commission acquired a 15+ acre parcel (*Betzhold property*), off of Beers Avenue and contiguous to the Jacobs Pond conservation area (335 acres) with the aid of a $162,000 of Self-Help grant (*Self-Help Project #15*) and $300,000 from the proceeds of the sale of a portion of the Donovan Property (see Appendix I for newspaper article). The town also installed the Cliff Prentiss Bridge at Jacob's Shores. The town was able to implement many actions from its 1995 Management Plan for the property such as controlling invasive aquatic plants and repairing the dock to enhance recreation on the pond. The parking area has been improved with a new kiosk and trail map, and a picnic table.

STETSON MEADOWS

There have been several improvements to the recreational facilities at Stetson Meadows: a new field, a new boardwalk and kiosk thanks to an Eagle Scout project, two additional kiosks for trail map displays, and 1,000 printed trail maps for visitors.

COMMUNITY PRESERVATION ACT

In April of 1987, Norwell Town Meeting voted to petition the state to enact a land bank, but the state failed to pass the enabling legislation. The previous Open Space Plan encouraged the backing of any land-bank enabling legislation. While the Community Preservation Act (CPA) is not a land-bank in the traditional sense, the town of Norwell did pass the Act with the full 3% surcharge of property tax in May 2002. The CPA allows the town to accrue funds to spend on open space, recreation, affordable housing, and historic preservation initiatives.

ACQUIRED LANDS

The town has acquired several other important parcels, including a wet meadow (a rare habitat in Southeastern MA) on River Street that was acquired using CPA funds in 2004. In 1999, 14 acres of the Osborne Fields on Main Street were purchased by the town through Chapter 61 right of first refusal. These are now athletic fields that abut the middle school and are under the authority of the Board of Selectmen.

Donations to the town include six acres on South Street (*Menzies property*) that was donated to the town's school department for running trails, and 16 acres on Cushing Hill Road (*Dunn property*). In the year 2000, seven acres on Green Street were donated to the Recreation Commission and is now called the Charles "Ed" White Recreation Area. In 2003, about seven acres on Winter Street were donated to the Conservation Commission. The land is mostly wetland, has wildlife and watershed benefits, and helps protect the Scituate water supply.

MASTER PLAN

In 2000, the town of Norwell began its Master Planning process, the first of its kind for the town. A final draft is expected by 2005. The Open Space and Recreation Committee considered the Draft Master Plan's actions as part of the planning process, and has indicated actions that overlap in this plan.

B FUNDING SOURCES FOR THE TOWN OF NORWELL'S ACTION PLAN

PUBLIC FUNDING SOURCES

Federal

1. EPA: Watershed Protection Grants
2. NOAA: Habitat Restoration
3. U.S. Fish & Wildlife: Habitat Preservation

State

1. DEP: Aquifer Land Acquisition Grants, Stormwater Mitigation Grants #319 and Water Quality #604 Grants
2. DCR: Greenway & Trails Demonstration Grants
3. DCS: Land and Water Conservation Grants and Self Help Grants
4. CZM: Coastal Access and Coastal Pollution Remediation (CPR) Grants
5. EOEA: Outdoor Classroom Grants
6. DFWELE: Riverways Program Grants
7. Mass. Environemental Trust: Biodiversity, Education, Monitoring and Habitat Restoration Grants
8. Clean Water State Revolving Loan Funds

Town Funding and other resources

1. CPA Funding
2. Other Town Funding
3. Senior Tax Relief Program

PRIVATE FUNDING AND OTHER RESOURCES

1. Land Donations
2. Foundation Grants
3. Fundraising Events
4. Volunteers

NORWELL
OPEN SPACE AND RECREATION
FIVE-YEAR ACTION PLAN
2005 – 2010

KEY:

✸ Action is also outlined in the Draft Norwell Master Plan

≈ Action is also outlined in the South Coastal Regional Open Space Plan

❖ Action meets the goals of the MA Statewide Comprehensive Outdoor Management Plan[1]

$ Funding Sources (see page 61)

GOAL 1 Protect the Quality and Quantity of Norwell's Water Supply

OBJECTIVE	OBJECTIVE NUMBER	ACTION	RESPONSIBLE PARTIES	TIME FRAME
A. Acquire Land to Protect Water Supply	A1. ✸ $	Identify areas for future potential well sites, as well as parcels for acquisition to protect the aquifer and/or are contiguous to Zones II and III.	Water Department Community Preservation Committee (CPC)	2005–2010+
	A2.	Adapt local bylaws to minimize impervious surfaces and nitrogen loading in the Aquifer Protection Overlay District.	Water Department Planning Board Zoning Board of Appeals (ZBA)	2005–2006
	A3.	Determine lawful claim of all municipal properties with uncertain ownership to ascertain which parcels are protected for water supply purposes in perpetuity.	Water Department Board of Assessors Town Counsel Conservation Commission	2005–2006
B. Promote Water Conservation	B1. ✸ ❖ $	Create and implement Public Outreach initiatives that promote using water conservation measures such as the NSRWA "GreenScapes" Program that teaches homeowners how to create beautiful landscapes while protecting water resources.	Water Department North and South Rivers Watershed Association (NSRWA)	2005, then annually
	B2.	Pass a bylaw limiting the square footage of lawns that can be installed in new construction.	Water Department Planning Board ZBA	2005
	B3.	Implement a permitting process for private irrigation wells.	Water Department Board of Health	2006

GOAL 1 Cont. Protect the Quality and Quantity of Norwell's Water Supply

OBJECTIVE	OBJECTIVE NUMBER	ACTION	RESPONSIBLE PARTIES	TIME FRAME
C. Protect Drinking Water Quality	C1. ✸ ❖ $	Distribute information on Best Management Practices for landowners within water supply areas.	Water Department NSRWA	2005
	C2.	Recommend Integrated Pest Management (IPM) planning tools to farms near well sites; post IPM information on town web-site.	Water Department	2006
	C3. $	Approach Hanover and Hingham to develop a plan to protect groundwater resources that affect Norwell wells.	Water Department	2005–2010+
	C4.	Amend the Aquifer Protection Overlay District to include the Aaron River Reservoir (Cohasset) and Tack Factory Pond (Scituate) watersheds.	Water Department Planning Department ZBA	2005–2006
	C5.	Display information on NPDES Phase II stormwa-ter regulations [ii] in the Town Hall, Library and on the town's website.	Highway Department Water Department Public Library	2005 2006

KEY:

✸ Action is also outlined in the Draft Norwell Master Plan

≈ Action is also outlined in the South Coastal Regional Open Space Plan

❖ Action meets the goals of the MA Statewide Comprehensive Outdoor Management Plan[1]

$ Funding Sources (see page 61)

GOAL 2 Protect Natural Resources and Biodiversity

OBJECTIVE	OBJECTIVE NUMBER	ACTION	RESPONSIBLE PARTIES	TIME FRAME
A. Wetlands Protection	A1. **$**	Increase the Conservation Agent's position to full time in order to adequately enforce wetlands regulations and perform job duties.	Conservation Commission Board of Selectmen Advisory Board Town Manager	2005
B. Acquire land or conservation restrictions to protect natural resources and biodiversity	B1. ✸ ❖ **$**	Acquire lands or conservation restrictions on parcels that are contiguous with existing open space, have unique environmental features, or will buffer sensitive ecological resources. Special priority should be placed on parcels that will contribute to the creation of the Draft Master Plan proposed "Greenways."	Conservation Commission Open Space and Recreation Committee (OS&R Committee) CPC	2005–2010+
	B2.	Analyze and prioritize the 16 properties of Chapter 61 lands using criteria established for ranking open space & recreation lands for protection.	University of Massachusetts-Boston GIS graduate student	2005
	B3. **$**	Determine lawful claim of all municipal properties with uncertain ownership to ascertain which parcels are protected for natural resource purposes in perpetuity.	Conservation Commission Board of Assessors Town Counsel	2005–2006
	B4.	Partner with Maxwell Conservation Trust, Ltd. in Scituate to expand its scope to act as a local private land trust for Norwell.	OS&R Committee Conservation Commission Maxwell Conservation Trust, Ltd.	2005

GOAL 2 Cont. Protect Natural Resources and Biodiversity

OBJECTIVE	OBJECTIVE NUMBER	ACTION	RESPONSIBLE PARTIES	TIME FRAME
B. Acquire land or conservation restrictions to protect natural resources and biodiversity	B5. ❖ **$**	Partner with the North and South Rivers Watershed Association (NSRWA) to hold an annual informational seminar for private and non-profit landowners on land protection strategies and tools.	NSRWA OS&R Committee	2005, then annually
	B6. ❖ **$**	Collaborate with Scituate to acquire parcels for habitat protection on First Herring Brook.	Conservation Commission Water Department OS&R Committee First Herring Brook Watershed Association	2005–2010+
	B7. ❖ **$**	Collaborate with Hanover to acquire parcels for habitat protection on Third Herring Brook.	Conservation Commission Water Department OS&R Committee	2005–2010+
	B8. ❖ **$**	Create outreach materials for landowners that present possible options and benefits of land preservation.	OS & R Committee Conservation Committee	2005
C. Protect unique habitats	C1. ❖ **$**	Synthesize existing information to prioritize lands for protection based on unique community habitats and species. Overlays should include the Natural Heritage (NHESP) BioMap, Living Waters, Potential Vernal Pools and Priority Habitats documents, the NSRWA North River mapping project and other relevant reports.	Conservation Commission OS&R Committee	2005–2007

KEY:

✸ Action is also outlined in the Draft Norwell Master Plan

≈ Action is also outlined in the South Coastal Regional Open Space Plan

❖ Action meets the goals of the MA Statewide Comprehensive Outdoor Management Plan[1]

$ Funding Sources (see page 61)

GOAL 2 Cont. Protect Natural Resources and Biodiversity

OBJECTIVE	OBJECTIVE NUMBER	ACTION	RESPONSIBLE PARTIES	TIME FRAME
C. Protect unique habitats	C2. ≈ ❖ **$**	Develop bioinventories of unique habitats and species, and create management plans for the following special feature areas: Third Herring Brook, Black Pond, areas abutting Wompatuck State Park, and the North River.	Conservation Commission Norwell schools Manomet Center for Conservation Sciences South Shore Natural Science Center (SSNSC) NSRWA	2005–2010+
	C3. ✸ ≈ **$**	Complete a town-wide survey to certify vernal pools.	Conservation Commission Norwell schools SSNSC	2005–2008

GOAL 3 Protect Norwell's Scenic Quality and Historic Resources

A. Acquire land or conservation restrictions to preserve rural character	A1. ❖	Continue to support the Community Preservation Act for the acquisition of open space as well as funding recreation, historical and affordable housing initiatives.	All Departments Citizens of Norwell	2005–2010+
	A2. ✸ ❖ **$**	Identify priority areas for protection that preserve the scenic and rural qualities of the town especially along the North River and in the Historic Village District.	Historical Commission Historical Society OS&R Committee	2006–2008
	A3. ✸ ❖ **$**	Protect remaining farms, heritage landscapes, fields, and bogs by purchasing outright or acquiring conservation restrictions (specifically the agricultural fields on Main Street and other Chapter 61 lands).	CPC, Conservation Commission Historic Commission Planning Board	2005–2010+

GOAL 3 Cont. Protect Norwell's Scenic Quality and Historic Resources

OBJECTIVE	OBJECTIVE NUMBER	ACTION	RESPONSIBLE PARTIES	TIME FRAME
B. Preserve historical areas and scenic roads	B1. ✸ ≈	Develop a management program and outreach materials for existing scenic roads, and work toward securing additional Scenic Road Designations.	Planning Board Conservation Commission Historical Commission Tree and Grounds Department	2005–2009+
	B2. ✸ ❖ **$**	Create, improve, and maintain signage to improve awareness of Norwell's historical features.	Historical Commission	2005–2010+
C. Promote appropriate and environmentally-sensitive development	C1. ✸ ❖	Support the creation of an Conservation & Recreation Residential Design bylaw to promote new development that fits in Norwell's semi-rural character.	Planning Board	2005–2010

GOAL 4 Support and Enhance Passive and Active Recreation with little Impact to the Environment

A. Acquire land or conservation restrictions for Recreation	A1. ❖ **$**	Acquire lands or conservation restrictions on parcels to create the proposed Draft Master Plan "Greenways" that can accommodate a variety of open space and recreation use.	Conservation Commission OS&R Committee Recreation Commission CPC	2005–2010+
B. Improve public awareness of and involvement in recreational resources	B1. ✸ ❖	Establish community groups to help maintain trails on town-owned conservation lands and for planning assistance for playgrounds and trails.	Conservation Commission OS&R Committee Recreation Commission	2005–2007

KEY:

✸ Action is also outlined in the Draft Norwell Master Plan

≈ Action is also outlined in the South Coastal Regional Open Space Plan

❖ Action meets the goals of the MA Statewide Comprehensive Outdoor Management Plan[1]

$ Funding Sources (see page 61)

GOAL 4 Cont. Support and Enhance Passive and Active Recreation with little Impact to the Environment

OBJECTIVE	OBJECTIVE NUMBER	ACTION	RESPONSIBLE PARTIES	TIME FRAME
B. Improve public awareness of and involvement in recreational resources	B2. ✸ ≈ ❖ **$**	Create a "Pathways Committee" to build upon the work already done by previous town bikeway and transportation committees to create a town-wide bicycle and pedestrian path system that links to the new Greenbush commuter rail station.	OS&R Committee Recreation Committee Planning Board Board of Selectmen	2005–2009
	B3. **$**	Create and distribute a map of town owned open space, recreation areas, trails, and public access to the North River.	Conservation Commission OS&R Committee CPC Committee	2005
	B4. ❖	Develop management plans for Fogg Forest,[ii] Miller Woods, Hatch Lots, Cuffey Hill.	Conservation Commission OS&R Committee Graduate Students	2007–2010+
	B5. ❖ **$**	Create, improve and maintain signage to increase awareness of and access to Conservation Lands.	Conservation Commission	2005–2010+
C. Enhance recreation opportunities	C1. ❖ **$**	Improve and maintain existing playground and athletic fields including a long term capital budget.	Tree and Grounds Departmen, Recreation Commission Athletic Fields Committee Board of Selectmen	2005–2010+
	C2. ❖ **$**	Build new or modify existing athletic fields to meet the needs demonstrated in the inventory completed for the "Norwell Schools 2000-2005" campaign. At present time, the town needs 3-4 additional playing fields to satisfy needs.	Recreation Commission Athletic Fields Committee	2005–2010+

KEY:

✸ Action is also outlined in the Draft Norwell Master Plan

≈ Action is also outlined in the South Coastal Regional Open Space Plan

■ Action meets the goals of the MA Statewide Comprehensive Outdoor Management Plan[i]

❖ Action item will be mapped

GOAL 4 Cont. Support and Enhance Passive and Active Recreation with little Impact to the Environment

OBJECTIVE	OBJECTIVE NUMBER	ACTION	RESPONSIBLE PARTIES	TIME FRAME
C. Enhance recreation opportunities	C3.	Evaluate recreation needs for the community, specifically for the growing senior population.	Recreation Commission OS&R Committee Counsel on Aging	2005–2006
D. Enhance North River	D1. ✸ ≈ ❖ ■ $	Improve public access, parking and signage along the North River by acquiring land and promoting existing access points.	OS&R Committee Conservation Commission CPC, Recreation Commission Planning Board	2005–2008

[i] The Massachusetts Statewide Comprehensive Outdoor Recreation Plan (SCORP) is a broad planning document based on six priority areas: Resource Protection, Stewardship, Restoration and Enhancement; Education and Information; Partnerships; Funding; Access; and Maintenance. The Plan offers policy reports on each of those areas and many of the goals and objectives are similar to, if not the same as, this plan. SCORP is a state-wide document and has been written to be applicable to cities and towns across the Commonwealth. Therefore, while the SCORP does not call for the development of a management plan specifically for Fogg Forest in Norwell, it does call for developing "action plans for areas of multiple use to mitigate adverse impacts and avoid user conflicts."

[ii] The Clean Water Act authorizes the EPA and states to regulate point sources that discharge pollutants into waters of the United States through the National Pollutant Discharge Elimination System (NPDES) permit program. "Point sources" are generated from a variety of municipal and industrial operations, including treated wastewater, process water, cooling water, and storm water runoff from drainage systems. The NPDES Phase I Storm Water Program (in place since 1990) regulates cities and counties with populations of 100,000 that operate a municipal separate storm sewer system (MS4), specific industrial operations, and construction activities that disturb 5 or more acres of land. The Phase II Storm Water Program (effective March 2003) regulates MS4s located within "urbanized areas" as defined by the U.S. Census Bureau and construction activities that disturb between 1 and 5 acres.

Maps *(See Open Space Plan Map.pdf)*

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10 South Shore Natural Science Center
11 Maxwell Trust

The Commonwealth of Massachusetts

Executive Office of Environmental Affairs

100 Cambridge Street, Suite 900

Boston, MA 02114-2524

MITT ROMNEY
GOVERNOR

KERRY HEALEY
LIEUTENANT GOVERNOR

ELLEN ROY HERZFELDER
SECRETARY

Tel. (617) 626-1000
Fax. (617) 626-1181
http://www.mass.gov/envir

March 28, 2005

RECEIVED
APR 11 2005
NORWELL
CONSERVATION COMMISSION

Norwell Open Space and Recreation Committee
c/o Norwell Conservation Commission
Town Hall
345 Main Street
Norwell, MA 02061

Re: Open Space and Recreation Plan

Dear Ms. Lenahan:

Thank you for submitting Norwell's draft Open Space and Recreation Plan to this office for review for compliance with the current Open Space and Recreation Plan Requirements. This plan was particularly thorough has been conditionally approved through February 2010. Conditional approval will allow the town to participate in DCS grant rounds through February 2010, and a grant award may be offered to the town. However, no final grant payments will be made until the plan is completed.

Once the following tasks are done, the plan will receive final approval.

1. Growth and Development Patterns – include information on sewer systems in the "Infrastructure" section and the ecological impact of development. found on
2. Analysis of Needs – in the "Community's Needs" section, special groups are discussed.
3. Letters of Review are submitted.
4. The Five-Year Action Plan includes funding sources.

You are well on your way toward completing this ambitious project. Please call me at (617) 626-1171 if you have any questions or concerns, and I look forward to reviewing your final plan.

Sincerely,

Melissa Cryan

Melissa Cryan
Urban Self-Help Coordinator

cc: Board of Selectmen
Park Commission

Metropolitan Area Planning Council

60 Temple Place, Boston, Massachusetts 02111 617-451-2770 fax 617-482-7185 www.mapc.org

Serving 101 cities and towns in metropolitan Boston

February 17, 2005

Deb Lenahan, Chair
Norwell Open Space and Recreation Committee
Conservation Commission
Post Office Box 295
Norwell, MA 02061

Dear Ms. Lenahan:

The Metropolitan Area Planning Council has reviewed the draft Norwell Open Space and Recreation Plan 2005-2010 dated February 1, 2005. The plan is very well-written, thorough and includes a very comprehensive Section 504 handicapped Self-Evaluation. I have a few minor comments to help strengthen the plan.

1) The South Shore Coalition - Within the discussion of the regional context, it should be noted that Norwell is a member of the South Shore Coalition, one of eight MAPC subregions. The South Shore Coalition is a group of communities that meet regularly to discuss issues of common interest and is an excellent forum for discussing regional open space issues and opportunities. More information on the South Shore Coalition can be found on the MAPC website at http://www.mapc.org/metro_area/ssc.html.

2) Surrounding communities – The plan should include information on the open space planning activities of surrounding communities.

Thank you for the opportunity to review this plan.

Sincerely,

Marc D. Draisen, Executive Director

Cc: James Boudreau, MAPC Representative, Town of Norwell
Jennifer Soper, Division of Conservation Services

RECEIVED
FEB 23 2005
NORWELL
CONSERVATION COMMISSION

Richard A. Dimino, *President* Gordon Feltman, *Vice President* Grace S. Shepard, *Treasurer* Jeanne E. Richardson, *Secretary*

Marc D. Draisen, *Executive Director*

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OFFICE OF BOARD OF SELECTMEN
TOWN OF NORWELL
345 MAIN STREET P.O. BOX 295
NORWELL, MASSACHUSETTS 02061

(781) 659-8000
FAX (781) 659-7795
www.townofnorwell.net

May 25, 2005

Ms. Kathryn Mudgett, Chair
Norwell Conservation Commission
345 Main Street
Norwell, Massachusetts 02061

Dear Madame Chair:

The board of Selectmen would like to thank you, the members of the Conservation Commission and the Open Space and Recreation Committee for your efforts in preparing the Norwell Open Space Plan 2005-2010. The Board agrees with the content of the report and supports you goals and objectives to acquire and maintain open space within our Town consistent with the wishes of the Townspeople.

Again, thank you for all of your efforts. Our community is fortunate to be able to benefit from the hard work of dedicated volunteers like yourselves.

Very truly yours,

John G. Mariano, Chairman
Norwell Board of Selectmen

CONSERVATION COMMISSION

TOWN OF NORWELL

Post Office Box 295
Norwell, Massachusetts 02061
(781) 659-8022

June 21, 2005

Norwell Open Space and Recreation Plan Committee
c/o Deb Lenahan, Chair
Town of Norwell

Dear Members of the Open Space and Recreation Plan Committee:

Thank you for your outstanding work on behalf of the Conservation Commission and the Town of Norwell in creating a five-year plan for the protection and use of the town's natural resources. After having reviewed the Open Space and Recreation Plan for 2005 - 2010 and given your committee feedback on a draft, Conservation Commission members have voted to endorse your final plan unanimously.

Please accept our thanks for all of your hard work. We are impressed with both the breadth and depth of your plan and believe it will be a valuable resource for the town as we seek to preserve and enjoy the natural environment that makes Norwell a special place to live.

Sincerely,

Kathryn Mudgett

Kathryn Mudgett, Chair
Norwell Conservation Commission

PLANNING BOARD
TOWN OF NORWELL

Post Office Box 295
Norwell, Massachusetts 02061
(781) 659-8021

To: Conservation Committee and
Open Space and Recreation Committee
Re: Norwell Open Space & Recreation Plan 2005-2010
Date: May 2, 2005

On April 27, 2005, the Planning Board voted to endorse the "Norwell Open Space & Recreation Plan 2005-2010," dated February 1, 2005.

The Planning Board congratulates the Open Space and Recreation Committee on the hard work and many volunteer hours that made the report possible and commends both the Open Space and Recreation Committee and the Conservation Commission on a job well done.

The Open Space and Recreation Plan will be a great asset to the Town, both now and in the future.

Norwell Planning Board by:

Bruce W. Graham
Chairman

cc: Board of Selectmen
Town Clerk

norwell recreation

345 main street, post office box 295
norwell, massachusetts 02061
telephone 659-8046

March 22, 2005

Norwell Open Space and Recreation Committee
Town Offices Building
Norwell, MA 02061

Attention: Deb Lenahan, Chair

Subject: Open Space and Recreation Plan Support

The Norwell Recreation Commission is impressed with the 2005 Open Space and Recreation Plan and extends our support to the plan. We appreciated being invited to be a part of the process for the first time. Previous plans had not incorporated the "active" recreation component that our commission has seen as an invaluable community asset with considerable citizen interest and support. We think the plan now reflects an integrated look at the important need to protect and acquire open space and recreation resources. We recognize that the plan can and should become an "active planning" document used by various town boards, commissions and committees to advance its goals and actions, not simply filed away until the next update.

Interestingly we also appreciate that the plan is well written and documented and is a real educational resource. The Open Space and Recreation Plan Committee is very fortunate to have knowledgeable, talented, dedicated members in a variety of areas of expertise who serve the town well.

We sincerely hope and will encourage the citizens of Norwell to embrace the goals and actions of the plan.

In support and appreciation for a plan well-done,

Ginny Maree

Ginny Maree, Chair
Norwell Recreation Commission

Members: Dave Barcomb
Jerry Kehoe
John Rice
Patricia Richardson

TOWN OF NORWELL

BOARD OF WATER COMMISSIONERS
345 MAIN STREET
P.O. BOX 295
NORWELL, MASSACHUSETTS 02061

WATER DEPARTMENT
(781) 659-8076

Norwell Open Space Committee
c/o Norwell Conservation Commission
Town of Norwell
345 Main Street, P.O. Box 295
Norwell MA 02061-0295

RE: Norwell Open Space and Recreation Plan, 2005 - 2010

Dear Ms. Chair Lenahan and Members of the Committee and Conservation Commission:

At the meeting of the Norwell Water Commission on 05 May 2005, the Commission voted to enthusiastically support the Draft Norwell Open Space and Recreation Plan, 2005-2010.

It is our opinion that the Plan presents the various action plans (Particularly the Water Protection Action Plan, Table 6-1) in a comprehensive yet user-friendly manner so that future Town decision - making can be well-guided using the Open Space and Recreation Plan.

In our review, we paid particular attention to the Environmental Inventory and Analysis, and deem it to be an accurate reflection of the Town's natural resources and built infrastructure.

We are very encouraged by the placing of the protection of the quality and quantity of the Town's water supply at the beginning of the Open Space and Recreation Action Plan.

We are either in process or anticipate beginning on many of the specific objectives listed it the Action Plan in the very near future: the inclusion of these objectives in the Action Plan provides a specific basis for Water Department actions. We believe that an informed consuming public can better take their own actions to preserve and protect our aquifer areas.

Thank you for the fine work of the Committee. We look forward to implementation of the Action Items by the Town.

Sincerely,

Peter Dillon, Chairman,
for the Members of the Water Commission, Fred St. Ours and Steve Ivas

NSRWA

Samantha Woods
Executive Director

March 23, 2005

Ms. Deb Lenahan, Chair
Open Space and Recreation Committee
C/o Norwell Conservation Commission
PO Box 295
Norwell, MA 02061

Dear Ms. Lenahan,

The North and South Rivers Watershed Association was pleased to review the 2005-2010 Norwell Open Space and Recreation Plan. It is an impressive document that will serve as a great resource for the town as well as organizations such as ours. We applaud your efforts.

We are currently involved in numerous projects and initiatives that promote the goals of the Plan, and are enthusiastic to work with the Town on the outlined actions in the plan where we are listed as a Responsible Party. The NSRWA is currently active in many areas that were outlined in the plan. For example, we have recently created and are supporting a local "Stream Team" for Third Herring Brook, and are in the second year of our Greenscapes water conservation program of which Norwell is a participating community. We have partnered with the Wildlands Trust to target land for acquisition and protection in the North River Corridor, and are pleased to see that points will be given in your evaluation criteria for parcels that have been identified in our "Protecting What Matters" report. We are also in the process of securing funding to create a model bylaw that will address landscape features that have the potential to impact water quality and quantity in our natural resource areas. We will continue to work on important initiatives such as these and promote open space and recreation goals on a watershed basis.

Thank you for including us in your review process. We look forward to working together to implement this ambitious plan.

Sincerely,

Samantha Woods
Executive Director

The North & South Rivers Watershed Association Inc.
P.O. Box 43, Norwell, Massachusetts, 02061 (781) 659-8168
www.nsrwa.org

THE WILDLANDS TRUST

OF SOUTHEASTERN MASSACHUSETTS

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May 05, 2005

Ms. Deborah Lenahan, Chair
Norwell Open Space Committee
c/o Conservation Commission
345 Main Street
Norwell, MA 02061

RE: Norwell Open Space Plan

Dear Ms. Lenahan:

I am writing to offer our enthusiastic support for the 2005-2010 Norwell Open Space and Recreation Plan. First let me congratulate you and the other members of the Norwell Open Space and Recreation Committee for the completion of the above-mentioned Plan and thank you for your hard work and devotion to protecting open space in our area.

Undoubtedly, said Plan will help to effectively guide Norwell's open space actions. I do, however, urge you to more explicitly identify in said Plan the various conservation organizations whose service area includes Norwell and may potentially become partners in your Town's conservation efforts, in particular the Wildlands Trust. It is essential that public and private entities work collaboratively to protect open space and our natural heritage. As a regional non-profit conservation organization dedicated to land conservation and the preservation of the natural heritage of Southeastern Massachusetts, the Wildlands Trust has protected over 4200 acres of land in our region. We recently partnered with the North and South Rivers Watershed Association to implement the latter's "Protecting What Matters: Prioritizing Lands for Protection in the North River Corridor" report. Many of the lands that will hopefully be protected through this effort are located in Norwell.

Once again, congratulations. The Wildlands Trust looks forward to working together with Norwell's Open Space Committee to further the goals highlighted in your Plan.

Sincerely,

Gabriela Silva

Gabriela Silva, Ph.D.
Director of Land Protection

SOUTH SHORE NATURAL SCIENCE CENTER

48 Jacobs Lane
P.O. Box 429
Norwell, MA 02061
781-659-2559 tel
781-659-5924 fax
www.ssnsc.org
ssnsc@comcast.net

9 June 2005

Deborah Lenahan, Chair
Norwell Open Space and Recreation Committee
C/O Norwell Conservation Commission
Norwell Town Hall
345 Main Street
Norwell, MA 02061

Dear Deborah and Open Space and Recreation Committee Members,

On behalf of the staff and trustees of the South Shore Natural Science Center, I would like to congratulate and thank the Norwell Open Space and Recreation Committee for compiling such a thorough and detailed Report and Five Year Plan. The wealth of information contained within the report is broad enough to give Norwell residents an overview of the town's geography and semi-rural character, yet detailed enough to represent the local natural habitats and inspire a sense of appreciation of our towns unique rich biodiversity. The documentation within the Environmental Inventory/Analysis as well as in many sections within the Appendices is outstanding and provides an invaluable compendium of ecosystem biodiversity information. To have this amount of information in one place is a tremendous resource for the Science Center naturalists.

Norwell continues to grow at a rapid pace. The strategies of the Five Year Action Plan address many of the challenges that the effect of growth will have on open space and the environment. The goals of protecting the town's water supply and natural resources, promoting diversity, and protecting our scenic quality and historic resources while providing means of supporting passive and active recreation will assure that future generations develop a sense of stewardship and appreciation of our connection to our local natural environment. The South Shore Natural Science Center offers its support toward these efforts.

Yours truly,

Martha B Twigg,
Executive Director

Maxwell Conservation Trust
292 Clapp Road, Scituate, MA 02066
Phone 781-545-4167
Fax 781-545-9023

Debra Lenahan
Chair, Norwell Open Space Committee
Norwell Town Hall
June 14, 2005

Dear Ms. Lenahan,

Thank you for sending the Maxwell Conservation Trust the "Open Space and Recreation Plan" for the Town of Norwell.

We are very impressed with both the scope and the depth of the plan. It is encouraging to see such a well thought out strategy for preserving our increasingly important open space.

We are very interested in working with the Committee, and look forward to discussing the ways in which we may be helpful.

Sincerely,

Cynde Robbins

Cynde Robbins, Director
Maxwell Conservation Trust

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