

1.0 PLAN SUMMARY

The North Andover Open Space and Recreation Plan draws on the findings of the Master Plan Committee as well as updated inventories of North Andover's Community Setting, Environmental features, and Lands of Conservation and Recreation interest. The Plan culminates in a series of sixteen recommendations supporting:

- ◆ Sustained Watershed Protection
- ◆ Preservation of the Town's Open and Rural character, and
- ◆ Increasing Recreational opportunities and quality of life in North Andover.

The full set of recommendations appearing in Section 8 are set forth as a Five Year Action Plan in Section 9, according to their importance within the Community and their impact on resource conservation.

2.0 INTRODUCTION

2.1 Statement of Purpose

The purpose of this 2000 North Andover Open Space and Recreation Plan is to show where we were, where we are, and where we wish to go in regard to open space and recreation in the Town of North Andover, Massachusetts. A look at the open space map for the Town of North Andover indicates the great work that has been accomplished by a town that truly cares about its open space and image. Critical parcels of land have been acquired for preservation throughout the Town. In the past 28 years, since the original Open Space and Recreation Plan, the community has developed a number of similar planning documents, which have also articulated the need to protect open space and provide recreational opportunities for this growing community. These other documents include:

- The North Andover Comprehensive Plan 1972
- The Open Space and Recreation Plan 1980
- The Phased Development Bylaw 1986
- The Balanced Growth Plan 1987
- The Lake Cochichewick Watershed Plan 1987
- The Lake Cochichewick Watershed Plan 1999
- The Open Space and Recreation Plan 1987
- The ENSR Report on Lake Cochichewick 1987
- The Open Space and Recreation Plan 1995
- The Growth Management Bylaw 1996
- The Three Interim Master Plan Reports 1997, 1998, 1999
- The Wetlands Protection Bylaw and Regulations 1998 (REV)
- The ENSR Report on Lake Cochichewick 1999

The North Andover Open Space Committee was formed as a result of the 1995 Open Space and Recreation Plan's recommendations. The committee has spent the past three years developing a more accurate open space map. The up-to-date mapping of town owned properties has been a continuing problem. The committee has taken advantage of extensive research being performed by the town's Master Plan Committee. The combination of the two committees has revealed a town's people that care very much about open space. It also indicated the need for education as to the location, best use and ways to maintain the image of North Andover. Cooperating in this same effort is the town's Trails Committee and Bicycle Advocacy Committee. Their expertise with computerized mapping has compounded the entire effort. This effort has encompassed the accurate mapping of the Town's trails, community paths and old logging ways. Documentation of these trails, paths and ways is critical to their continued existence.

The Open Space Committee has performed inventory and prioritized open space sites. The Conservation Commission has established detailed maps of rivers, brooks and tributaries protected under the Rivers Protection Act. With the help of two local committees, a \$30,000 ISTEIA enhancements grant is currently progressing to establish the necessary property and land information for further grant applications and eventual construction along the seven mile abandoned rail line through North Andover. Plans are well underway for use of the upcoming Gas Line Project that is proposed through part of the town. The High School is now using parts

of some trails for open space classrooms while the Sargent School has set up its own trail and open space class area with the help of the Trails Committee. The Trails Committee has set up extensive trail maps and a warden program is in progress to maintain and monitor open space sites.

Where we are going has already been established and needs to continue. These areas are:

1. Accurate Open Space maps
2. Additional trail maps
3. Acquisition of targeted Open Space sites
4. Creation of Open Space interconnections
5. Community paths and village ways

Other areas will depend on legislation pending with regard to the Community Preservation Act and other versions of land banks.

The Open Space, Trails and Bicycle Committees are coordinating a strong effort to continue documenting open space, trails and paths. We plan to inspire through education, better use of present facilities. We are still pursuing properties of importance to the town. The continued use of town properties is critical to preservation because lands that are not well monitored quickly turn to dump sites.

2.2 Planning Process and Public Participation

The Open Space Committee has been reviewing the 1995 Open Space and Recreation Plan for the past year. All organizations and boards in town were notified of the intentions of the committee to update the Plan. Liasons from the Conservation Commission, Trails, Bicycle and Master Plan Committees were involved with the meetings. The organizations and boards of the town were asked for any comments or contributions to the update. The Master Plan Committee contributed member representation and an extensive citizen survey covering Open Space and recreation issues. The three interim Master Plan reports (see Appendix G) summarized the survey results and served as a valuable source of community statistics.

3.0 COMMUNITY SETTING

This section discusses how North Andover evolved. The history of the Town's settlement, growth and development will be presented. While each community is unique, growth and development occurs as a result of interactions with other communities. The regional factors which have had an effect on the community's development are also presented. These factors may determine the future challenges which North Andover will face.

3.1 Regional Context

The Town of North Andover lies along banks of the Merrimack River in the Merrimack Valley in the northeast corner of Massachusetts. The Historical map, found on the next page shows the Merrimack River as the community's most prominent natural feature. The River has undoubtedly driven the growth and development of most of the communities in the Valley. In the late 18th and throughout the 19th century, mills sprouted up along the river and its many tributaries. The smaller tributaries were less prone to devastating floods and were very valuable mill sites. Two of those tributaries, the Shawsheen River and Cochichewick Brook, were located within the original Andover settlement. These waterways saw intense mill development, particularly in the 19th century, which transformed the community from an agricultural village to a more diverse one of mills and farmland.

North Andover is a highland on the outer edge of the Merrimack Valley. The prominent hills drain into numerous wetlands. These wetlands are the headwaters of three separate rivers: the Ipswich River, the Parker River and Cochichewick Brook. The Ipswich River flows twenty miles to the sea through Boxford, Middleton, Topsfield, Hamilton, and Ipswich. One emergency well and one weekend well are located along the Ipswich River in Ipswich. The Parker River flows through Boxford, Georgetown and Newbury twenty miles to the sea. Along the way this river supplies water to underground aquifers which sustain four public wells in Georgetown, one more is proposed. Countless private wells are also served by underground aquifers in the Parker and Ipswich River watersheds. The Town of North Andover has recognized the importance of the Ipswich River to water supplies by requiring the same minimum lot size in much of the Ipswich River watershed as in the Lake Cochichewick Watershed District.

Cochichewick Brook flows from Lake Cochichewick, which is the sole source of public drinking water for the people of North Andover. The Lake Cochichewick watershed is 2,732 acres in size, 378 acres (14%) of which lies within the Town of Boxford. This part of Boxford is zoned residential and is sparsely developed. The Town of North Andover must continue to keep a watchful eye on the future development of this portion of the watershed since the Town of North Andover has little control over it. Experience has shown that controlling growth has been very difficult in the portion of the watershed which lies *within* North Andover; controlling growth in another community will present even more challenges.

Today, regional transportation routes have a major impact on North Andover's character. Secondary highways such as Routes 114, 125 and 133, have been important in providing local and regional transportation routes. Route 114 brought goods to and from the bustling port of Salem. Route 125 was the direct route to the prosperous mill town of Haverhill while Route 133 was the major route to the mill centers of Andover and Lowell. When they were first laid out, these early roads were the only dependable routes to the regional centers of commerce. Such roadways made it possible to transport raw materials to, and finished goods from, the local mills.

These roads are now secondary highways which funnel traffic to the two major interstate highways, Routes 93 and 495. These highways have had perhaps the greatest impact on the community's growth and development in the latter half of this century. Route 93 makes North

Andover accessible for those who work in Metropolitan Boston while Route 495 provides quick access to the job markets which have filled the void left by the failure of the mills throughout the Merrimack Valley.

3.2 Community History

The original settlement of Andover was located in the area bounded by Andover, Osgood and Court Streets and Academy Road. It was based on the jointly-held field system of the part of England most of the founders came from. The small cluster of houselots was surrounded by land used for planting, woods and swamps. The common field system had devolved into individual holdings by the end of the 17th century and settlement had spread into the southern part of town which would eventually become the “south parish” and even later, in 1855, become “Andover”, taking the name of the original settlement.

In the early 1690s, Andover was caught up in the witchcraft hysteria of Essex County when dozens of residents were imprisoned and three hanged. Andover men were involved in the several French and Indian Wars, taking part in raids up into Canada. Andover was active in the Revolutionary War, sending minutemen to Concord and publishing the full text of the Declaration of Independence in the Town Meeting report.

In the early 19th century, the North Parish was still primarily agricultural, although a thriving (but short-lived) shoe industry grew up around the crossroads village in what is now the old center. A carding mill (still standing) was built in 1802 on the Cochichewick near the Merrimack. Other mills were built along the brook, which at one time supported 4 major mills connected with textile manufacture. The outlet of the lake to Cochichewick was dammed to regulate the flow of waterpower to the mills, which increased the size of the lake several times. The original millponds still exist, for the most part hidden behind mill and residential buildings. They offer a possible scenic pathway connecting the Merrimack with Lake Cochichewick.

The founding of the City of Lawrence was the catalyst which led to the division of the Town into 3 segments before the Civil War. In the north parish, now North Andover, the mills along the Cochichewick grew, and a new commercial center developed closer to the River and to Lawrence. “Machine Shop Village” is a National Register District in the downtown area which contains examples of the former textile industry buildings as well and factory-built workers housing, stores, a church and an owner’s residence.

The old center village escaped pressure for development and largely retains its 19th century appearance today. Several of the structures around the common are owned or protected by the North Andover Historical Society. The common itself, created in the past century by the North Andover Improvement Society was turned over to the town in the 1950s after the last house had been removed. It serves as a location for Town celebrations and for a variety of passive recreation uses. It is also the focus of the Town’s only local historic district.

North Andover residents appreciate the historic character of their community, which still retains many examples of buildings and landscapes from former days.

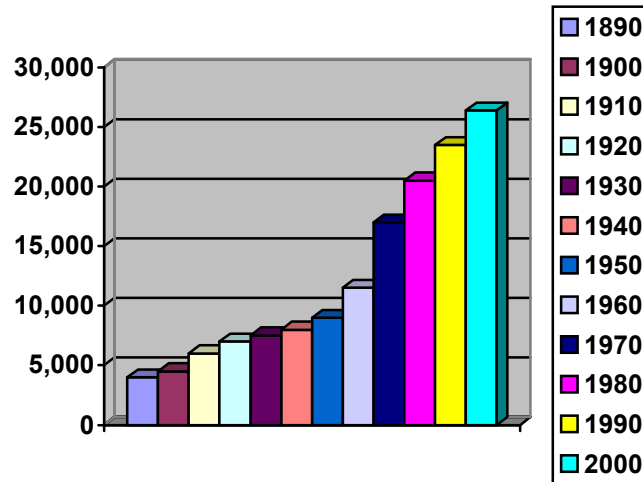
Population continued to rise during the 20th Century, although the shift of textile manufacturing to the South after WWII meant the loss of factory jobs. Some of these jobs were replaced with new industry such as the large Western Electric (now Lucent Technologies) plant. Until the 1960s, however the eastern and southern sections of town were still largely undeveloped open space.

3.3 Population Characteristics

The population of North Andover has grown steadily throughout the 20th century. Table 3.31 demonstrates this growth over the past 100 years +.

Table 3.3.1

**North Andover Population Growth
(1890 to 2000)**



As immigrants came to work in the woolen mills, they tended to settle within walking distance of those mills. This led to a concentration of factory housing, modest homes and a few owners' mansions in a relatively dense settlement in the northwest part of Town along Cochichewick Brook. Many of the Town's recreational areas are located in these older neighborhoods, and are heavily used.

Up until the last quarter of the century, the rest of the town was mainly undeveloped, with a number of farms and a few large country estates bordering Lake Cochichewick, built by wealthy mill owners. From 1950 to 1970, the population almost doubled. During this period, Routes 93 and 495 were completed, putting North Andover within driving distance of employment in the Metropolitan Boston region, making the Town attractive as a residence for commuters. Rapid growth has continued to the end of the century.

North Andover's population has grown to 26,400 as estimated by the Town Clerk's office in February of 2000. This population increase has led to a corresponding decrease in open space, even though the perception of North Andover as a town with a great deal of open space is one of the reasons given for moving to Town. Past surveys indicate that many residents thought that these open spaces were somehow protected and would remain open.

In conjunction with the overall population growth has come a growth in the senior and

teenage populations with their separate recreational needs. A Senior Center adjacent to Town Hall was built in 1984 and expanded in 1997. A youth center is under construction in the old town center and will be completed in the summer of 2000.

Changes in employment trends can be seen in Table 3.32.

Table 3.32 Employment Trends

<u>Area of Employment</u>	Percent of workforce in	
	<u>1989</u>	<u>1998</u>
Manufacturing	54.0	42.0
Services	15.5	29.0
Trade	11.0	13.0
Government	4.2	4.7
Transportation, Communication, Public Utilities	7.0	4.2
Construction	2.7	3.0
Finance, Insurance, Real Estate	3.6	2.6
Agriculture, Forestry, Fishing	.08	1.3

(Source: Commonwealth of Massachusetts, Division of Employment and Training (ES-202 Series))

As with many towns in the state, North Andover has seen a shift away from manufacturing jobs and toward high tech, service employment. Much of the recent population growth has changed North Andover from a blue collar to a white-collar community. This may increase interest in open space protection and conservation issues. There has already been an increased demand for recreational facilities, particularly playing fields for rapidly growing sports programs. From discussions with representatives of the Recreation Department and user groups, it is clear that the Town is not meeting the community's recreational needs.

3.4 Growth and Development Patterns

North Andover first adopted local zoning in 1943. The current zoning map is included on the following page.

The Zoning Bylaw has been revised and updated on numerous occasions. It includes cluster zoning or Planned Residential Development, flood plain zoning, a Watershed Protection District and Site Plan Review. There are seven residential zones including R6 and Village Residential. The R6 zone allows 6 lots per acre and Village Residential zone allows 4 homes per acre (with sewer). This Village Residential zone has recently been changed back to 1 home per acre but there is a significant development grandfathered under the 4 per acre allowance. There is no remaining land available for development in the R6 zone.

North Andover's Wetlands Protection Bylaw and Wetlands Regulations, as well as local septic system regulations, are more restrictive than the state regulations such as the Wetlands Protection Act (M.G.L. C.131 S.40) and Title 5 (State Sanitary Code). The Conservation

Commission has also specified seven (7) rivers protected under the Rivers Protection Act in their local bylaw. These local regulations have been necessary because of the large amount of wetlands in town. An increase in Conservation applications combined with the increased need for sewer connections are indicators of poor land. Smaller developers are unable to capitalize developments with high on and off site costs. The trend to larger development firms is related to the greater infrastructure and wetland issues. A Rte. 114 sewer extension, paid for by a developer, will be going on-line soon, and then development will increase substantially. The development community will need to build homes to recoup infrastructure costs. The larger firms will be able to weather market fluctuations better than smaller builders. The only tools that will temper this growth are two growth bylaws.

There are two growth management bylaws, section 4.2, Phased Growth Bylaw and section 8.7, Growth Bylaw. As an example, Forest View will be phased in over 8 years under the section 8.7 Growth Bylaw. A remaining problem is the number of grandfathered lots that predate these growth management bylaws and are thus exempt from the phasing of growth. Thus, the results of the growth bylaws will not be seen for a few years. Another issue is that prior to these new bylaws, there was rapid growth in town, and the town is in a period of matching services to needs of the new growth. These bylaws and other regulations attempt to provide the Planning Board, Conservation Commission, Board of Health and the Zoning Board of Appeals with the tools to control growth. The Master Plan Committee has recommended that the zoning bylaw be revised and reorganized on a regular basis to adequately guide the future growth and development of the community.

North Andover's zoning has always heavily favored residential development over commercial or industrial growth. Eighty-five percent (85%) of the Town is zoned residential. The new Master Plan stresses the need for greater commercial and industrial growth to offset costs of providing services to the residents. Out country has seen significant development over the last five years, necessitating the building of a new elementary school, the rebuilding and enlargement of an existing elementary school, and expansion of the Middle School. This growth has also meant that the High School, an outdated and over-capacity facility, may soon have to be rebuilt. This growth also puts pressure on the town to build a third fire station, modernize and expand the currently spread-out Town Hall offices into the adjacent outdated fire station, and build a new Public Safety Center to replace both the fire station and an inadequate Police Station. Also under stress from the accelerated growth are the town's playing fields. The Town has purchased Foster Farm as an elementary school site and land for playing fields. Under construction now is a new and larger youth center.

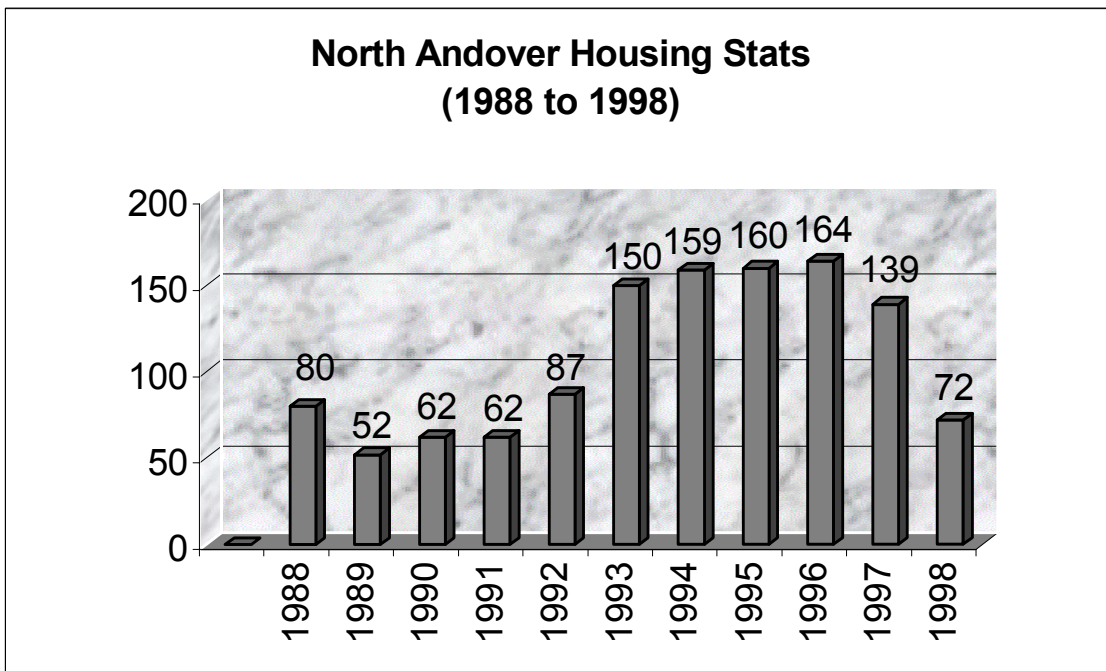
As in many other Massachusetts towns, much of the new residential building has resulted in large and expensive homes. Even some homes originally marketed as empty-nester homes have become very desirable, with prices reflecting that, and have become havens for families with children. North Andover's traditional diversity of home styles and prices has become less diverse in the past decade.

Both the Open Space and Master Plan Committees see the importance of preserving open space, farmland and historic scenic vistas as a brake on the inevitable expansion of residential development, and, more importantly, as a cost-containment move. In attempting to pay for the needed public buildings and services, a corridor study of Rte. 114 is being planned to

find appropriate space for small industrial parks and commerce, without adversely affecting adjacent residential areas or traditional rural and farmland vistas. Studies by the American Farmland Trust "suggest that residential land uses cost more in services than they generate in revenues, and that a mix of other land uses offsets this imbalance." (**American Farmland Trust, 1992**)

This residential housing growth can be seen in Table 3.41 for the years 1988 to 1998.

Table 3.41



While North Andover is fortunate to host part of Harold Parker State Forest, some Essex County Greenbelt land and The Trustees of Reservation land, only 25% of land in the Lake Cochichewick watershed is protected. Protecting land within the Lake Cochichewick watershed is the Open Space Committee's highest priority. There are still significant parcels of land abutting the lake which have no protection and are vulnerable to development. These include North Andover Country Club, Rolling Ridge Conference Center, Brooks School and other fairly large private parcels.

Forested land has decreased because of many new developments, and the new Title 5 regulations, which have had the unintended consequences of clear-cutting of whole parcels for septic systems for the new developments. The recent displacement of farms and forests is

reflected in the names of recent developments: Orchard Path Estates, Windkist Farms, Forest View Estates, Hickory Hill, Walnut Ridge, Woodlea, White Birch, Pinewood and Foxwood. The Open Space Committee values the remaining forest lands for the reasons of ecological diversity, wildlife habitat protection and scenic and historic preservation.

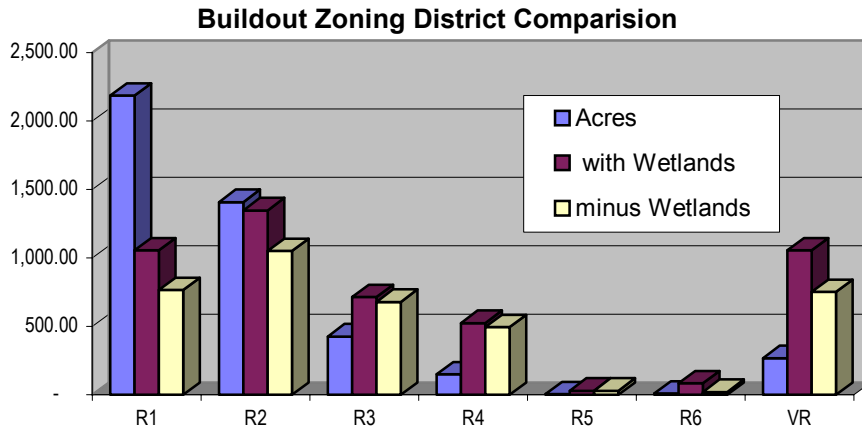
Only one dairy farm, Barker Farm, remains. Calzetta Farm has become the site of the new elementary school. Another farm, Foster Farm, has been purchased by the Town to provide a site for an elementary school in the future, land for playing fields, and open space to be used for educational purposes and recreation for the townspeople. There are successful producing farms in North Andover which are supported by the townspeople. The Open Space Committee is strongly in favor of preserving open scenic vistas and historic ways of life. The Master Plan reflects this same desire. We encourage the use of Chapter 61A and APR's as methods to preserve these farms, though the Town is currently unable to act on its rights of first refusal in most cases.

Another concern of the Open Space Committee, also reflected in the Master Plan, is the use and amount of open space in Planned Residential Developments. Incursions into the open space by homeowners and the use of severe slopes as open space has violated the spirit of the PRD Bylaw. The Open Space Committee holds the opinion that the percentage of open space required be increased and that it be more visibly marked, more usable and accessible.

A priority of the 1995 Open Space and Recreation Plan was to preserve, through easements, acquisition or other means, public control of a 200 foot boundary of shoreline around the Lake Cochichewick drinking water supply. Accordingly, the Town purchased the Stevens Estate on Osgood Hill, a significant parcel within the watershed, and continues to press for improved protection with help from the Conservation Commission. The Open Space Committee's highest priority is to protect land in the watershed to Lake Cochichewick, with purchase of the Carter/Renshaw property topping the list of conservation targets.

The next chart, a buildout study, from the 1997 Interim Master Plan Report, shows in two ways how many acres and/or lots could be built in each of the seven residential zones or six regions of town. The startling number which jumps out is 3,800 lots with no wetlands present are available for development. Another way to interpret this is that wetlands reduce the number of buildable lots by 1,020, from 4,820 to 3,800. If all of these lots were built on, this would result in 30,400 more traffic trips and 1,900 more children. The Conservation Commission's enhanced ability to manage growth through its wetland bylaw is key to preserving these valuable lands.

Table 3.42



Zone	Acres	Number of Lots With Wetlands	Number of Lots Without Wetlands	Wetlands Difference	Traffic 8 trips per Lot	School Children .5 per Lot
R1	2186.75	1057.00	767.00	290.00	6136.00	383.50
R2	1408.10	1348.00	1051.00	297.00	8408.00	525.5
R3	428.68	715.00	681.00	34.00	548.00	340.5
R4	150.06	526.00	496.00	30.00	3968.00	248.00
R5	4.75	32.00	32.00	-----	256.00	16.00
R6	9.90	86.00	21.00	65.00	168.00	10.50
VR	269.67	1056.00	752.00	304.00	6016.00	376.00
Totals	4457.91	4820.00	3800.00	1020.00	30400.00	1900.00

4.0 NATURAL RESOURCE INVENTORY AND ANALYSIS

4.1 Geology

Surficial Geology

The North Andover landscape shows the unmistakable influence of continental glaciation. This is most notable in the presence of a number of oval-shaped hills as well as many irregularly-shaped swamps and bogs resulting from the disrupted drainage patterns. "These hills are known as drumlins. They are oval shaped hills made of a jumbled combination of clay, sand and boulders that is known as till. The till can be recognized by the mixed distribution of boulders and pebbles and clay. Till is hard and generally gray in color. The soil at the top of the till where it has been weathered is brown. Till is sediment deposited directly by the glacier" (Roberts, 1977).

There are a dozen large hills in North Andover. Roberts identifies 11 drumlins, but one, Claypit Hill, may be a kame. This hill shows deposits of "fine sand to gravel to rocks of several inches in diameter. One fresh cut in the hillside showed well defined layering of gravel" (Doucette, 1990). A kame is the remnant of deposits of a glacial stream which formed on the valley wall while the glacier filled the valley. Perhaps this is an ancient kame reshaped by a later glacier into a drumlin.

Much of the southern and southeastern portion of Town is made up of ground moraine, "bedrock covered by a thin sheet of till" (Roberts, 1977). The poor drainage of this clay-rich till, and the disruption of drainage patterns mentioned above, has resulted in the many swamps, marshes and bogs found throughout Town, particularly in the southern and southeastern portion. These poorly-drained soils, and broad wetlands, present serious limitations for development (particularly with the lack of public sewer) but do provide opportunities for protecting open spaces.

Bedrock Geology

Two major bedrock zones underlie North Andover. These are the Merrimack belt in the extreme northern portion of Town and the Nashoba zone, which underlies the remainder (Zen et al, 1983). The Merrimack belt is composed mostly of metamorphosed sandstone and siltstone while the Nashoba zone is dominated by Andover granite and Sharpners Pond Diorite.

These two major bedrock zones are split by the Clinton-Newbury fault which runs southwest to northeast just north of Lake Cochichewick. This major structural feature runs through southern New England and was most active over 250 million years ago (Skehan and Murray, 1980). There have been minor earthquakes associated with this fault including a quake measuring 2.5 on the Richter Scale felt in Littleton MA in 1990 (Cook, 1990). A second fault, the Assabet river fault, may run through Town in a north/south direction along the eastern edge of the main mass of andover granite (Goldsmith, 1991).

Soils

The soils found in North Andover can be classified into four major associations (United States Soil Conservation Service, 1981).

- * Paxton-Woodbridge-Montauk Association
- * Canton-Charlton-Sutton Association
- * Charlton-Rock Outcrop-Medisapristis
- * Hinkley-Windsor-Merrimac

These general soil associations are intended for broad planning purposes only and include a wide variety of soil types. Determination of actual soil types, their extent and suitable uses, is made on a site-specific basis through field identification. Such detailed investigations of soil characteristics and boundary determinations are made as part of individual land use decisions.

4.2 Landscape Character

Hilltops

North Andover's landscape is noted for its many drumlins. These hills have had an impact on the community's development patterns. Until recently, the development constraints and lack of infrastructure left the hillsides untouched but the inflated property values of recent years has promoted extensive hillside development. Some of these hilltops offer expansive views of the Merrimack Valley. Erosion and sedimentation during hillside construction has been a problem. A more restrictive slope and erosion control section is being incorporated into the Planning Board's Subdivision Rules and Regulations which is in the process of being revised and adopted.

These large, gently-sloped hills were referred to as "Major Heights" in the only Town-wide natural resource inventory as discussed in the Town's first Open Space Plan of 1970. "These hills provide an outlook over the whole town as well as great parts of the Merrimack Valley. They also form the skyline of the town when seen from the valleys. Such natural landscape tends to give the town an open appearance much desired by suburban dwellers and highly valued by North Andover resident." The 1970 Open Space Plan recommended the "Protection of the skyline which gives the town an open appearance..." (North Andover Conservation Commission, 1970).

The 1972 Comprehensive Plan also recommended the protection of eight prominent hills from intense development to "retain the rural character of natural hills" (Brown, 1972). Of these eight hills, Town Farm Hill and Claypit Hill have since been covered by large subdivisions. Planned Residential Developments (PRD) have been approved for Barker Hill, Boston Hill (3 lots in 1998) and a portion of Woodchuck Hill (17 lots in 1995) which will preserve some open space. Weir Hill is protected by the Trustees of Reservations and Osgood Hill is now owned by the Town of North Andover. The 1987 Balanced Growth also recommended the protection of the Town's hills. The Town needs to be more proactive in protecting these hilltops before landowners produce development proposals which can only promote a reactive response.

Farmland

Farmland has defined the Town's character since the first settlers arrived. As has been discussed, most of North Andover's farmland has been replaced by residential development since 1950. As a response to this, the 1972 Comprehensive Plan's first long- range goal was to "Retain the

natural character of woodlands, fields and farms throughout the town so that they can be used for recreation and conservation and enjoyment of open space to the extent possible" (Brown, 1972).

Some landowners use Chapter 61A, the Farmland Assessment Act, to temporarily protect their farmland. Presently 18 landowners protect 1298 acres through farmland tax classification. This acreage is about the same as 1995 when the last Open Space Plan was completed. The Town has first right of refusal to purchase such land when it is marketed for development. The former Mazurenko Farm was purchased using this option in 1988 for the purpose of watershed protection and the preservation of farmland. The farm's fields remain active and a residential subdivision with potentially harmful impacts on the community's water supply has been avoided. Overall, little has been done proactively to preserve the remaining open fields and farmland which have helped to define the community character although the Planned Residential Development concept has been used successfully to preserve portions of the Barker Farm.

One reason why many people accept the loss of more natural landscapes is the common misconception that there is a financial gain to the community from the conversion of these land uses to residential or commercial development. A better understanding of the positive financial impact of land preservation would hopefully improve the attitude of not only landowners but municipal policy-makers toward land preservation. Various studies, such as the American Farmland Trust (AFT) study previously cited, have shown that residential growth is more of a strain on local services than preserving open land, forests and farmland.

One common claim made to Massachusetts towns is that residential development increases the local tax base, thereby lowering property taxes. Others are that resource conservation is too expensive at the local level, and that farmland does not make a significant contribution to the tax base, so it is best converted to its "highest and best use," which is generally assumed to be development... The AFT found although residential development increases the local tax base, it does not pay for itself. These towns paid more on residential services than they received from residential services.

(American Farmland Trust, 1992)

Table 4.21

Ratio of Dollars Generated to Services Required by Different Land Uses

<u>Residential</u>	<u>Commercial/Industrial</u>	<u>Farm & Open Land</u>
\$1 : 1.12	\$1 : 0.41	\$1 : 0.33

(Source: American Farmland Trust, 1992)

The American Farmland Trust has conducted a number of studies to determine the fiscal impacts of different land uses. In all six studies conducted, residential development of open space lost money for the community while commercial/industrial and farm/open land uses generated more in revenue than they required in services. Thus, a dependence on residential growth to fund municipal budgets is a losing battle. More diversified land uses must be promoted to ensure economic stability. Hopefully, a better understanding of this issue will generate a more positive economic view of farmland and open space.

4.3 Water Resources

The term 'water resources' is a broad one which encompasses standing and moving water bodies, vegetated wetlands such as swamps and marshes, floodplains and groundwater. These water resources are described in this section. No comprehensive mapping of all these resources has ever been completed. While Mass GIS has this information available, it is not as accurate as data which is available here in North Andover. The existing data includes:

- * Townwide wetlands mapping completed by IEP in 1998. This is available on the Assessor's map grid system. The wetland boundaries are not exact but this information is very detailed and valuable. This information is available through the Conservation Office.
- * This mapping effort produced a number of different maps by habitat type and an overview of the functions and values of those wetlands. This information can be found in the roll file in the Conservation Office.
- * Town-wide aerial photos circa 1991 have been purchased from The University of Massachusetts at Amherst. The delineation overlays have not been received but when they are, this will provide a more accurate delineation than the 1977 mapping, but not on the Assessor's map system. This information can be found in the Conservation Office.

Surface Waters

In a regional context, much of North Andover is a highland at the junction of three watersheds: the Merrimack River and the headwaters of two rivers: the Ipswich River (via Boston Brook and Mosquito Brook) and the Parker River. Much of the southern and southeastern portion of town flows into the Ipswich River. The northern and western portion of town drains into the Merrimack River. Two Merrimack River subdrainage areas of note are the Shawsheen River and Cochichewick Brook. As we have seen, the Town's origin and development has been driven by water resources, hydro power in particular. Early in the Town's history there was "hardly a stream or brook of any size that was not put in requisition by the settlers as water-power for grinding or sawing" (Bailey, 1880).

Today, Lake Cochichewick is the sole source of public drinking water. An understanding of the vulnerability of water resources has been learned the hard way - through the degradation of the public water supply. Pollutants from a number of sources including: house construction, septic systems and urban stormwater degraded water quality until 1986 when giardia was discovered in the Lake. A 'boil water order' followed. A filtration plant was constructed, a three year building moratorium was instituted throughout the watershed, and a comprehensive watershed study was commissioned. A portion of this study's Diagnostic Conclusions provides a picture of the threats to the water supply from increased growth and development:

- *Water quality of the inlet streams is degraded compared to water quality in-lake. Given the present degraded quality of inflows, there is potential for in-lake water quality to deteriorate in the future even without a corresponding degradation of inflows.*
- *The watershed to the lake has residential and agricultural uses which contribute to these periodic water quality problems. Erosion of soils in areas of new construction and agricultural areas, and urban storm water runoff appear to be the primary sources of elevated suspended solids, nutrients and bacteria concentrations.*
- *Over half of the watershed to the lake is presently forested, and is a prime site for future*

residential development. Further development in the watershed will lead to increases in nutrient loading and urban stormwater runoff. Lake development is experiencing low growth and is expected to continue in that fashion.

(IEP, 1987)

As a result of the Lake Cochichewick Watershed Plan (in conjunction with the Balanced Growth Plan), a number of steps were taken to protect the water supply. These included major revisions to the Zoning Bylaw, Board of Health Rules and Regulations, Wetlands Regulations, land acquisition, increased street sweeping, and an extension of sewer system. The level of success in protecting the water supply, particularly in promulgating comprehensive recommendations, has been greater than in many communities. Still, a number of recommended steps have not been taken.

A document entitled Status Report: Implementation of the 1987 Lake Cochichewick Watershed Plan was developed in November 1992 by the Division of Planning and Community Development. It was revised in February of 1999. This document reviewed the Town's response to the Watershed Plan and found that of the 17 recommendations, four had not been implemented in any way. The four fully neglected recommendations (#7, 9, 13, 16) involve the following situations:

- cleaning five storm drains;
- conducting phosphate fertilizer education;
- prohibiting non-electric powerboats on the lake; and,
- conducting a toxicology report on Rea's Pond.

Watershed protection measures should manage all threats to the water supply. Updates to the Zoning Bylaw aid this this. A list of three new "no disturbance" requirements have been implemented as of February 1999. The buffer zones are as follows:

- 400' from tributary or lake;
- 150' Conservation Zone from high water mark; and
- 75' wetland resource area.

Currently, approximately 25% of land in the watershed is protected open space. This includes Osgood Hill and the Trustees of Reservations' Weir Hill Reservation, Mazurenko and Rea's Pond Conservation Areas, a large portion of the Town Farm, a portion of the Smolak Farm which is protected under an Agricultural Preservation Restriction and a small conservation easement managed by the Essex County Greenbelt Association. The remaining land in the watershed is not protected and will likely be developed at some point. Most reservoirs are surrounded by much more protected land. Much more must be done to protect land in the watershed, whether it be through conservation restrictions or acquisition.

Land in the watershed is sought after for residential development since the open spaces, lake views and larger lots increase the desirability and value this land. Even when the real estate market was at its most depressed state in 1989-91, land in the watershed continued to be built upon at a higher rate than non-watershed land. Therefore, the community must not only be vigilant in its protection of these resources, but also be open to new protection measures such as improved regulations and acquisition.

Wetlands

North Andover was one of the first communities in the Commonwealth to organize a Conservation Commission in 1961 when it adopted Chapter 40 Section 8C of the Massachusetts General Laws. The Commission quickly went to work on the very general task of protecting the Town's natural resources. Since the passage of the Wetlands Protection Act (MGL Chapter 131 Section 40) in 1972, the Commission has rigorously enforced the provisions of this Act. The Commission not only enforces the state Wetlands Protection Act, but also a local Wetlands Protection Bylaw and Regulations. This Bylaw (and its subsequent revisions) has been in effect since 1979. Comprehensive Wetlands Protection Regulations were adopted early in 1991. These regulations provide detail and performance standards to support the local Bylaw. The Town of North Andover's Wetlands Protection Bylaw and Regulations was revised in 1998. The Commission meets twice a month to review development projects and issue permits for work near wetlands.

In an effort to better protect wetlands, a town-wide wetlands mapping project was completed in 1998 by IEP Inc. Vegetated wetlands were delineated using aerial photography. Additional data was gathered on vegetation types, hydrologic data and soils through field checking. This data, though now somewhat outdated, has been a great help to planning staff and landowners alike in obtaining concise information about development constraints and understanding wetlands and surface waters.

Flood Hazard Areas

North Andover lies in the floodplain of the Merrimack and Shawsheen Rivers to the north and west and various tributaries of the Ipswich River in the south and east. In an effort to protect the community from lost flood storage, floodplain zoning was adopted in 1979 which restricts building in the flood plain.

During major storm events such as the 100 year event, flooding generally occurs in the same areas. Such flood plains can be found in all river systems in town. Some lands in the Shawsheen and Merrimack River floodplains have been taken in lieu of taxes. These land holdings are not only valuable for flood control purposes, but also for open space and recreation. Potential for trails and wildlife habitat improvement projects are now being considered for these floodplains. Such tax takings, or other acquisitions, should be encouraged since these floodplains help preserve flood control, water quality, wildlife habitat and potential sites for both active and passive recreation.

4.4 Vegetation

The specific open space and recreation values we all cherish are dependent on a particular setting. These various settings are defined, to a great extent, by the vegetation which grows there. This vegetation not only provides for the visual setting for human enjoyment but also the necessary food and cover, species and structural diversity, to sustain countless wildlife. It is difficult to think of an open space recreational pursuit which does not rely on a particular setting defined by its vegetation:

* wooded trails and hilltop vistas for the hiker, photographer, mountain biker or cross country skier.

* old fields or farmland which attract pheasant, turkey, grouse and

deer for the hunter.

- * dense, unbroken forest for uncommon wildlife such as raptors, neotropical migrant birds and larger mammals such as fisher, coyote and moose.
- * thick shoreline cover along streams and ponds providing cover for fish, mammals and waterfowl.
- * a quiet meadow in which to picnic.

Non-Forested Resources

Most people think of forests when protecting open space. But the picture is much more complex than that. As we can see from the settings described above, two of the five - the old field and quiet meadow, are defined by an absence of trees. Some species of wildlife, and various recreational pursuits, require non-forested areas. This diversity must be taken into consideration when protecting and managing open spaces. Areas of diverse vegetation, such as old fields and wet meadows can be protected through acquisition or created/maintained on existing conservation land.

The introduction of non-native plant species can seriously compromise native diversity. "In 1990, the Massachusetts Natural Heritage and Endangered Species Program developed a list of 209 invasive alien plants in Massachusetts, fifty-one of which are aggressive nonnative species that are considered to be the most problematic" (Anderson, 1993). Some of these invasive species, including purple loosestrife (Lythrum salicaria) and european buckthorn (Rhamnus frangula), have begun to dominate certain vegetated wetlands in North Andover. The control of invasive exotics should be considered when managing conservation land.

Forest Resources

North Andover's percent of forested land apparently has not changed much in the last 40 years. Table 3.42 indicated that in 1951, 53% of North Andover was forested while 48% was forested in 1985. This statistic is misleading since many residential subdivisions in a forested landscape will be classified as forest in aerial photograph interpretation. When one reviews aerial photos and road maps, a better understanding of North Andover's forests can be gained. There are relatively few areas of unbroken forest remaining. These remaining forests include lands which are unbuildable such as swamps and protected open space.

North Andover's forests are typical for the southern New England region. The younger forests, those taking root after clearing, are characterized by the presence of gray birch (Betula populifolia), poplars (Populus sp.) and (particularly in the wet areas) red maple (Acer rubrum). Post-agricultural forest may include black cherry (Prunus serotina), white ash (Fraxinus alba), locust (Robinia pseudo-acacia), red maple and apple (Pyrus sp.). The more mature (upland) forests are dominated by red oak (Quercus rubra) and may also include hickory (Carya sp.), white pine (Pinus strobus), and a wide variety of hardwoods. Red maple dominate the majority of forested wetlands. There are stands of atlantic white cedar (Chamaecyparis thuyoides) in and around Boxford State Forest. These may be but remnants of the cedar swamps that were an important resource for the earliest settlers. "Sawing wood for shingles was a profitable business, and there was such a demand for them in the town that the inhabitants were forbidden to sell them out of town without special permission" (Bailey, 1880). Relatively few cedar swamps exist in Massachusetts, most being logged for ship-building and shingles many years ago.

No stands of old growth forest are known to exist in North Andover, nor is there much likelihood that any such stands exist in the region due to extensive agricultural land use for over 200 years. There are some individual specimens which are quite old, particularly 'boundary oaks' and street trees, such as white oak, various red oaks, sugar maples, beech, white pine and others. Such specimens should be sought out and preserved to remind us of what the primeval forest held when the land was first settled.

Only one state-listed plant species has been identified in North Andover by the Massachusetts Natural Heritage & Endangered Species Program. It is a shrub known as broom crowberry (*Corema conradii*) which was last seen in 1886 near Bruin Hill. This, and possibly other, rare/threatened/endangered species will be sought out and protected whenever possible.

Only three landowners temporarily protect forty-one acres of forested land through Chapter 61, the Massachusetts Forest Tax Law tax. This method of temporary land preservation has been successful at least in the short term since no land classified as forestland has been developed at least since the last Open Space Plan (1995). While more landowners are now considering this tax classification, the participation is very low. This very limited acreage is a reflection of either a lack of public knowledge of this program and/or the limitations of this tax classification as a method of protection. The primary limitation of these programs is a requirement that the land remain in that land use for ten years. From discussions with the Assessor's Office, landowners are wary of such restrictions. Information regarding this tax classification program should be made more available to landowners.

Today, the forests of North Andover (and New England) are faced with a myriad of stresses. Air pollution weakens numerous species, particularly white pines and other evergreens. The gypsy moth threatens many species. The once-dominant american chestnut (*Castanea dentata*) and stately american elm (*Ulm americana*) were decimated years ago by introduced pests. Some of our dominant forest trees such as maple, ash, and oak are threatened by a variety of pests and other stresses (Houston, 1981). The wildlife that depends on the forest are being threatened by the loss of native tree species and forest fragmentation. The issue of fragmentation is a difficult one for an individual community to deal with due to the limitations of working in a single community where the preservation of large tracts of forest is simply not practical. When protecting and managing forest land, biodiversity and the preservation of native species must be considered.

4.5 Fisheries and Wildlife

Fisheries

The protection of an important local fishery was stated as a condition of the incorporation of the Town of Andover in 1646. All rights to the land were sold to the settlers "provided that the Indian called Roger and his company may have liberty to take alewives in Cochichawicke River, for their owne eating" (Bailey, 1880). As the early mills industries grew, this fishery was of such importance to cause what may have been the first environmental regulation. In 1695, the Town granted permission for a saw mill on Cochichewick Brook "on condition that this do not stop the passage of the fish called alewives" (Bailey, 1880). Later, as the larger mills sprung up along the Merrimack and Cochichewick, the herring disappeared. Bailey mentions the presence of perch, bass and speckled trout in the 17th century (Bailey, 1880).

Today, our streams, ponds and lakes hold a variety of species including rainbow trout (*Salmo gairdnerii*), brown trout (*Salmo trutta*), brook trout (*Salvelinus fontinalis*), largemouth bass (*Micropterus salmoides*), northern chain pickerel (*Esox niger*), yellow perch (*Perca flavescens*) and

various panfish. The Massachusetts Division of Fisheries and Wildlife stock the Shawsheen River, Fish Brook and Boston Brook just outside the Town boundaries with various species of trout. These trout travel throughout the river system and are an important recreational fishery. Lake Cochichewick is not stocked since this would attract recreational use which has been considered a threat to water quality. The lake does hold panfish, pickerel, perch and largemouth bass.

The Merrimack River has recovered greatly from the affects of the mills. Shad (*Alosa sapidissima*), striped bass (*Morone Saxatilis*), the endangered shortnose sturgeon (*Acipenser brevirostrum*) and atlantic salmon (*Salmo salar*) have returned to the Merrimack while smallmouth bass (*Micropterus dolomieu*) have been successfully introduced. The success of the Merrimack River fishery is an example of the great potential for success in reclaiming resources which were lost or seriously degraded.

Wildlife

In rapidly suburbanizing communities such as ours, wildlife are displaced or threatened far sooner, and to a greater extent, than is commonly understood. A greater understanding of the interactions between species, between species and their surroundings, and between humans and wildlife, can result in the preservation of a greater diversity of wildlife. In an effort to gain this understanding, various studies have been made at the Mazurenko Farm Conservation Area. These studies have shown a far greater diversity of plants and animals than was previously known. The diversity of wildlife is likely due to the presence of a large wetland and a diversity of habitats present.

Table 4.51

Mammals of the Mazurenko Farm Conservation Area

Cottontail Rabbit (Sylvilagus floridanus)
Grey Squirrel (Sciurus carolinensis)
Long-tail weasel (Mustela frenata)
Mice, shrews (Soricidae sp.) and voles (Microtus sp.)
Mink (Mustela vison)
Mole (Talpidae sp.)
Raccoon (Procyon lotor)
Red Fox (Vulpes vulpes)
River Otter (Lutra canadensis)
White-tail deer (Odocoileus virginianus)
Woodchuck (Marmota monax)

(Source: Doucette, 1991)

These findings were the result of a winter tracking census. It was surprising to discover uncommon species such as mink, weasel and otter still inhabiting the open spaces and waterways of North Andover. Other uncommon species have been seen recently in North Andover. These include fisher (Marte pennanti), eastern coyote (Canis latrans) and the bald eagle (Haliaeetus leucocephalus). Beaver (Castor canadensis) have recently been discovered at the Mazurenko Farm Conservation Area and on the Shawsheen River. Wild turkey (Meleagris gallopavo) have been sighted at a number of locations. These are likely turkeys or descendants from 33 individuals introduced to a sanctuary within the Boxford State Forest in 1988. The habitat requirements of these uncommon species should be considered when protecting and managing open spaces.

The diversity of bird species in North Andover can be seen from the variety found in one 120-acre parcel. This one area boasts 49 species. A number of uncommon species have been observed at Rea's Pond and Mazurenko Farm Conservation Areas in 1990 and 1991. These include raptors such as barred owl (Strix varia), broad-winged hawk (Buteo platypterus), northern harrier (Circus cyaneus), northern shrike (Lanius excubitor) and red-shouldered hawk (Buteo lineatus); songbirds such as bobolink (Dolichonyx oryzivorus), eastern bluebird (sialia sialis), northern oriole (Icterus galbula) and pileated woodpecker (Drycopus pileatus); and game birds such as ruffed grouse (Bonasa umbellus), wild turkey (Meleagris gallopavo) and wood duck (Aix sponsa). A bird census was conducted at the Mazurenko Farm Conservation Area and is included in Appendix F. A bird census later conducted by the Merrimack Valley Bird Club identified 53 species in this general area (O'Grady, 1993).

Suburbanization can either benefit or harm wildlife. Certain species have adapted to humans and now thrive. These include mammals such as the gray squirrel (Sciurus carolinensis), skunk (Mephitis mephitis), red fox (Vulpes vulpes) raccoon (Procyon lotor), opossum (Didelphis virginiana) as well as birds such as the starling (Sturnus vulgaris), house sparrow (Passer domesticus), rock dove (Columba livia) and american crow (Corvus brachyrhynchos). These successful species are characterized by two features: all are very adaptable to the human landscape and most are scavengers.

Open spaces can provide a haven for native species in a growing community such as North Andover. One unfortunate result of the success of some species (particularly non-native ones such

as the starling and house sparrow) is the displacement of native species. This displacement sometimes takes unique forms. In the case of the cowbird (Molothrus ater), it lays its own egg in the nest of another (likely native) bird. The unknowing foster parent raises the intruder as its own. This example of nest parasitism may be related to fragmentation. The habitat needs of native species must be considered when managing open spaces.

Rare, Threatened, Endangered Species

The Natural Heritage & Endangered Species Program has identified the following 'Species of Special Concern' in North Andover:

Table 4.52

State-Listed Wildlife in North Andover

Type of Organism	Name	Last Observed
butterfly	hessel's hairstreak (<u>Mitoura hesseli</u>)	1989
dragonfly	mocha emerald (<u>Somatochlora linearis</u>)	1973
crustacean	mystic valley amphipod (<u>Crangonyx aberrans</u>)	1991
salamander	blue-spotted salamander (<u>Ambystoma laterale</u>)	1989

(Source: MA Natural Heritage & Endangered Species Program)

There has also been an unconfirmed sighting of spotted turtle (Clemmys guttata) and a confirmed sighting of a blanding's turtle (Emydoidea blandingii) which are species of special concern. The locations of these species are sensitive due to the tenuous nature of their existence. For this reason, these locations will not be made public but will be considered when evaluating lands for protection. There are likely other state-listed species in North Andover which have not yet been identified by the Natural Heritage Program.

Blue-spotted salamanders are one of a number of state-listed species which need vernal pools to survive. Vernal pools are temporary bodies of water which hold water for two consecutive months in the spring (typically March – May). These shallow depressions then dry up and are therefore free of fish which would prey on the eggs and young of frogs, salamanders and crustaceans. Nine of these vernal pools in Harold Parker State Forest have been certified to contain state-listed species and many more are likely to exist. Further efforts must be made to identify and protect these ephemeral resources using a certification process through the Division of Fisheries and Wildlife.

An effort to identify vernal pools throughout town was undertaken by the Conservation Administrator and a few committed volunteers in the spring of 1999. Sixty vernal pools have been certified and more are suspected. As well as containing certified vernal pools, North Andover has five habitat sites that have been deemed rare and unique. Every effort to protect these areas from disturbance must be made as such habitats may house endangered species of plant and animal (Site reference numbers WH 3089, WH 6005, WH 110, WH 458, WH 474, National Heritage and Endangered Species map 2000-2001).

4.6 Scenic Resources and Unique Environments

Historic Landscapes

The Massachusetts Department of Environmental Management completed an inventory of scenic landscapes in 1982. This project sought to identify "large, contiguous areas of outstanding scenic quality" (Green, 1993). Surprisingly, the vast majority of the inland scenic landscapes contained open areas and farmland. The openings in the dense forest promote the scenic quality of New England's rolling topography. This program identified a scenic landscape of approximately 7 acres in the "outstanding area of rolling farmland" north of, and surrounding, Lake Cochichewick. While DEM's designation carries with it no protection, it does highlight this area's unique scenic value which is worthy of protection. This scenic landscape can be seen on the map on the next page.

Prehistoric Resources

Prior to European settlement, inland sites such as North Andover were used as seasonal hunting grounds in the spring and fall and perhaps to till small gardens. Although no large-scale or town-wide archaeological survey has been undertaken, certain inferences can be made from the available data. The Massachusetts Historical Commission reports that a few archaeological sites have been unearthed along the present shoreline of Lake Cochichewick. (Other sites likely exist on the original shoreline which has since been flooded.) According to information compiled by Ripley Bulen in Excavations in Northeastern Massachusetts (1949), over one hundred prehistoric sites have been discovered in the Shawsheen and upper Ipswich River drainages. All of these sites are along streams or ponds. Native people frequented water bodies since many of the fish, plants and animals they sought could be found there. Rivers also provided transportation routes.

Considering the high percentage of prehistoric sites along water bodies, a site's archaeological potential should be investigated when any waterfront site is considered for acquisition. Prehistoric sites are prone to disturbance, vandalism and illegal excavation. Due to the sensitive nature of these sites, if any are discovered the exact location should not be made public.

Historic Resources

North Andover "includes several well preserved buildings and landscapes that characterize each phase of its evolution. Seventeen First Period (pre-1725) houses, fifty Georgian or Federal farmhouses, and several Federal and Greek Revival stores that formed the commercial Center Village still exist" (North Andover Historical Society). These historic homes, churches, mills and stores are included in three historic districts: The Old Centre, Machine Shop Village, and Tavern Acres. The Old Centre District contains 16 sites including a church, homes from as early as 1715, the North Andover Historical Society and the Museum of Printing. The Machine Shop Village contains 17 sites including impressive mill buildings, a church, and homes ranging from row housing to mansions. Tavern Acres is an early twentieth century residential development including the Olmstead-designed Memorial Park. The Historical Society has produced brochures to guide visitors on a walking tour of the historic districts. In 1995, the Town acquired Osgood Hill, an 1886 estate listed on the National Register with 164 acres on Lake Cochichewick.

The protection offered to cultural resources as a result of their designation as an historic district is limited. The local Historic District Commission implements regulations on any district it recognizes. Presently only one district is recognized by the local commission - the Old Centre. The Old Centre, Machine Shop Village, and Tavern Acres are recognized by the State Register of Historic Places. This designation provides little protection and only when public funds are involved in a

project. In general, many historic resources are held in private hands and are relatively unprotected by any law or regulation.

4.7 Environmental Problems

This section discusses certain environmental problems which do not fall into other larger categories. These include hazardous waste sites, abandoned landfills and air quality issues. Such issues can have an impact on a communities' open space and recreational needs.

Hazardous Waste

The North Andover Fire Chief is the Town's Hazardous Waste Coordinator. In this capacity, he investigates all reported, uncontrolled releases or improper storage of chemicals. After an initial investigation, the Fire Department notifies all authorities who may have an interest. Those notified would include local and state agencies such as the Board of Health, Conservation Commission, Department of Public Works, Police, the Massachusetts Department of Environmental Protection (DEP) and the property owner.

In 1987 under SARA TITLE III, the Town of North Andover established the Local Emergency Planning Committee (LEPC). The LEPC has now expanded to a regional LEPC which includes the communities of Andover, Haverhill, Lawrence, Methuen, Middleton and North Andover. The regional LEPC has its own website ([www.shore.net/~mvrlepc/.](http://www.shore.net/~mvrlepc/)). Under the provisions of SARA TITLE III, all facilities and responsible parties that are responsible for spills or releases of hazardous materials, oils or chemicals must report the incident at the local level.

From the 1940s to the 1980s, the Town of North Andover operated its municipal landfill at a site on Holt Road near the Merrimack River. This site was purchased by the Commonwealth of Massachusetts in 1981 and 1982 with an agreement that the Commonwealth would properly cap the landfill. Though long overdue, the landfill has recently been capped and the Department of Environmental Protection is entering a final stage to bring closure to the project. The capping of the landfill safeguards the public health, particularly due to its proximity to the Merrimack River which could quickly transport pollutants off site.

Air Quality

An active incinerator is located in North Andover, and another is located only two miles away in Haverhill. The presence of these waste facilities in the Merrimac Valley is a considerable burden to the air quality of the region. One is located adjacent to the former landfill on Holt Road. It is managed by the Northeast Solid Waste Consortium (NESWC) as a trash-to-energy plant. This facility took the place of the landfill when the landfill was closed in the 1980s. In July of 1999, The Massachusetts Department of Public Health announced a fish consumption advisory for both Lake Cochichewick and Stevens Pond. The study performed by the Department of Environmental Protection on fish toxins showed the amount of mercury found to be below the Food and Drug Administration Action Level, but within a level that may pose health concerns for pregnant or nursing women and children under 12. A recommendation was made to the general public on limiting the consumption of largemouth bass caught in Lake Cochichewick or Stevens Pond to two meals per month (North Andover Board of Health release dated July 21, 1999).

The second incinerator is managed by the Greater Lawrence Sanitary District (GLSD) and is presently inoperative. This facility is designed to burn sludge, which is the solid waste produced by the regional wastewater treatment plant. The incinerator was closed in 1988 due to the release of high levels of air pollutants. The GLSD has proposed to retrofit the incinerators with new technology

and producing a product that essentially pelletizes the sludge to be used as a fertilizer. GLSD is in the process of acquiring permits from the Town's various boards and eventually hopes to restart the incinerator. A capped ash landfill is currently on site and has been tested within required environmental parameters. Due to the possible health affects of incineration, sludge will not be burned.

Development Impacts

There are both short-term (during construction) and long-term (after construction) environmental impacts of land development. These impacts are particularly negative with regard to wetlands and water bodies, particularly when these wetlands and water bodies may be tributaries to a public water supply such as Lake Cochichewick. The Lake Cochichewick Watershed Plan (IEP, 1987) identified erosion in areas of new construction as one of the "primary sources of elevated suspended solids, nutrient and bacteria concentrations".

Erosion during the construction process and siltation of water bodies can have a variety of impacts, depending on the soil characteristics. "There are three general soil types - fine muck, clay, and sand - all of which must be kept from eroding into the water. Fine muck, if introduced into a stream, will cloud the water and create what is known as biological oxygen demand. This depletes the waters of dissolved oxygen (DO), causing a reduction in fish and other aquatic organisms who depend on the DO for respiration. Clays will create a milky cloud which may clog the gills of fish living in the streams' waters. Fine muck and clays impact waters on a short-term basis. Sand, however, may be the most harmful of all eroding soils because of its long-term implications. The sand fills in gravel beds, which is used by fish as spawning beds." (Maynard, 1992)

SECTION 5.0 INVENTORY OF CONSERVATION AND RECREATION LAND

There is an abundance of undeveloped land in North Andover. This open land is an important part of the community character and is one of the primary reasons why people choose to locate here and raise a family. Actually, much of this undeveloped land is **not** protected open space. Undeveloped land in North Andover includes: wetlands which are strictly regulated; private land which is not yet developed; protected open space and public land which has varying degrees of protection. This section will provide a detailed review of these various levels of protection.

5.1 Protected Open Space

The main source for identifying protected open space land in North Andover is the Merrimack Valley Planning Commission (MVPC) "Open Space Map". This map has been created with input from the North Andover Open Space Committee and The North Andover Trails Committee. The original map sources included the maps entitled "Protected Open Space of Essex County 1983 (1989 Revision)" by the Essex County Greenbelt Association; and the MassGis Open Space Map. The map presented in this document is a close approximation of the final Open Space and Recreation Map and is for reference purposes only.

5.1.2 Public-Protected Open Space

North Andover has benefited from the efforts of public and private organizations to preserve open spaces. The Commonwealth of Massachusetts, through the Department of Environmental Management, manages two state forests, portions of which are in North Andover (**Table 5A**). These parcels have been part of the state forest system for decades and include large tracts of forests, wetlands and water bodies. These forests contain some ecologically significant areas. Harold Parker State Forest is known to contain numerous vernal pools, a few are certified through the Division of Fisheries & Wildlife while Boxford State Forest includes portions of a large cedar swamp.

**TABLE 5A
Massachusetts Forest and Park Service**

PROPERTY	ACRE S	PRIMARY USES
Harold Parker State Forest (60% in NA)	3100	Recreation
Boxford State Forest (40% in NA)	828	Recreation

The Town of North Andover also owns open land with various levels of protection. Municipal lands are generally protected for conservation, recreation or watershed protection purposes. For the purposes of this section, 'conservation' shall refer to land used for wildlife habitat, resource management activities such as forestry, and resource-based recreation such as hiking. Municipally owned lands can be seen in **Table 5B**. This table does not include lands associated with schools.

TABLE 5B
Town of North Andover
Open Space Parcels

PROPERTY	ACRES	PRIMARY USES
Town Farm/Forest	170	Watershed, Conservation, Recreation
Mazurenko Farm	105	Watershed, Conservation, Recreation
Rea's Pond	15	Watershed, Conservation, Recreation
Cyr Recreation Center	88	Conservation, Recreation
James Swamp	57	Conservation, Recreation
Town Common	8	Historic Preservation, Recreation
Merrimack River Well	8	Water Supply
Shawsheen River	5	Flood Control, Conservation, Recreation
Memorial Park	3	Historic Preservation, Recreation
Riverview Street	1	Future Boat Ramp, Recreation
Foster Farm *	93	Conservation, Recreation, Future School Site
Osgood Hill *	165	Conservation, Recreation, Historic Preservation
Other ***	10	Conservation, Recreation

*New additions since 1995.

***Lot 124 Hidden Court (1 acre); Lot 151 Blue Ridge Rd. (9 acres).

An Access Survey has been completed to determine the accessibility of these open spaces for persons with disabilities. North Andover's municipally-owned open spaces have very limited facilities. What few facilities there are were not designed for persons with disabilities. Findings from the Access Survey will be used to ensure the accessibility of a representative sample of the Towns open spaces and recreational facilities.

The **Town Farm/Forest** is the largest parcel of municipal open space. The original 126 acres were purchased from Mr. Samuel Jenkins in 1856. The community's poor farm operated on this property for approximately 100 years. Pine plantations are also located on this property which may have been the work of the Civilian Conservation Corps in the 1930s. Additional acquisitions were made as late as 1985 (Leland parcel). Although not purchased for watershed protection purposes, 120 acres of the Town Farm now serves this vital purpose. A management plan (Seekamp Environmental Consulting) is near completion (2000) for this property. The baseball and soccer field construction is complete. The Nays Ropes Course is located at the Town Forest. The low and high challenge course is utilized by over 1,000 youth per year and is a real treasure.

The **Mazurenko Farm Conservation Area** was purchased in 1988 with the assistance of a \$1 million grant from the Commonwealth of Massachusetts. Almost all of this property is in the Lake Cochichewick watershed. The water supply was then under extreme stress from development in the watershed and this was the driving force behind its purchase. This parcel was classified under Chapter 61A as farmland. When the landowner attempted to develop the parcel, the Town exercised its option to purchase. Rea's Pond is adjacent to the Mazurenko Farm and was the first piece of

conservation land purchased by the Town, in 1975. This 15-acre site includes a pond that is a popular fishing spot.

The **Cyr Recycling and Recreation Center** is located in the extreme southern end of Town and has been used by the DPW as a storage and leaf composting facility. Two soccer fields and 2 baseball fields are located on this property. A portion of the Bay Circuit Trail is also located here. This trail connects the Boxford and Harold Parker State Forests in North Andover. The Bay Circuit is greenbelt through 50 communities containing a series of trails, totaling approximately 200 miles, which runs from Ipswich to Duxbury.

James Swamp is 57 acres in size and has 3 soccer fields and a basketball court. This property also includes heavily wooded land which contains hiking trails (established 1998). The Reynolds Cider Mill and two outbuildings are also located on this parcel, these buildings were leased to an adjacent property owner prior to the donation of the land to the town in 1971.

The **Town Common** was created between 1880 and 1956 as various parcels were acquired and existing structures were removed. The site is a popular picnic spot and is the setting for various special events and recreational programs.

Portions of the **Shawsheen River** floodplain have been taken in lieu of taxes and serve a valuable flood control function and protect important wildlife habitat. Additional donations of land have been received as part of a subdivision approval. Plans for a trail system along the river are presently in progress.

Memorial Park is located directly across from the Stevens Library. This park is dedicated to the men and women of North Andover who, during the two hundred and seventy-five years of existence, have rendered the State or Nation patriotic service of either a civic or military nature. This property was a gift to the Town from the Stevens family. Restoration, which followed the original Olmsted Park design, was begun in 1996 from donations received from many local sources.

The Town also owns two small parcels along the Merrimack River. One acre on **Riverview St.** is the site of a proposed boat ramp. Plans for the construction of the boat ramp have now been put aside due to lack of public support. A public well is located on an eight-acre parcel next to the river but has never been used since the water quality would require treatment. This well may be used in the future if needed.

Osgood Hill was purchased in October 1995 through a special Town meeting. The citizens of North Andover purchased the land and the Stevens Mansion in 1994 for permanent preservation and the protection of the Town's water supply. The entire parcel is in the watershed to Lake Cochichewick, our water supply. The Osgood Hill Property sits on 165 acres of land on which the 1886 home of Moses T. Stevens (1825 – 1907) still stands. The Stevens Estate Mansion and related buildings are operated by the Trustees of Osgood Hill for conferences and functions in a manner similar to that done formerly Boston University. Articles 15 and 16 of the May 1997 Town Meeting authorized an annual Osgood Hill operating budget and established a 7 member governing board. Article 5 of the October 1994 special town meeting contains language that requires that disposition of land or buildings require approval by vote at a town meeting.

Foster Farm was purchased in 1998 through an action of Town meeting. The 92.72 acres of vacant farmland and woods was purchased from the estate of Earl L. Foster. This land acquisition was under the provisions of Chapter 61A. For the purposes of management by the Town, the property is comprised of 3 parcels designated as the following. For more history on Foster Farm and

the Barker Farm reference *Founding Farms, Portraits of 5 Massachusetts Family Farms* by Stan Sherer and Michael E. C. Gery.

- Parcel A – Future School Site
- Parcel B – Protected Open Space
- Parcel C – Protected Open Space

While most of these lands serve some conservation purpose, few were acquired and are protected in perpetuity as open space. **Table 5C** details the specific properties that are under the jurisdiction of the conservation commission. This has been done as a condition of state grants received for their acquisition.

**TABLE 5C
Conservation Commission
Property Jurisdiction**

Mazurenko Farm
Rea's Pond
Riverview Street Boat Ramp Site
Town Farm/Forest *

* Action of 1997 Town meeting.

Public land, which was acquired for conservation, recreation, agriculture or other specified public uses, is considered a public resource under Article 97 of the State Constitution. Therefore, any change in land use proposed by a local government requires a 2/3 vote of both Town Meeting and the State legislature. This applies to all public land in Massachusetts, whether it was purchased by local or state government. This provision of state law does protect such public resources.

The issue of control/jurisdiction is not an academic one. With the real potential for conflicting public interests, the 1995 Open Space and Recreation Plan recommended that each parcel of town-owned land should be placed under the management of a specific board or department. As of the 1999 rewrite of this plan, this has yet to be done with the exception of those listed in **Table 5C**. As a general rule, a public board or commission should hold this control with expertise in the appropriate area. This could include the Conservation Commission, Open Space Committee, Trails Committee, Recreation Council and possibly others. In this way, the public interests served by these lands will be managed properly.

5.1.2 Private-Protected Open Space

Two private land trusts also manage land in North Andover. **The Trustees of Reservations**, the oldest land trust in the nation, manages three properties in North Andover (**Table 5D**). Weir Hill Reservation is located on the shore of Lake Cochichewick. It has 1 mile of frontage on the lake and is the largest piece of protected open space in the watershed of our public water supply. Stevens-Coolidge Place is 91 acres in size and includes an historic house/museum with 5 acres of formal landscape, 30 acres of hayfields and 6 acres of meadow. The property has considerable street frontage that adds to the rural character of the old center historic district. Ward Reservation includes a variety of natural landscapes and includes Holt Hill, the highest point in Essex County, with fine views of the distant Boston skyline.

The Essex County Greenbelt Association is a private land trust that holds title to 334.7 (**Table E**)

acres of land in North Andover and controls conservation restrictions on one other parcel. These include the Farnsworth Reservation, which abuts the Town Farm and Smolak Farm, Potters Field on the shores of Lake Cochichewick, and a number of parcels abutting the Boxford State Forest

TABLE 5D
Trustees of Reservations

PROPERTY	ACRES	PRIMARY USES
Weir Hill	192	Watershed, Recreation, Conservation
Stevens-Coolidge Place	91	Historic
Ward Reservation*	640	Recreation, Conservation
TOTAL	923	

* Half of total property in North Andover

TABLE 5E
Essex County Green Belt Association

PROPERTY	ACRES	PRIMARY USES
Fish Cedar Swamp	6.0	Conservation
Farnsworth Reservation	50.0	Conservation
Chaplin Cedar Swamp	61.5	Conservation
Wilmot Lot	11.0	Conservation
Chaplin Nike Site	43.8	Conservation
Bruin Hill	62.3	Conservation
Purgatory Swamp	91.0	Conservation
Christmas Tree Estate	9.1	Conservation
TOTAL*	334.7	

- Excluding Potters Field (3.0 acres)

5.1 Planned Residential Developments

Planned Residential Developments (PRD's) are communities or clusters of homes which create a traditional New England Style landscape surrounded by usable open space. The number of homes allowed in a PRD subdivision is the same as allowed by a conventional subdivision on a given parcel of land. However, the lot sizing is smaller, allowing a reduction to the developed portion of the parcel. The undeveloped portion of the parcel is then reserved as open space. This space excludes parking areas, but includes required setbacks and walkways. The usable open space shall be open and unobstructed to the sky; however trees, planting, arbors, flagpoles, sculptures, fountains, swimming pools, atriums, outdoor recreational facilities and similar objects shall not be considered obstructions. The developer owns PRD open space parcels until the street is accepted at a Town Meeting. The ownership is then transferred to the Town, Homeowners Association, or Private Land Trust. Some of the main reasons for PRD's are listed below.

- To promote the more efficient use of land in harmony with its natural features.
- To protect water bodies and supplies, wetlands, flood plains, hillsides, agricultural lands, wild life, and other natural resources.
- To permit greater flexibility and more attractive, efficient and economical design of residential developments.
- To preserve open space in the Town which would be available for public use.

For subdivision PRD's the minimum usable open space requirements shall be 35% of the total parcel area; and no more than 25% of the total amount of required usable open space shall be wetlands. For site planned PRD's the minimum usable open space requirements shall be 50% of the total parcel area; and no more than 25% of the total amount of required usable open space shall be wetlands. For all PRD's the Usable Open Space shall be owned in common by and readily accessible to owners of all units in the PRD or by any of the following groups:

- A non-profit organization or trust whose members are all the owners and occupants of the units.
- Private organizations including but not limited to The Trustees OF Reservations or Essex County Greenbelt Association whose primary function is preservation of open space.
- The Town of North Andover.
- Any group as indicated by the Planning board, which exists or is created for the purpose of preserving open space for the owners of the units located in the PRD Project.

Further, restrictions shall provide that the Usable Open Space shall be retained in perpetuity for one or more of the following uses: Conservation, Agriculture, or recreation. (M.G.L. Chapter 184, Section 31). **Table 5F** on the following page lists the accepted PRD's located within The Town of North Andover.

TABLE 5F
North Andover Accepted PRD's
T.O. = Town Owned H.O. = Homeowners ECGA = Essex County Greenbelt Assoc.

NAME	LOCATION	LOTS	ACREAGE	ACCEPTED	FINAL OWNER
Phillips Common	Mass. Ave	TBD	6.94	YES	T.O
North Andover Estates	Chestnut/Holly Ridge St.	42	22.0	NO	T.O.
White Birch Estates	Bradford St.	6	3.3	NO	T.O.
North Andover Heights	Rosemont Dr.	19	9.4	NO	T.O.
Woodland Estates	Rt. 114/Old Cart Way	29	22.0	NO	T.O.
Cobblestone Crossing	Mass. Ave	17	3.6	NO	H.O.
Hickory Hill II	Barker St.	20	55.2	YES	Private: Conservation Restriction
Cobblestone Crossing II	Copley Circle	5	1.8	NO	H.O.
White Birch II	White Birch Ln.	10	4.0	NO	H.O.
Christmas Tree Estates	S. Bradford St.	4	9.1	NO	ECGA
Foxwood	Salem St.	49	18.1	NO	T.O.
Seven Oaks	Sugarcane Ln.	6	18.1	NO	T.O
Jared Place III	Candlestick Rd.	8	5.2	NO	T.O.
Pinewood	Salem St.	17	9.6	NO	T.O.
Lost Pond	Foster/Wintergreen St.	13	15.5	NO	T.O.
Jared Place IV	Boxford St.	19	64.0	NO	T.O.
Woodlea Village	Chestnut St.	11	10.8	NO	H.O.
Salem Forest IV	Raleigh Tavern Ln.	6	26.9	NO	T.O
Settlers Ridge	Bradford St.	11	5.0	YES	T.O
Brookview Estates	Boxford St.	15	25.9	NO	T.O
TOTAL ACREAGE			336.6		

5.3 Unprotected Land of Conservation Interest

A comprehensive review of all land in North Andover was completed using the Assessor's records. This effort investigated such factors as ownership, current use, condition of land, presence of wetlands and degree of protection as required by the Open Space Planners Workbook. The Open Space Advisory Committee's 1995 recommendations of appropriate criteria, with modifications, are still valid in 2000. It is the recommendation of the Open Space Committee that the following still be

used for evaluating land of Conservation Interest.

- Land adjacent to a Lake Cochichewick Tributary.
- Land within the boundaries of the Lake Cochichewick Watershed.
- Land abutting existing/protected Open Space.
- Land with development risks (i.e. private ownership chapter 61 or APR status, Town Property)
- Unique Aesthetics/Historic Value/Community Character.
- Feasibility of a Trail Network & Adjacent Network(s).
- Unique Wildlife-Wetlands/River Corridors/Riparian Habitat Values.

5.4 Public Recreation Areas

5.4.1 Parks and Playgrounds

North Andover has **16** public recreational facilities. This includes a combination of ballfields, recreation areas and playgrounds. **Table 5G** provides an overview of these facilities.

TABLE 5G
Town of North Andover
Recreational Areas

PROPERTY	Size (acres)	Soccer	Baseball	Softball	Football	Basketball	Skate-board	Play-ground	Tennis	Volleyball	Ropes Course	Track
Aplin Playground	1.8		1			1	1	1				
Chadwick Fields	3.0			3		1		1				
Cyr Recreation Center	88	2	2									
Drummond Playground	5.0			1		1		1				
Grogan's Field	4.7		1			1						
Reynolds Fields	6.0	4		1		1		1				
Carl Thomas Playground	4.7		3			1		1				
Gallagher Field	3.0	1	1								1	
Stevens Pond Beach	1.4							1				
Atkinson/Middle Schools	38.3	5	1	2	2	2		1				1
Bradstreet School	1.2							1				
Franklin School	8.8		2					2				
High School	44.5	6	1	1					6			
Kittredge School	6.5			1		1		1				
Thomson School	3.0		1			1						
TOTAL	207	18	13	9	2	10	1	11	6		1	1

5.4.2 Hiking Trails

North Andover has many miles of scenic hiking trails located on numerous public and private properties throughout the Town. These trails are available year round for hiking, picnicking, nature walks, bird watching, and in the winter, cross-country skiing. The trails on Town owned properties have been developed and maintained by the North Andover Trails Committee (NATC).

The NATC was formed in October 1991. It was initially comprised of a group of volunteers whose plan was to open up trails in North Andover that would link the town via an extensive trails network. The NATC has been operating with the recognition and support of the North Andover Conservation Committee since the fall of 1994. Newsletters and financial accounts were set up at this time by the Conservation Committee to support the NATC. Since that time the trails committee has established a total of 17 trails on 8 separate properties totaling approximately 12 miles.

Today the Trails Committee is exclusively responsible for the maintenance of these trails at no cost to the town. The Trails Committee exists thanks to the year round efforts of its many volunteers and through public support via membership donations.

Table 5H identifies all public trail systems within the Town of North Andover. **Table 5J** identifies the trail systems that are presently being developed. The North Andover Trails Committee will be publishing trail maps of all the properties listed in Table 5.3.1 in March 2000. Information on these trail systems may also be found at the North Andover Trails Committee web sit at www.natrails.org.

TABLE 5H
Developed Public
Recreational Trails

Property	Ownership	Number of Trails
James Swamp	North Andover	2
Town Forest	North Andover	1
Town Farm	North Andover	1
Foster Farm	North Andover	1
Mazurenko Farm	North Andover	7
Rea's Pond	North Andover	1
Osgood Hill	North Andover	3
Shawsheen River	North Andover	1
Weir Hill	Trustees Of Reservations	8+
Ward Reservation	Trustees Of Reservations	5+
Harold Parker	Mass. Forest & Park Service	10+
Boxford State Forest	Mass. Forest & Park Service	10+
Bay Circuit Trail	Private, Town, and State Owned	1

**TABLE 5J
Planned Public
Recreational Trails**

Property	Ownership
Essex Railroad Rail Trail	North Andover
Foster Farm (Parcel C)	North Andover
Merrimack River (to Haverhill)	North Andover

The North Andover Trails Committee together with the North Andover Open Space Committee has developed a long-range 5 year plan to link all North Andover neighborhoods, open spaces, neighborhood paths, recreation areas via an extensive trails network. The crucial part of this plan is the Essex Railroad Rail Trail. The Rail Trail is the main link with all other open spaces, neighborhoods, and recreation areas within the Town. The North Andover Bicycle Advocacy Committee (NABAC) was formed in June 1998, and has worked with the above committees as an advocate for the Rail Trail. These committees have also worked with similar groups in the neighboring towns of Middleton, Danvers and Peabody.

The Essex Railroad was completed in 1848 connecting Salem, Peabody, Danvers, Middleton and North Andover. Sections of the 7 mile route through North Andover were abandoned between 1926 and 1981. Many parties, including the town, various utilities and private landowners currently own the former right of way. Hikers, equestrians and bicyclists currently use much of the route, while other sections are overgrown or have been privately developed. One section of the route is used by the Bay Circuit Trail. The Town of North Andover conducted a Greenway Feasibility Study in 1994 as the first phase in developing this multi-use trail. Phase 2 of this work, involving property ownership research, mapping and conceptual design begins 1Q2000, funded by the Massachusetts Highway Department with Federal ISTEA Transportation Enhancement Funds. Details of this plan are located in the Appendix section of this report.

The plans for the proposed Essex Railroad Rail Trail involve development of the currently accessible sections and determining alternatives for those sections privately developed. The ultimate goal is to develop a paved path to allow for the most diverse use of the route. The town's efforts are coordinated through the Office of Community Development and Services. Information is available from the NABAC at their website at <http://www.amateur-sports.com/nabac>.

An Access Survey has been completed to determine the accessibility of these recreational facilities for persons with disabilities. North Andover's recreational facilities are aging and therefore were not designed for persons with disabilities. Findings from the Access Survey will be used to ensure the accessibility of a representative sample of the Towns open spaces and recreational facilities. There are improvements and repairs that are needed at each of the recreational properties listed in Table 5.4. These repairs were listed in the 1995 Open Space and Recreation Report. A summary of this 1995 list has been forwarded to Bill McEvoy, (Recreation Director) for review and update.

5.5 Private Recreation Areas

North Andover has a number of private recreational facilities. These private facilities are listed in **Table 5K**.

**TABLE 5K
Private Recreational Facilities**

Andover/North Andover YMCA, Andover
Brooks School - pool, tennis, skating
Merrimack College
North Andover Country Club
North Andover Riding Academy
Willows Racquet and Fitness Club
Windrush Farms Riding Academy

5.6 CHAPTER 61, 61A, & 61B

Currently there are 3 landowners that utilize Chapter 61-tax classification (**Table 5L**), 6 landowners (**Table 5M**) utilize Chapter 61A-tax classification, and 18 landowners that utilize Chapter 61B-tax classification (**Table 5N**). These classifications are intended for parcels of 5 or more acres that are retained in a natural state and used for forestry, recreational, and agricultural purposes.

**TABLE 5L
Chapter 61
Forestry**

OWNER	ACREAGE
Adams, G.B.	15.37
Cudhea, A.	12.90
Cullen, J.	12.70
TOTAL	40.97

**TABLE 5M
Chapter 61A
Agricultural**

OWNER	ACREAGE
Barker Farm	195.00
Forgetta Farm	12.56
Farnum Farm	505.33
Windrush Farm	145.60
Roche Farm	27.02
Kittredge Farm	32.17
Calzetta Farm	7.75
Eldred Farm	60.75
Lambert	15.60
Manzi	22.73
Rea's Farm	45.17
Tighe/Whippor- Will Farm	19.00
Young	20.02
Hart, M.	17.42
Farr, G.	8.47
Finbury, L.	6.56
Edgewood Farm	29.5
TOTAL	1170.65

**TABLE 5N
Chapter 61B
Recreation-Open Space Land**

OWNER	ACREAGE
Hornbeck	12.0
Leland	6.5
Rullo	8.0
Goldstein *	23.0
Bailey (FT)*	19.8
Ulrich*	10.4
TOTAL	79.7

*Additions since 1995

The potential for new recreation land and additions to the Chapter 61B classification was investigated. Few new parcels were determined to be of recreational interest. From a review of the survey results, there is little support for acquisition of land for recreation areas but strong interest in more/better maintained facilities at existing recreation areas/playgrounds. *Smolak Farm is an Agricultural Preservation Restriction (APR) with a total of 152.27 acres.*

6.0 Community Goals

In the five years since the prior Open Space and Recreation Plan, North Andover has experienced significant population growth, development of Open Space, and acquisition of Open Space by the Town. Accordingly, this plan draws from the 1995 Community Goals and considers the recent growth related issues as well. Current community opinions and attitudes were uncovered by the work of the North Andover Master Plan Committee, and the results were used in crafting the Community Goals for this section. The committee gathered opinions from the community in 1997 through Neighborhood Meetings and Phone Surveys. Much of the community opinion related to drinking water quality, preservation of Community Character, and the value of Open Space and its Recreational uses.

6.1 Description of Process

The North Andover Master Plan Committee gathered input for Community Goals began in 1996 with a series of Neighborhood Meetings, organized to speak with a cross section of North Andover citizens in focus groups. Issues and opinions expressed in these meetings were prioritized by the Master Plan Committee and used as a basis in constructing questions for the Phone Survey. Each neighborhood meeting lasted approximately one and one half-hours with an average attendance of six to eight people. Overall, nineteen meetings were held with an estimated 120 people attending.

The Phone Survey, based on the input from the Neighborhood Meetings, was conducted in February 1997 with phone calls from committee members and volunteers. The phone numbers were randomly selected, assigned precinct numbers and sorted by precinct. An equal number from each precinct were provided to the callers for an even geographic distribution. Responses were gathered from all six precincts in North Andover with a fairly even representation. Once completed, the effort generated 247 valid Phone Surveys, creating a 90% confidence level, plus or minus 5%.

A summary of these surveys and broad based Community Goals were presented and approved at the North Andover Annual Town Meetings in May of 1997, '98 and '99. The updated Open Space and Recreation Plan was presented for approval to the North Andover Conservation Commission, Planning Board and Board of Selectmen at public meetings in the spring of 2000.

6.2 Statement of Open Space and Recreation Goals

Interaction with the citizens of North Andover reinforces the historical perception that the Town is fortunate to have a great diversity of natural, cultural and recreational resources. Protection of the Lake Cochichewick Watershed remains the most highly valued natural resource, followed by maintaining the community's "rural, small town feel". Preservation of Open Space, wetlands, wildlife and river corridors in the community naturally emerge as necessary actions to meet these goals.

Conservation of wetlands inside and outside the watershed is essential to preserving a high quality watershed for the drinking water supply at Lake Cochichewick. Additionally, preservation of diverse New England forest, Open Space and river corridors provide enhanced wildlife habitats to help maintain the effective wetlands needed for watershed protection. The Town's rural character is also preserved, as these conservation measures often protect scenic landscapes, such as hilltops, fields and farmland. Protection of these diverse resources can only be accomplished through a multi-faceted approach including public awareness, education, planning, management and regulation. To be successful, protection measures must continue to be proactive and engage the public more consistently and successfully.

North Andover is a community with a high level of participation in recreational programs. Youth athletic programs and hiking are among the most important and popular local activities. Athletic needs must be met with proper maintenance of facilities, adequate playgrounds and field space. Recreational hiking activities can be enhanced with improved Trail systems and linkages between open space parcels. Similarly, access to regional facilities such as the Merrimack River is also important to the community's overall recreational program.

7.0 Needs Assessment

This section reviews some important features of the previous sections to identify specific Community Needs. Therefore, citizens survey results are presented to define community priorities, and analyses from the Community Setting, Environmental Inventory, and Inventory of Lands sections refine these priorities into specific needs for North Andover.

Citizens Survey Results

The Master Plan Phone Survey of 1997 provided the most objective and detailed picture of citizens opinions regarding North Andover. In total, the results of the survey showed that the top community issue of concern was the quality of the School System, followed by protection of the Lake Cochichewick Watershed, Conservation of Open Space and Rural Character, and Limiting Population Growth. An overview of the survey, including Open Ended Questions, Relative Ranking of Non-Education Issues, and Statements of Choice appears below.

Open Ended Questions:

<u>Question</u>	<u>Top Answers</u>
How do you like North Andover as a place to live?	Very Desirable (75%) Somewhat Desirable(22%) Somewhat Undesirable (3%)
What two issues most influence your positive opinion?	Educational System (28%) Open and Rural Character (25%)
What would you want as your vision for North Andover?	Quality Schools (32%) Rural Character (20%)
What has been the most negative change in recent years?	Too Much Development (39%) Too Much Traffic (17%)
How would you correct this negative trend?	Limit Growth (20%)

Relative Ranking of Non-Education Issues:

Citizens were asked to specify their opinions about the relative importance of the four factors below.

<u>Factor</u>	<u>Very Important</u>	<u>Important</u>	<u>Not Important</u>
Water Supply Protection	90%	9%	1%
Control of Population Growth	61%	28%	6%
Open Space Preservation	40%	43%	9%
Provide More Affordable Housing	10%	47%	30%

Statements of Choice:

Citizens were given a choice of two mutually exclusive possibilities and asked to identify the one they feel is best for the Town.

- Use Town funds to purchase Open Space (**55%**) or Increase Town Budgets to allow growth (**23%**).
- Develop stricter Building Controls (**75%**) or Allow more Flexibility (**17%**).
- Leave Open Space as natural (**40%**) or Develop as Active Parks (**35%**).

For the purposes of this Plan, the Educational responses are ignored. Therefore the Open Space and Recreational issues of primary importance for the Town are:

- Protection of the Lake Cochichewick Watershed
- Conservation of Open Space and Rural Character and
- Limiting Population Growth

7.1 Resource Protection

Lake Cochichewick Watershed Protection

The protection of the primary public water supply source will always remain one of the primary goals of this community. This goal is particularly difficult to attain since only 25% of the land within the Lake Cochichewick Watershed is protected open space. This being the case, the Town needs to use **legal protection measures and regulations** designed to promote the common good. Areas of special importance include:

1. Any planned development of open space within the Watershed should be closely considered for water quality implications.
2. Town boards need to pay particular attention to development and disturbance in and around tributaries feeding into the Lake, including buffer zones.
3. Continued elimination of septic systems within the Watershed.
4. Close scrutiny of road maintenance practices (i.e. salting and sanding) within the Watershed.

North Andover also needs to maintain a special relationship with a small number of substantial land owners within the Lake Cochichewick Watershed. The town needs to be proactive with the owners of **The North Andover Country Club, The Brooks School, and the Rolling Ridge Conference Center**. A cooperative and friendly relationship with these key organizations can be an effective approach to maintaining the conditions for good water quality.

The Town should also continue pursuing purchase of the **Carter-Renshaw property**, located inside the Lake Cochichewick watershed. This is a key parcel within the watershed, as it contains a prominent hilltop above the Rea Pond and tributary to Lake Cochichewick. Development of this terrain would undoubtedly cause water quality problems, due to its close proximity and its contiguous hydrology. This 100+ acre parcel in North Andover and Boxford was for sale as recently as 1998 and the Town was unsuccessful in authorizing the necessary funds for purchase.

A similar parcel of currently unprotected open space exists on the opposite shore of Lake Cochichewick, situated between the Osgood Hill property and the Weir Hill Reservation. Its location on the lakeshore holds a large potential impact on water quality if the area is developed. The town

needs either to purchase the open space or seek to arrange a perpetual covenant, preserving the valuable watershed property.

The town also needs to take advantage of **State Environmental programs** as well as local programs to help preserve Lake Cochichewick water quality. The Massachusetts Department of Environmental Protection can provide useful methods in watershed protection and updating of the 1987 Watershed Plan.

Finally, the Town needs to **increase awareness** of private citizens on the subject of Water Quality protection, especially the residents within the Watershed. Use of Lawn Fertilizer and proper maintenance practices of Septic Systems are two important factors which the individual homeowner has significant control.

Protection of Open Space and Rural Character

Protection of the Town's Rural Character has been a common theme in historical citizen surveys as well as the most recent 1997 Phone Survey. The citizens clearly wish to preserve the natural resources in town for high quality Open spaces and Recreation. Along with effective Management of currently Protected Open Space, the Town needs to link existing Open Space parcels and create valuable Wildlife and River Corridors. These corridors function to create enhanced habitats for vegetation and wildlife, and thereby provide more effective Buffer Zones and higher quality wetlands.

Several key linkages have been identified to achieve this goal of enhanced Open Spaces and higher quality wetlands. These Open Space linkages are:

1. Protect the natural areas west of Foster Street (40 to 50 acres) which **link Foster Farm (93 acres) with the Town Forest (170 acres) and Farnsworth Reservation (50 acres)**. Combined with approximately 50 acres of Open Space at Smolak Farm, this potential Open Space parcel could be larger than 400 acres. This linkage has the added feature of Mosquito Brook, thereby providing an enhanced habitat to a broad diversity of wildlife and vegetation.
2. Protect the natural area, known as **Salem Forest IV** (approximately 75 acres) which links the Harold Parker State Forest open space parcels along Raleigh Tavern Lane (approximately 130 acres) and Campbell Road (approximately 90 acres). This potential 300 acre open space contains a substantial section of Boston Brook, which could also provide a high quality habitat to a broad diversity of life forms. The value of this potential open space is furthered by its location adjacent to Farnum Farm, consisting of approximately 500 acres of working farmland. Although under no perpetual covenant, the addition of the Farnum Farm area creates a contiguous open space corridor well over 700 acres.

Limiting Population Growth

In 1996, the Town of North Andover adopted a Growth Management ByLaw, aimed at slowing the rate of Residential Development to a reasonable level. This was in response to fears that Population Growth could easily outpace the Town's Planning and Budgeting processes in place. Building permits were limited to a total of 80 per year. The town needs to continue administration of this ByLaw until potential development conditions slow to a more manageable pace.

7.2 Community Needs

Meeting the Community's needs in the Open Space and Recreation Plan sets the stage for citizens to interact first hand with the Town's natural features, via recreation, and develop an increased appreciation of them. This first hand awareness is a source of support for the preservation and enhancement of the Town's natural resources, recreational facilities, and open spaces.

Historical surveys indicate that the highest level of recreational involvement in North Andover is in the **Youth Recreational Sports programs**, such as Soccer, Baseball, Softball, Football, and Lacrosse. Members of the Youth and Recreational Sports organizations have combined resources with the Town to make great strides over the past five years in upgrading recreational facilities. Evidence of this is:

- ◆ Refurbishing and irrigation of the youth Baseball diamonds at the Carl Thomas baseball complex.
- ◆ Refurbishing and irrigation of youth Soccer fields at Sargent School and Town Forest.
- ◆ Construction of irrigated Soccer and youth Baseball fields at the Cyr Center.
- ◆ Construction (in progress) of a new Youth Center at Johnson Street.

These upgraded facilities must continue to be maintained properly to retain their peak condition. To date, informal agreements between the Town's DPW and different recreational groups have combined resources for adequate maintenance. These agreements and maintenance plans need to be formalized to insure that the upgraded facilities will retain their high quality. In a similar way, the Town must continue to work with the recreational groups to promote further improvement of the Town's recreational facilities. This includes **school and neighborhood groups** as well, for the continued improvement and upgrading of playground facilities in North Andover.

The next level of recreational involvement is for adult recreation activities, such as jogging, biking, hiking, skating, skiing, and rollerblading. These forms of activities are traditionally supported by **Trail Systems** in town. The North Andover Trails Committee has establishing natural hiking and biking trails in multiple locations, in the last five years. Although this constitutes a good start, further work is needed to meet the hiking and similar needs of the citizens. The Trails group is currently working with others to establish the North Andover Rail Trail, comprised of an old rail bed running the length of North Andover. This effort needs to be completed, as the Rail Trail would serve as the "back bone" of the planned Trail System, linking together many of the existing trails, and providing a significant improvement in the biking and rollerblading options in town. Another key trail in the planning stage is the Cochichewick Brook Trail, spanning the route of the historic Textile Industry between Stevens Pond and the Merrimac River. This trail proceeds along the brook, passes by several Mill Ponds and Mill Buildings and contains several cultural and historic vistas along the way.

Along with establishing of new trails, the Town needs to improve the Publicity of Recreational and Conservation activities. Trail head signs are badly needed on most of the established trails, so most of the existing trails remain unknown to most citizens. Trail maps of the entire Town as well as for individual trails need to be posted at logical locations to increase this awareness. Once the trail system is established and documented, publishing a "North Andover Trail Guide" would further improve awareness both inside the community as well as in neighboring towns. Finally, well publicized Conservation and Clean Up activities can improve general awareness of the trail systems and improve their quality as well. These activities, usually coordinated with Earth Day, can also provide education of the general public on proper recreational use and conservation practices.

7.3 Management Needs

The community's growth must be controlled through diligent enforcement of the existing methods and through the formulation of new regulations as needed. Survey respondents overwhelmingly favored a growth policy which "regulated growth in existing developed areas". Other responses, and much experience, have shown that there is a general lack of understanding of the growth control process. Citizens should be better informed of the growth control process and its limitations. Each interaction between staff or board members (from the Division of Planning) and the public must be treated as an educational opportunity.

The process now in place to control the community's growth and protect natural resources must be constantly evaluated and improved. Efforts must be made to attract motivated residents to become engaged in the planning and decision-making processes and to provide them with the tools and training to perform this vital function. While boards and commissions operate under both the General Law and the Town Charter with a certain level of autonomy, they should keep in close contact with the appointing authority to work in harmony toward shared goals.

Town officials should work with other agencies and organizations such as the Department of Environmental Management, the Division of Fisheries and Wildlife, The Trustees Of Reservations, and the Essex County Greenbelt Association to protect natural resources and provide recreational opportunity for area residents.

8.0 Goals and Objectives/Recommendations

The following recommendations were developed from a review of the results of the inventory, the recreation survey, discussions and meetings with the Open Space Advisory Committee, and a review of the community's previous major planning efforts. The results of the planning efforts produced the following community goals in brevity:

- **Protect the Town's Watershed**
- **Preserve the Rural Atmosphere and Uniqueness of North Andover**
- **Expand North Andover's Recreational Programs**

The goals, the success/failure of past efforts, the findings the inventory, interviews, and many Open Space Committee meetings, are the foundation for the following recommendations with which to attain these goals.

These goals can be attained through a combination of general methods including:

- Public Awareness
- Education and Outreach Programs
- State and Local Planning Initiatives
- Natural Resource Management
- Regulations

The next **sixteen** recommendations discuss the general methods in greater detail and offer techniques of how the identified goals can be addressed and accomplished.

1. Protect Valuable Water Resources

The foremost concern of North Andover is protecting the water supply. The following is a preliminary list of ideas that may help further protect the water supply:

Approximately twenty-five percent (25%) of the land in the Lake Cochichewick Watershed is protected. This figure needs to be increased in order to protect the future of our water supply.

Steps to increase protected watershed lands include:

- Designate the Lake Cochichewick Watershed as an Area of Critical Environmental Concern (ACEC) through the Massachusetts Department of Environmental Management. An overview of ACEC can be found at: www.state.ma.us/dem/programs/acec/overview.htm
- Keep updating the Watershed Plan every 10 years.
- Reconvene the Lake Cochichewick Watershed Council and identify tasks to be accomplished.
- The Zoning Board of Appeals should be an active part of the watershed protection effort and should severely restrict the granting of any waivers in the watershed.
- A meeting of all citizens interested in watershed and water resource issues should be held annually at a site along the shores of Lake Cochichewick. This gathering will provide landowners and concerned citizens with an opportunity to educate themselves on various resource protection issues.

- Research new zoning techniques and revisit successful techniques used in the past. For example:

Slope and Elevation Protection Bylaws seeks to protect fragile hillsides and high elevations from new development. These bylaws can also help protect areas of scenic and natural beauty. This technique is in the process of being implemented in North Andover.

Downzoning, a process where the current zoning is change to a less intense use. This can be combined with open space/cluster zoning. In 1987, the Town rezoned the minimum lot area in the residential 1 district from 1 acre to 2 acres. This should be explored in other residential districts throughout the Town.

Overlay Zoning is a separate zoning district that is overlaid over the current zoning district. Overlay zones seek to protect a particularly type of resource that is only within the overlay area. The Town currently utilizes the Watershed Protection District as an overlay.

2. Expand Existing Conservation Efforts

Existing conservation land should be protected from encroachment and expanded whenever possible. The most successful ways to conserve natural resources are:

- Land acquisition by the Town or a special interest conservation group;
- Conservation easements,
- Agricultural preservation restrictions; and
- Current-use tax classification.

While acquisition is more expensive initially, its benefits are much greater in the long term. (This can be expanded on, see *Trust for Public Land: Parks and Open Space, 1999*)

The Town must involve special interest groups and state agencies. These include the MA Department of Environmental Management, who manage the state conservation lands, the Department of Environmental Protection, the Essex County Greenbelt Association, the MA Division of Fisheries and Wildlife, the Trustees of Reservations, the Massachusetts Audubon Society, and The Trust for Public Lands. All of these organizations protect, through acquisition or other methods, natural resources throughout the Commonwealth. These organizations have resources and financial assistance that could greatly benefit the Town of North Andover.

3. Fund Open Space Acquisition

Annual warrant articles should be submitted each year to Town Meeting to raise and appropriate funds through the Conservation Fund for land acquisition. Fund will then be available should a parcel of great interest becomes available.

Local Financing Tools:

- Community Preservation Act :
The Community Preservation Act, which is in conference committee as of 3/10/2000, is enabling legislation that addresses this need by providing communities with the option to create a local community preservation fund, when supported by a local ballot vote. The Community Preservation Act also enables several communities to join together to create watershed-wide and

regional community preservation programs, if they choose. Funds shall be distributed by a locally defined Community Preservation Committee (CPC) in accordance with a Community Preservation Plan written by the CPC with full public input.

A minimum of 10% of the fund's revenues shall support each of the following uses:

- acquisition of open space
- preservation of historically significant structures and landscapes; and
- provision of affordable housing opportunities.

The remaining 70% can be allocated for any combination of these uses, in response to the most pressing needs of the community. If needed, up to 5% of the funds may be used for developing the Plan and a maximum of 10% (20% for communities where management needs exceed acquisition needs, as described in the Plan) may be used for management or restoration of open space, historic sites, or community housing.

The Community Preservation Act enables municipalities to choose one of three mechanisms as a funding source:

- A real estate transfer tax of up to 1% of a property's sale price;
- A surcharge on property tax bills of up to 3%; and
- A combination of both at lesser amounts (up to ½ of 1% of real estate transfer tax and up to 1½% surcharge on the property tax bill).

A community preservation fund, supported by local citizens, is a critical tool in this effort. Secretary of Environmental Affairs Robert Durand wrote this bill, and it is presently under consideration in the Joint Committee on Taxation as of January 2000.

- Real Estate Transfer Tax: Tax on the sale of property for the use of park and open space acquisition. Proceeds deposited into a land bank. It is a one time cost to home seller or buyer.
- Impact Fee: A one-time fee to off set costs of infrastructure or mitigation for watershed protection caused by new development. The developer pays. Proceeds will be used for open space and land acquisition.
- Bond-general obligation: It is a loan taken out by a Town against the value of the taxable property. The funds can be used to purchase valuable sites within the Town or to create recreational areas. The bonds are typical issued for 15, 20 or 30 years.
- Mitigation: It is a way to acquire land at no cost from a developer that is trying to develop land near wetlands, natural areas, and watersheds. It can be used to acquire significant portions of land near the land at risk.

(See: "Increasing Public Investment in Parks and Open Space", by The Trust for Public Lands, 1999)

3. Link Open Space and Trails

Linkages should be developed between protected open spaces and recreation areas. This could include:

- Acquiring land contiguous to existing open space parcels, such as those mentioned in Section 7.1.
- Developing a biking and walking path along portions of the railroad and power-line right-of way;
- Working with the DPW to develop bikeways along roadways when the roads are re-paved;

and

- Pursuing major trail projects such as the Bay Circuit and the Merrimack River Trail;

4. Promote River Access and Awareness

North Andover was settled, and prospered, because of three rivers. The Merrimack River, the Shawsheen River and Cochichewick Brook yet few people can now enjoy these resources. Access to the Merrimack River via the Merrimack River Trail and the Boat Ramp will make the Merrimack River accessible. Awareness of Cochichewick Brook and the Shawsheen River can be improved through increased donation of land, development of a trail along each river, and cleanups of those areas in need.

5. Encourage Open Space Management

Protected land should be managed to maximize the value of these public resources. Management Plans should be completed for each parcel of municipal conservation land. Access for persons with disabilities should be included in any management plan. An ongoing funding mechanism should be developed for the management of municipal conservation land. Almost all the labor for conservation land management has been completed on a volunteer basis but funds are needed for equipment and supplies. Funds should be appropriated at Town Meeting to be placed in the existing Conservation Fund for this purpose.

6. Investigate Former Municipal Landfill

The Department of Environmental Protection (DEP) currently holds a permit from the Conservation Commission on the Holt Road landfill project and it has entered the final stage of the phased construction which includes the capping of it. Its recreation potential should be explored in the future.

7. Maintain Existing Recreational Facilities and Create New Recreational Opportunities

The Recreation Department and the Department of Public Works should continue to pursue the repair of existing playgrounds and recreational facilities. Consider the establishment of local neighborhood groups to monitor existing facilities and make minor repairs. These groups could seek donations of funds and supplies. The success of the Drummond Playground Committee has shown that there is support for such efforts.

In general, recreational needs of the community can be improved by:

- Properly maintaining existing facilities;
- Providing adequate playgrounds and field space; and
- Improving linkages between open space parcels and access to regional facilities such as the Merrimack River.

More specifically,

- The 1995 Open Space Plan identified a need for new field space.
- Any new playgrounds or other facilities should provide some access for persons with disabilities. A representative sample of all existing recreational facilities should be made accessible to persons with disabilities.
- New biking/walking trails should be developed, perhaps utilizing existing/proposed roadways. These multi-purpose trails could be used to increase recreational opportunity, improve

recreational mobility and link together open spaces and recreation areas.

- A major planning effort is needed to improve Stevens Pond as a recreational area. For example:
- Stevens Pond could become a four-season recreational area by managing it as a safe skating area in the winter. A snow blower could be a valuable asset to the Recreation Department for this effort.
- There are also two hills nearby which could be used for sledding with supervision.
- The Recreation Department should continue in its efforts to make the Stevens Pond swimming program self-sustaining.
- The Commonwealth of Massachusetts is considering opening a new swimming area in the Harold Parker State Forest. The Town should support this program while ensuring the success of its own program.

8. Enhance Access to Recreational Opportunities in the Lake Cochichewick Watershed

Maintaining existing access points to the Lake will deter people from creating new access points for fishing and boating, thereby decreasing the threat to our drinking water supply. Maintaining existing areas, will also encourage the public to gain a better appreciation of the wildlife and natural beauty. Expanding existing walking trails around the Lake will also increase this recreational value.

9. Protect Scenic Hilltops, Landscapes and Farmland

A better effort must be made to protect, and provide access to, the Town's major hilltops. This could include acquisition or protection of more of Woodchuck Hill, Claypit Hill, Bruin Hill, Boston Hill and other hills that have unique views. These named hills are presently undeveloped and unprotected. The use of Planned Residential Development (PRD) should be revised to become a more effective tool for protecting hilltops. The use of new zoning tools, bylaws (See Section 8.1), or better use of PRD's would help to protect these valuable assets. In addition to the protection of hilltops, accessibility should be enhanced to benefit the entire community.

The inventory of "Land of Conservation Interest", identifies the primary land in need of conservation in this community. The protection of these lands, and those designated by the DEM Scenic Landscape Inventory, should be improved. For Example:

- Efforts should be made to increase the amount of land in Chapter 61, 61A, 61B tax classifications and contact with the landowners should be maintained.
- The community should make a concerted effort to pursue Agricultural Preservation Restrictions on important landscapes.
- Planned Residential Developments should continue to be pursued when development of scenic landscapes is proposed.
- **Scenic Road Bylaws are an effective method of maintaining the rural character of scenic roads. A Scenic Road designation would provide limited protection from actions resulting from the repair, maintenance, reconstruction or paving of the road that would involve the cutting of trees or the destruction of stonewalls within the public right-of-way. On a scenic road, such actions, usually proposed by the DPW, would be subject to a public hearing and planning Board approval as well as Board of Selectmen approval before they could proceed (see definition in proposed Subdivision Regulations, Planning, Town of North Andover). Only significant roads need to be designated.**

10. Preserve Historic Landscapes and Other Historic Resources

This rural character can be enhanced and protected for future generations by a comprehensive and proactive program of land protection through a variety of methods, including:

- Deed restrictions;
- Purchasing of development rights;
- Outright acquisition;
- Regulation of new development;
- Donations of land; and
- The involvement of local land trusts.

11. Protect Habitats for the Diversity of Plant and Animal Species

The Town should further efforts to protect habitats for the diversity of plant and animal species to assure the protection of unique and irreplaceable ecosystems. There are still options for increasing diversity and recreational value in a fragmented landscape. One such way is to vary the ages of the trees in an appropriate sized tract. The variation of age, species and vertical strata, will allow for richer diversity. This will also allow for greater recreation such as bird watching and hiking. Another is to plant berry and fruity vegetation to attract wildlife. Creating a permanent source of water will certainly create greater diversity. Another option is to link smaller "islands" together through corridors. The corridors must be sensitive and practical in accord to the need of the species that will use them. Ideally corridors should connect tracts of any size to defray the effects of fragmentation.

12. Educate Regulatory Boards - Conservation, Planning, Health, Zoning Board of Appeals

Membership on a local board is a position that requires a high level of commitment. All board members must educate themselves as to the issues and regulations they are charged with administering. To ensure that board members are fully knowledgeable of these issues, they should be required to attend a specific number of hours of training/workshops as a condition of retaining membership. During the interview and appointment process, these board members should develop goals and objectives with the input of both the appointing authority and the board to which they are applying. The board members should meet with their appointing authority on an annual basis (by appointment) to review the level of attainment of these goals and objectives.

More board members should be involved in the implementation of permits not just in the review of a proposed project. This field experience is very important to improving the level of compliance with local permits. Each board should develop a policy to attend other boards' meetings on a regular basis working in harmony to achieve shared goals. The appointing authority should attend a sample of all board meetings.

13. Research New and Innovative Regulatory Changes

A number of regulatory changes are proposed. (See also Section 8.1)

1. The Planned Residential District (PRD) should be reviewed and updated. Attempts should be made to better preserve open spaces during the development process.
2. The Subdivision Rules and Regulations are currently being revised. Roadway widths and related issues should be presented clearly and the basis for waivers to any section should be detailed.
3. Slope restrictions should be considered for areas of steep slopes to decrease the impacts of erosion that have been observed during, and after, development.
4. Eighty-five (85%) of North Andover is zoned for residential development. Thought must be given to reducing the amount of residentially zoned land and increasing the amount of commercial/industrial land. (See [The Trust for Public Land Hand Booklets](#)) This would reduce the burden on the municipal budget, increase tax revenues, and will help to slow residential growth.
5. Board of Health regulations should be refined to provide more oversight of the maintenance of septic systems, particularly in the Lake Cochichewick Watershed. All Board of Health regulations must be printed and made available to the public.

14. Facilitate Environmental Education Opportunities and Public Outreach

Interactive education lesson plans in North Andover schools about local environmental issues, such as watershed management, would help educate the younger population about the Town's natural resources. Field trips with guided walks would offer hands-on environmental laboratories illustrating aspects of resource management, fisheries and wildlife, and conservation issues. This could be done by the Town's Conservation Agent one day per month during the academic calendar.

15. Evaluate and Implement the Open Space Plan

The Conservation Commission is responsible under state law for the protection of natural resources, water resources and wetlands. However, the Commission spends a majority of its time and resources on wetlands permitting and enforcement. The proactive functions, such as Open Space Preservation and long range planning are often subordinated by the reactive tasks. To fill this void, the Open Space Committee, was formed as a subcommittee within the Conservation Commission with responsibility for open space planning and natural resource protection. This group is charged with implementation and evaluation of this Open Space Plan, and individual plans for protected open space management.

9.0 Five Year Action Plan-Table

Legend-Priorities

- A. Highest**
- B. Moderate**
- C. Lower**

<p>1. Protect Valuable Water Resources</p> <p style="text-align: center;">A</p>	<ul style="list-style-type: none"> • Reconvene the Lake Cochichewick Watershed Council • Initiate process of designating the Lake Cochichewick Watershed as an Area of Critical Environmental Concern (ACEC). • Hold annual meetings for citizens concerned with the Watershed District • Revise the Watershed Plan every 10 years. 	<p>The Town of North Andover</p> <p>The Town of North Andover</p> <p>The newly formed Watershed Committee</p> <p>The newly formed Watershed Committee</p>	<p>Spring 2000</p> <p>Spring 2001</p>
<p>2. Expand Existing Conservation Efforts</p> <p style="text-align: center;">A</p>	<ul style="list-style-type: none"> • Acquire more open space through assistance if special interest groups and state agencies. • Increase awareness of Conservation Alternatives to development by, for example, mailing to all property owners who own more than five acres and whose land is not already protected. • Updating the list of “key” unprotected open space parcels and develop a plan to protect these properties. • Prepare map for Planning Department showing key unprotected Open Space. • Implement Open Space Restrictions and Agricultural Preservation Restrictions on researched and designated parcels of land throughout the Town. 	<p>Town of North Andover</p> <p>The Open Space and Trails Committee through the Town of North Andover</p> <p>The Open Space and Trails Committee</p> <p>The Open Space and Trails Committee</p> <p>The Open Space and Trails Committee and the Planning Department</p>	<p>Fall 2000</p> <p>Winter 2001</p> <p>Spring 2000</p> <p>Spring 2002</p>
<p>3. Fund Open Space Acquisition</p> <p style="text-align: center;">A</p>	<ul style="list-style-type: none"> • Find new financing tools for open space acquisition: <i>Community Preservation Act</i> <i>Real Estate Transfer Tax</i> <i>Impact Fees</i> <i>Bond general obligations</i> <i>Mitigation</i> • Notify the community early in the development approval process so that open space can be protected. • Plan now for open space acquisition during the next real estate plateau or downturn. 	<p>Open Space and Trails Committee in conjunction with Conservation and Planning Departments</p>	<p>Fall 2000</p> <p>Fall 2000</p>

			through Fall 2005
4. Link Open Space and Trails A	<ul style="list-style-type: none"> • Update MVPC Open Space Map via input from town government and local committees by identifying all existing open space and trail networks. • Identify and document all accepted roads. • Complete Phase I of Rail Trail Grant to fund property study. • Pursue major trail projects • Research all abandoned roads and paper streets for linkage potential with open spaces and neighborhood paths. • Identify existing and propose and develop new neighborhood paths. • Perform trail linkage analysis between open space properties, isolated communities, and any future planned residential developments. • Prioritize and develop trail section linkages. • Coordinate with nearby regional communities for expanding linkage potential. 	<p>Open Space and Trails Committee</p> <p>Dept. of Public Works Rail Trail Committee</p> <p>Open Space and Trails Committee</p>	Spring 2000- Spring 2005
5. Promote River Access and Awareness B	<ul style="list-style-type: none"> • Determine potential sites along the Merrimack River that would provide for public access (pedestrians, biking, boating, etc.). 	Open Space and Trails Committee	Fall 2000 – 2003
6. Encourage Open Space Management A	<ul style="list-style-type: none"> • Complete management plans (including fire prevention plans) for each parcel of protected land in North Andover. • Implement a funding mechanism for the management of conservation lands and for supplies to maintain these lands. • Organize and combine efforts of the North Andover Conservation Commission, Department of Public Works, Recreation Council, and the Trails Committee for the establishment of an Open Space & Recreation management and maintenance plan (i.e. Warden Program). 	Open Space and Trails Committee in conjunction with the Fire Department	Fall 2000 – Fall 2003
7. Investigate Potentially Contaminated Sites	<ul style="list-style-type: none"> • Investigate the Holt Road Landfill for any threats to public health. • Determine if other contamination sites in North 	Board of Health and the LEPC.	Spring 2002

B	Andover that may need to be investigated.		
8. Maintain Existing Recreational Facilities and Create New Recreational Opportunities B	<ul style="list-style-type: none"> Repair existing playground and facilities Establish local neighborhood groups to monitor existing facilities and make minor repairs. Increase the amount of playing fields as determined by the town managers and specific committees for the sports of baseball, soccer, and lacrosse. Additional tennis courts, a walking/biking path are some suggestions to improve the Cyr Recreation Area. Begin planning effort to improve Stevens Pond as a recreational area. Install bike racks in the downtown area near shopping and restaurants Provide operating funds for new Youth Center currently under construction. 	Recreation Department, Department of Public Works and Open Space and Trails Committee The Town of North Andover	Spring 2000- Spring 2005
9. Enhance Access to Recreational Opportunities in the Lake Cochichewick Watershed B	<ul style="list-style-type: none"> Maintain appropriate access to view Lake Cochichewick Seek to expand existing walking trails around appropriate portions of the Lake. 	Open Space and Trails Committee Town of North Andover and Department of Youth Services	Fall 2000
10. Protect Scenic Hilltops, Landscapes, and Farmland A	<ul style="list-style-type: none"> Increase amount of land in 61, 61A, 61B by outreach including annual informational mailings to key property owners. Pursue PRD's when development of scenic landscapes is proposed. Implement a Scenic Roads Bylaw as an effective method of maintaining the rural character of North Andover roads. Protect or acquire more land on scenic hills through North Andover 	Planning Board and Open Space and Trails Committee in consultation with the Assessor's office	Spring 2000 Fall 2000
11. Preserve Historic Landscapes and other Historic Resources A	<ul style="list-style-type: none"> Develop a program that will research and implement deed restriction. Investigate the process of purchasing of development rights to acquire open space. Seek private donations of land. Promote public-private partnerships with local land trusts, non-profit conservation groups, heritage associations, etc. 	Planning Board, North Andover Historic Commission and the Open Space and Trails Committee	Fall 2000
12. Protect Habitats for the Diversity of Plant and Animal Species B	<ul style="list-style-type: none"> Vary the ages of the trees in an appropriate size tract which will allow for richer diversity. Encourage the planting of berry and fruity vegetation to increase the wildlife's food supply through education. Research the possibility of protecting plant and animal species and their habitats which are outside the jurisdiction of the ConComm. 	School Department, Youth Center, Open Space and Trails Committee Planning Board	Begin Fall 2000 Begin Spring 2000

13. Educate Regulatory Boards C	<ul style="list-style-type: none"> Require members to attend a designated number of hours of training and workshops as a condition of maintaining membership. 	Board of Selectmen	Begin Fall 2000
14. Research New and Innovative Regulatory Changes B	<ul style="list-style-type: none"> Revise existing subdivision rules and regulations. Increase the amount of commercial or industrial-zoned land and reduce the residential-zoned land. Research new zoning bylaws such as: Downzoning, Overlay Zoning, Slope and Elevation Protection Scenic Views, etc. Print and publicize Board of Health regulations to all residents of North Andover. 	Planning Board Board of Health	Currently underway Currently underway
15. Facilitate Environmental Education and Public Outreach C	<ul style="list-style-type: none"> Continue to create interactive education lesson plans in the North Andover Schools. Hold field trips and guided walking tours throughout North Andover's conservation areas. Adequately promote these events for maximum turnout. Conduct special events on existing open space sites throughout North Andover so residents can see firsthand what the benefits are from acquiring open space. Create an informational web site for the Town of North Andover which will provide residents with current rules and regulations, plans and upcoming activities. 	School Department Open Space and Trails Committee and Conservation Commission	Begin Fall 2000 Begin Spring 2001
16. Facilitate and Implement the Open Space Plan A	<ul style="list-style-type: none"> Meet regularly to update plan, strategize how to complete the Plan's goals, and designate persons to tasks to be accomplished within the next quarter. Report to the Conservation Commission quarterly. 	Open Space and Trails Committee	Spring 2000 – Fall 2005

10.0 Public Comments (attached)

10.1

Distribution List

**North Andover Conservation Commission
North Andover Planning Board
North Andover Board of Selectmen
North Andover Board of Health
North Andover Board of Appeals
Bill McEvoy, Recreation Director
Merrimack Valley Planning Director
Open Space Committee
Master Plan Committee
North Andover Town Manager
Stevens Library (2)**

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Appendix A-
Open Space and Trails Plan, 1999

Appendix B-
Section 504 Access Survey

Appendix C-
Chapter 61, 61A and 61B Lands

Appendix D-
BIRDS OF THE MAZURENKO FARM CONSERVATION AREA

american crow Corvus brachyrhynchos
american goldfinch Carduelis tristis
american kestrel Falco sparverius
american robin Turdus migratorius
american tree sparrow Spizella arborea
barred owl Strix varia
belted kingfisher Megaceryle alcyon
black-capped chickadee Parus atricapillus
black and white warbler Mniotilta varia
blue jay Cyanocitta cristata
bobolink Dolichonyx oryzivorus
broad-winged hawk Buteo platypterus
brown-headed cowbird Molothrus ater
canada goose Branta canadensis
cardinal Cardinalis cardinalis
cedar waxwing Bombycilla cedrorum
chipping sparrow Spizella passerina
common grackle Quiscalus quiscula
common flicker Colaptes auratus
common yellowthroat Geothlypis trichas
eastern bluebird Sialia sialis
field sparrow Spizella pusilla
gray catbird Dumetella carolinensis
great blue heron Ardea herodias
killdeer Charadrius vociferus
mallard Anas platyrhynchos
mourning dove Zenaida macroura
northern harrier Circus cyaneus
northern mockingbird Nimus polyglottos
northern oriole Icterus galbula
northern shrike Lanius excubitor
olive-sided flycatcher Nuttallornis borealis
pileated woodpecker Drycopus pileatus
red-breasted nuthatch Sitta canadensis
red-shouldered hawk Buteo lineatus
red-tailed hawk Buteo jamaicensis
red-winged blackbird Agelaius phoeniceus
ring-necked pheasant Phasianus colchicus
ruffed grouse Bonasa umbellus
song sparrow Melospiza melodia
starling Sturnus vulgaris

tree swallow Iridoprocne bicolor
tufted titmouse Parus bicolor
veery Catharus fuscescens
white-breasted nuthatch Sitta carolinensis
wild turkey Meleagris gallopavo
wood duck Aix sponsa
wood thrush Hylocichla mustelina
yellow warbler Dendroica petechia
(Source: Doucette and Kasprzyk, 1990-1991)

Appendix E

SOIL ASSOCIATIONS

(U.S. Soil Conservation Service, 1981 and Jacobs, Mark, 1993)

Paxton-Woodbridge-Montauk Association:

Soils of this association are found on hills and sloping uplands. Well drained paxton and montauk soils are on the sides of drumlins. Moderately well drained woodbridge soils are on hilltops, concave toe slopes, and gently sloping areas. Such areas can be found from the Merrimack River to the highlands along Lake Cochichewick and the watershed divide between the Ipswich and Shawsheen Rivers. These soils are suitable for some agricultural and residential uses, with some limitations such as restrictive hardpans that promote perched water tables and hillside seeps.

Canton-Charlton-Sutton Association:

Further south and west, the well drained Canton and Charlton soils are on the tops and sides of low hills. Moderately well drained sutton soils are found on the toe slopes of hills and in slight depressions. These soils are suitable for agricultural use and residential development except for slopes and the presence of stones in the canton and charlton soils, the seasonal high water table of the sutton soils, and some poorly drained wetland soils.

Charlton-Rock Outcrop-Medisapristis:

In the extreme southern portion of North Andover, this association can be found in areas of low, irregular hills, ridges, and plains as well as bedrock outcrops and depressions of very poorly drained organic soils. Well drained, loamy charlton soils are found on the tops and sides of low hills and ridges. Many areas have stones on the surface and rock outcrops are also present. Medisapristis are organic soils associated with wetlands which have a very high water table and are found between the hills and ridges. The charlton soils are suitable for residential development but stones and rock outcrops do present limitations.

Hinkley-Windsor-Merrimac:

Many of the soils in this association are excessively-drained. Such soils are found on plains, stream terraces and kames generally at lower elevations. Such areas are found along the Shawsheen and Merrimack rivers as well as along Mosquito Brook. These areas are generally suited for farming and residential development. Some poorly and very poorly drained soils are also found in this association.

Appendix F- BEDROCK GEOLOGY

Merrimack Belt

The Berwick Formation (Sb) is generally considered to be Silurian in age. This formation consists primarily of thin to thick beds of metamorphosed calcareous sandstone and siltstone. Some layers contain quartz, biotite and actinolite while others contain diopside, hornblende, and plagioclase. The Eliot Formation (Se) is also considered to be Silurian in age, but is older than the Berwick Formation. The Eliot Formation consists of thinly bedded slate and phyllite, commonly dolomitic, and metasiltstone. (Robinson and Goldsmith, 1991)

Nashoba Zone

The Sharpners Pond Diorite (Ssqd) consists of non-foliated, medium-grained equigranular biotite-hornblende tonalite and diorite. It intrudes the Nashoba Formation (OZn) and the older gneissic phase of the Andover Granite. The Andover Granite (SOagr) is a foliated, medium to coarse-grained gneissic granite that intrudes the Nashoba Formation (Wones and Goldsmith, 1991).

The Nashoba Formation (OZn) consists of interlayered schist and gneiss with minor amounts of quartzite and marble. Amphibolite is abundant in the Boxford Member (OZnb) of this formation. The Fish Brook Gneiss (OZf) is a fine to medium-grained foliated gneiss containing biotite, quartz and plagioclase and is intruded by the Andover Granite (Goldsmith, 1991a). The Fish Brook Gneiss is probably the oldest rock type found in Town (Zen et al, 1983).