The City of Beverly

Open Space and Recreation Plan

DRAFT

Prepared by:

The City of Beverly
Open Space and Recreation Committee

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Table of Contents

Chapter 1: Plan Summary **1**

Chapter 2: Introduction **6**
A. Statement of Purpose 6
B. OSRC Accomplishments 6
C. Statement of Plan Purpose 7
D. Planning Process and Public Participation 8

Chapter 3: Community Setting **10**
A. Regional Context 10
B. History of Beverly 10
C. Community Demographics 14
Table 1: Beverly Population Percentage by Age Group
Table 2: Beverly Statistics for the Year 2000
D. Infrastructure 15
E. Growth and Development Patterns
Table 3: Comparison of Single-Family Homes Built Pre- and Post-1990

Chapter 4: Environmental Inventory and Analysis **20**
A. Topography, Geography and Soils 20
Table 4: Geographical Areas of Beverly and Soil Type
Table 5: Major Soil Associations in Beverly
Table 6: Textures of Soils
Table 7: Soil Limitations to Recreational Development
Table 8: Soil Limitations to Building Site Development
Table 9: Soil Limitations on Septic Drain Fields
Table 10: Hydrologic Soil Group (Permeability)
B. Landscape Character 26
C. Water Resources 28
D. Vegetation 30
E. Fisheries and Wildlife 31
F. Scenic Resources and Unique Environments 33
G. Environmental Challenges 35
Table 11: Beverly's Impaired Water Bodies

Chapter 5: Inventory of Lands of Conservation and Recreation Interest **44**

Chapter 6: Community Goals **63**
A. Description of Process 63
B. Statement of Open Space and Recreation Goals 63

Chapter 7: Analysis of Needs **64**
A. Summary of Resource Protection Needs 64

B. Analysis of Identified Needs 64
C. Priority Open Space Priorities for Beverly 65
D. Rationale for Priority Parcels 68
E. Summary of Community Needs 71
Table 12: 2000 U.S. Census Statistics, Children in Beverly
F. Management of Parks 75
G. Summary of Management Needs 77

Chapter 8 and 9: Goals, Objectives and Actions 78

Chapter 10: Public Comments 81

Chapter 11: References 85

Appendices 87
Appendix 1: OSRC Recommendations 87
Appendix 2: Maps 89
Map 1: Zoning Map
Map 2: Soil and Geologic Features Map
Map 3: Unique Features Map
Map 4: Water Resources Map
Map 5: Open Space Inventory Map
Map 6: Action Plan
Appendix 3: Acronyms 96

CHAPTER 1
PLAN SUMMARY

"Planning is bringing the future into the present so that you can do something about it now."

Alan Lakein
Time Management Expert

A. Statement of Purpose

This document is the five-year update of the City of Beverly's Open Space and Recreation Plan, as required by the Massachusetts Department of Conservation and Recreation (DCR). It replaces the 2001 Open Space and Recreation Plan prepared for the City of Beverly by the Cecil Group as part of Beverly's Master Plan (1998).

Mission Statement

The mission of the City of Beverly Open Space and Recreation Committee is to preserve, maintain and enhance the quality of life for the citizens of Beverly by developing and maintaining an open space plan. The plan will identify and recommend open space acquisitions and will identify other creative strategies to preserve open space based on public input and in consideration of City government policies and actions and the City's Master Plan.

B. Planning Process and Public Participation

The Beverly Open Space and Recreation Committee (OSRC) has carried out this updating of the City's Open Space and Recreation Plan. The Committee started working on the plan in the fall of 2005 and has been focused on this task through much of 2006 and 2007. Various components of the plan have been discussed at the Committee's monthly meetings, which are open to the public. In addition, the Committee held a public meeting on June 13, 2007 to get input from citizens of Beverly. The process includes approval from the Mayor and City Council. Finally, the plan is presented to the Massachusetts Division of Conservation Services (DCS) within the Executive office of Energy and Environmental Affairs for their approval.

C. Structure of the Plan

The structure of the plan, as reflected in the Table of Contents, is based on the information requirements set out by the Massachusetts DCS (available on their website).

Chapter 1: Plan Summary (this chapter).

Chapter 2: Introduction: A general introduction to the planning process.

Chapter 3: Community Setting: This chapter describes the long history of Beverly from before colonial times until the present and then discusses the demographic characteristics and recent growth trends as well as the present city infrastructure.

Chapter 4: Environmental Inventory and Analysis**:** This chapter describes the geology, plants and animals that characterize Beverly and the major environmental issues the city is facing.

Chapter 5: Inventory of Lands of Conservation and Recreation Interest**:** This chapter is an accounting of existing protected land and unprotected land of open space interest.

Chapter 6: Community Goals**:** This chapter presents the community's vision for open space.

Chapter 7: Analysis of Needs**:** This chapter lists priority open space parcels for the next five years as well as needs of the community and management needs.

Chapter 8: Goals, Objectives and Actions**:** This chapter is a statement of open space goals and objectives as well as actions to accomplish in the next five years.

Chapter 9: Five-year Action Plan

Chapter 10: Public Comments

Chapter 11: References

D. Open Space Goals and Objectives

The Beverly Open Space and Recreation Committee (OSRC) identified the following three open space goals:

1. Protect and acquire land in Beverly of high natural, scenic and recreational value.
2. Enhance the public's opportunities to enjoy open space in Beverly.
3. Promote public education on environmental issues.

The following objectives were associated with each of those three goals:

1. Protect and acquire land in Beverly of high natural, scenic and recreational value.
   a. Acquire private lands with high natural values:
      i. Wildlife habitat, such as lands supporting exemplary, rare, or uncommon natural communities and land supporting species of conservation concern,
      ii. Lands with high potential for passive outdoor recreation,
      iii. Lands in the watershed of Wenham Lake reservoir, and
      iv. Lands that provide scenic views.
   b. Ensure that all City-owned properties with high open space and passive recreational value and potential future active recreational value are protected from future development.
   c. Ensure adequate resources for maintenance and management of Beverly's open space lands.
   d. Integrate the City's Master Plan with this Open Space and Recreation Plan, and integrate open space planning into the city's planning and budgeting processes.

2. Enhance the public's opportunities to enjoy open space in Beverly.

a. Increase public access to the waterfront.
b. Create a trail network throughout the city.
c. Increase awareness of open space, park and recreation needs and opportunities within the community.
d. Increase the number of playing fields within the community.
e. Promote awareness and use of conservation areas for passive recreation (i.e. hiking, walking, nature study, etc.)
f. Increase and enhance recreational opportunities for Beverly residents.

3. Promote public education on environmental issues.
   a. Increase environmental awareness within the community

Each of these objectives has actions associated with them that will be carried out within a five year time period. These are summarized in Chapters 8 and 9 of the plan. Some of the major actions we have proposed over the next five years include the following:

1. Maintain a list of priority parcels for open space acquisition and conservation restrictions within the City and develop plans to acquire land rights to these parcels.

2. Work with the Planning Department to identify and write grants that fund open space acquisitions and conservation restrictions.

3. Review and upgrade the Watershed Protection Overlay District.

4. Hold forums for landowners on conservation giving, in collaboration with private non-profit conservation organizations.

5. Work with city government to ensure maintenance of trails and signage at city parks.

6. Work with local and state officials to implement a Sea Path, or waterfront access way.

7. Identify and install signage at all existing public rights-of-way that lead to parks and other public open spaces. Publicize the existence of these rights of way.

8. Identify parcels that would be appropriate for active recreation.

9. Maintain and periodically update the Beverly Trails map.

10. Create handicap accessible trails.

11. Create an Open Space and Recreation Committee webpage.

12. Conduct regularly scheduled trail walks and continue our highly successful Earth Day walk series.

E. Inventory of Lands of Conservation and Recreation Interest

Land of conservation and recreation interest in Beverly includes lands owned by both public and private entities. Several non-profit organizations, most notably the Essex County Greenbelt Association and The Trustees of Reservations protect a total of 309 acres in the City. The Beverly Conservation Commission has ownership of 423 acres, much of it in the Beverly Commons woodlands in Beverly Farms. The City of Beverly owns 418 acres of parkland and playgrounds. This includes 98 acres that are under the care and custody of the Parks and Recreation Department, 160 acres of the Beverly Golf and Tennis Club, and 160 acres under the general ownership of the City. The latter includes 120 acres bordering Norwood Pond, an open space priority that is currently protected under a special zoning ordinance of the City Council, called the Municipal Open Space and Recreation (OSR) district. The OSRC and Essex County Greenbelt Association have encouraged the city to grant a conservation restriction on the parcels within the OSR district.

In determining what the next set of open space priorities should be, the OSRC asked the City's GIS Administrator to extract a list of all parcels greater than five acres throughout the City. This list included 202 privately owned parcels. The OSRC also asked for a list of parcels greater than 0.5 acres in Wards 1,2, and 3, the more urbanized part of the city. This included 18 parcels.

F. Priority Open Space Projects for the Next Five Years.

As it did in the 2001 plan, the OSRC identified priority projects for the next five years based on the goal of protecting land of high conservation value and enhancing recreational opportunities. The Committee first examined the list from the 2001 plan, and determined which projects had been completed and no longer needed to be on the list, and whether some areas had been lost to development and were no longer suitable as conservation or recreation land. We then examined new areas, using the same prioritization criteria that had been developed for the 2001 plan. Some of the priorities are new acquisitions or conservation restrictions. Others are intended to provide more permanent protection for existing publicly owned open spaces. Still other priorities are to ensure that open space interests are represented in redevelopment projects. The following are the results.

<u>Ward 1</u>

- Complete the walkway from Green's Hill around the river by acquiring the "owner unknown" parcel 19-27X.

<u>Ward 2</u>

- Ensure that there is an open public walkway and city pier park in any waterfront development and redevelopment.
- Incorporate open space walkway along Bass River as part of any Rantoul Street redevelopment.
- Transfer the newly acquired Greens Hill property to either the Conservation Commission or the Parks and Recreation Commission.

Ward 3

- Develop and implement a landscape plan for the walkway area between Colgate Park and Beverly Golf and Tennis Club.
- Place a Conservation Restriction (CR) on the Beverly Golf and Tennis Club land to ensure permanent protection as open space.

Ward 4

- Transfer the former Hill property (2003 addition to Sally Milligan Park) to the Conservation Commission to ensure its permanent protection.

Ward 5

- Place the city owned land surrounding Norwood Pond into a CR.
- Protect city owned open space land adjacent to the Hannah Elementary School.
- Work with the YMCA for a CR on the remaining land at the Sterling Center.
- Consider redevelopment of the former municipal landfill off of Essex Street as playing fields.
- Work with City officials and private landowners to protect open space land from development in the watershed of the Wenham Lake Reservoir.

Ward 6

- Transfer ownership of city owned parcels in the Pole Swamp area to the Conservation Commission to ensure their permanent protection and to consolidate ownership under one city agency. Acquire any tax title and owner unknown properties in this are as well.
- Transfer ownership of city owned parcels in the Beverly Commons area to the Conservation Commission to ensure their permanent protection and to consolidate ownership under one city agency. Acquire any tax title and owner unknown properties in this area as well.
- Acquire back land of Ball family property (parcel 35-11) on Greenwood Avenue across from the vernal pool.
- Work with Affiliated Managers Group, Inc. (AMG) on placing a CR on their property, as they promised in meetings to support a zoning variance they received for its current use as corporate headquarters.
- Create an open space linkage and a trail system in the land between Boyle Street, Thissel Street, Endicott College, and the MBTA light rail line. Obtain tax title of the owner unknown parcels to provide this link.
- Work with Endicott College for a trail behind the College and Landmark School.
- Work with the Girl Scouts to place a CR on their land at Camp Paradise.

CHAPTER 2
INTRODUCTION

A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise.

Aldo Leopold
Environmentalist
1887-1948

A. Statement of Purpose

This document is the five-year update of the City of Beverly's Open Space and Recreation Plan, as required by the Massachusetts Department of Conservation and Recreation. It will replace Beverly's 2001 Open Space and Recreation Plan prepared for the City by the Cecil Group as part of Beverly's Master Plan (2002).

Public hearings held during the master planning process made it clear that protecting open space is a priority among residents. At that time the Beverly City Council recognized the need to create a permanent standing committee to address the issue of open space on a continual basis. In l999 a 12 member Open Space and Recreation Committee (OSRC) was created. One of the first actions of the Committee was to define its mission:

> Mission Statement
>
> *To preserve, maintain and enhance the quality of life for the citizens of Beverly by developing and maintaining an open space plan. The plan will identify and recommend open space acquisitions and will identify other creative strategies to preserve open space based on public input and in consideration of City government policies and actions and the City's Master Plan.*

B. OSRC Accomplishments

Some of the OSRC's major accomplishments under the 2001 plan include:

- Facilitated the purchase by the City of two of four privately owned parcels identified as "key" parcels in the 2001 Open Space and Recreation Plan (OSRP). The Greens Hill and Hill properties total approximately 50 acres. Development of these parcels would have critically compromised an adjacent city park.

- Sponsored a Landowner's Forum with assistance from the Essex County Greenbelt Association (ECGA). The owners of over 200 parcels of land were invited to the forum to learn about land use preservation options and potential tax benefits. A panel of land use experts including a land use planning firm, land use lawyers, ECGA and Trustees of Reservations representatives addressed an audience of approximately 50 landowners and Committee members at the forum. As a direct result of this meeting, at least a half dozen

property owners have expressed an interest in selling or giving their land to the City for open space use. Discussion with these individuals is continuing.

- Facilitated the purchase by the City of several additional parcels of open space interest, including a section of one of the other four identified "key" parcels known as Tanzella Hill.

- Drafted an Open Space Action Plan that outlined open space priorities and implementation steps for promoting the City's open space agenda on a ward-by-ward basis.

- Developed and distributed a trail map of open spaces in the City of Beverly.

- Designed and installed signage and six informational kiosks, placed throughout the City's open space parcels.

- Alerted the City to potential encroachments onto public rights of way to certain open space properties.

- Conducted educational outreach to the community, which included: coordinating Earth Day events, leading walks in protected open spaces, organizing Biodiversity Days in Beverly, writing newspaper articles, and engaging in other activities to inform the public about open spaces in Beverly.

- Provided comments to other City boards and commissions about the open space implications of specific developments and encouraged the passage of zoning changes (Open Space Residential Design, OSRD) that would enhance open space opportunities.

- Drafted a management plan for a newly acquired property to be used as a public park.

- Prepared a Power Point presentation to educate the Mayor and the City Council about the benefits of a Conservation Restriction (CR) on the municipally-owned Norwood Pond property and held a site walk for the Councilors.

- Met regularly with the Mayor and the City Council to provide updates of the OSRC's activities.

- Collaborated with the ECGA to coordinate land protection initiatives in Beverly.

C. Statement of Plan Purpose

The benefits of having an updated and comprehensive OSRP are several-fold. A current plan:

- Establishes goals and objectives with respect to development of open space and recreation facilities to meet projected future demand and provides a blueprint for meeting those goals and objectives;

- Provides a current and comprehensive inventory of vacant land that can help the community plan its development activities in a way that is consistent with established recreation and open space preservation goals and objectives;

- Allows the City to apply to certain grant funding sources for which it would otherwise be ineligible without a plan.

D. Planning Process and Public Participation

The State requires that an open space plan be updated very five years. The process of updating the City's 2001 OSRP started in the fall of 2005.

The OSRC is comprised of twelve appointed citizen members. Each of the City's political wards has a representative on the Committee who is chosen by the ward councilor. The Mayor appoints the remaining six members; the mayoral appointments must include representatives of the Conservation Commission, Planning Board, Parks and Recreation Commission, and the Beverly Harbor Management Authority. The prescribed membership on the Committee insures that each of the City's neighborhoods and each of the local land use boards are included in the open space planning process. The City of Beverly Planning Department provides staff support to the Committee. The OSRC meets monthly throughout the year to further the goals in the OSRP.

The 1999 City ordinance that established the Committee required a chairman, vice-chairman, and secretary be elected; it also required technical and administrative support be provided by the City's Planning Department. The ordinance dictated the Committee's duties and responsibilities in section 3-227(b):

- To act as an advisory committee to the Mayor, City Council, City departments, private organizations and the general public on matters concerning open space and recreation;

- To formulate a mission statement to guide the Committee's work;

- To prepare and update a five-year OSRP for current and future use;

- To research and recommend financing alternatives for the acquisition and preservation of open space and the development of recreational facilities including the impact on the fiscal budget;

- To set criteria for prioritizing open space acquisition and recreation facility development and redevelopment for current and future use;

- To structure ad-hoc committees, as needed, to address specific objectives of the committee, and shall recruit, as needed, members to serve in a non-voting advisory capacity;

- To explore creative strategies to preserve open space; and

- To recommend changes in local and state laws to facilitate the acquisition and preservation of open space.

The Committee has used its authority and responsibility throughout the public process of updating this plan. It has held monthly public meetings to discuss open space issues and solicit public involvement, and has established ties with local newspapers to advertise the work of the OSRC. The public is given an opportunity, at each meeting, to ask questions and express concerns to the Committee.

The City of Beverly's Ordinances from section 4-308 state that the Conservation Commission is responsible, with the Parks and Recreation Commission, for development and adoption of the City's OSRP. The Con Com may adopt policies and promulgate land management plans for City properties reserved for conservation purposes.

In the months leading up to the passage of this OSRP, the Committee worked closely with the Beverly Planning Department to hold a public hearing to solicit input on the plan. Members of the public were invited to attend the hearing through newspaper articles and postings in various public buildings, and all local land use boards and commissions were formally invited to attend. The final version of the OSRP incorporates comments and suggestions from these public meetings and from city officials to the extent deemed advisable by the Committee.

Several meetings were held to solicit input for the updated OSRP:

- Monthly OSRC meetings, held the first Wednesday of each month
- Public forum: June 13, 2007

CHAPTER 3
COMMUNITY SETTING

The loveliest scenery of that lovely Town lay on its ocean border; miles of shore, verdant out to the verge of beach or cliff with varying tints of gardens, orchards, hills, evergreen forests, intermixed with growth, of the light maple and the glimmering birch; and quaint old homesteads whose colonial date was hid back among the Indian wars, all washed by landlocked waters drowsily, as by faint, lapsing, half-dreamed memories.

Lucy Larcom
Beverly Poet
1824-1893

A. Regional Context

The City of Beverly is located approximately eighteen miles North of Boston, on the historic North Shore. Beverly residents know the City as the "Birthplace of the American Navy" and its history can be traced back over 350 years to 1626. Today, Beverly has a population of over 40,000 and a land area of 15.4 square miles, including over nine miles of coastline. Situated in the heart of Essex County in Northeastern Massachusetts, the community is bordered by Manchester and Wenham to the North, Danvers to the West, Salem to the South, and the Atlantic Ocean to the East. It is within the jurisdiction of Boston's Metropolitan Area Planning Council (MAPC) and also the North Shore Task Force (NSTF), a sub region of the MAPC. Beverly maintains a diverse socioeconomic make-up that reflects the City's distinct urban and rural land use characteristics.

Beverly is located within two watershed basins as delineated by the Commonwealth of Massachusetts: the North Coastal Watershed Basin and the Ipswich River Watershed Basin. Approximately 60% of Beverly's landmass is located within the North Coastal Watershed. The remaining 40% of the City's landmass is located in the more Northerly sections of the City and contribute to the Ipswich River Watershed; this watershed envelops all of the major fresh water bodies located in Beverly, namely the Wenham Lake Reservoir, Norwood Pond and Beaver Pond (Map 4).

With a considerable amount of land suitable for building, the City has maintained a steady rate of residential development and commercial redevelopment over the course of the last ten years.

A. History of Beverly

There are over twenty prehistoric sites recorded for Beverly at the Massachusetts Historical Commission (MHC) and amateur collectors know many more sites. Archeological evidence found in Beverly traces the presence of native people, who probably spoke Algonquian

languages. Studies have detailed their migratory habits of living along the coast in the summer for horticultural activities and the harvest of seafood, heading inland in the winter to hunting villages (Norwood Pond Draft EIR, 1983). A collection of artifacts, which support these migratory theories, were found in the beach sand in Beverly Farms and were part of a collection that was donated to Phillips Andover Academy, a private high school located in Andover, Massachusetts.

The colonial history of Beverly began in the early 1600's when plots of land were laid out along the Danvers River for the harvesting of salt marsh hay. How early houses were built is not known, but as early as the mid-1600's, grants of land were being distributed in Beverly. Cross-river activity between settlements in Salem and Beverly was sufficient to warrant a ferry by 1636.

In 1668, the Town of Beverly was incorporated; as the population on the Beverly side of the river grew to about 600 people. Early European settlement of this area was scattered and organized by tracts of arable land rather than around one town center.

The boundary between Beverly and Wenham was drawn in 1643, and in 1649 the first gristmill was constructed. Eight families had settled near the mill site by 1650. A tannery was also located nearby on what are known today as Beckford Street and Dock Lane. Another area of settlement was located near the coast in the present-day Beverly Cove. The border between Beverly and Manchester was delineated in 1672.

The area of Beverly facing Salem became the landing place for the Salem Ferry in 1636 and thus became a nucleus for settlement. Salt works were constructed across the mouth of the Bass River, which were essential to the emerging fishing industry. Settlement in the Ryal Side area of the town was scattered except for the mill cluster previously noted. Farms were established along the river and along the western road, later called Elliott Street.

Beverly developed steadily through the mid 1770's with an economy focused on the maritime industry. The population grew to more than 1600 people in 1710, and to more than 2000 before the Revolutionary War. The wharves and warehouses appearing along the Salem-facing waterfront demonstrated the increased prominence of maritime activity and the retailing and wholesaling of goods associated with it. The harbor was the center of Beverly's important fishing industry; a continuously growing one that was now conducted in larger vessels, which required docks. An auxiliary shipbuilding and rope manufacturing industry to support the maritime trade was begun near the waterfront. Shoemaking became a wintertime activity of the fishermen in Beverly, an occupation widely pursued in small shops before the Revolution.

During the Revolutionary War and Federal periods, Beverly seafarers played a crucial role; fitting out the first ships of Washington's Navy. Like most seacoast towns, Beverly suffered a brief depression as a result of the disruption of Caribbean and European trade. By 1790, however, Beverly was well on the way to recovery, with the cod fishery faring especially well.

Entrepreneurs in the years after the Revolutionary War concentrated on engineering and industrial ventures, and the first cotton textile factory in America was built in 1788. In 1794, an economic boom was underway. Ships laden with mercantile trade goods were based in Beverly. Embargoes imposed during the war of 1812 were lifted in 1814 and local manufacturing expanded. Small factories making shoes appeared in many locations along Cabot Street after 1815. Land was largely cleared of woods during this period except for inland Beverly Farms.

Between 1830 and 1870 the town evolved from its traditional maritime and agricultural economy to a predominately industrial one. The coming of the Eastern Railroad in 1839 encouraged an industrial district to spread along the tracks by the Bass River.

Still prominent on the waterfront, the fishing industry grew steadily during the 1830's and 1840's when nearly 500 men worked on approximately 80 vessels. After the War of 1812, trade dropped off for most ports in the State, but construction of schooners continued at Tuck's Point.

Beverly became a shoemaking center as maritime activities began to decline. This decline in the fishing industry was caused by an interruption of markets for New England salt fish caused by the Napoleonic Wars, Jefferson's embargo, and the disruption caused by the war of 1812. The European salt fish market never fully recovered to its previous prosperity. The new market of providing salt fish to the West Indies slaveholders was less lucrative. The rise of the "mechanical trades" such as the mills and the shoe making industry made a strong appeal for the younger generation. By 1870, boot and shoemaking were Beverly's most important industry. The primary industrial district beside the railroad tracks grew between 1850 and 1870. Many newly constructed shoemaking factories clustered along Rantoul and Park Streets. At the south end of Rantoul Street, the first housing development in Beverly was built in the late 1850's. As other areas developed away from the waterfront, Cabot Street became the institutional and commercial center. A street railway linked the Cabot Street business area to Salem in 1863.

Agriculture prospered in Ryal Side, North Beverly, and the Centerville area as local markets developed for dairy and market garden products. Trees began to reforest some of the areas that were heavily grazed and cleared in earlier years for heating fuel during difficult times.

Beverly grew quickly after 1870 and was incorporated as a city in 1894, adopting a Mayor and Aldermen form of government. The growing population, which reached 22,000 by 1920, demanded new housing. Suburban housing development changed rural parts of the town like Ryal Side and Montserrat, and multiple-family housing filled the Gloucester Crossing area. Many three and four-story factories stood along Rantoul and Park Streets. By the end of the century, over 35 shoe manufacturers existed in Beverly. By World War I, the largest manufacturer, the United Shoe Machinery Corporation (USMC), employed 5,000 people and provided low cost single- and multi-family housing for its workers. The fishing industry declined through the late 1800's, and lumberyards and wharves replaced the structures used for fishing.

While a street railway linked North Beverly to the downtown area in the late 1890's and made it possible for workers to commute to industrial jobs, agriculture was still important in North Beverly. Ryal Side farmland began to be developed as suburban housing lots around 1900. Centerville remained largely agricultural at this time.

Another industry that brought Beverly international acclaim around the turn of the 20th Century was ice. The Wenham Lake Reservoir was the source of exceptionally pure ice, a result of pure water flowing into the lake from the western hills. The ice, absent any salt and other contaminants, was shipped around the world. It is reported that the ice was carved and shipped for many influential people including the Queen of England.

During the two decades following the turn of the century, the Beverly Farms and Prides Crossing sections of the City experienced a resurgence of construction as wealthy families built mansions. A huge upswing in tourism to the coastline of Beverly and Cape Ann resulted in the creation of many new crossroads leading to the waterfront. This corridor was entitled the "Gold Coast" due to the significant number of large residences constructed along the waterfront, not to mention the extensive wealth of some of the inhabitants. Beverly became known for the wealthy socialites who summered here, including President William Howard Taft, Senator Albert Beveridge of Indiana, Congressman Nicholas Longworth of Ohio (son-in-law to Theodore Roosevelt) and Supreme Court Justice Oliver Wendell Homes.

During World War I Beverly's industries slowed as labor supplies decreased. The USMC continued to be the City's largest employer, attracting commuting workers from outside Beverly and supplying the region's many shoe-making factories with machinery. The Gloucester Crossing neighborhood housed families of USMC workers. Leather goods, printing, chemical, and metal goods were also produced in Beverly in the industrial district along the Bass River.

Immediately after World War II, the waterfront continued to be a working district of terminals and docks. During this time, as farming rapidly declined, suburban development transformed the Montserrat, North Beverly, Ryal Side and Centerville neighborhoods. A large dairy farm remained in North Beverly until the 1970's, when it was redeveloped as an industrial park.

The Shoe gradually reduced its operations during the 1960's and 1970's, and eventually shut down in the mid 1980's. Today the housing built for the families of workers continues to provide moderately priced housing in the Gloucester Crossing and McKay Street areas. The former USMC headquarters on Elliott Street, which had been a North Shore landmark since 1903, is now the home to the sprawling 88-acre Cummings Center. A ten-year restoration that involved a blend of new construction, rehabilitation and renovation transformed "the Shoe" into the Cummings Center: a vibrant corporate campus providing approximately two million square feet of office, laboratory, and research space as well as supporting retail and daycare facilities.

Today, Beverly is a predominantly residential community. That the community has remained an attractive residential area is evidenced by the residential building boom of the last several decades. A secondary commercial district now exists in North Beverly, serving both the residents and several communities to the North. Despite the new development of the past several decades, the overall development pattern remains similar today to what it was in the first years of Beverly's formation - Cabot and Rantoul Streets continue to serve as the commercial core of the community; the area adjacent to the railroad tracks contains industrial land and buildings, and the waterfront area near the bridge continues as a center of marine activity.

B. Community Demographics

In order to plan adequately for Beverly's open space and recreation needs, population characteristics must be considered. During the 10-year period between 1990 and 2000, Beverly's population went from 38,195 to 39,862, an increase of 1,667 people or 1.04%. According to the City Clerk's office, data showed a population of 40,807 as of August 2006, an increase of 945 people or 1.02%. The total population, which over the 15.4 square miles encompassed by the City, is an average population density of 2,650 people per square mile. The Metropolitan Area Planning Council (MAPC) has provided population projections into the year 2030, which show an average increase of approximately 2.1% per 10-year period.

Table 1: Beverly Population Percentage by Age Group

MAPC projection data

Age Group	% of total population **2000**	% of total population **2010**	% of total population **2020**	% of total population **2030**
0-19	25%	24%	22%	21%
20-34	20%	17%	18%	16%
35-59	36%	38%	34%	32%
60-85+	19%	21%	26%	31%

As the Table 1 demonstrates, the City can expect a slight decrease in residents younger than 35, and a steady increase in its senior population.

Table 2: Beverly Statistics for the Year 2000*

U.S. Census

*School Enrollment for 1996 is included.

Category	Statistic	Category	Statistic
Median Family Income	$53,989	School enrollment, 1996	4,875
Median Age	38.3	School enrollment, 2000	4,680
Residents under the age of 35	17,675	Number of households	15,760
Residents under the age of 59	14,550	People per household	2.39
Residents aged 60+	7,637	Number of family households	9,907
Non-Family households: singles or aged 65+	5,843		

A majority of the City's working population is employed in the services or wholesale/retail trade sector. Other major employers in the City include:

- Beverly Hospital
- Cummings Center
- Axcelis Corporation
- Essex County Newspapers

D. Infrastructure

The City of Beverly has a well-established infrastructure that provides municipal water and sewer service to approximately 95% of all residences. The remaining five percent have either private well water or septic systems, or both. As part of its ongoing infrastructure improvement program, the City has completed a number of public projects in the last five years, most notably some complicated drainage improvement projects designed to alleviate the longstanding flooding projects in various neighborhoods. Daily maintenance operations include replacing manhole covers and cleaning storm drains. The former landfill site was capped as mandated by the Department of Environmental Protection in 1999, but has yet to receive a Certificate of Compliance from the Con Com. With funding assistance from the Commonwealth, two major arteries – Route 1A and Route 62 have undergone complete reconstruction. A number of secondary roadways across the City are being repaved.

Other city infrastructure components include a comprehensive road network consisting of local streets and state numbered highways, as well as two commuter rail lines with five separate depots throughout the City; there are more commuter rail stations in Beverly than in Boston. In addition, the Massachusetts Bay Transportation Authority (MBTA) runs scheduled bus service throughout the City and a separate, City-funded shuttle bus links the downtown Central, North Beverly and Beverly Farms business districts to assist shoppers and senior citizens. Beverly residents have easy access to Boston and neighboring cities and towns that border Route 128. The City of Beverly owns and manages the Beverly Airport, which is used primarily by private recreational aircraft, with some business traffic as well; there are several local businesses that utilize the airport for private jet landings.

Storm Drainage

The City has had some significant storm drainage problems in low-lying areas. Approximately $9 million was spent to install new drain culverts in the Lawrence Brook drainage area east of the downtown, improve the drainage in the Raymonds Farms neighborhood and to construct a new storm water retention pond system in Beverly Farms. These projects were completed in 2005.

Beverly is currently dealing with other high priority drainage issues and at a June 2006 City Council meeting the City proposed to develop a systematic plan to correct the drainage problems. Priority areas include: Willow Street, Lothrop Street and Corning Street where raw sewerage entered residents homes during the “Mothers’ Day Storm” in May 2006. Other hard hit areas under consideration for future improvements were:

- **Raymonds Farms:** Dartmouth Street and Yale Boulevard
- **North Beverly:** Brimbal Avenue, Wirling and Morningside Drives
- **Gloucester Crossing** neighborhood

Water Service

The principal potable water supply sources for the City are the Wenham Lake Reservoir in Beverly and Wenham, the Longham Reservoir in Wenham and the Putnamville Reservoir in Danvers. The Salem/Beverly Water Supply Board, a public utility, owns and operates the distribution system on the City's behalf. When there is excess flow or between December 1st and April 1st, water from the Ipswich River is pumped to the Putnamville Reservoir and to the Wenham Lake Reservoir.

The water supply is adequate, but the distribution system needs attention. A new 25-year Master Plan is currently being prepared for the Water Board that will include addressing the aging distribution system (July 2006 SBWSB meeting). A 6.5 million gallon water tank, constructed on Brimbal Hill (north of Route128), alleviated a former low water pressure condition throughout the City. The former tank would only yield 65 to 70 pounds of water pressure. The newer tank, installed in the 1990's, produces 85 to 90 pounds of pressure with a peak pressure capacity of 100 pounds. Four new water pumps are planned for installation in the downtown area. The City faces a problem common to older communities in this part of the country, in that many of the water services to individual businesses and residences are non-copper and subject to failure. As many as 4,000 such services may exist in the community and are expected to be replaced on a continual basis.

Additionally, the City has replaced all residential and commercial water meters with state-of-the-art remote read meters. Installation of nearly 11,000 of these meters has significantly increased the accountability of water being used by the City's business and residential communities. The results have been favorable for Beverly as the City now uses 41.4% of the total water supply and the remaining 58.6% being used by Salem.

Sewer Service

The Beverly wastewater collection system serves nearly 95% of the community's residents, with the City's goal to sewer the remaining five percent over time when those homes are sold. The City recently completed a sewer system evaluation survey and has alleviated many of the issues identified by this survey. The Mothers' Day Storm in May 2006 magnified inflow and infiltration of water into areas of the city's wastewater system. The South Essex Sewerage District (SESD) has been permitted by the Con Com to start work on investigating the 300 sump pumps targeted in l995 as illegal connections.

E. Growth and Development Patterns

Land Use Regulations

Local land use controls currently in effect in Beverly regulate all commercial, industrial and residential development within the community. Many of the land use controls prescribe minimum and maximum dimensional requirements for the various types of land uses allowed in the community. These controls spell out size, frontage, setback and lot coverage requirements for permitted uses. In December of 2005, the City adopted the Open Space Residential Design

(OSRD) zoning bylaw, which provides for residential development that conserves open space in a new subdivision or development. OSRD achieves this goal by enabling houses to be placed closer together than they would with a traditional subdivision as well as tailoring roadway and driveway design to minimize impact on the natural and hydrologic features of the parcel. OSRD is not like older cluster ordinances. The main difference is OSRD seeks to protect open space based on the unique features of the parcel and sets these unique features aside first, rather than by application of a standard formula. As of Spring 2007, this ordinance had yet to be applied to a specific project; but it promises a more efficient and sensitive approach to land use in the City.

Regarding land controls around water resources, the Con Com administers both the State Wetlands Protection Act and the Beverly Wetlands Protection Ordinance. These policies regulate land use within 100 feet of a wetland resource area and 200 feet of a perennial stream/river. Building setbacks are prescribed under the Beverly Wetlands Protection Regulations that provide greater protection of wetland and water resources than is already granted by the Act.

In addition to traditional dimensional controls, the City of Beverly also utilizes an "overlay district" to provide additional levels of land use control in areas identified as meriting special regulation. A Watershed Protection Overlay District (WPOD) covers the physical watersheds of two separate sources of drinking water for the cities of Salem and Beverly, and require most commercial, industrial, and residential developments to submit plans for Special Permit review by the City's Planning Board. This review allows for a more detailed review of development proposals by the Boards and Commissions charged with protecting the public's health and the drinking water supply, and enables the Planning Board to impose restrictions on certain developments, which would otherwise be permitted by right. *The Beverly OSRC recommends that the City reexamine the effectiveness of these overlay districts in protecting drinking water supplies and make revisions as necessary.* A Floodplain Overlay District has been established in known flood-prone areas in the community in accordance with guidelines set forth by the National Flood Insurance Program. Lastly, a Historic District Overlay Zone has been created in an area of the City deemed historically significant, Fish Flake Hill on the waterfront, in order to support preservation efforts.

Recent Patterns of Growth

During the 1970's and the 1980's, the City of Beverly experienced substantial growth in residential development. The vast majority of infrastructure improvements made during this time were constructed to service this development boom. Following the decline of the real estate market in the early 1990's, the amount of residential development in Beverly decreased in accordance with the downturn in the economy. Moreover, industrial and commercial development, which had grown at a reasonable pace during the 1970's, dropped off during the 1980's in response to the economy and changing attitudes of the community.

In 2004, home values in Beverly skyrocketed, as it did in much of eastern Massachusetts. The average single-family home is now worth nearly $350,000 and the City has at least 231 homes worth more than a $1 million. Single-family homes rose in value by fifteen percent, and since 2002 they have gone up by about 50%.

Beverly has continued to see steady development of both residential and commercial properties. Between 1995 and 2005, 360 permits were issued for single-family housing units, an average of about 33 building permits for housing per year. The number of permits does not indicate the actual number of housing units being built as the City issues one permit for multiple unit projects such as condominiums, apartments and multi-family homes. Several multi-unit condominium and single-family projects are either underway or in the planning stages. This could result in as many as 276 new housing units. According to the City's GIS database, homes built after 1990 in are larger and consume a higher amount of land area than the citywide average.

Table 3: Comparison of Single-Family Homes Built Pre- and Post-1990

City of Beverly GIS database

	Pre-1990	Post-1990
Total Number of Homes	7,701	649
Minimum Square Footage	718	1,596
Maximum Square Footage	30,590	21,898
Average Square Footage	3,273	5,346

*These numbers represent the total square footage of the primary structure. They include the square footage of a garage or structure when it is attached; unattached garages and structures are not included in the total square footage.

This is likely a reflection of existing zoning and regional economic trends. However, with the newly adopted OSRD zoning bylaw, this trend should start to be reversed.

In the commercial/industrial sector, several large-scale industrial projects have been undertaken or completed in recent years. As mentioned above, the transformation of the sprawling USMC complex, a brownfield site, from one million square feet of underutilized and/or vacant industrial space into a two million square foot office and research and development center is complete. In the mid to late 1990's the City partnered with the private owner of 65 acres of undeveloped and unserviced industrial land to create a roughly 100-acre industrial park adjacent to the Beverly Municipal Airport known as the Garden City Industrial Park. Portions of this land is located in the watershed to the Wenham Lake Reservoir and subjected to the protections of the WPOD.

In using a combination of State grant funds and private investment, the City built a one-mile long roadway (Sam Fonzo Drive) with water, sewer, gas, cable and storm drainage utilities in order to turn 100 acres of vacant land into an industrial park. The project also included the installation of upgraded water lines in Cabot and Trask Streets, as well as the installation of sewer lines in upper Cabot Street for the first time. As a result of the sewer line construction in Cabot Street, over 40 homes within the Wenham Lake Reservoir watershed that had been on septic systems were hooked into the municipal sewerage system.

A total of seven industrial lots were created with four of the privately owned lots having since been developed with a mix of office and manufacturing space. The businesses now located along Sam Fonzo Drive include:

- Aero Manufacturing
- Liberty Publishing
- Electric Insurance
- Axcelis Corporation

The City of Beverly's Airport Commission owns the three remaining lots. The City has issued a Request for Proposals (RFP) for the lease or sale and development of these three lots for industrial uses consistent with the IR zone (industrial, research and office space) and the WPOD zoning requirements. Responses to the RFP were due in late June 2006, and depending on the responses received by the City and the complexity of the necessary permitting processes, construction on the remaining lots owned by the City could occur in 2007. In addition to these two projects, several new commercial developments and the redevelopment of five existing commercial establishments have been executed in the last several years.

The effect of additional development on the City's open space areas will be two-fold. First, residential development will continue to occur on the remaining large parcels of vacant or underutilized privately owned land. Second, development of all kinds will increase the use of existing open space and the demand for both active and passive recreation facilities, as well as City services. The process of updating the City's OSRP has highlighted a number of areas where additional recreational and open space facilities should be acquired, protected or developed to meet existing and future demands. This view has been reflected in the Sections 6-9 of the plan.

CHAPTER 4
ENVIRONMENTAL INVENTORY AND ANALYSIS

Forests are the lungs of our land, purifying the air and giving fresh strength to our people.

Franklin Delano Roosevelt
32nd President of the United States
1882-1945

A. Topography, Geology and Soils

The City of Beverly is located on the coast of Massachusetts Bay, approximately eighteen miles northeast of Boston. As such, it is part of the eastern megalopolis of cities and towns, which lie along the eastern seaboard of the United States from southern New Hampshire to northern Virginia.

Topography

Beverly has a gentle rolling topography, characterized by a long ocean shoreline, low hills, and wetlands. The city has about ten miles of coastline running east from Foster's Point on the Danvers boundary to the Chubb's Brook marsh near Manchester. The coastline consists of rocky headlands interspersed with sandy beaches. From the shoreline, gently rolling hills separated by broad valleys, often containing wetlands, extend inland. The highest hills of bedrock outcrops west of Wenham Lake Reservoir are about 150 feet above sea level (City of Beverly GIS Database). A fine example of an esker occurs in the vicinity of Norwood Pond. Near the Wenham boundary, in the northern part of the City, are three major water bodies: Beaver Pond, Norwood Pond and Wenham Lake Reservoir, which serves as the final collection basin for the public drinking water supply for the 80,000 residents of Salem, Beverly, and parts of Wenham.

Two U.S. Geological Survey topographic maps show the geography of the Beverly area. These are the Salem and Marblehead, North *1:25,000* quadrangles.

Geology

The major geologic forces shaping the landscape of Beverly include its igneous bedrock and the recent effects of glaciations.

Bedrock

The bedrock that underlies Beverly consists largely of two principal types. The dark colored Salem gabbro diorite dates to the Pre-Cambrian era, greater than 600 million years ago. Cape

Ann granite, a light-colored material, is about 400 million years old. Both types are igneous in origin and are intruded by dikes and sills that are younger than the surrounding rock. The Cape Ann granite was once part of an island arc that became incorporated into the North American continent when it was squeezed between the North American and European plates during the Paleozoic Era.

Glaciations

Fifteen thousand years ago southern New England lay under a mile thick layer of glacial ice. The coastline off of Beverly was many miles further out to sea than it is currently because so much water was locked up as ice. The advancing ice eroded hills and valleys throughout New England. As this late Pleistocene continental ice sheet melted, its leading edge retreated northward across the region. Boulders, rocks and other debris that had been incorporated in the ice were gradually released to form an uneven mantle of glacial till across the landscape. Rushing rivers and streams under the melting ice deposited sand and gravel in narrow, winding ridges called eskers as the ice retreated. Meanwhile, former coastal shorelines migrated inland as worldwide sea levels rose to their pre-glacial heights. Simultaneously, the adjacent continental land rebounded to higher elevations as it was released from the massive weight of the ice. Much of the surficial geology and topography of Beverly, its pronounced dips, ridges and small hills, is the product of the glaciers.

Soils

As the glaciofluvial deposits, till and ground moraines left by the glacier became exposed to weathering processes the parent material began breaking down and forming various types of soils. Over the last 15,000 years numerous soil types have developed throughout Beverly (Map 2). The soil maps in the Soil Survey of Essex County, Southern Part, compiled by the Natural Resources Conservation Service (NRCS) of the U.S. Department of Agriculture, contains locations and description of all present soil types in the City.

Local variation of plant type and density is partially controlled by the depth of soils, their capacity for water retention, and degree and orientation of slope. Oaks and hickories predominate on sunny slopes while in cool, shady areas northern hardwoods such as American beech and yellow birch flourish.

The highly developed areas of downtown Beverly, Ryal Side and the urban corridor through North Beverly exhibit highly altered soil deposits and artificial landscapes and plant communities. Little agricultural land remains throughout the City. In Centerville and Beverly Farms, however, rolling hills are covered with second or third growth hardwood forest. Lowlands between the hills often contain impermeable soils, high water tables and vegetation characteristics of legally protected wetlands.

Effects of Soils on Land Use

The major soil types are grouped into their natural associations as they occur within the City of Beverly (Table 4). This will help us to assess the virtues and limitation of soils on the potential

for urban development or open space preservation addressed by this Plan.

We have divided Beverly into three areas based on a scale of decreasing potential for urban development, and thus increasing potential for Open Space consideration (Table 4). Area 1 is comprised of downtown Beverly and Ryal Side, Area 2 is Upper Cabot Street and Dodge Street, and Area 3 is the Centerville and Beverly Farms region. Areas 1 and 2 are much more densely developed than Area 3. Within Areas 1 and 2 there is little space left for either new development or for setting aside large tracts of open space. However, these areas do contain scenic and historical vistas and the potential for integrating walking paths with existing development and any redevelopment.

A monograph by the Soil Conservation Service (now NRCS) identified six major soil associations in Beverly (Table 5). Because the Centerville and Beverly Farms area contains most of the remaining open space in the City, discussion of the two soil associations found there is emphasized.

Limits to Land Use Imposed by Soil Types in the Centerville-Beverly Farms Area

The textures of the four soil types comprising these two soil associations have a direct influence on their physical structure and characteristics. These characteristics in turn influence the use to which that land surface is put. Table 6 shows the textures of these five primary soils.

In addition, prior geologic history, climate, and weathering processes all influence the formation of certain soil characteristics. The sum of these characteristics imposes certain limits on future land use. In the following tables some of the limits imposed by the major soil types in Area 3 (Merrimac, Hinckley, Chatfield, and Hollis) are shown. Some of the more notable limitations include:

1. Support of Wildlife Habitats: Particular soils often support very specific natural communities, thus from the perspective of open space protection, all soils have natural values. Those that are labeled “poor” in terms of their ability to support large amounts of plant growth may support uncommon plants and animals of major conservation concern (e.g., sandplain, grasslands, heathlands and bogs).

2. Recreational Development: Stones in both Chatfield and Hollis soils can present a challenge to the building of picnic areas and playgrounds due to shallow depth to bedrock (Table 7).

3. Building Site Development: shows that both Chatfield and Hollis soils impose severe to moderate limitations on construction of roads, streets and buildings with or without basements because these areas have shallow depth to bedrock, steep slopes, hills and ridges (Table 8). The presence of bedrock in project construction area will increase construction costs and bedrock may require blasting for removal.

4. Limits for Septic Tank Drain Fields: Neither Merrimac nor Hinckley soils are suitable for drain fields due to their high permeability and poor filtration capabilities. In addition,

Chatfield and Hollis soils limit drain-field construction through their tendency to have shallow depth to bedrock (Tables 9 and 10).

Physical Controls on Land Use

No matter which soil covers the surface, certain physical features of the landscape impose moderate to severe limitations on development and recreational use. The major physical limitations to land use are:

- Degree of slope
- Presence of shallow or exposed bedrock
- Presence of legally protected wetlands

These physical limitations are present in varying degrees throughout all three of the geographic areas into which Beverly is divided in this section of the report. In the more highly developed areas (Area 1 and Area 2), these physical limitations have been overcome in the past through expensive construction techniques such as grading, blasting and draining. In Centerville and Beverly Farms (Area 3) these physical limitations will greatly influence future potential land uses. A great part of Centerville is also in the watershed to Longham Reservoir, which will pose limitations to future development.

Table 4: Geographical Areas of Beverly and Major Soil Types

Fuller, D.C. and Francis, E.L., 1984

Area 1: Downtown Beverly and Ryal Side

Symbol	Soil Type	Location
4	Canton-Woodbridge-Freetown Association	Dane Street Beach, North to Memorial Building (502 Cabot Street)
6	Chatfield-Hollis-Rock Outcrop Association	Central Ryal Side
8	Urban Land-Udorthonts Association	Downtown Beverly and East Ryal Side
5	Boxford-Scitico-Maybid Association	Danvers River on Ryal Side

Area 2: Upper Cabot Street and Dodge Street

Symbol	Soil Type	Locations
2	Merrimac-Hinckley-Urban Land Association	Memorial Building, North Cabot Street, Dodge Street, Enon Street
3	Paxton-Montauk-Urban Land Association	High School to Dodge's Row

Area 3: Centerville and Beverly Farms

Symbol	Soil Type	Locations
2	Merrimac-Hinckley-Urban Land Association	Prides Crossing east to Manchester and north to Wenham; Dane Street Beach east to Curtis Point and north to Route 128
6	Chatfield-Hollis-Rock Outcrop Association	Curtis Point east to Prides Crossing, north to Centerville and Wenham

Table 5: Major Soil Associations in Beverly

Fuller, D.C. and Francis, E.L., 1984

Symbol	Name and Description
2	**Merrimac-Hinkley-Urban Land Association** Deep, level to steep, excessively drained, fine to gravely sandy loams on outwash deposits and areas where soils are obscured by urban development. Usually on outwash plains, stream terraces and eskers and intermittent bedrock outcropping.
3	**Paxton-Montauk-Urban Land Association** Deep, level to steep, well-drained stoney, sandy, loamy soils formed on glacial till and areas where soils are obscured by urban development. Usually on hills and sloping uplands, common in higher elevations of the City as seen around Wenham Lake Reservoir. Permeability is moderate to rapid.
4	**Canton-Woodbridge-Freetown Association** Deep, level to steep, well-drained loamy soils on glacial till or level, poorly drained mucky soils in organic deposits. Often on low, irregular hills with few bedrock outcrops and some wet organic soils. It drains poorly due to the presence of a shallow underlying hardpan layer.
5	**Boxford-Scitico-Maybid Association** Deep, nearly level to strongly sloping, moderately well drained, poorly drained or very poorly drained, loamy soils formed in lacustrine or marine sediments.
6	**Chatfield-Hollis-Rock Outcrop Association** Moderately deep to shallow, sloping to steep, well to excessively well drained, loamy soils in glacial till or areas of exposed bedrock. Often low, irregular hills, ridges and plains often with bedrock exposures and poorly drained depressions due to slow permeability.
8	**Urban Land-Udorthonts** Soils altered or obscured by urban development, or where soils have been excavated or deposited from elsewhere. Occurs in the most densely built-up areas.

Table 6: Textures of Soils

Fuller, D.C. and Francis, E.L., 1984

Soil Type	Depth (in inches)	Texture
Merrimac	0-10	Fine, sandy loam
	10-15	Sandy loam
	15-22	Gravelly, loamy sand, sandy loam, gravelly, sandy loam
	22-60	Stratified sand to very gravelly, coarse sand
Hinckley	0-8	Gravelly, fine sandy loam
	8-17	Gravelly, loamy sand, loamy fine sand, very gravelly loamy coarse sand
	17-60	Stratified very gravelly loamy find sand to cobbly coarse sand
Chatfield	0-5	Extremely stony, fine sandy loam
	5-34	Loam, gravelly loam, gravelly sandy loam
	34+	Unweathered bedrock
Hollis	0-3	Very stony, fine sandy loam
	3-18	Fine sandy loam, sandy loam, gravelly loam
	18+	Unweathered bedrock
Boxford	0-9	Silt loam
	9-17	Silt loam clay
	17-34	Silt loam, silty clay
	34-60	Silt loam, silty clay

Table 7: Soil Limitations to Recreational Development

Fuller, D.C. and Francis, E.L., 1984

Soil Type	Picnic	Playground	Paths/Trails
Merrimac	Slight	Moderate	Slight
Hinckley	Slight	Moderate	Moderate
Chatfield	Severe	Severe	Moderate
Hollis	Severe	Severe	Moderate
Boxford	Slow perc	Wet/slow perc	Wetness

Table 8: Soil Limitations to Building Site Development
Fuller, D.C. and Francis, E.L., 1984

Soil Type	Roads/Streets	No Basements	Basements
Merrimac	Slight	Slight	Slight
Hinckley	Slight	Slight	Slight
Chatfield	Moderate	Moderate	Severe
Hollis	Severe	Severe	Severe
Boxford	Severe	Severe	Severe

Table 9: Soil Limitations on Septic Tank Drain Fields
Fuller, D.C. and Francis, E.L., 1984

Soil Type	Limitations
Merrimac	Slight
Hinckley	Slight
Chatfield	Severe (bed rock depth)
Hollis	Severe (bed rock depth)
Boxford	Severe (wetness, low perc)

Table 10: Hydrologic Soil Group (Permeability)
Fuller, D.C. and Francis, E.L., 1984

Soil Type	Grade
Merrimac	A
Hinckley	A
Chatfield	B
Hollis	C/D
Boxford	C

B. Landscape Character

Beverly's landscape character as well as its history, is strongly intertwined with its coastal location. The shoreline consists of headlands interspersed with small sandy beaches. One such headland, Woodbury Point, is the location of Lynch Park, which is the City's most popular recreation area. This provides wonderful views across Salem Sound to Salem and Marblehead, rocky headlands for tide pool exploration, two sandy beaches for swimming, and a beautiful rose garden that has served as a backdrop for many wedding.

Ober Park, another popular recreation area, has a beach on the tidal Danvers River. West Beach, a barrier beach, is the largest beach in the City.

Historically, the coastline in Beverly has been dominated by large private estates, which led the area being referred to as the "Gold Coast." Although the City is comprised of over nine miles of coastline, much of the access to the waterfront is privately controlled with only limited public access. Massachusetts Route 127, which follows the coastline from downtown Beverly east through Beverly Farms and into Manchester, is a scenic route providing glimpses of the ocean and the estates of Prides Crossing and Beverly Farms.

In addition to its coastal location, substantial tracts of undeveloped woodlands also characterize the City. Such woodlands are especially evident in the Beverly Farms neighborhood. The terrain in these woodlands is rolling with numerous outcroppings of bedrock. Most hills are densely forested, but a few do provide nice, partial vistas of the ocean and surrounding communities. Wetlands, particularly red maple swamps, are also a dominant feature of the landscape.

The Wenham Lake Reservoir is the largest body of fresh water in Beverly and serves as the drinking water supply to Beverly, Salem, and parts of Wenham. About one third of this lake is in Beverly, with the remaining two thirds in Wenham. The John C. Phillips Nature Preserve provides public walking paths through forested land to the shores of Wenham Lake. Conservation issues related to Wenham Lake are discussed in Section C: Water Resources.

Beverly also has a number of freshwater ponds. The most notable is Norwood Pond in North Beverly. The 88-acre forest surrounding this pond supports the largest number of vernal pools in the City. The combination of forest, open water, and rolling topography around Norwood Pond create rich natural habitats for aquatic pond life, vernal pool creatures, birds, other fauna and flora. It has been a priority area for protection by the OSRC and the ECGA. City owned land on the west side of the pond is now protected as a special open space zoning district, and the current Mayor and City Council have expressed their intentions to keep this land as open space. The OSRC and ECGA have suggested that a Conservation Restriction would ensure more permanent protection. Potential development in the surrounding area, such as the construction of an overpass/interchange on Route 128 will have to be carefully evaluated to insure that they do not degrade the pond and its surrounding open space.

The Bass and Danvers Rivers are significant river corridors within the City of Beverly. Both rivers are in heavily developed areas of the City, but still offer opportunities for public enjoyment. One of the priorities of the OSRC as expressed in the 2001 plan has been to develop a walk along the Bass River, which would then extend along the Shoe Pond. The Beverly Conservation Land Trust has secured funding to help complete this task.

Downtown Beverly, which begins at the intersection of Cabot and Rantoul Streets near the Beverly Salem Bridge, is the most densely populated region of the City. The local historic district is located within the downtown area and provides a colonial context to the City's core central business district.

C. Water Resources

More than half of Beverly is located within the North Coastal Watershed Basin, and the remainder is located within the Ipswich River Watershed Basin.

The water resources within the City of Beverly are many and encompass a wide variety of present and potential uses (Map 4). The resources include the Wenham Lake Reservoir, ponds, marshes, inland fresh water areas and coastal areas. The uses of these resources include recreation, wildlife habitat protection, nature study, and drinking water.

The Wenham Lake Reservoir, a publicly owned water supply, provides drinking water to Beverly, Salem and parts of Wenham. Water for the Reservoir is drawn from the Ipswich River through a canal from December through May, as regulated by state permit. The Ipswich River has been classified as one of the countries most threatened riverine ecosystems, due to water withdrawals by the many communities within its watershed. The permitted water withdrawal from the river to Wenham Lake Reservoir corresponds to winter and spring when the river is relatively high, however any water withdrawals to this stressed basin are of concern. The Reservoir is also augmented by water stored at Longham and Putnamville Reservoirs in Wenham and Topsfield respectively.

Beverly needs to be vigilant to protect the water quality of its drinking water supply because the watershed surrounding Wenham Lake Reservoir within Beverly is relatively developed. A section of one of Beverly's major commercial districts, the corridor along Route 1A in North Beverly, is as close as a few hundred feet from the Reservoir. Beverly Airport and surrounding lands zoned for light industry are also within a quarter mile of the Reservoir. An accidental spill of petroleum or a toxic chemical could be disastrous as would be any chronic discharges of toxics or microbial contaminants. Currently there is a plume of arsenic and trichloroethylene (TCE), originating from an old industrial site, up gradient and very close to the Reservoir (Technical Review of the Phase II Studies in the vicinity of the Vitale Property, 2000). This may threaten the water quality in the Reservoir. Beverly has a WPOD, however it does not provide standards for Best Management Practices (BMPs) to protect drinking water nor does it address the issue of strategically protecting important parcels as groundwater recharge areas and as a buffer against pollution. *It is timely for the City to re-examine and update its water resource protection, as recommended by the Massachusetts Department of Environmental Protection (DEP), in their guidance document, "Developing a Local Surface Water Supply Protection Plan, 2000."*

The City's two largest ponds, Norwood Pond and Beaver Pond, are located in North Beverly. Norwood Pond is a 50-acre water body formed as an impoundment of Alewife Brook at the turn of the 20th century. Naturally connected to the Wenham Lake Reservoir, Norwood Pond, listed as an Outstanding Resource Waters (ORW) could be used as surface water to augment the local reservoir. Norwood Pond serves as the headwaters to the Miles River, which flows into the Ipswich River. It compliments the adjacent 88 acres of City-owned land located northwest of the pond. As an integral part of Norwood Pond's watershed, this area includes undeveloped woodlands, acres of wetlands, scenic vistas, and the greatest concentration of vernal pools in the City. The informal trails at Norwood Pond are currently used for passive recreation with an

informational kiosk to educate visitors. There are several areas to access the pond and trail system including one that the City has marked with a sign. The eastern side of the pond contains private houses on relatively large parcels of land.

Today, Norwood Pond has an average depth of approximately three feet. The southern part of the pond is particularly shallow and is covered with water lilies and other aquatic plants. Erosion from the land is likely causing sediment build up in the pond. The 1998 *Feasibility Study of Norwood Pond* and the l983 *Norwood Pond Campus Draft Environmental Impact Report* conclude that Norwood Pond is "highly eutrophic." Both reports include corrective recommendations, such as the institution of BMP's for handling storm water runoff. Another concern mentioned in the reports is an orange leachate stream stemming from the Beverly landfill into Norwood Pond. A study by DEP suggests that the landfill is the major cause of eutrophication of the pond. *Because Norwood Pond is contiguous with Wenham Lake Reservoir, it would be prudent to remediate this area for added protection of Beverly's drinking water supply.*

In the fall of 1997, the City charged the Norwood Pond Commission to recommend land use options for the Norwood Pond area. After 2 ½ years of study, the Commission concluded that Norwood Pond and its environs should be preserved for open space and recreation purposes. Another recommendation was to appropriate funds to conduct a feasibility study and develop an implementation plan for preserving Norwood Pond, and that it should be considered "a high priority in the City's new OSRP" (Final Report, June 2000). The area is currently kept as open space by a special zoning district created by the City Council in 2000. However, this zoning can be rescinded by a 2/3rds vote of any future City Council. In 2005, the OSRC formally requested the Mayor and City Council to place a Conservation Restriction on the city-owned land, in conjunction with Norwood Pond, in partnership with the ECGA. This process is ongoing.

Beaver Pond, classified as a "great pond", also harbors a large amount of aquatic plants that are of concern to neighbors. Beavers have been very active in the area in the past few years. The area surrounding the 18.9-acre pond is privately owned and has previously been developed as large, single-family home parcels. ECGA owns some frontage on Beaver Pond, but there is no public access to the pond through Greenbelt land due to impenetrable vegetation.

In addition to reservoirs and ponds, Beverly is blessed with a large number of freshwater wetland habitats. Wooded swamps dominated by red maples and wetlands shrubs such as winterberry, sweet pepperbush, withered, and buttonbush are a common habitat type within the Beverly Commons, Norwood Pond area, other forests and even some residential areas. A number of cattail marshes occur in the Centerville neighborhood.

Beverly has 25 certified vernal pools, according to the current information from the Massachusetts Natural Heritage and Endangered Species Program. These occur primarily in Beverly Commons, the vicinity of Endicott College, and near Beaver and Norwood Ponds. Eight of the City's vernal pools are located in the watershed to Norwood Pond. *The Beverly Commons, with its mixture of forests and small woodlands, should be surveyed more extensively for vernal pools.* Atlantic White Cedar swamps, another special wetland type, exist at Beaver Pond and near the city's composting facility off Standley Street.

There are several salt marshes within the City. The Bass River, which is tidal, supports a number of fringing salt marshes within close proximity to the downtown area. Chubb's Brook Salt Marsh located on the Beverly-Manchester boundary line is the largest salt marsh area within the City. Twenty-nine of the forty-four acres that comprise Chubb's Brook Salt Marsh are located in Beverly. A small salt marsh is located behind Patch Beach.

A significant wetland restoration project was completed in 2006 on the western shore and up gradient of the Wenham Lake Reservoir. This project included the removal of 40,000 cubic yards of fly ash from the drinking water reservoir, an active stream course named "Airport Brook," and sixteen acres of associated wetlands. Fly ash, a byproduct of coal-burning power plants, typically contains elevated levels of heavy metals associated with the parent coal material.

> "The erosion of fly ash from the Vitale site buried the downstream wetlands under one to three feet of ash. The fly ash reduced the health and diversity of the wetlands as invasive species such as common read (*Phragmites australis*) and purple loosestrife (*Lythrum salicaria*) invaded large portions of the wetlands. The dominance of invasive species also reduces the wetlands' ability to support a diversity of wildlife species. In addition, the deposition of the fly ash adversely impacted the hydraulics of Airport Brook, resulting in periodic flooding of nearby Route 97" (Brownstein and Lotti 2006).

The restoration project's goal is to increase protection of the community's water supply and restore a valuable wetland habitat. Project designs included such wildlife habitat features as basking logs, boulders, root wads, and brush piles. The 40,000 cubic yards of fly ash have been removed and the site has been capped and stabilized. Currently, the City is planning to use this area for athletic fields. For more details on this wetlands restoration project, please refer to: www.erosioncontrol.com/ecm_0603_ erosion.html.

D. Vegetation

Massachusetts Geographic Information System (GIS) mapping indicates that roughly one third of Beverly's land area is now forested. The largest tract of forested land is the Beverly Commons, an area of about 500 acres. The topography of Beverly Commons is variable, consisting of an interesting mixture of wetlands within small, low hollows alternating with small, steep hills where the native bedrock breaks the surface. The Commons is crossed by a number of abandoned roads and trails that are used for cross-country skiing, mountain biking and hiking. The use of firearms is prohibited within the City; hunting is not a legal option. Other significant forests are found around Wenham Lake Reservoir and in Centerville. The land occupied by these forests was cleared for farms and pastures early in the City's history and has returned to forests as farms were abandoned.

The woodlands of Beverly are typical of those found in eastern Massachusetts. In sunny, drier areas, trees such as red and black oak, black birch, hickories and white pine dominate. In damper

places or at the bottom of northward facing hills, the trees found are those more typical of cooler climates like the American beech, yellow birch and Canadian hemlock. Typically, the understory is dense with a variety of shrubs, such as blueberries, viburnums, raspberries, and greenbrier (the latter often forming dense, impenetrable tangles). Among the showier native wildflowers of the forest floor in Beverly are Canada mayflower, wood anemone, wild sarsaparilla, pink lady's slippers, goldenrods, and asters. A large number of non-native flowers occur along roadsides and in fields. Featherfoil, (*Hottonia inflate)* a plant species on the Watch List of the Massachusetts Natural Heritage and Endangered Species Program, occurs in a boggy wetland between Norwood Pond and Beaver Pond.

Beverly contains several salt march areas. The most extensive is the Chubb's Brook salt marsh at the City border with Manchester-by-the-Sea. This is a typical New England salt marsh dominated by salt tolerant plants such as cordgrass and salt marsh hay. A small salt marsh behind Patch Beach is currently under consideration for hydrological restoration by the Massachusetts Wetlands Restoration Program. Fringing marshes occur along the Bass and Danvers Rivers.

One of the most significant, if somewhat hidden, natural communities of Beverly, is the eelgrass bed off of its shoreline. The eelgrass bed runs almost continuously in a narrow band several hundred meters wide from Hospital Point all the way to the Manchester-by-the-Sea border in water depths of approximately three to 15 feet at low water. This is the longest contiguous eelgrass bed on the North Shore. Eelgrass became an issue with the dredging of Beverly Harbor for the Hubline natural gas project, when eelgrass was inadvertently destroyed in laying down the pipeline. Scientists from Division of Marine Fisheries (DMF), the New England Aquarium, Environmental Protection Agency (EPA), Massachusetts Audubon, and the Massachusetts Office of Coastal Zone Management (CZM) have studied Beverly's eelgrass community.

Stuart K. Harris's *Flora of Essex County* (Peabody Museum, 1975) is the most relevant reference for Beverly and contains some direct references to plants found in the City by botanists during the 19th century. The OSRC's management plan for Sally Milligan Park contains a plant species list for that site. Less extensive species lists have been generated from Biodiversity Days walks at the J.C. Phillips Preserve, Greens Hill, and the Beverly Commons woods in Beverly Farms.

E. Fisheries and Wildlife

One area in the vicinity of Standley Street is designated as a priority habitat. In total, this area and the entire city is home to twenty-five vernal pools for rare or endangered species according to the Massachusetts Natural Heritage and Endangered Species Program (NHESP). The city contains dozens more potential vernal pools according to the 2000 NHESP Potential Vernal Pool data layer from MassGIS. These vernal pools, since not certified by the state, are not protected under the Massachusetts Wetlands Protection Act regulations. However, the city of Beverly's Wetlands regulations do protect them, despite being uncertified. Beverly does not contain any Mass Heritage BioMap core areas or surrounding natural landscapes.

The Massachusetts Audubon Society's Endicott Regional Center is mostly in Wenham, but abuts the Beverly Commons; the birds and mammals present in the Endicott Center are likely also present in the Commons. Some particularly noteworthy birds of the Endicott Center include Great Horned Owls, Red-tailed Hawks, Pileated Woodpeckers, Winter Wren, Louisiana Waterthrushes, and various other wood warblers. Some mammals observed at the Endicott Center include white-tailed deer, red and gray squirrels, flying squirrels, white-footed mice, woodchucks, coyote and fisher. Beavers are in abundance around Beaver Pond and have created a nuisance problem in Centerville. Raccoons, red foxes, eastern cottontail rabbits, and Virgina opossums also are typical of the region. Spotted salamanders, green, bull and pickerel frogs, milk snakes and ring-neck snakes have also been seen at the Endicott Center.

The Norwood Pond area is another productive area for birds in Beverly. The following species have been observed regularly at some time during the year:

- Great Egret
- Mallard
- Hooded Merganser
- American Robin (including a wintering population)
- Warbling Vireo
- Blue Jay
- Tufted Titmouse
- Black-throated Sparrow
- Great Blue Heron
- Wild Turkey
- Red-winged Blackbird
- Barn Swallow
- Tree Swallow
- American Crow
- Red-tailed Hawk
- Baltimore Oriole
- Song Sparrow
- Black-capped Chickadee
- Turkey Vulture
- Ring-necked Duck
- American Black Duck
- Northern Flicker
- White-throated Sparrow
- American Goldfinch
- Bufflehead
- Canadian Goose
- Various warblers
- Cedar Wax Wing

In 1988-89, the Massachusetts Audubon Society's North Shore Office conducted winter waterfowl surveys in Salem Sound, using volunteer observers. A number of observation points were in Beverly, including Independence Park, Mingo Beach and West Beach. Common species observed included Red-breasted Mergansers, Common Goldeneye, Buffleheads, Common Eider, Black Ducks, Horned Grebes and Common Loons.

The offshore islands in Salem Sound are technically not part of Beverly, but are part of the City's ecology. The U.S. Fish and Wildlife Survey surveyed these islands, such as Great Misery Island off of West Beach, for nesting coastal waterbirds in 1977 and again in 1984-85. Herring and Great Black-backed gulls and Double-crested Cormorants nest in large numbers on these islands and undoubtedly find their way into Beverly. Herons and egrets that nest on a few of these offshore islands occasionally feed in the salt marsh at Chubb's Brook and in the tidal flats along the Bass River.

Another source of information on Beverly wildlife is the annual Audubon Christmas Bird Count. Parts of Beverly are surveyed annually as part of the Cape Ann Christmas Count. Other Audubon surveys include their recently completed butterfly atlas and their Herp Atlas. In

addition to these organized surveys, various documents associated with proposed developments (e.g. Environmental Impact Reports, etc.) contain useful information on wildlife habitat.

The DMF has recently mapped known anadromous fish runs. Chubb's Brook, which forms the border between Beverly and Manchester, contains a rainbow smelt run. The Danvers River, between Beverly and Danvers, is a historical site for smelt which swim upriver to spawn in the Porter River and Crane Brook in Danvers. DMF has tried with limited success to restore the smelt run in this river.

Comprehensive surveys of fisheries resources were carried out in Salem Sound by DMF in 1965 and again in 1997. A number of shoreline sample stations were in Beverly. Atlantic herring, Atlantic silversides, winter flounder, smelt and mummichogs were among the most commonly caught species at these stations. Winter flounder, yellowtail and Atlantic cod were the most commonly caught species in Beverly Harbor in 1965. It should be noted that the relative abundance of flounder and cod are likely to have declined in the past 30 years due to over-fishing. The report of the 1997 survey was completed in 2001. SCUBA surveys were concluded concurrently with the DMF in 1997-8 under the auspices of Salem Sound Coastwatch and assisted by the Massachusetts Audubon Society. Abundant juvenile lobsters, sea stars, hermit crabs, mussels, sea urchins, cunners and sculpin were observed during these surveys. The tidal flats contain about 120 acres of productive and non-productive shellfish flats.

Exploring tide pools is a popular activity for Beverly beachgoers, particularly at Lynch Park. Interesting tide pools also exist at some of the private beaches, including West Beach and Mingo Beach. Salem Sound Coastwatch has been organizing tide pool monitoring in Beverly and surrounding communities, with particular emphasis on detecting marine invasive species.

F. Scenic Resources and Unique Environments

There are several scenic vistas and unique environmental areas that contribute to Beverly's character: coastal environments, scenic roadway corridors and trails, and historic districts.

Coastal Environment

An irregular coastline several miles long with numerous harbors and attractive homes against a backdrop of rounded outcroppings and headlands add outstanding visual character to Beverly's inventory of scenic resources. A deep-water harbor is located between Goat Hill and Tuck's Point. The coastline is an interesting mixture of urban harbor, rocky shoreline and sandy beaches. Sandy beaches include Dane Street Beach, Patch Beach, Mingo Beach, and West Beach. These are valuable recreational beaches, however their small size and heavy use by people limit their value as a wildlife habitat. Rocky shorelines occur at various points along the coast, most notably at Woodbury Point, Curtis Point, Smith Point, Allen Head and at the eastern end of West Beach. Brown algae (rockweeds, bladder wrack), periwinkle snails and green crabs are common in inter-tidal pools among the rocks.

Part of the Chubb's Brook salt marsh is in Beverly. This is a typical New England salt marsh dominated by salt tolerant plants such as cordgrass and salt marsh hay. Wading birds (herons, egrets, etc.), black ducks and small fish are common inhabitants of salt marshes on the North Shore.

The shallow marine waters off Beverly Harbor are home to a number of eelgrass beds. Underwater meadows of eelgrass are excellent "nursery" habitats for juvenile fish as well as great feeding areas for larger fish and waterfowl. As a result, eelgrass meadows are considered a "special aquatic site" under federal wetlands protection programs. The eelgrass bed that extends from West Beach to Beverly Cove is one of the most extensive in Massachusetts.

Roads

Route 128, known as the "Gateway to Cape Ann," is the major highway that connects Beverly to adjacent communities both north and south. The wooded open space along Route 128 north of Exit 19 (Brimbal Avenue) is part of a natural corridor that extends all the way to Gloucester. Some of this land was protected from development with support from the State Department of Transportation in the 1980s in an effort to protect the region's character. Beverly residents have easy access to Boston and neighboring cities and towns that abut Route 128. Common Lane, Cabot Street, Grover Street, Dodge Street, Hale Street, Cross Lane, Boyles Street, Branch Lane, Conant Street and Greenwood Avenue are roads that have interesting characteristics, such as scenic views or historic value. The Massachusetts Legislature named the Route 127 corridor as a "Scenic Byway" in 2005. The MHC completed an Area Form was completed on this stretch of road.

Historic District

Historic and cultural resources are present just outside the downtown area of Beverly. Beautiful old homes are just a short walk from downtown. Several French inspired and Norman style houses are located on the shoreline. Several large estates have become part of Endicott College such as the Brimmer/Sears House on Hale Street. Fish Flake Hill, a local historic district located near the ocean, was once a thriving area for fish drying. The Beverly Historical Society has published a survey report by Margaret Hepler called "Historical Cultural Resources Survey, 1992 - 1993", which lists the historic structures and cultural areas that presently exist within the City. Some of these attractions include:

- Beverly Common
- Balch House
- Conant House
- Larcom Theatre
- United Shoe Machinery
- Lynch Park Carriage House
- Beverly Golf and Tennis Club House
- North Shore Music Theater
- Cabot Street Cinema

Although not a historic district, the Wenham Lake Reservoir is noteworthy for it's historically pure ice harvesting at the turn of the 20th Century. The water was so pure and absent of any salt,

from the western hills that flowed into Wenham Lake, that it was shipped around the world. It is reported that many influential people, including the Queen of England, craved the ice. It was also reported that if one were to put a piece of pure ice from Wenham Lake between the sun and an object, it would start a fire.

Archeological evidence found in Beverly traces the presence of native people, who probably spoke Algonquian languages. Studies have detailed their migratory habits of living along the coast in the summer for horticultural activities and the harvest of seafood, heading inland in the winter to hunting villages. A collection of artifacts found in the beach sand in Beverly Farms is part of a collection given to Phillips Andover Academy.

Islands

The islands off the coast of Beverly are in Beverly waters but are a part of the City of Salem. These are Great Misery Island, Little Misery Island (both are owned in fee by the Trustees of Reservations) and Bakers Island. Chubb Island is not owned by the City of Salem.

Scenic Trail

These trails are located on city-owned property as well as land held by local land trusts. Other potential trails requiring further research include some of the old logging roads:

- Alt Reservation (ECGA)
- Long Hill (TTOR)
- Beverly Common area
- John C. Phillips Nature Preserve
- Sally Milligan Park
- Boulder Lane area
- Norwood Pond
- Pole Swamp Lane area

G. Environmental Challenges

Currently, there are no Areas of Critical Environmental Concern (ACEC) within the City limits. However, Beverly does face a number of environmental challenges.

Hazardous Wastes

For the purposes of this report, hazardous waste is defined as any human-created or modified substance released into the environment that constitutes a present or potential threat to public health and safety, to plants and animals, and to the quality and quantity of Beverly's drinking water supply. This is based on definitions from the EPA and the DEP. Hazardous wastes can be solid, semi-solid, liquid, or gaseous in nature. Hazardous wastes, including oil, pose a threat when improperly stored, used, transported, disposed of, treated or mismanaged.

As of 2006, DEP has identified thirty-five hazardous waste sites and l32 oil release sites in the City of Beverly. DEP has files on each of these sites. The listed sites have identified accidental spills or are old dumps that may potentially contaminate soil, water and air. Eight sites are

classified as priority sites; the remaining sites are considered secondary. The priority sites are the following:

- Vitale Fly Ash Dump Site (L.P. Henderson Road)
- L.P. Henderson Road (Beverly Airport)
- Varian Property (Tozer Road)
- GTE Hanger (Beverly Airport)
- Filteck (L.P. Henderson Road)
- Casco Chemical (Beverly Airport)
- Gurnard (Beverly Airport)
- Tuck Point Condominium Trust (Old Beverly Chemical Company) 109-123 Water Street

The six sites on L.P. Henderson Road and at the Beverly Airport are all either located within the watershed of the Wenham Lake Reservoir or in close proximity to the watershed, which is the drinking water supply for Beverly, Salem and parts of Wenham.

Vitale Fly Ash Dump Site, Wenham Lake and the Watershed Overlay Protection District

The Vitale Fly Ash Dump Site has undergone restoration to secure 300,000 cubic yards of fly ash on site. Wetland and water quality monitoring continues to be conducted to ensure that the contamination does not spread. The following is a documented list of other chemicals found layered between the fly ash at the 33-foot deep site:

- Oils
- Paints
- Metal turnings and filings
- Liquid rocket fuels
- Tolune
- Xylene
- Asbestos
- Car bodies
- Gasoline and diesel fuel
- Coal gasification wastes
- Arsenic
- Complex cyanides
- Solvents
- Batteries
- 55 gallon drums (contents unknown)
- Chromium dips
- Coolant liquid
- Methyl and ethyl ketone
- Waste oil
- Polynuclear aromatic hydrocarbons
- Burning waste magnesium
- Flammables
- Ferocyanide

(EPA Waste Site Cleanup)

Chemicals on the Vitale site and those on adjacent sites up gradient in the watershed have the potential to leach into and contaminate the City's drinking water supply. The Wenham Lake Reservoir is located in close proximity and down gradient from all of these sites. The City is considering selling or leasing currently undeveloped parcels for light industrial development in the Wenham Lake Reservoir watershed. The Watershed Overlay Protection District emphasizes that "a proposed project or activity may be denied if….that project or activity violates the intentions of this Overlay District, [and have] an adverse environmental impact on the aquifer or recharge area, or adversely affect the existing or potential water supply." Thus any future use of these sites should be done with extreme care and with stringent requirements for Best Management Practices. The city has required Low Impact Development (LID) in the RFP for the sale or leasing of land at airport. LID practices include using green roofs, porous pavement, and limited vehicle parking to prevent any contaminated runoff from leaving a site.

Beverly has 19 known Activity and Use Limitations (AULs) sites. AULs are legal restrictions per mandate of the Massachusetts Contingency Plan to limit future exposure to contaminants remaining at these sites. An AUL at the Commodore Site on Route 1A (RTN #3-21615), received on May 12, 2003, is approximately 575 feet to the west of Wenham Lake Reservoir, the city's drinking water supply.

Brownfield Sites

Brownfield properties are usually abandoned, or for sale or lease. Typically the past use for these sites was for commercial or industrial purposes. A brownfield site is a parcel where a hazardous substance or pollutant is suspected of being spilled, or the site hasn't been assessed due to fear of unknown contamination. A brownfield program is designed to help a community reinvest in these properties by assessing the damage and safely remediating it for redevelopment. In turn, a community can increase the local tax base and facilitate job growth, while also protecting the environment if the site remediation is done safely and correctly.

Redeveloped brownfield sites in Beverly are:

- Cummings Center on Elliot Street
- Tuck Point Condominiums on Water Street
- Gateway Towers on Rantoul Street
- Stop & Shop on Elliot Street
- Mass Electric on River Street

In addition to these sites, plans have been presented for the redevelopment of the Ventron Site on Congress Street. This site has waterfront views of the Danvers River. These plans include two buildings with a total of 72 housing units, both underground and surface parking, and a public riverfront walkway.

Hazardous Waste Management

The City of Beverly has appointed a Hazardous Waste Oversight Committee to establish regulations and oversee the storage, use and transportation of chemical hazardous waste in the City of Beverly. Representatives from the Beverly Board of Health, Department of Public Works, Fire Department, and a private citizen volunteer with experience in fields related to the subject are members of the Committee who meet once a month. The Fire Chief maintains records on large-volume handlers of toxic or hazardous materials. Once a year, a Household Hazardous Waste Collection Day is held, usually in April. Residents pay a nominal price and can bring items such as chemicals, oil based paints, lead, and pesticides to this collection.

Pesticides

Pesticides are applied in three forms: solid, liquid, and aerosol. In addition to individual homeowners and their contractors, the City of Beverly applies pesticides on a very limited basis: weed and grub control are applied to ball fields around the city. The DPW workers that apply the pesticides have had the appropriate training and certifications to responsibly apply these pesticides using best management practices. The City does not apply pesticides within the limits

of the WPOD, however there is no distinct wording in this ordinance to prohibit private individuals from applying chemical pesticides and herbicides within the watershed. Section 7 of the WPOD only prohibits "outdoor storage of manure, fertilizers, herbicides, and pesticides." *The City should take steps to tighten up the language of the WPOD ordinance to insure that no hazardous chemicals can be released where they can reach the drinking water supply*.

Household and Yard Debris

The City's contracted waste management collector collects household trash on a weekly basis. Curbside recycling collection occurs every other week on a scheduled trash collection day. Beverly's Solid Waste Management Committee (SWMC) consists of nine citizen members, each appointed for a term of three years. The SWMC identifies ways of increasing recycling and waste reduction and serves as a resource for the general education of the public in matters concerning solid waste management, solid waste reduction and recycling. This committee organizes Beverly's Electronic Collection Day, which is held annually in the spring.

The City conducts curbside pick-up of yard debris for eleven weeks in the spring and fall. Yard debris pick-up helps to prevent illegal dumping into sensitive environmental areas. Biodegradable bags are required to contain the debris, and the material is dumped at the City's composting site located on Standley Street. Residents are also permitted to bring yard waste directly to the composting site for disposal. The site is open nine months of the year, three days per week. Contractors and homeowners are encouraged to take compost from the composting site for use on private property. The City also annually provides, at cost, a limited number of individual composting bins for backyard composting. Demand for these bins always exceeds the available supply. The Fire Department allows brush burning on a very limited basis three months of the years, and only by permit from the Fire Chief.

Landfills

Beverly no longer has active landfills, however residents still raise concerns about the possible impact of past landfills; none of the landfills in Beverly are lined. The former municipal landfill off of Otis Road has been capped but has not yet received a Certificate of Compliance for its closure. Since l999, Norwood Pond Association (NPA), a citizen's organization, has considered the landfill to be the main contributor of pollution in nearby Norwood Pond, based on a persistent orange leachate stream and a ruptured force main pipe. This leachate has been found to contain benzene, high levels of ammonia, elevated aluminum, barium and lead (2001 Analytical Report). Due to the presence of these chemicals, the City was mandated by the DEP in July 2001 to investigate and remediate this problem. The NPA has asked that collection and treatment of the orange leachate be resumed either by replacing the pump station or the leachate system. The NPA also believes there is a need for a public health assessment regarding this issue.

Restoration of the Vitale Fly Ash Dump is now complete. Monitoring of water quality and the wetlands will continue for another four to five years. The monitoring will ensure that the Wenham Lake Reservoir and the surrounding areas are not receiving leached contaminants from the old dumpsite located on L.P. Henderson Road.

A private, inactive landfill exists near the Beverly airport.

A former untreated, unregulated old landfill site is located at the corner of the egress ramp off of Route128 and Brimbal Avenue at Exit 19. This parcel has been sold, and will need to meet DEP regulations to ensure the health and safety of Beverly residents.

Stormwater Management, Erosion, and Sedimentation

The City of Beverly periodically has experienced erosion problems during roadway construction and in areas of on-going residential development. Pursuant to an EPA mandate to municipalities of a certain size, the City is developing a new stormwater ordinance to address erosion, sediment, and stormwater management as part of a Phase II Stormwater Management Program. This is now a requirement under the National Pollution Discharge Elimination System (NPDES) program of the Federal Clean Water Act.

The purpose of the ordinance, currently in draft form, is to provide for the health, safety, and general welfare of the citizens of Beverly by regulating stormwater discharge into the city's storm drain system and waterways. The primary objectives of the ordinance are to regulate the contribution of pollutants to the municipal storm drainage system, to prohibit illicit connections and discharges to the municipal storm drainage system, and to establish legal authority to carry out all inspection, surveillance and monitoring procedures necessary to ensure compliance with the directives of the ordinance.

The City's Con Com strives to ensure that wetland resource areas are adequately protected, requiring that appropriate mitigation measures be implemented to insure protection of these resources. Prior to the issuance of Certificates of Compliance, applicants must prove that the work was conducted as specified in the plans and that the areas subject to erosion have been stabilized.

Chronic Flooding

Over the past eight years, the City has aggressively taken steps to alleviate a number of areas that have experienced periodic flooding problems as municipal finances permit. New drainage culverts were installed in East Lothrop Street and Lawrence Street to Hale Street in 2001 as part of the Lawrence Street Brook Area Project and in Chase Street, Pond Street, Rantoul Street and the Federal Street railroad underpass as part of the Chase Street Area Project along with the Stormwater Pumping Station on Margin Street. All of these facilities worked perfectly during the Mother's Day Storm of May 2006 according to the Beverly Director or Public Services.

The 1.5 million-dollar Chubb's Brook Project, completed in 2005, was overwhelmed during the five-day period of heavy rainfall known as the 2006 Mother's Day Flood. During the same flood two of the four detention ponds were not able to hold the immense volume of rainwater, with excess water spilled over the earthen berms. The City plans to armor these berms and add one or two more detention ponds. Several crises arose across the City when torrential rains caused sewer backups that sent raw sewerage into the streets and into residential homes. Residences

along Willow Street, Lothrop Street, Corning Street, and the Gloucester Crossing neighborhood were among the worst cases (Beverly Citizen, May 2006). Other areas hardest hit by the Mother's Day Storm of 2006 include the low-lying sections of Haskell Street and Goodwin Street in Beverly Farms, Dartmouth Street and Yale Boulevard in the Raymond Farms neighborhood, and Brimbal Avenue, Morningside Drive and Wirling Drive in North Beverly. These areas experienced flooded homes and street closures due to waist-high water. The City is making plans to repair the drainage issues in these areas by installing new drainpipes. Public hearings will be scheduled. Residents on Morningside Drive and Wirling Drive were also at risk from a potential dam failure at Norwood Pond Dam. The City is designing a new outlet at Kelleher's Pond to mitigate future overflows onto Colon Street and neighboring homes.

Other areas that have undergone recent drainage improvements are Northern Avenue, Dane and Porter Streets and Cross Lane. The City is currently studying the North Beverly Brook Drainage Area. The Mother's Day Storm of 2006, which was declared a 100-year storm by the U.S. Geological Survey, allowed City officials to take pictures and measurements to help in the design of this project. Remediation of drainage problems in Centerville and in the Cove is now being planned. Future projects will include the corner of Elnew Avenue and Norge Road where stormwater skirts around an existing drain because of its height in the street and flows down the Norwood Pond trail next to wetlands.

In other extraneous water issues, the Department of Public Services' daily operations are to improve the sewer system and replace manhole covers (6-19-06 City Council meeting). This will help to alleviate some of the drainage and sewerage problems in the City.

The City's administration, Boards and Commissions are committed to a policy of no net increase in drainage runoff from construction projects. The objective of this policy is to ensure that the post-construction runoff is equal to or less than the pre-construction stormwater runoff. The Planning Board and Con Com, in connection with the City Engineer, insure compliance with this policy for all private and public developments. The City of Beverly also regulates earthwork operations, such as gravel and soil removal, through the Zoning Board of Appeals (ZBA), which must grant a Special Permit for such work prior to commencement of the activity. The Board of Health has established regulations governing both the removal of soil or solid fill from the City as well as the admittance of soil or solid fill into the community from outside sites.

Development Impact

Sprawl

The United States Environmental Protection Agency's Northeast Regional Office (NERO) has identified urban sprawl, the loss of open space due to rapid, often poorly planned development, as one of the region's major environmental issues. Beverly is in a unique geographic position in relation to this issue. It is located at the edge of the almost completely built-out region of the North Shore and abuts such towns as Wenham and Manchester that still possess substantial areas of open space. With about one third of the City still forested, Beverly still has relatively large amounts of open space, compared to neighboring communities to the south. Its proximity to Boston and to convenient transportation corridors such as Route 128 and the MBTA commuter

rail line have put it under tremendous development pressure. Beverly added 153 single-family homes between 2000 and 2006. New subdivisions continue to be proposed. Due to current economic trends, these recent house lots tend to be larger and consume more land than the average home lot in the City.

In response to this development pressure, the Beverly City Council passed a comprehensive OSRD ordinance in 2005 to address the issue of protecting open space and the character of neighborhoods. As of this writing, Beverly's OSRD ordinance is the most far reaching in Massachusetts, affecting any new subdivision anywhere in the city greater than two acres.

The City Council adopted a zoning amendment in the spring of 2007 to allow buildings along a particular section of Rantoul Street, near the Beverly Depot, to apply for a special permit from the Planning Board to increase their height to a maximum of 75 feet, where a maximum height of 55 feet was previously allowed. This zoning amendment not only creates additional housing opportunities, both market rate and affordable units, but supports "Transit Oriented Development," a smart growth principal that encourages the creation of residential units clustered around public transportation nodes. It will also focus construction of new housing units where the infrastructure exists to support it, rather than in the City's remaining open spaces.

Protecting the Drinking Water Supply

Like many municipalities in Massachusetts, Beverly has been facing a revenue crisis, which challenges the City to continue to provide public services such as schools, public safety, and parks. As a result, the City is looking to facilitate development of land, particularly for commercial and industrial uses, in order to generate tax revenues. One of these areas is in the watershed of the Wenham Lake Reservoir where the City owns several undeveloped parcels of land that is zoned light industrial. This is the last remaining recharge area to the west and up gradient of the Reservoir, which supplies drinking water to Beverly. *Land in the watershed of the drinking water supply should be kept as open space as much as possible to eliminate the potential threat of contamination reaching our water supply.* The Reservoir is potentially at risk from a proposed Over-55 community-style development next to the Vitale Site, which is also up gradient from the Reservoir.

Ground and Surface Water Pollution

Approximately 95% of the homes in Beverly are connected to the municipal sewer system; the remaining five percent use septic systems. A portion of this five percent is located within the City's WPOD. This district covers about 20% of Beverly's land area, although not all parcels within the actual watershed. The language of the WPOD prohibits or significantly limits many of the land uses likely to cause ground and surface water pollution, such as the storage of pesticides and herbicides.

Beyond the measures outlined above, the City has also taken steps to eliminate reliance on septic systems in the last remaining areas of the community that are not connected to the municipal sewer. Fifty-four homes along the northern stretch of Route 97, which are in the Wenham Lake Reservoir watershed, were connected to the municipal sewer as the result of an extensive public

works project completed by the City in 1999. The remaining homes on this road were connected to the municipal sewer as the second phase of this project was completed in 2003. Engineering design has begun to extend the municipal sewer system to another area in the Cove neighborhood of the City. In addition, as "unconnected" homes are sold throughout the City, they have been connected to the municipal sewer system.

The City is in the process of implementing an "Inflow and Infiltration" program Citywide to curb the difficulties associated with groundwater flow into the sewer system. Every significant rainfall causes sewer backups that send raw sewerage into streets and residential homes in particular areas of the City. The overworked system is the result of old sump pumps that transfer water into the sewer system and not into storm drains. In 1995 the City aggressively targeted, for removal, 300 sump pumps that were hooked into the sewer system. These sites will be revisited in 2006 to insure that the hook ups have been removed.

Salem Sound Coastwatch, a local non-profit organization, has been carrying out regular monitoring of water in and around Beverly as part of their Clean Beaches and Streams Program. They have documented high counts of fecal coli form bacteria in some storm drains and streams that drain near some swimming beaches, most notably at Rice's Beach, Brackenberry Lane Beach, and Dane Street Beach. The open waters of the beaches are not contaminated, but children frequently play in the streams leading to the beaches; this is considered a potential health hazard. At the time of this writing, the Beverly Health and Engineering Departments are working on an approach to this issue. Results of the Salem Sound Coastwatch monitoring effort are available through their office at (978) 741-7900 or their website (www.salemsound.org).

Wenham Lake Reservoir supplies most of Beverly's drinking water needs, but the watershed encompasses areas of intense development and identified, as well as potential, contamination. These areas are:

- Several old industrial sites near the Beverly Airport;
- Dense commercial development along Route 1A in North Beverly;
- Plume of contamination heading toward the Reservoir from the Varian site;
- Plume of Arsenic and TCE pooling underneath the Vitale Site from an unknown up gradient site.

In addition, potential new commercial and industrial development both near the airport and along the Route 1A corridor is possible under current zoning. These have raised concerns among some citizen's groups of the chance of increased contamination in groundwater and runoff flowing toward Wenham Lake Reservoir. Those concerns have focused on the following issues:

- Several former industrial sites near the airport off of L.P. Henderson Road, including the former Vitale, Nike, Casco Chemical/Gurnard Manufacturing, and Revere Aviation sites, all have open Release Tracking Numbers (RTNs) and are still under investigation for contamination. The Vitale site was formerly used as a fly ash dump for residuals from the Salem Power Station. The City owns these properties and is currently planning for their

redevelopment. The City has prepared RFPs for selling or leasing abutting parcels, as described under "Development" (section 6). The Filtek site, across L.P. Henderson Road, is also still under investigation for contamination (U.S. Environmental Protection Agency Waste Site Cleanup list and RFP, May 2006).

- The old Varian site on Sohier Road contains a plume of volatile organic compounds, formerly used as solvents by the company, and has been found in the groundwater under the property. The contamination plume extends south of Route 128 into an area near the Wenham Lake Reservoir, with a second plume traveling north. These areas are currently undergoing investigation and clean up by the IT Corporation on behalf of Varian.

Although testing of the drinking water itself indicates that Beverly's water supply still meets federal water quality standards, there is a concern that industrial wastes will eventually reach the Reservoir and may render the water supply unhealthy. *The City may find it prudent to place a moratorium on developing the City-owned parcels within the Wenham Lake Reservoir watershed until a comprehensive assessment can be conducted as it may provide pertinent information regarding land uses within the watershed.* This would help to set priorities for remediation and for planning. Evaluation of the combined impacts of the land uses could be part of the future City's master planning. The DEP has identified two medium yield aquifers in the Wenham Lake Reservoir watershed; one aquifer is located to the east of the lake and crosses into the Town of Wenham and the other is located to the south of the reservoir along Route 1A/Cabot Street. *The City should research state-suggested methods and regulations to protect medium yield aquifers. Upon completion of this research, the best method of protection can be established and implemented.* Protection of the drinking water supply by controlling development with a balance of open space within the watershed is an important need for the community.

Impaired Water Bodies

A water body is considered impaired if a) the current water quality does not meet the numeric or narrative criteria in a water quality standard or b) the designated use, i.e. drinking supply, swimming and fishing, or shell fishing is not being achieved.

Table 11: Beverly's Impaired Water Bodies

Section 303(d) List Fact Sheet for Watershed, 2002, U.S. EPA

Water Body	Size	Impairment
Bass River From the outlet of Shoe Pond to confluence with Danvers River	0.12 sq miles	Pathogens
Beverly Harbor	0.82 sq miles	Pathogens
Danvers River From the confluence with Porter, Crane and Waters Rivers, Danvers to mouth at Beverly Harbor	0.53 sq miles	Pathogens
Shoe Pond	15.4 acres	Turbidity
Wenham Lake*	243 acres	Mercury

* The impairment of Wenham Lake is due to high levels of mercury found in fish tissue samples. Wenham Lake is considered an impaired water body for fishing, not for drinking water.

CHAPTER 5
INVENTORY OF LANDS OF CONSERVATION AND RECREATION INTEREST

A. Purpose of Inventory

This inventory describes the ownership, management agency, current use, condition, recreation potential, public access, type of public grant accepted, zoning and degree of protection for several different categories of parcels in the city. The next several sheets are divided into four sections: City Land, Parks and Playgrounds in Beverly, Non-Government Organizations Lands, and Parcels Greater than 5 Acres.

B. City Land

The City owns several open space parcels, the majority of which are located in wards 5 and 6. There are a few notable parcels in ward 4, including those that comprise Sally Milligan Park. Very little open space exists in wards 1 through 3; the Beverly Golf and Tennis Club is the largest open space parcel, which is entirely in Ward 1. Several of these lands are under the care and custody of the Beverly Con Com or the Parks and Recreation Commission.

C. Parks and Playgrounds in Beverly

The next set of parcels is also owned by the City of Beverly. All of these are under the care and custody of the Parks and Recreation Commission. The parcels include parks that have been landscaped and have playground equipment, basketball courts, and baseball diamonds. There are also parcels that are used for passive recreation and have trails that are open to the public. All of the parcels need to be evaluated for ADA accessibility.

D. Non-Government Organizations Land

The third listing of parcels features those that are owned and managed by non-governmental organizations. The predominant landholder among the parcels is the Essex County Greenbelt Association, which holds approximately 185 acres located predominantly in the eastern half of the city. The Trustees of Reservations and Mass Audubon Society hold a total of six parcels and a combined total of 124 acres. All of the parcels are used for passive recreation and are forested.

E. Parcels Greater than 5 Acres

The final listing of parcels in the inventory features properties that are greater than five acres. These parcels are a combination of privately owned and city-owned properties. The majority of the parcels is located in wards 5 and 6 and are single-family house lots that are already developed. The larger lots that are municipally owned are typically either used for schools or are held in the care and custody of the Beverly Con Com. A few of the large parcels are owned by the ECGA and Mass Audubon Society.

CHAPTER 6
COMMUNITY GOALS

"Never doubt that a small group of people can change the world – indeed it is the only thing that ever has!"

Margaret Mead
Cultural Anthropologist
1901-1978

A. Description of Process

Open space protection is a priority of the citizens of Beverly, as was made quite clear by public comments heard at meetings to discuss the draft Master Plan in 1999-2000. Development, both residential and commercial continues to consume remaining available open space. Protection of this space will continue to be valued as a cornerstone to the character and quality of life of the City's residents.

The OSRC solicited input from the Beverly City Council, various city officials, members on the volunteer boards and commissions and members of the general public. The OSRC hosted a public forum on June 13, 2007 at the Beverly Public Library to present a draft version of the entire plan, answer questions and record comments to be used to formulate the three open space and recreation goals listed below.

B. Statement of Open Space and Recreation Goals

The committee, with input from various boards and commissions, as well as the City Council and the public, has identified three overarching community goals for open space. These goals will be further developed in Section 8 as a series of objectives and activities.

1. Protect and acquire lands in Beverly of high natural, environmental, scenic and recreational value: This includes both proper management and enhanced protection for open space lands already in public ownership and acquisition of currently unprotected parcels. Lands that are of high priority for open space protection have significant value for drinking water supply and water quality protection, wildlife habitat, as scenic vistas, and for use in active or passive recreation. Another priority is linkages of open spaces to create a greenbelt for the city.

2. Enhance the public's opportunities to enjoy open space in Beverly: Maintaining access to open space and the waterfront are major issues in Beverly. This will be achieved by protecting and enhancing rights of ways, maintaining and marking trails in parks, providing updated trail maps, acquiring easements for trails to cross private land, improving handicapped accessibility, and marking property boundaries of open spaces.

3. Educate the public about the value of protecting open space and about stewardship of environmental resources: Particularly in an era of tight municipal budgets, citizens must have enhanced role as stewards of their local environment.

CHAPTER 7
ANALYSIS OF NEEDS

When one tugs at a single thing in nature he finds it attached to the rest of the world.

John Muir
Preservationist
1838-1914

A. Summary of Resource Protection Needs

This section provides a summary of the open space and recreational needs of the city, with reference to specific parcels that are the highest priority. It is based on the analyses of environmental characteristics and issues in Section 4 and the parcel analysis in Section 5. Much progress has been made since the 2001 plan in protecting some key parcels. A number of gaps still exist with regard to:

- Linking existing open space parcels to create a meaningful open space network and establishing a City greenbelt;
- Identifying unprotected open space parcels vulnerable to changes in use;
- Determining whether parcels currently owned by the City are actually protected from future development in perpetuity;
- Ensuring maintenance of recreational facilities and open spaces.
- Ensuring adequate public access to open spaces by protecting rights of ways;
- Researching creative ways to fund open space acquisitions.

In order to establish an action plan to address these gaps, this section presents an analysis of the problems and needs that have been identified.

B. Analysis of Identified Needs

In 1998, the City of Beverly Planning Department conducted a citywide Master Plan Goals and Objectives Study, which consisted in part, of a Community Attitude Survey and three community forums. Both the survey and the forums provided valuable insights into the concerns of Beverly citizens. Results from the survey showed strong support for preserving open space, with 78% of the survey respondents considering this issue very important. The only area that was considered more important than preserving open space was the school system. 72% of the respondents felt that the City should encourage the creation of more open space and 61% felt it was an important category for tax expenditure. 37% of survey respondents considered recreation a very important issue.

The City's Master Plan Update Survey cited the following resource protection goals:

- Protect ground and surface water resources of the City from overuse and pollution.

- Preserve and protect the City's critical and sensitive natural resources including the land surrounding the water supply, significant scenic vistas, wetlands, salt marshes and flood plains.
- Increase and enhance recreational opportunities for Beverly residents, including access to the City's fresh and salt-water resources.
- Preserve and enhance Beverly's open space to create a contiguous "greenbelt" system throughout the City.
- Maintain and enhance the opportunity for public use of the waterfront, including recreation and tourism.

The City has made provisions within its Zoning Ordinance to assist with achieving some of the aforementioned objectives. The most significant regulatory change affecting open space since the 2001 OSRP has been the passage of the OSRD bylaw by the City Council in 2005. Beverly's OSRD ordinance is the most far reaching in all of Massachusetts, affecting all proposed residential subdivisions throughout the city. It requires that 50% of the developable acreage (i.e., uplands) of any subdivision larger than 2 acres be kept as open space.

In December of 2001, the Con Com adopted the Beverly Wetlands Protection Ordinance that enhanced the protection of vernal pools by extending protection to both certified and uncertified vernal pools. Later in June of 2003 the Commission adopted the Beverly Wetlands Protection Regulations, which established a 100-Foot No Disturbance Zone surrounding the pool to further protect these delicate resource areas and their critical adjoining upland habitat.

Many of the open space parcels currently owned by the City have uncertain, limited or no protection measures in place and could be transferred for other purposes. *The degree of protection needs to be evaluated by researching titles, reviewing deeds, and providing further protection where warranted.* The latter could include granting conservation restrictions to be held by a land trust, such as Essex County Greenbelt Association or transferring of land to either the Con Com or Parks and Recreation Commission, where the properties would be protected under Article 97 of the Massachusetts Constitution. Furthermore, many areas of the City described by residents as scenic, unique or worthy of preservation are privately owned and subject to further development. Beverly is limited in its ability to purchase privately owned parcels by fiscal constraints. With this in mind, *certain priorities for protection must be established and the City should continue to research other mechanisms to protect property besides an outright purchase and sale (e.g. land swaps, tax abatement, conservation restrictions, taking tax title lands and owner unknown lands).*

C. Open Space Priorities for Beverly

The OSRC has identified over 200 parcels that are currently unprotected open space, i.e., undeveloped but potentially developable. We used the City's GIS to select parcels larger than two acres in developed parts of the city and five acres in other areas for further study. Many of these are essential to preserving open space and recreational opportunities accessible to neighborhoods and linking various individual parcels to one another. From this list we have identified the following priorities:

Ward 1

- Obtain clear title to Parcel 19-27X (owner unknown) to complete walkway from Green's Hill around the river.

Ward 2

- Ensure that there is an open public walkway and city pier park in any waterfront development.
- Incorporate open space walkway along Bass River as part of any Rantoul Street redevelopment.
- Transfer the newly acquired Greens Hill property to either the Beverly Con Com or Parks and Recreation Commission.

Ward 3

- Develop and implement landscaping plan for the walkway area between Colgate Park and the Beverly Golf and Tennis Club.
- Get CR to ensure permanent protection as open space of the Beverly Golf and Tennis Club land.

Ward 4

- Transfer the Hill property (2003 addition to Sally Milligan Park) to the Con Com to insure its permanent protection.

Ward 5

- Use a CR to ensure permanent protection for Norwood Pond and environs as scenic open space, a wetlands area, and potential water supply.
- Protect City-owned open space land adjacent to Hannah School
- Work with the YMCA for a CR on the remaining land at Sterling Center
- Work with the landowner to enhance protection for the Johnson/Beverly Tree Farm LLC
- Consider redevelopment of former municipal landfill as playing fields.
- Work with City officials and private landowners to protect open space land from development in the watershed of the Wenham Lake Reservoir.

Ward 6

- Transfer ownership of City-owned parcels in the Pole Swamp area to the Con Com to ensure their permanent protection and to consolidate ownership under one city agency.
- Research and acquire any tax title and owner unknown properties in the ward.
- Transfer ownership of City-owned parcels in the Beverly Commons area to the Con Com to ensure their permanent protection and to consolidate ownership under one city agency.
- Acquire back land of Ball family property (parcel 35-11) on Greenwood across from the vernal pool.
- Work with AMG on obtaining a CR for their property, which they had promised in meetings to support the zoning variance they received for the parcel's current use as corporate headquarters.

- Create an open space linkage and a trail system on the land between Boyle Street and Thissel Street between Endicott College and the MBTA line. Obtain tax title and owner unknown parcels to facilitate this link.
- Collaborate with Endicott College to establish a trail behind the college and Landmark School.
- Collaborate with the Girl Scouts for a CR at Camp Paradise.

Criteria for determining these priority parcels

The criteria for determining priority parcels is similar to those used in the 2001 OSRP, however with a greater emphasis on linkages. All parcels have been evaluated using the following criteria, which has insured that they are truly critical for resource protection within the City:

- Linkage: Does the site provide linkage to other open space areas? Will it offer an opportunity to consolidate an otherwise fragmented area of open space, or would it increase the size of existing open space parcels?

- Natural Resources: Is the site in an area of valuable natural resources such as wildlife habitat, flora, or fauna?

- Visual: Does the site provide an unusually valuable visual experience, such as appealing wooded areas, open meadows, distant open space views, waterfront vistas, etc.?

- Size of parcel: Generally, larger parcels offer more opportunities for both active and passive recreation. However, smaller parcels, which provide opportunities for linkages, visual benefits, or natural resource preservation, etc., need to be considered.

- Opportunities lost: If the site is developed, will that development preclude future opportunities for contiguous open space, access to other parcels, linkage to open space in other areas of the City, or other open space values? If the parcel isn't purchased, could it be added to an adjacent isolated, undevelopable lot to make that isolated parcel developable?

- Neighborhood/ Infrastructure Impacts: Will development of the site significantly impact neighborhood traffic, parking and storm drainage and /or eliminate open land and increase the school population?

- Cost and Funding Options: The City's ability to pay for acquisition of sites with open space potential is extremely limited at this time. Alternative funding sources, including federal and state grants and funding from private organization such as the ECGA or the Trustees of Reservations, must be sought. In addition, there may be situations where acquiring certain land use rights such as easements are possible, thereby effectively giving the public open space land at a cost far less than the cost of outright acquisition. There also may be special situations where some parcels can be acquired for little cost, e.g., tax title land or owner unknown properties.

- Type of control: Land use control may be by acquisition, easement, or CR. The method of control is recommended based on how the site can best be used in light of the City's needs. The interest of private landowners is also a consideration.

- Active recreation: Can the site serve a need for organized sport facilities, i.e. playing fields?

- Passive recreation: Will the site contribute to the city's portfolio of passive recreational opportunities? Will it provide walking trails, scenic vistas, etc?

- Degree of Development Potential: The extent to which a property has the potential to be developed. Factors affecting the ability to develop a site include physical features such as wetlands, ledge, or steep slope restriction, ownership restrictions such as conservation easements, ownership forms such as lands in institutional holdings, zoning nonconformity, lack of supporting infrastructure such as frontage and public utilities.

- Coastal access: Since much of Beverly's extensive coastline is in private ownership or under private control, public access, when available, is important.

- Potential for Imminent Development: How imminent is the sale and/or development of the site likely to be?

D. Rationale for Priority Parcels

Ward 1

- Acquire parcel 19-27X (northwestern side of Bass River basin): This parcel is a small, narrow property that offers an opportunity to preserve a right of way and link a continuous walkway for passive recreation around the Bass River waterfront in a dense urban neighborhood with limited existing open space. The impact to adjacent properties would be limited. The property would complete a linkage from the existing paths around the Shoe Pond and the Bass River basin, to Green Hill Park and the Ryal Side shoreline to the neighborhoods. Acquisition will enable the City to provide another piece in the completion of a public access way to the Bass River waterfront and would be the final link to a public walk around the Bass River, north of Bridge Street. Development potential of this parcel is unlikely since the site does not meet zoning requirements for an R10 zone. The setbacks are not sufficient and the property has no frontage as well as potential drainage issues. The land cost is unknown, and is tax title owner- unknown status.

Ward 1 & 3

- Protect Beverly Golf and Tennis Club, City-owned open space land: This large, 160 acre parcel comprises the public golf course and tennis courts and is also the largest open space area in the western portion of Beverly and nearest to the downtown. It is essential to preserve this land, its rights of ways and linkages to help make a continuous walkway around the Bass River waterfront and radiating out to the dense urban neighborhoods of North Beverly where there is limited existing open space. The land offers numerous linkages from the existing paths around Shoe Pond and the Bass River basin to: Green Hill Park and the

Ryal Side shoreline, Ryal Side at the end of County Way to the Raymond Farms, (Colgate Park) and Apple Village and Folly Hill neighborhoods. The City of Beverly has ownership with an appointed board overseeing the private management of the property. The active recreation use is year-round (golf, tennis, soccer, skiing, sledding) as is the passive recreational use (walking). Visual effects are striking with panoramic views from the hill on the 3rd hole looking over the city and the inner Bass River basin. The clubhouse, with a restaurant and function facility, is listed on the National Register of Historic Places. The natural resources are extensive, as would be expected on an open golf course bordered by hardwood and mixed deciduous forest that supports a large variety of wildlife. Golf courses function as nature preserves and this land also acts as a natural, undeveloped watershed to the Bass River. Keeping this land as a public golf course with recreational use would be ideal. The Committee recommends placing a CR on this property.

Ward 2

- Ensure that there is an open public walkway and city pier park in any waterfront development: The waterfront is a shared community resource that should be open to all residents to enjoy. Both oceanfront and riparian areas offer unique passive and active recreation opportunities, scenic vistas and peaceful settings for tranquil enjoyment. Working with the City's land use boards to guide both publicly and privately owned waterfront development that incorporates public walkways and open spaces into site designs is one method to ensure this shared resource is open to all. A second method that can be used to guarantee public access to the waterfront is through the State's Chapter 91 licensing process. The City and its boards and commissions can comment on these licenses and promote public accessibility.
- Transfer the newly acquired Greens Hill property to either the Beverly Con Com or Parks and Recreation Commission: Protection of the Greens Hill open space area is important to the character of the Ryal Side neighborhood. It offers a unique wooded riverfront experience in a relatively densely populated section of the City. Transfer of this property to the care and custody of the Parks and Recreation Commission or the Conservation Commission will ensure the preservation of this exceptional open space resource.

Ward 3

- Develop and implement landscaping plan for the walkway area between Colgate Park and the Beverly Golf and Tennis Club: A landscaped walkway is needed in order to provide an inviting pathway between Colgate Park and the Beverly Golf and Tennis Club. Signage to indicate the public walkway as well as some vegetated screening would be advantageous to avoid potential conflict between users of the path and golf course.

Ward 4

- Transfer the Hill property (2003 addition to Sally Milligan Park) to the Con Com to ensure its permanent protection: The City purchased the Hill property (parcel 33-6) in 2003 as an addition to Sally Milligan Park. This parcel was on the top of the priority parcel list in the 2001 OSRP. The Hill property, combined with the original Sally Milligan Park, creates a contiguous area of over 80 acres of open space easily accessible from all parts of the city. It creates a linkage with a potential trail system between the MBTA tracks and Endicott College that would lead all the way to the Prides Crossing neighborhood. The land was

purchased with a state grant with the intention to keep it as open space for passive recreation and nature study. The land should be transferred to the Conservation Commission to give it protection under Article 97 of the Massachusetts State Constitution. The Con Com already has jurisdiction over a portion of Sally Milligan Park and the Parks and Recreation Commission has jurisdiction over the remainder. Thus a transfer to the Con Com would consolidate the management of this property with the City's resource agencies.

Ward 5

- Protect city-owned open space land at Norwood Pond: Approximately 140 acres of city-owned open space is located to the west of Norwood Pond. The combination of forest, open water, and rolling topography create natural habitats for aquatic pond life, feathered vertebrates, fauna and flora. Several potential developments being considered within the watershed are threatening this natural resource area: Route 128 interchange, paved access road into Norwood Pond, industrial growth. This area offers a unique opportunity for passive, water-related recreation activities as well as potential use of a water resource for emergency drought situations. Obtaining a CR for the municipally owned land around Norwood Pond should be a top priority among all municipally owned land in the City. The OSRC has offered its assistance in facilitating a CR for this property.

- Continue to work with the owner of the Johnson Tree Farm toward obtaining a CR: In 1999 the Beverly Tree Farm LLC acquired the 15.5-acre Johnson Tree Farm property. The new owners currently plan to maintain the property as a tree farm and see no need for a formal CR. Despite the owner's assurances that the farm will remain as open space the OSRC will continue to advocate for permanent protection of this area. This parcel borders Longham Reservoir, which is an integral part of the city's water supply and supporting watershed.

- Protect City-owned open space land adjacent to Hannah School: The Hannah School property consists of 38 acres, half of which is developed including school buildings, a parking lot and playing fields. The remainder is undeveloped wetlands and woodland. This parcel has a trail system that provides linkages with open space behind the YMCA and with the former Beverly landfill. While there are no certified vernal pools on the parcel, Mass Audubon staff identified potential vernal pools on the site. In addition to protecting the site's natural resources, protecting the property will provide outdoor educational opportunities for current and future Hannah students.

- Work with the YMCA to place a CR on the remaining land at Sterling Center: The YMCA currently owns 35 acres, approximately 25 of which are woodlands; the property also includes a small pond. The YMCA uses this site for their summer day camp programs. The YMCA property, combined with the undeveloped land adjacent to the Hannah School and the former Beverly landfill site make up a complex of over 80 acres of undeveloped land for passive and active recreation.

- Consider redevelopment of former municipal landfill as playing fields: This approximately 45-acre parcel (Map 56-Lot 36) is the site of the former city landfill off of Essex Street. It is currently relatively inaccessible to the public. At various times, suggestions have been made to redevelop the land for active recreation. Access could come from a City right-of-way to

the land from Essex Street or from Brimbal Avenue. A feasibility study would be useful to determine if it is economically viable to put athletic fields in this property.

- Protect city-owned, open space watershed land upgradient of drinking water supply: The Wenham Lake Reservoir watershed is zoned for light industry and residential development. The City has surplused for sale or lease four undeveloped, forested parcels of land, totaling approximately 18 acres, west of the Wenham Lake Reservoir. It is important to protect these open space parcels from incompatible land uses that may have negative impacts for our drinking water supply.

Ward 6

- Work with the Girl Scouts for a CR at Camp Paradise: The Girls Scouts of America own twelve acres off of Cole Street. The property includes a pond, a vernal pool, and an attractive, rustic lodge. The building is used for campouts and other events by the scouts and on occasion other organizations. The camp is adjacent to the City's composting facility, which itself abuts over 50 acres of protected land under the control of the Conservation Commission. The combined area of these parcels is about 74 acres. Until about ten years ago, undeveloped parcels surrounded the Girl Scout camp; now parcels on two sides are currently being developed. It is not clear that the narrow streets can handle additional traffic from further development. If the camp was ever sold and developed, an opportunity would be forever lost to use this property as the starting point for access to a large amount of open space and a trail system that could take you all the way to Manchester.

E. Summary of Community Needs

According to 2000 U.S. Census figures, the median age for Beverly residents is 38.3, which is an increase from the 1990 median age of 31. Beverly has 15,750 households, which accounts for almost 95% of the city's population. The average household size is 2.39 individuals. There are 4,817 Beverly households with at least one child under the age of 18 and 10,933 households with no individuals under the age of 18.

Recreation is extremely important to the development of healthy families. One of the most significant values of recreation is to help children develop physically.

It is well known that a high percentage of our children do not get adequate physical activity and many are overweight. Active recreation, in addition to weight control, also contributes to the mental and social development of children as they test skills, share opportunities, and communicate. In earlier times, children had open fields, woods, or vacant lots where they could play. This is no longer true for many children. Public open spaces fill this void, especially in areas where there is a lack of open land and few backyards as found in multi-family residences and urban centers. Public open spaces and parks allow children to develop and test their skills by providing a series of progressively graduated challenges: first on playgrounds and later in the City's parks, athletic fields and open spaces.

Parks are also important to parents. Recreational activities bring together parents of children

who may not know each other. Informal support groups and friendships often form as a result of these interactions.

Needs Assessment

Developing planning criteria for parks should include consideration of city population information as a frame of reference.

- According the Beverly School Department statistics for the 2006-2007 school year, there are 2,060 children in the public elementary schools, kindergarten through fifth grade, and another 414 elementary-aged children in private schools.

Table 12: 2000 U.S. Census Statistics, Children in Beverly

U.S. Census (2000)

U.S. Census Category	Number of Children
Children in nursery school or pre-school	749
Children less than 5 years old	2,504
Children in Kindergarten	531
Children in Elementary School, Grades 1-8 (public and private)	3,954
Children Aged 5-9	2,465
Children Aged 10-14	2,367

- The 2000 U.S. Census calculated the number of elementary school aged children, first grade through eighth grade, to be 3,954. This number includes both private and public schools. The 2000 Census listed 2,465 children aged five to nine years old and 2,367 children aged ten to fourteen years old. Nearly 4,000 children 12 years and younger reside in the City of Beverly. More specifically, as of 9/98 there were 2,406 children in public elementary schools, 426 children in private elementary schools and 879 children ages 3-pre K. The number of two-year-old children is estimated at 401 based on the city census of 1997.

- There are 30 playgrounds throughout the city for public use including 21 Park and Recreation Department playgrounds and eight school playgrounds.

- Playgrounds should accommodate an average of approximately 150 users per day, with schools having a much higher use depending on the population of the school.

Recreation Planning Criteria

Described below is the suggested standard equipment for community parks, neighborhood parks, mini park/tot lots, and school playgrounds. These are minimum planning guidelines, which can be varied if the population served is smaller or larger than other neighborhoods.

Planning Criteria for Community Parks

The National Recreation and Park Association recommends that community parks be about fifteen acres, serve a half-mile or more radius, and provide more facilities and a variety of activities. Typically, community parks include such facilities such as a playground, basketball court, baseball/soccer fields, tennis courts and, in Beverly, sometimes a beach. In most cases the service radius for a community park will overlap the smaller service areas of nearby neighborhood parks, although this varies dramatically in different areas of the city.

The community park should be within a half to one mile of Beverly residents and will provide twice as many activities as the neighborhood park. The reason for this relates to the larger area served and the larger number of users. In some cases, a school will also serve as the community park. Community parks will serve a minimum of eighteen preschool-age children and 28 school-age children. The planning criteria for community playgrounds provide for a minimum set of equipment consisting of:

<u>Preschool-age playground equipment area</u>
- Swing frame (2 bays of 2 tot type seats each)
- 2 spring toys (1 single rider and 1 double rider)
- Small play structure (deck, straight slide, crawl tunnel, and 2 climbers or similar combination)

<u>School-age playground equipment area</u>
- Swing frame (3 bays of 2 standard seats each)
- Very large play structure (2 decks, wave slide, tunnel slide, 2 climbers, pole slide, corkscrew, 2 hanging events, and a clatter bridge, or similar combination)

<u>Amenities</u>
- 2 benches
- 2 information signs

Planning Criteria for Neighborhood Parks

The purpose of neighborhood parks is to provide recreational opportunities within a quarter-mile walking distance of all homes in that particular district of the community. The National Recreation and Park Association recommends that neighborhood parks be about five acres in size (Beverly's neighborhood parks vary widely from this standard), and include a wide range of uses. Most include a playground, sports field, and basketball court. Neighborhood playgrounds should provide for a minimum of nine preschool-age children and fourteen school-age children. The planning criteria for a neighborhood park provides for a minimum set of equipment consisting of:

<u>Preschool-age playground equipment area</u>
- Swing frame (2 tot type seats)
- 1 spring toy (1 single rider or double rider)
- Small play structure (slide, climber, deck, or similar combination,)

School-age playground equipment area
- Swing frame (2 bays of 2 standard seats each)
- Large play structure (1 slide, 2 climbers, 1 pole slide, and 1 hanging event or similar combination.

Amenities
- 2 benches
- 2 information signs

Planning Criteria for Mini Parks (Tot Lots)

Mini parks are very small parks that are usually one quarter acre or less in size. They are constructed for preschool-age children in a very localized neighborhood of only a few streets. Mini-parks should accommodate a minimum of nine children at one time. The planning criteria for mini parks provide for a minimum set of equipment consisting of:

Preschool-age playground equipment area
- Swing frame (2 tot type seats)
- 1 spring toy (1 single rider or 1 double rider)
- Small play structure (slide, climber, and deck)

Amenities
- 1 bench
- 1 information sign

Planning Criteria for School Playgrounds

School Playgrounds serve the children of a given school district with the boundaries established by the School Committee. In Beverly, some of the schools also have sports facilities such as baseball and soccer fields that serve the larger community and will therefore have parents with children at the site during non-school hours. Most school sites also serve as a neighborhood or community park for the general public during non-school hours.

Schools should have enough equipment to accommodate approximately 40% of the school population on the playground during peak use periods such as recess. This assumes that the other 60% of the children will be using the playfields and other spaces that are available for free play and hanging out. Meeting these needs will generally require more equipment than is called for under standards for the neighborhood or community parks. This amount will vary depending on the size of the school and the recess schedule. In some schools it is limited by the amount of available space. Some schools also have park and recreation playgrounds very close by and in these cases the planning and development of the playgrounds needs to be very carefully coordinated. School playgrounds should be divided into two zones of equipment, one for the younger children including preschool-age children and one for the older children.

Handicapped Accessibility

All municipalities in Massachusetts must follow the Americans With Disabilities Act Accessibility Guidelines (ADAAG) adopted by the Department of Justice and the Commonwealth of Massachusetts Architectural Access Board Rules and Regulations. These regulations address access issues for individuals with a variety of disabilities in any public facility or area. A special regulatory negotiation committee was established by the ADAAG to develop accessible guidelines for newly constructed and altered recreation areas covered by the ADA. This committee has reached consensus and made its recommendations in its Final Report in July 1997. This Final Report has been written into the ADAAG; therefore, these are the guidelines upon which improvements should be based.

F. Management of the Parks

The Beverly Parks and Recreation Department employs three full-time staff members, which oversee twenty-four parks and playgrounds, nine public beaches and seasonal staff. Programs are offered by the Department throughout the year, including day camps for children, golf, tennis and swim lessons, dance and exercise programs, concerts, volleyball leagues, parent and tot playgroups, trips, non-credit courses and special events.

The Parks and Recreation Department has prepared plans to meet the City's future needs in three areas: parks and open space, recreational programs and playing fields. To accomplish these goals, the Department has also established budget goals for developing the necessary financial resources. The goals established by the Department are generally as follows:

<u>Goal 1: Parks and Open Space</u>

- Acquire more open space for both passive and active recreation.
- Create trails in open spaces and promote their use for recreation.
- Conduct a survey to determine the need for more playgrounds.
- Formalize a tree and planting plan for City parks.
- Development additional recreational opportunities at memorial parks.

<u>Goal 2: Recreation and Programs</u>

- Increase the visibility of parks and recreation in the City.
- Foster more communication between city departments regarding park issues.
- Acquire a facility for expansion of Parks and Recreation staff.
- Create a "Parks in Beverly" map to distribute to residents.
- Perform a review of park usage to determine need for expansion of programs into under-utilized sites.
- Create a recreation programs catalogue to be available on the Internet.
- Review and address parking issues at parks.
- Continue to work with the City Dog Officer on the feasibility of a City “Dog Park."

Goal 3: Fields

- Strengthen and formalize the relationship between the public schools, Recreation Department and fields and facilities.
- Create a master schedule of fields for distribution to the schools.
- Address the shortage of fields with the acquisition of new lands.
- Investigate the possibility of field sharing and partnering with private schools.

Parks and Recreation Department's Budget and Finances

The Department has managed its resources to develop financial stability by seeking new revenue sources, implementing private sector fundraising, proactively soliciting public grants and spending prudently.

- City Budget: The emphasis is on securing funding for the replacement of aging, unsafe playground equipment and other critical areas. The funds are to come from the regular City budget process or the issuance of City bonds.

- Grants: With the assistance of other departments, State-elected officials and State granting agencies, the Department has pursued grant funds to upgrade parks and fields in economically depressed areas of the City, and to ensure facilities comply with the ADA standards.

- Enterprise Fund: While the City budget provides most of the operating funds, user fees provide a steady revenue stream to run enrichment programs offered to Beverly residents. A review will be completed to determine the cost effectiveness of the programs, and whether the current user fees are sufficient for program costs. However, "profit margins" shall not be a determining factor in continuing programs.

- Private Donations: The Department will pursue Neighborhood Parent Associations to actively assist in fund raising activities to help pay for certain items. The Bench Replacement program will be continued with funds derived from private citizens and groups. Further diversification will be accomplished by reviving the "Friends of the Recreation Department" for other fundraising alternatives.

The following are specific actions that are at the top of the Department's priority list:

- Bring all recreational areas into compliance with the ADA,
- Ensure that all existing play structures are safe and replace those that are deemed unsafe,
- Continue to increase the publicity of Department programs,
- Maintain and update the Department web site,
- Continue the successful summer concert series program by recruiting sponsors and increasing publicity.

G. Summary of Management Needs

In preparing the inventory of lands of conservation and recreation interest, it became clear that responsibility for management and maintenance of many city-owned parcels is somewhat undefined. While the Parks and Recreation Department is responsible for management and scheduling of the City's recreational facilities, they do not have the funding or staff to perform optimum maintenance. The DPW has performed maintenance tasks in the past, however the responsibilities for this department have increased over the recent years, while budgeting and staff have not kept pace with these increased duties.

The School Department also maintains and schedules use of some recreational facilities, and some of the recreational youth leagues maintain certain parks for their use. For the most part, there is never enough funding or labor for maintenance projects.

The development of a comprehensive city-wide maintenance and management program that identifies the responsibilities of each department would help increase the level of service and maximize the use of all existing facilities, as well as provide for new recreational opportunities for residents of all ages.

CHAPTERS 8 AND 9
GOALS, OBJECTIVES, AND ACTIONS

A. Purpose

The table on the following pages combines Chapter 8: Goals and Objectives and Chapter 9: Five-Year Action Plan. The table is a statement of the vision and general goals from Chapter 6 and the data analyses from Chapter 7 and an expansion of this information into a comprehensive set of goals and objectives. The year-by-year timetable for implementation of these goals is necessary to illustrate the Beverly OSRC's priorities. The Action Plan Map, Map 6, is a visual representation of the goals and actions listed in the table.

GOALS:	Chapter 8 OBJECTIVES:	Chapter 9 ACTIONS:	RESPONSIBLE PARTIES	PRIORITY
Protect and acquire land in Beverly of high natural, scenic, recreational, and environmental value.	Acquire and protect lands with high natural and environmental values including, but not limited to: • Lands in the Wenham Lake and Longham Reservoirs watershed and the WPOD, • Wildlife habitats, which includes lands supporting exemplary, rare, or uncommon natural communities and land supporting species of conservation concern, • Areas with high potential for passive outdoor recreation, and • Lands that provide scenic vistas.	Maintain a list of priority parcels for open space acquisition within the City and develop plans to acquire land rights to these parcels.	OSRC	Review yearly
		Maintain a list of priority parcels for conservation restrictions withi the City and develop plans to implement these.	OSRC	Review yearly
		Review and upgrade the Watershed Protection Overlay District.	OSRC, Planning Staff, Con Com, Planning Board	Year 1
		Work with the Planning Department to identify and write grants tha fund open space acquisition.	OSRC, Planning Staff	Ongoing
		Develop and enhance partnerships with ECGB, MAS, TTOR and BCLT for land acquisition and for promotion of conservation restrictions.	OSRC	Ongoing
		Collaborate with appropriate non-profit groups to hold forums for landowners on conservation giving.	OSRC	Year 1
	Ensure that any proposed development is consistent with the Open Space Plan and the Master Plan	Increase coordination and information sharing with other City Boards and Commissions: Plannng Board, Conservation Commission, Zoning Board of Appeals and the Design Review Board.	Planning Staff	Ongoing
		Review agendas from the City's Boards and Commissions and comment when appropriate.	OSRC	Ongoing
	Integrate open space planning into the city's planning and budgeting process.	Develop financial plan to fund open space acquisition. This may include promoting the passage of the Community Preservation Act in Beverly.	OSRC	Year 1
	Ensure that all City-owned properties with high passive recreational value, potential future active recreational value and environmental value are protected from development.	Promote the use of Conservation Restrictions (CRs) for all ConCom land and other City lands of conservation interest, including Parks and Recreation Commission lands.	OSRC, Parks Department	Ongoing
	Ensure adequate resources for maintenance and management of Beverly's open space and recreational lands.	Coordinate with the Department of Public Works (DPW) to ensure maintenance of trails and signage at city parks.	OSRC, Planning Staff, DPW	Review yearly in Spring
		Coordinate with the City's GIS Manager to review and update maps of open spaces, recreational areas and historic sites.	OSRC, Planning Staff, GIS Manager	Start of Year 5
Increase and enhance the public's opportunities to enjoy open space in Beverly.	Increase public access to the waterfront.	Coordinate with the Planning Department to identify and seek funds to acquire parcels and easements along the waterfront.	OSRC, Planning Staff	Ongoing
		Continue to work with local and state officials to implement a "Sea Path" and provide comments on development and redevelopment proposals for parcels that provide potential public access to the water (e.g. through Chapter 91 licenses).	OSRC, Planning Staff, City Boards, State Agencies	Ongoing

	Create a trail network throughout the City.	Work with appropriate stakeholders to purchase the land and easements identified on the maps to create a comprehensive open space network and adequate playing fields.	OSRC, School Department, Non-Profits	Ongoing
		Develop a uniform trail system for existing and proposed open space areas within the community.	OSRC, Planning Staff, GIS Manager	Year 2
		Identify and coordinate with the DPW to install signage at all existing public rights-of-way that lead to parks and other public open spaces.	OSRC, Planning Staff, DPW	Review yearly in Fall
		Publicize the existence of rights-of-way in appropriate forums, such as meetings, newspaper articles and websites.	OSRC	Ongoing
		Coordinate with the GIS Manager to maintain and update the Beverly Trails map.	OSRC, Planning Staff, GIS Manager	Year 5
	Increase the number of playing fields within the community.	Coordinate with the Parks and Recreation Department to identify and develop a list of parcels that would be appropriate for active recreation.	OSRC, Parks Department	Review yearly
		Coordinate with the Planning Department to identify and seek funds to acquire parcels to be used specifically for active recreation.	OSRC, Planning Staff	Ongoing
	Increase awareness and promote use of open space and recreational opportunities within the community.	Develop a public education campaign, which will promote the importance of preserving parcels for conservation and resource protection.	OSRC	Year 3
		Coordinate with the City and the School Department to sponsor activities and educational programs for clean-up and recycling on public lands.	OSRC, Solid Waste Committee, School Department	Review yearly
	Increase awareness and promote use of conservation areas and the waterfront for passive recreation, i.e. hiking, walking, birding, nature study, etc.	Work with the ADA Coordinator to create accessible trails.	OSRC, ADA Coordinator	Year 2
		Create an educational flyer on trail and waterfront access protection for the community.	OSRC	Year 3
		Coordinate with the Parks and Recreation Commission to develop water related recreational amenities on public land.	OSRC, Parks Department	Year 4
		Coordinate with the DPW to improve maintenance of existing recreational facilities to ensure public safety.	Planning Staff, DPW	Review yearly in Spring
Promote public education of environmental issues.	Increase environmental awareness within the community.	Create an OSRC webpage.	Planning Staff, IT Staff	Ongoing
		Increase utilization of local public media outlets (newspapers, BevCam, websites, etc.)	OSRC	Ongoing
		Continue the successful Earth Day Walks program.	OSRC, ConCom, Local Non-Profits	Review yearly in December
		Develop an educational program in conjunction with the schools.	OSRC, School Department	Year 3
		Collaborate with appropriate non-profit groups to hold forums for landowners on conservation giving.	OSRC, Non-Profits	Year 1

		Continue to sponsor successful park and open space clean-up days.	OSRC, Con Com, Solid Waste Committee, DPW	Review yearly in Spring
	Increase and enhance recreational opportunities for Beverly residents.	Conduct regularly scheduled trail walks.	OSRC	Spring, Summer, Fall

Chapter 10
Public Comments

The Open Space and Recreation Committee hosted a Public Forum in the Sohier Room of the Beverly Public Library on June 13, 2007. A total of sixteen people attended the meeting, with seven of those being committee members. The forum began with Chairman Robert Buchsbaum presenting an overview of the Open Space and Recreation Plan. Next Planning Department staff, Amy Maxner and Kate Newhall passed out information and maps to the audience in order to generate conversation and comments regarding the information presented in this first draft of the plan. The audience was given 20-30 minutes to discuss the presentation and the materials before Robert accepted comments from the audience.

The comments, attached and recorded in the same order as they were spoken at the meeting, range from conservation restrictions and the CPA to water resource protection and recreational playing fields. Some of the major points from the comments are listed:

- The "housekeeping" work that is done by the Committee is important, preserving rights of way, encouraging conservation restrictions on properties of conservation interest, hosting land forums, etc.

- Protection of land around water resources is important. This includes lands around Wenham Lake Reservoir, Longham Reservoir, and Norwood Pond.

- Recreational fields must be increased and preserved. This includes preserving Hurd Stadium and investigating the potential for public use of the fields of private schools in the city.

- A couple of comments focused on the need to work together with other boards and commissions in the city to accomplish the goals in the plan. One comment inquired whether Con Com money could be used to pay for conservation restrictions and another stated the need to integrate the plan into the boards and commissions' methods while reviewing project applications and site plans.

A. Comments from the Public Forum – June 13, 2007
(Recorded in the same order as was spoken)

- Will the Folger Lane path near the Bass River be at the top or the bottom of the area? It may be safer to place the path at the top.

- Are there funds available to implement the CR process?

- Can the CPA be used to fund putting a CR on the land?

- The Sierra Club can help cities/towns gather momentum to help pass the CPA.

- There are more resources available to those who want to pursue passage of the CPA than when it was first defeated in Beverly a few years ago.

- Camp Paradise is beautiful. The OSRC should talk with the Girl Scouts of America to express this sentiment and how the city does not want the organization to sell the property.

- "Housekeeping" i.e. preserving Rights-of-Ways, obtaining Conservation Restrictions is very important work.

- Can Conservation Commission money be tapped to pay for Conservation Restrictions?

- Beverly Farms is very vulnerable to development due to the large lot sizes.

- Holding land forums and inviting some of the owners of the large lots may be beneficial to discuss protection.

- It is important to protect the land around Norwood Pond, especially with the changes being proposed and implemented for Route 128 in that area.

- If an objective listed in the plan is to protect land around the watershed and the City Council has already surplussed several parcels in that area, then the goal is in a direct conflict with what the City is doing.

- If an objective is to increase playing fields in the City, then there should be no plans to sell Hurd Stadium or Cooney Field in Ward 4.

- The City should be able to use the playing fields on the private schools since these schools do not pay taxes.

- The term, "environmentally sensitive" should be added to the first major goal of the plan.

- There are very few mentions of the Longham Reservoir in the plan. Since it is part of the drinking water supply system as much of the attention paid to the Wenham Lake Reservoir should be paid to the Longham.

- Other land-use boards in the City make no mention of the OSRP during project evaluations. The OSRC should be consulted when activities/projects are proposed to Con Com and the Planning Board.

- In Ward 2, the Master Plan does not mention increasing building height to 75'. You can't crowd people into an area with no green space.

- I am baffled that the City is selling land in the watershed for development. Look at MWRA and how they are always trying to acquire more land to protect their water supply. What can be done to convince the Mayor/City Council to no sell the city-owned parcels?

- Is it industry versus public health? (In reference to lands in the watershed and development.)
- Beverly contains very productive marine habitats. A good thing for the City would be to protect the eelgrass beds along the coast from Tucks Point to Manchester border.
- The users of Salem Sound should be educated and made aware of the eelgrass beds.
- Should regulate or even eliminate moorings in or near the beds.
- Stating that the OSRC wants to put all open space in a CR is a hard sell. A better strategy may be to prioritize the lands that should be in a CR.

B. Citizen Comment – Eelgrass Beds

A private citizen, Anthony Wilbur, who also attended the public forum, submitted the memo below. This memo emphasizes the importance of protecting this natural resource and recreational opportunity. The eelgrass habitat is mentioned in the draft plan, Mr. Wilbur feels that there should be more of a focus the topic.

TO: Kate Newhall,
Associate Planner, Beverly Planning Department

FROM: Anthony Wilbur,
87 Kernwood Avenue
978-927-4680

SUBJECT: Draft Open Space and Recreation Plan

DATE: 5 July 2007

The draft 'Open Space and Recreation Plan' is full of outstanding information on open space and environmental resources in the City of Beverly. The information presented in the draft document helps achieve – among the other two goals – Goal 3, 'promote public education on environmental issues.' The draft document is a great starting point to increase the understanding of terrestrial and coastal environmental issues. I suggest considering methods to further publicize the information within the 'Open Space and Recreation Plan' to improve education efforts to increase awareness among the citizens of Beverly on environmental issues and opportunities to enjoy open space. Outreach is critical to educating Beverly citizens. Educated citizens will subsequently become active stewards for the natural resources of our city.

The draft plan identifies eelgrass as a 'substantial, if somewhat hidden, natural community.' While this statement highlights the value of eelgrass to Beverly and the Commonwealth of Massachusetts, it also demonstrates challenges in conserving this important and sensitive

underwater habitat. The majority of coastal residents are not aware of the location and ecological value of eelgrass habitat, making it difficult to conserve this natural resource. Eelgrass habitat along Beverly's coastline is one of the largest and relatively pristine shallow water habitats in Massachusetts. Increased awareness of the distribution and ecological functions and services of eelgrass is needed throughout Massachusetts, particularly in Beverly given the location of this productive habitat.

The Massachusetts Department of Environmental Protect mapped the distribution of eelgrass along the North Shore in 1995 and 2001 (Figure 1). The DEP data are 'snap-shots' of eelgrass distribution at the time of the surveys. That is – eelgrass is a dynamic underwater habitat and spreads and contracts through time, so the specific location of eelgrass moves from year to year or even month to month. The point is – there is probably more area covered by eelgrass in Beverly waters than indicated by DEP data.

Eelgrass habitat is very important to protect because eelgrass helps maintain water quality, protects shorelines, and supports a diversity of marine life. However, human activities impact eelgrass habitat. Eelgrass requires clear and clean waters to grow and prosper. Anthropogenic threats to eelgrass in Beverly that warrant attention include moorings, transient anchoring and stormwater. Moorings located in eelgrass directly scar the bottom and dislodge eelgrass. Mooring chains scour the seafloor and resuspend sediments into the water column and degrade water quality – further impacting eelgrass. Anchoring also directly impacts eelgrass. Deploying anchors (from recreational boats) in eelgrass directly uproots eelgrass which leaves 'holes' in the eelgrass bed. Stormwater often contains suspended sediments, and these suspended sediments cloud coastal waters, making areas unsuitable for eelgrass. This is a generalized and simple description of human impacts to eelgrass habitat and is meant to identify issues that the City of Beverly may consider in attempts to conserve this valuable underwater habitat.

Many users, such as recreational boaters, are not aware of the presence and/or ecological values of eelgrass habitat. The City of Beverly may want to consider outreach efforts to further the general public's awareness and appreciation of this tremendous natural resource. Speaking from personal observations, the eelgrass bed along Beverly's coastline is beautiful and unique to the North Shore. Similar to coral reefs in tropical waters, eelgrass habitat along the coastline of Beverly requires conservation measures.

Figure 1. Eelgrass distribution in the City of Beverly. Data provided by the Massachusetts Department of Environmental Protection.

CHAPTER 11
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Appendix 1
OSRC Recommendations

These recommendations come from various sections within the City of Beverly Open Space and Recreation Plan. They are not listed in any particular order.

- The Beverly OSRC recommends that the City reexamine the effectiveness of the WPOD district in protecting drinking water supplies and make revisions as necessary.

- The City should take steps to tighten up the language of the WPOD ordinance to insure that no hazardous chemicals can be released where they can reach the drinking water supply.

- Land in the watershed of the drinking water supply should be kept as open space as much as possible to eliminate the potential threat of contamination reaching our water supply.

- The City may find it prudent to place a moratorium on developing the City-owned parcels within the Wenham Lake Reservoir watershed until a comprehensive assessment can be conducted as it may provide pertinent information regarding land uses within the watershed.

- The City should research state-suggested methods and regulations to protect medium yield aquifers. Upon completion of this research, the best method of protection can be established and implemented.

- It is timely for the City to re-examine and update its water resource protection, as recommended by the Massachusetts Department of Environmental Protection (DEP), in their guidance document, "Developing a Local Surface Water Supply Protection Plan, 2000."

- Because Norwood Pond is contiguous with Wenham Lake Reservoir, it would be prudent to remediate this area for added protection of Beverly's drinking water supply.

- Obtaining a CR for the municipally owned land around Norwood Pond should be a top priority among all municipally owned land in the City.

- The Beverly Commons, with its mixture of forests and small woodlands, should be surveyed more extensively for vernal pools.

- Certain priorities for protection must be established and the City should continue to research other mechanisms to protect property besides an outright purchase and sale (e.g. land swaps, tax abatement, conservation restrictions, taking tax title lands and owner unknown lands).

- The Hill property should be transferred to the Conservation Commission to give it protection under Article 97 of the Massachusetts State Constitution.

- A feasibility study would be useful to determine if it is economically viable to put athletic fields on the old municipal landfill off of Essex Street.

Appendix 2
Maps

Appendix 3
Acronyms

ACEC	Areas of Critical Environmental Concern
ADA	Americans with Disabilities Act
ADAAG	Americans with Disabilities Act Accessible Guidelines
AUL	Activity and Use Limitation sites
BMP	Best Management Practice
Con Com	Beverly Conservation Commission
CR	Conservation Restriction
CZM	Massachusetts Coastal Zone Management
DEP	Massachusetts Department of Environmental Protection
DMF	Massachusetts Division of Marine Fisheries
DPW	Beverly Department of Public Works
ECGA	Essex County Greenbelt Association, also referred to as "Greenbelt"
EIR	Environmental Impact Report
EPA	United States Environmental Protection Agency
GIS	Massachusetts Geographical Information Systems
LID	Low Impact Development
MAPC	Metropolitan Area Planning Council
MBTA	Massachusetts Bay Transportation Authority
MHC	Massachusetts Historical Commission
NERO	EPA's Northeast Regional Office
NHESP	Massachusetts Natural Heritage and Endangered Species Program
NPA	Norwood Pond Association
NPDES	National Pollutant Discharge Elimination System
NRSC	Natural Resources Conservation Services
ORW	Outstanding Resource Waters
OSR	Municipal Open Space and Recreation District
OSRC	Beverly Open Space and Recreation Committee, also referred to as "the Committee"
OSRD	Open Space Residential Design (Zoning By-law)
OSRP	Open Space and Recreation Plan
PB	Beverly Planning Board
RFP	Request for Proposals
RTN	Release Tracking Number
SBWSB	Salem/Beverly Water Supply Board
SESD	South Essex Sewerage District
SWMC	Solid Waste Management Committee
TTOR	The Trustees of Reservations
USMC	United Shoe Machinery Corporation, also referred to as "The Shoe"
WPOD	Water Protection Overlay District
ZBA	Beverly Zoning Board of Appeals