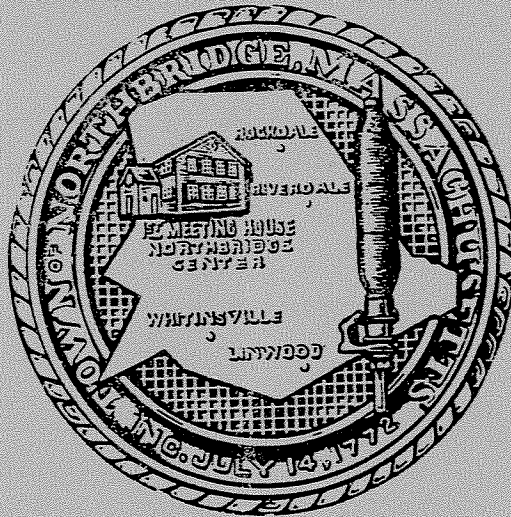


**A MASTER PLAN
FOR THE
TOWN OF
NORTHBRIDGE,
MASSACHUSETTS**



Adopted By The Northbridge Planning Board

April 27, 1994

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1. Master Plan Survey

INTRODUCTION

What is a master plan?

A master plan is defined in Chapter 41 Section 81 D. of the Mass General Laws as:

A statement ...that is designed to provide a basis for decision making regarding the long term physical development of the municipality.

It identifies the goals and policies of the town for its future growth and development. A master plan should deal with concepts rather than dwell on specifics. The goals should be broad based, long term solutions.

Why is it necessary to have a master plan?

Change is inevitable. Whether we like it or not, development will occur. That is why it is so important to take a pro-active course in shaping our future. A master plan provides an easily understood, easily used and easily updated document which provides guidance to town officials and agencies making decisions about land use, growth and development.

There is also a financial reason for developing a current master plan. Communities applying for state grants must have at a minimum an "economic development statement" indicating municipal goals for industrial and commercial development, affordable housing and preservation of parks and open space.

What should the plan include?

According to Chapter 372 of the Mass General Laws a master plan must include:

1. GOALS AND POLICIES STATEMENT
2. LAND USE PLAN
3. HOUSING ELEMENT
4. ECONOMIC DEVELOPMENT ELEMENT
5. NATURAL AND CULTURAL RESOURCES ELEMENT
6. OPEN SPACE AND RECREATION ELEMENT
7. SERVICES AND FACILITIES ELEMENT
8. CIRCULATION ELEMENT
9. IMPLEMENTATION PROGRAM ELEMENT

Development of the 1994 Northbridge Master Plan

The Town's first master plan was done by Camp Dresser McKee in 1967. Since that time a number of efforts were undertaken to update the document, but the work was never completed. In 1989 a Master Plan Update Committee was formed to work on this project under the direction of Ted Brovitz, the Town's part-time planner. The group gathered a lot of information, but lost momentum when Ted Brovitz left his position.

In 1990 the Planning Board contracted with the University of Massachusetts Graduate School of Landscape Architecture and Regional Planning to have a group of graduate students complete the master plan. They presented a draft master plan to the Planning Board in May of 1990.

The Board recognized the efforts of the student team and felt that the draft master plan was good "starting point". The draft lacked a central focus and needed to be fine tuned to meet the needs of the Northbridge community. Unfortunately, the completion of the plan was put on hold because of overriding financial difficulties of the Town.

In the spring of 1993, the Planning Board began to re-channel its efforts toward completing the plan. The members realized that the work would have to be done without professional assistance because the Town, still seriously affected by economic problems, could not afford to hire a consultant or even administrative support for the project. They decided that the completion of the plan was top priority and pressed on.

A Master Plan Up-date Advisory Committee was appointed in November of 1993. Planning Board members recommended potential committee members who were invited to serve. The committee ended up with nine members under the leadership of Barbara Gaudette, Planning Board Chairman. The other members are: Harry Berkowitz (Planning Board member), Priscilla Arbuckle, Robert Audet, Michael Feen, Jr., Nicholas Jane, Lorraine Langille, Eleanor Padovano, and Peter Shea. This group held monthly public meetings from November to April. In addition, a survey was published in March in the *Northbridge Times*. The responses were evaluated and are a part of this document.

The Master Plan Update Committee hopes that this document will provide guidance to Town officials in decisions that they make regarding land use.

Barbara Gaudette, Chairman

Harry Berkowitz

Robert Audet

Priscilla Arbuckle

Michael Feen, Jr.

Nicholas Jane

Lorraine Langille

Eleanor Padovano

Peter Shea

NORTHBRIDGE IN 2005

THE VISION STATEMENT

Northbridge has its own character, its distinctive style. It is indeed a special place and it is our inheritance, ours to use wisely, or to squander. Moreover, the economic future of the town is inextricably linked to the quality of life it provides. Yogi Berra said, "If you don't know where you're going, you will wind up somewhere else." We the citizens of Northbridge, after thoughtful analysis of where we are today and where we could end up, have reached a consensus as to the type of community we would like Northbridge to be in the year 2005. We do not want to end up with a town that is indistinguishable from others, a town that could be described as "anywhere U.S.A." We do not want to be doomed to a future of suburban sprawl, strip malls, terrible traffic problems, wasted resources and deteriorating infrastructure. We have a vision of the community we would like to be ten years from now. The major characteristics of our vision of 'Northbridge in 2005' are:

1. Northbridge has been successful in improving the educational opportunities available to all residents. Educational facilities are utilized all year around to provide a variety of programs. Business/ educational partnerships have been created to expand the learning opportunities for all age groups.
2. The citizens of Northbridge consider the Town's historical development pattern an asset. In the year 2005, through diligent planning, Northbridge continues to develop according to this pattern. The three main village centers, Linwood, Rockdale and Whitinsville are attractive, vibrant centers with mixed residential, commercial and light industrial uses. The village centers have the infrastructure and services in place to support concentrated development. Infill (using existing lots and existing buildings) has been encouraged to maximize the potential of the village centers while discouraging development sprawl. Moving out from these centers, the density of development decreases and large areas of open space have been preserved.
3. In the year 2005, Northbridge has been successful in expanding its tax base by locating desirable industries in Town. The Town has worked with the neighboring towns of Sutton, Douglas and Uxbridge to create regional industrial park along Route 146, and with Grafton to develop light industry on their common border near Route 122. The communities have coordinated their efforts to provide water and sewer to these sites to make them attractive to industry.
4. In the year 2005, Route 122 is still the major north/south tourist corridor through the Blackstone River Valley National Corridor. Development along the route has been tightly controlled so that commercial development has been confined to nodes rather than endless commercial strips which tend to be visually unattractive and create traffic nightmares. In addition, the visual quality of the roadway has been enhanced by continued efforts to place public utilities underground and to plant street trees.
5. In the year 2005, the major rivers that run through Northbridge, the Mumford, Blackstone and West Rivers, have been cleaned up and now provide numerous passive and active recreational opportunities to residents and visitors.

CHAPTER
THE VISION STATEMENT

6. By the year 2005, new residential subdivisions have increased Northbridge's population, however, cluster zoning has been successful in preserving large tracts of open space. In addition, a system of bike trails and pedestrian paths link the open spaces.
7. Active and passive recreational opportunities have been expanded to include: a community swimming facility, well-maintained playgrounds, athletic fields, parks and tennis courts. Efforts have concentrated upon creating these types of facilities in the most densely populated neighborhoods.
8. In the year 2005, Northbridge shows pride in its rich heritage. Two historic districts have been added to those established in the 1980s. The new districts are Northbridge Center and Riverdale.
9. In the year 2005, Northbridge residents still recognize that the land features of Northbridge create a number of natural constraints to development. The land characteristics are a determining factor in the assignment of zoning districts. For example, development is limited in areas of concern such as aquifer recharge areas, and areas with steep slopes.

Northbridge continues to be a community that is willing to invest in its future: to provide adequate housing for its existing and potential residents, to provide a strong economic base, to provide the infrastructure and services necessary to maintain a high quality of life, and to preserve those characteristics that give Northbridge its very special character.

CHAPTER 2

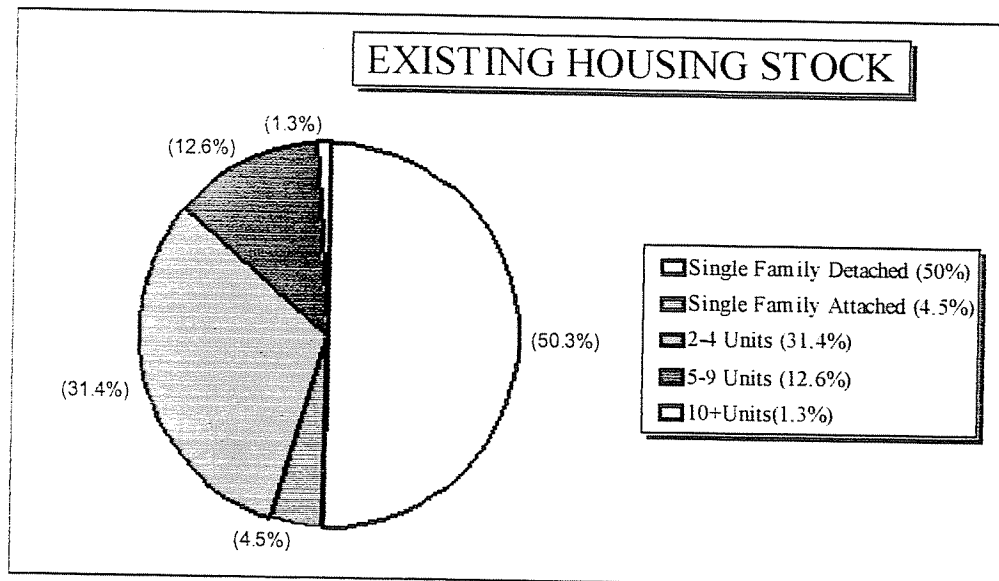
HOUSING AND POPULATION

1. Introduction

Housing and population are inextricably linked. In many ways housing determines the characteristics of the population. However, it is also true that population needs determine the housing that is created. An in depth analysis of the existing housing will provide a lot of information about the people who live in that housing.

2. Housing Overview

Northbridge has an atypical housing stock, comprised of large older homes, newer smaller single-family detached homes, numerous duplex and multifamily homes and condominiums. A disproportionately large percentage is rental housing, much of it older mill-housing of 6-8 units. Northbridge supplies the Blackstone Valley with the largest share of rental housing and consequently attracts a large transient population. Unfortunately many of the units are currently in substandard condition.



Source: Northbridge Assessor's Office

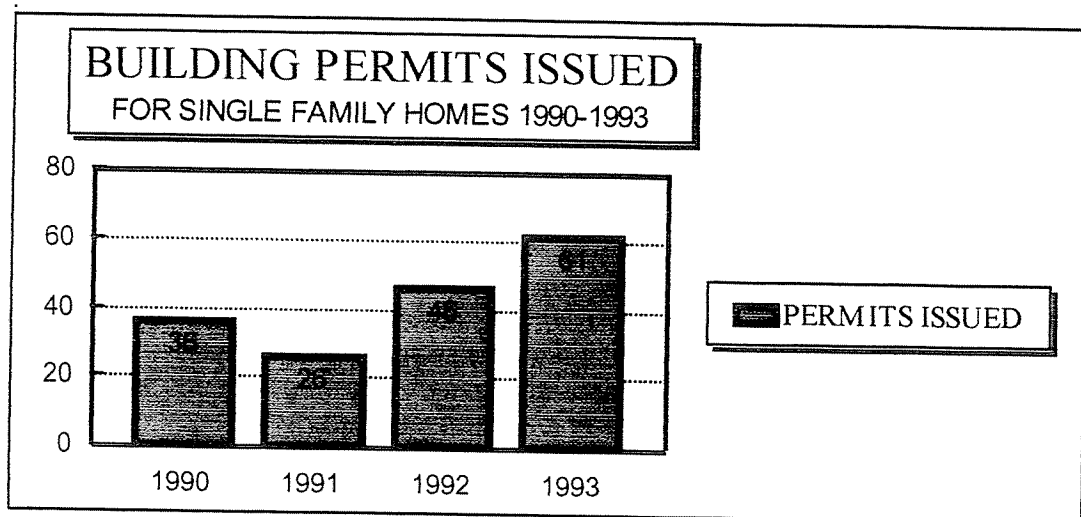
Figure 2-1

Historic Housing Trends

A number of trends are evident through the thirty year period from

1960 to 1990:

1. Many single family homes have been built since 1960 resulting in a younger housing stock than there had been earlier.
2. The 1980 Census showed a total of 4,157 households in Northbridge. The 1990 Census showed a total of 4,754 units, an increase of 14.4% over the ten year period.
3. The number of persons per household has declined by 7% between 1980 and 1990 to 2.73 persons per household.
4. The majority of housing in Northbridge is now owner-occupied rather than renter-occupied. However, in 1990 43% of the Northbridge housing stock was rental units which was a larger percentage, by 7%, than any other town in the Blackstone Valley.¹



Source: Northbridge Building Inspector

Figure 2-2

Figure 2-2 describes the construction activity in building single family homes in recent years by the number of permits issued. An examination of the number of building permits issued shows slow growth through the early 1980s, followed by increased activity in the late 1980s. The rapid growth was directly related to the healthy regional and state economy during that period as well as pent up demand for housing. Prices increased drastically during this period. By 1990 there was great concern that the people of Northbridge, including most of the municipal employees, could no longer afford to buy a house in town. Efforts were undertaken to provide affordable housing. A housing development called *Woodland Heights* was built with the support of the state Homeownership Opportunity Program (HOP) moneys, provided 43 new single-family homes in the \$78,000 to \$101,000 price range. Thirty-three of the houses were sold to qualified first time home buyers.

¹ 1990 U.S. Census data

Rental Housing

Northbridge's high percentage of rental housing has been cited earlier. Rents reached their highest levels in 1990 and then began to decline. During the height of the market it was difficult to find a two bedroom apartment for under \$500 a month. The rental affordability problem corrected itself when the economy slowed.

Much of the rental housing stock is the old mill housing built by Whitin Machine Works, including many 6-8 unit buildings in the historic "New Village " section and Rockdale. The general condition of this housing has declined significantly in the past five years. When Whitin Machine Works sold the multi-family dwellings, individual buildings were purchased by local investors. Over the years their values increased and many were re-purchased by absentee investors who seemed less willing to invest in the maintenance of the structures. These buildings were financed by loans and when the "bottom fell out" of the market, the rent structure declined rapidly and the situation worsened. A number of the buildings were taken over by the Federal Deposit Insurance Corporation and were allowed to decline even further. The number of substandard units increased dramatically.

Efforts are now underway to rehabilitate substandard buildings in both the Rockdale and New Village areas. The Town has entered into a partnership with South Middlesex Opportunity Council, to rehabilitate more than 60 structures.

There are numerous public housing units in Northbridge. The Northbridge Housing Authority oversees much of this housing, but outside agencies such as Rural Housing Improvement are involved with some. In late 1993 there were vacancies in the elderly housing developments.

Demographic trends indicate that there will be an increase in the elderly population. Although the growth will probably be small until the turn of the century, by 2005 Northbridge will probably see a significant increase in its elderly population. This may cause a demand for additional public housing for the elderly in years to come. More importantly, however, is the need to provide market rate housing of a type which will be more appealing to the older citizens. Retirement "villages" which provide a full range of housing and support for its elderly residents are a possibility.

3. Population Overview

In 1960 the population of Northbridge was 10,800. It grew steadily but at a declining rate from 1960 until the mid-1980s. During the late 1980s as the Blackstone Valley became a desirable location for new residential homes, a mild building boom pushed the population count beyond projections. The growth pattern of Northbridge is similar to that of surrounding towns in the Blackstone Valley.

In 1990 the Federal census figures showed the population of Northbridge to be 13,371. Northbridge remains the most populous community within the

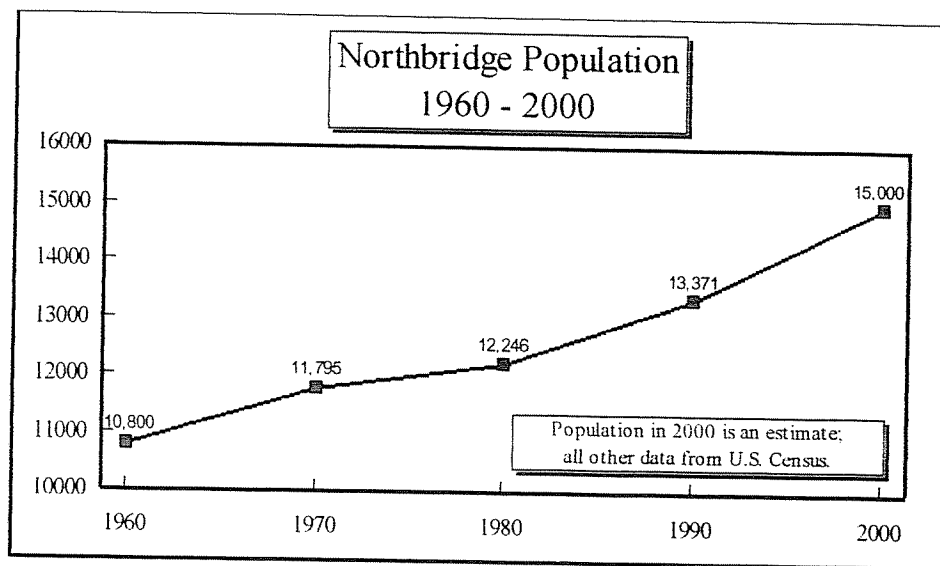
eleven town Blackstone Valley. At approximately 735 residents per square mile, it is the second most densely populated of the eleven towns.

NORTHBRIDGE POPULATION GROWTH

YEAR	POPULATION	% CHANGE
1960	10,800	
1970	11,795	9.2
1980	12,246	3.8
1990	13,371	9.2

Source: U.S. Census Data

Figure 2-3



Source: U.S. Census Data.

Figure 2-4

4. Characteristics Of The Population

One can get a better sense of the population statistics by separating the population into various age groups. Each group shows a different rate of growth and proportion of the total. The Federal census data uses the following age groups: 1.) under fifteen, 2.) fifteen to forty-four, 3.) forty-five to sixty-four, and 4.) sixty-five and older.

During the thirty year period between 1960 to 1990, the number of children in Northbridge under the age of 15 has varied in both absolute numbers and as a percentage of the over all population. The community's school age population declined from 1960-1985 and then began to increase. The April, 1989 "School Facilities Study for the Northbridge Public Schools", showed a decline in the school enrollments from 1985 through 1987, small increases through 1989, and projected growth through 1994. A jump of 3.9% was expected in 1993.

The 15-44 year old group increased by nearly 55% over the thirty year period, the greatest increase of any group. Over the same period, the 45-64 year old group decreased 8%, while the elderly population increased 74%.

As Figure 2-6 indicates, the elderly have increased both in numbers and in their portion of the Town's population. In 1990 nearly 15% of town residents were 65 and above. National demographics indicate that their numbers are likely to increase, however a closer look at the number of current residents in the 55 to 65 age group indicates that the rate of growth of the 65+ group will slow over the rest of the 1990's but will most likely increase beginning in about 2010.

The number of females exceeds the number of males. The ratio is approximately 53% to 47%. This is similar to Worcester County as a whole. The minority population has increased but remains a small percentage of the total.

Northbridge has followed the nationwide trend in the decline of the number of persons per household. At 3.18 persons per household in 1970, the town had the lowest figure in the Blackstone Valley. This number declined to 2.86 persons per household in 1980, and in 1990 the Northbridge had 2.73 persons per household.

Between 1970 and 1980 there was a significant increase in the number of families living below the poverty level. Six percent of families were recorded as below the poverty level in 1980 compared to 3.6% in 1970. although this growth in poverty is alarming, the town's number was not unusual for the Blackstone Valley.

The 1990 Federal Census data provides additional information about the local population including:

1. Seventy-six percent of the population lives in areas of the town that are described as densely populated or "urban areas".
2. Sixty-six percent of the town's residents live in the village of Whitinsville

Population By Age Groups

AGE	POPULATION N 1960	PERCENT OF TOTAL 1960	POPULATION 1970	PERCENT OF TOTAL 1970	POPULATION 1980	PERCENT OF TOTAL 1980	POPULATION 1990	PERCENT OF TOTAL 1990
<15	3190	29.5 %	3488	29.6 %	2941	24 %	3049	23%
15-44	3986	36.9 %	4292	36.4 %	5244	42.8 %	6167	46 %
45-64	2497	23.1 %	2579	21.9 %	2380	19.4 %	2191	16 %
65 AND UP	1127	10.4 %	1436	12.2 %	1681	13.7 %	1964	15 %

Source: U.S. Source: U.S. Census Data

Figure 2-6

5. Population Projections

Predicting population change is more of an art than a science. The projections vary depending upon the methodology used to develop them. Four recent studies provide population projections for Northbridge. (These numbers are summarized in the table shown as Figure 2-7).

- ♦ The Massachusetts Data Center Revised Report dated March 13, 1992: This study projects a decline in the population of Northbridge in 1995 and in the year 2000. These low figures may be attributed to the methodology used to generate them. The Data Center is more concerned about projecting population trends over a large, regional area rather than on a town by town basis.
- ♦ Amory Engineers projections calculated for the Whitinsville Water Company in 1987: This study was done specifically for the town of Northbridge. Their projections assumed that all of the approved subdivisions would be built. This study predicted that the population would reach 16,000 by 1995 and 17,400 by the year 2000. Clearly it will be well off the mark in its projection for 1995.
- ♦ A buildout analysis done by UMass students as part of the Master Plan Draft Report of 1990: Their projections were based upon a detailed build-out of the land in the town allowable under the existing zoning regulations. Four thousand and two hundred and eighty five new dwelling units could be built housing an additional 11,698 residents pushing the population of Northbridge over 25,000. No estimate was given as to how rapidly the build-out would occur.

Now, in 1994, it is once again appropriate to review the estimates arrived at through these studies. Given the number of building permits issued in the early 1990s, the **1995 estimate of 14,000 appears sound**. This figure may be refined once the 1993 town census figures are available.

If the population reaches 16,000 by the year 2000 as the 1990 UMass Draft Master Plan predicted, this would represent a 20% increase over the actual 1990 population. **A projection of 15,000 for the year 2000 is probably more realistic** given that:

1. Mr. William Grant, the demographics specialist at Central Mass Regional Planning Commission, said that he expects the population of Northbridge to grow but at a slower rate than it grew in the last decade (9.2%) .
2. Construction of the Mass Pike Interchange in Millbury is not expected to be completed until the end of the decade.
3. One of the goals of this Master Plan is to implement bylaws which will slow and limit residential growth so that it is in sync with the capacity of the town's infrastructure.

Northbridge Population Estimates							
	Earlier Estimates				1994 Estimates		
	1992 MASS DATA CENTER	1987 AMORY ENGINEERS	1990 BUILD OUT ANALYSIS	1990 MASTER PLAN DRAFT	BASE	LOW	HIGH
1990 Population	13,371	14,300	13,200	13,200	13,371	13,371	13,371
1990-1993 Building Permits (4 years) Assumed 1994 - 1995 Permits (1 year) Total New Properties					169	169	169
Person/Household (from '90 Census)					0	42	82
Additional People 1990-1995					169	211	251
					2.73	2.73	2.73
					461	576	631
1995 Estimated Population	13,351	16,000		14,000	13,832	13,947	14,056
Increase 1990-1995	-0.1%	11.9%		6.1%	3.5%	4.3%	5.1%
Increase 1995-2000	-0.1%	8.8%		14.3%			
2000 Estimated Population	13,332	17,400	25,070	16,000			
Overall Increase 1990-2000	-0.3%	21.7%	89.9%	21.2%			
							7.1%
							15,000
							12.2%

Notes:

42 = Average Number of Building Permits for New Residence for the Nineties (1990-1993)

82 = Average Number of Building Permits for New Residence for the Past 10 Years (1984 - 1993)

Assumes permits issued in early 1990 and included in 13,371 population are roughly equivalent to those in early 1995 for occupancy that year.

Buildout analysis 25,070 = 13,371 + (4,285 new dwelling units x 2.73 people/household).

Figure 2-2

GOALS AND ACTION ITEMS

TO PREPARE FOR THE POSSIBILITY OF SIGNIFICANT GROWTH WITHIN A SHORT PERIOD OF TIME. NORTHBRIDGE WILL BE UNABLE TO SUSTAIN A SIGNIFICANT INCREASE IN POPULATION WITHOUT UPDATING AND EXPANDING THE EXISTING SEWER SYSTEM, UPGRADING THE ROADWAY SYSTEM AND EXPANDING TOWN SERVICES WHICH MAY INCLUDE BUILDING ADDITIONAL SCHOOL ROOMS.

- ♦ Revise the zoning bylaw to increase lot sizes in some residential areas. Areas of critical concern such as Carpenter Reservoir watershed area, shall be re-zoned to restrict the amount of development which can occur in those locations. Larger lot sizes should also be required in areas with steep slopes, areas that are not well-suited for on-site septic systems and in the aquifer recharge areas. Larger lot sizes also makes cluster zoning more feasible.
- ♦ Adopt a Cluster Housing bylaw. Current zoning allows for only the standard cookie cutter style development to occur. This type of development chews of the land leaving very little open space. Encouraging developers to use this form of development will result in the preservation of many continuous acres of land for resource protection and recreation.
- ♦ Adopt a phased growth bylaw which will guarantee a limit on the number of new units that can be added to the housing stock per year.
- ♦ Revise the zoning bylaw by reducing the population density in other areas. The R-4 and R-5 districts, the zones allowing the greatest densities, comprise most of the multi-family mill housing in the New Village and in Rockdale. If some of these buildings were to be razed, they could be replaced with much denser housing. The R-5 zoning district has a build out potential of 20 units per acre. To prevent this possibility from occurring the density allowed in the R-4 and R-5 zones must be reduced so as not to exceed existing levels.

TO MAINTAIN THE SOCIAL AND ECONOMIC DIVERSITY OF THE COMMUNITY BY PROVIDING HOUSING OPTIONS FOR ALL SEGMENTS OF THE NORTHBRIDGE POPULATION WITHOUT OVERSTRESSING OUR INFRASTRUCTURE AND WITHOUT COMPROMISING THE ENVIRONMENT OR THE EXISTING QUALITY OF LIFE.

- ♦ Provide subsidized ownership opportunities.
- ♦ Enhance rental housing stock. Recognizing that the many of the multi-family structures in the rental stock are old and sub-standard, we must continue to pursue block grant funding for housing rehabilitation.
- ♦ Allow, by special permit, mixed commercial/residential uses in the downtown areas of Whitinsville and Rockdale. Mixed commercial/residential uses in the downtown area would allow 2nd floor space to be used as rental units while maintaining commercial uses on the first floor. It would enhance the vitality of those areas.
- ♦ To foster positive relationships between tenants and landlords, provide landlord/tenant education programs through the Housing Authority.
- ♦ Provide more suitable market rate housing for the elderly such as the comprehensive elderly village concept which includes independent living units combined with various levels of care.
- ♦ Rezone some areas of town for large lot zoning. Some property buyers would like to build high-end homes but feel unprotected by the existing lot sizes allowed under zoning. An area reserved for large house lots would attract people in the high-end bracket who do not want to buy substantial acreage to protect their investment.

**TO PROTECT AND ENHANCE THE EXISTING GROWTH
PATTERN OF THE TOWN BY ALLOWING HIGHER
DENSITY AND ENCOURAGING IN-FILL DEVELOPMENT
IN THE VILLAGE CENTERS AND BY PLACING GREATER
LIMITS ON DENSITY IN THE OUT-LYING AREAS OF THE
TOWN.**

- ♦ Adopt a "Cluster" or "Open Space" bylaw. A Cluster housing bylaw allows for the clustering of usually single family houses on a parcel of land rather than requiring that each lot have a certain frontage on an existing street. A large percentage of the land in the development is left as open space.
- ♦ Allow, by special permit, mixed commercial/residential uses in the downtown areas of Linwood, Whitinsville and Rockdale. Mixed commercial/residential uses in the downtown area would allow 2nd floor space to be used as rental units while maintaining commercial uses on the first floor. It would enhance the vitality of those areas.
- ♦ Revise the zoning bylaw to increase lot sizes in some residential areas. In general, the smallest minimum lot sizes should be allowed in areas closest to the existing village center, while the areas away from the centers should be reserved for larger lots.

CHAPTER 3

ECONOMIC DEVELOPMENT

Economic development is a broad term used to define the task of maintaining the stability and managing the growth of an area's commercial and industrial sectors by stimulating existing businesses and attracting new businesses. A community undertakes economic development activities to boost local employment, raise the general income level of the population, increase property values and balance the tax base.

This chapter of the Master Plan examines the economic history of the town, the need for economic development, and the potential for economic development. It concludes with a section which outlines goals and action items designed to implement the goals.

1. The Economic History of Northbridge

The Blackstone Valley has been designated the birthplace of the American Industrial Revolution and Northbridge played a crucial role in that development. The family of Paul Whitin was responsible for the creation of numerous mills along the fast moving Blackstone and Mumford Rivers. It was in the village of South Northbridge (later re-named Whitinsville) that Paul's son John C. Whitin founded the Whitin Machine Works and developed the mill village surrounding it. The Whitin Machine Works, once the largest manufacturer of textile machinery in the world, was the largest employer in the town and the dominant influence in all aspects of community life from the 1840s well into the 1960s. The economic history of Northbridge is closely aligned with the fortunes of the Whitin Machine Works (known locally as The Shop). Manufacturing was the engine that ran the town of Northbridge. At one point 92% of the workforce living in the Town worked in the Town. Community life revolved around the mills, primarily the Whitin Machine Works. It was truly a paternalistic society. Whitin Machine Works owned the workers housing, provided most of the town services such as fire protection and water, and controlled the local government. The Whitins were responsible for the creation of the Town Hall, the library, the schools, the Whitin Community Center and many of the town's churches.

As improvements in manufacturing techniques and transportation made access to markets and the location of factories less dependent on water power, the New England textile industries began moving south to locate closer to their sources of raw materials. The process accelerated after World War II leaving in its wake many empty mill buildings and high unemployment. The entire economy of the North East was adversely affected. Northbridge was shielded from the general decline of the textile industry until the early 1960s. Most of the mill operations were moved to South Carolina by the end of the decade. Whitin Machine Works was sold to White Consolidated Industries which later sold to

ATF Davidson Corp. During this period, the economic condition of the town declined and has yet to regain its former stability.

The departure of the Whitins affected nearly all areas of community life. During the period of Whitin control, the management skills of the Whitin Machine Works were applied to governing the town. Those who served in management positions in The Shop also served as selectmen and as other town officials. Their departure left the town without a guiding hand or a clear vision for the town's future. The Whitins had also owned most of the property and hundreds of housing units in the Whitinsville section of the town. These properties were sold to many different owners who often lacked the paternalistic view of the former owners. Overtime, the condition of the multi-family units deteriorated.

In 1960, Northbridge was still considered to be a manufacturing community with over 80% of its employment in the manufacturing sector.¹ This proportion was similar to that of the other communities in the Blackstone Valley where close to 75% of the jobs were in manufacturing. One should not assume however, that because so many of the local job opportunities were in the manufacturing sector, they were filled by Northbridge residents. In 1960, only 40% of Northbridge's manufacturing positions were filled by Northbridge residents. Nearly all of the remaining jobs were held by residents of Worcester, Woonsocket, and the other Blackstone Valley towns. Fewer than 10% were held by those living outside the region. During this time 90.8% of the Northbridge residents who were manufacturing workers were employed in Worcester or other Blackstone Valley communities. From all indications this pattern of residing in a town and working in another is even more prevalent today and it is not likely to change.

From the 1960s onward, Massachusetts began to experience a decline in manufacturing employment. The trend was experienced on the local level. The decline of a once-successful industrial base and its attendant service and related commercial activities has had a significant impact on the town's economic well-being.

2. The Need For Economic Development

Economic growth is necessary to maintain the long term stability and prosperity of a community. A close examination of existing employment trends, employment opportunities, the structure of the local tax base will provide a better understanding of where we are and what the implications for the may be.

Employment Opportunities In Northbridge

The Massachusetts Department of Employment and Training provides data, on an individual city or town basis, on the employment and wages in establishments subject to unemployment compensation laws. This data gives a profile of the local employment opportunities.

¹Metcalf and Eddy, 1965 Master Plan for the Town of Northbridge

CHAPTER 3
ECONOMIC DEVELOPMENT

**EMPLOYMENT AND WAGES IN ESTABLISHMENTS IN
NORTHBRIDGE**

	1986	1989	1991	1992
TOTAL ANNUAL PAYROLL (000'S)	\$42,831	\$56,767	\$52,761	\$60,312
AVERAGE ANNUAL WAGE	\$14,474	\$17,271	\$20,788	\$23,090
NUMBER OF ESTABLISHMENTS	212	227	203	195
TOTAL EMPLOYMENT	2,959	3,287	2,538	2,612
GOVERNMENT	389	403	296	304
AGRICULTURE , FORESTRY, FISHERIES	8	12	7	10
CONTRACT CONSTRUCTION	159	116	37	33
MANUFACTURING	586	544	489	529
TRANSPORTATION, COMMUNICATIONS, AND UTILITIES	96	46	122	70
WHOLESALE & RETAIL TRADE	733	991	742	798
FINANCE, INSURANCE, AND REAL ESTATE	124	82	59	61
SERVICES (HEALTH CARE, EDUCATIONAL AND SOCIAL, LEGAL ETC.)	864	1,093	786	807

SOURCE: Massachusetts Department of Employment and Training

Figure 3-1

A comparison of the data in the chart (Figure 3-1) above shows the cyclical nature of employment over this six year period. The height of the 1980s economic boom appears to have been reached in 1989. In that year, the Town experienced the highest total annual payroll, the greatest number of establishments and the highest total employment. From 1989 to 1991 the total annual payroll dropped by \$4,007,000; the number of establishments decreased

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by more than 10% and total employment was down nearly 23% . The only positive change from 1989 to 1991 was the increase in the average annual wage. This figure may be misleading. The increase in the average annual wage was probably the result of rising inflation. The 1992 figures show an improvement in the economic picture. The figures for 1993 are not available but indications are that we will continue to see improvement.

The table also shows the changes in employment in the various sectors over the period from 1986 to 1992.

According to figures provided by the Massachusetts Executive Office of Communities and Development in the 1993 *Northbridge Profile*, The largest employers in Northbridge in 1993 were:

TOWN OF NORTHBRIDGE	655
ALTERNATIVES UNLIMITED	250
COZ CHEMICAL	120
RIVERDALE MILL	115
DUROCRAFT	80

Figure 3-2

In Figure 3-2 for the Town of Northbridge is much higher than the number shown in Figure 3-1 under *government*. The Town of Northbridge figure includes teachers who had been counted under the *services* group in Figure 3-1.

Figure 3-2 shows how the average annual wage of the Northbridge worker compares to that of the average Blackstone Valley worker and the average Central Massachusetts worker. The average annual wage is slightly higher in Northbridge than the average for the Blackstone Valley but lower than the Central Massachusetts average.

**WAGE COMPARISONS BETWEEN NORTHBRIDGE,
THE BLACKSTONE VALLEY AND CENTRAL MASSACHUSETTS --
1991**

NORTHBRIDGE (AVERAGE)	BLACKSTONE VALLEY (MEDIAN WAGE)	CENTRAL MASSACHUSETTS (MEDIAN WAGE)	CENTRAL MASSACHUSETTS EXCLUDING WORCESTER (MEDIAN WAGE)
\$20,788	\$20,555	\$21,247	\$21,236

SOURCE: Massachusetts Department of Employment and Training

Figure 3-3

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Tax Base Data

The fiscal resources of Northbridge come from two main sources: local property taxes and state aid. In Massachusetts, Proposition 2-1/2 limits the amount a town is able to net from real estate taxes to two and one-half percent above the previous year's property tax revenue, plus revenues from "new growth" in town.

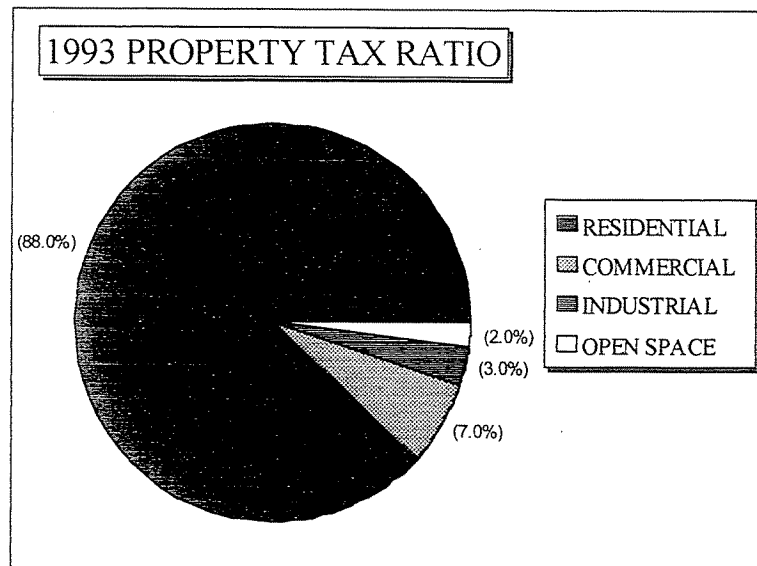
In 1993 the tax rate was \$12.18 per \$1000 of assessed value. There is one rate regardless of the land use classification. This rate is lower than the rate in all but two of the Blackstone Valley's 11 towns and lower than the average for Central Massachusetts. Northbridge's revenues come primarily from residential property taxes (88%) with the balance coming from commercial and industrial properties (7% and 3% respectively). Figure 3-4 provides more detailed information.

**TOWN OF NORTHBRIDGE
TOTAL ASSESSED VALUES BY USE CLASSIFICATION 1993**

	NUMBER OF SITES	TOTAL ASSESSED VALUE	PER CENT OF TOTAL
RESIDENTIAL	4224	441,044,359	88%
OPEN SPACE	142	7,551,000	1.5%
COMMERCIAL	316	35,174,152	7%
INDUSTRIAL	51	15,632,170	3%
TOTAL REAL ESTATE	4733	499,401,681	100.0%

SOURCE: Northbridge Board of Assessors

Figure 3-4



SOURCE: Northbridge Assessors

Figure 3-5

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Implications Of The Current Tax Base Structure

A healthy tax valuation ratio is considered to be: 70% residential, 20% commercial and 10% industrial (70:20:10). At this ratio, tax rates tend to remain stable. The ratio in Northbridge is closer to 88:7:3. This heavy reliance on revenue from residential uses presents several problems:

1. Typically, housing units and the families in them require higher municipal expenditures in terms of services than do industrial or commercial units.
2. A small economic base means that Northbridge has less knowledge of and control over the forces and events that shape its residents lives.
3. An unbalanced tax base places an undesirable burden upon the town's residents. When property owners become overwhelmed by increasing taxes they are less willing to fund town services. When the tax burden is shared by owners of commercial and industrial property, the residents feel less pressured and are more likely to vote for community improvements. Remember residents vote, businesses do not.

3. Potential For Economic Development

A town must have certain key ingredients in order to generate economic activity:

1. An adequately skilled labor force within commuting distance.
2. Accessibility to major routes and other modes of transportation (air, rail, etc.). Major industrial developers prefer sites that are within fifteen minutes of a major highway and thirty minutes from an airport.
3. Suitable land zoned for industrial or commercial use.
4. Support of the town government and the town's residents to encourage development.
5. Infrastructure, including water and sewer, to service the industrial and commercial areas.
6. Adequate community services: police, fire protection and school system.
7. A reliable and affordable system of waste disposal.

Does Northbridge have these ingredients? Let us take a closer look at a few of these key ingredients:

LABOR FORCE: To create a profile of the labor force in the town of Northbridge, one must look at several factors: level of education, income and wage statistics and current areas of employment. The tables on the following page show the comparison between the Northbridge labor pool, the labor pool of the Blackstone Valley as a whole and to that of the 40 town Central Mass Region.

EDUCATIONAL ATTAINMENT 1990

	% HIGH SCHOOL GRADUATES	% BACHELOR'S DEGREE OR HIGHER
NORTHBRIDGE RESIDENTS	73%	16.4%
BLACKSTONE VALLEY RESIDENTS	79.5%	21.8%
WORCESTER COUNTY RESIDENTS (Including the city of Worcester)	74.3%	17.9%

SOURCE: 1990 U.S. Census Data

Figure 3- 6

The labor supply is currently ample; however, it will become increasingly important to upgrade workers' skills to meet the more technical demands of the workplace. One of the challenges to attracting new industry is dealing with the lack of available training programs. The town should foster a partnership between the schools and local businesses to train students as technically skilled workers.

Central Massachusetts Regional Planning Commission employment data was examined to identify past trends in employment. The data clearly shows a steady rise in total employment for the Blackstone Valley and Northbridge from 1982-1988, then a steady decline in employment from 1988 to 1991. As these trends tend to be cyclical, the previous pattern was used to project future employment figures. Employment was estimated to increase annually over the next fifteen years.²

MEDIAN INCOME LEVELS IN 1989

	PER CAPITA	HOUSEHOLD	FAMILY
NORTHBRIDGE	\$14,159.00	\$36,634.00	\$41,969.00
BLACKSTONE VALLEY	\$16,600.00	\$42,452.00	\$47,629.00

SOURCE: Center for Labor Market Studies, Northeastern University/ Massachusetts State Data Center

Figure 3-7

² Central Massachusetts Regional Planning Commission, Regional Transportation Plan, 1993.

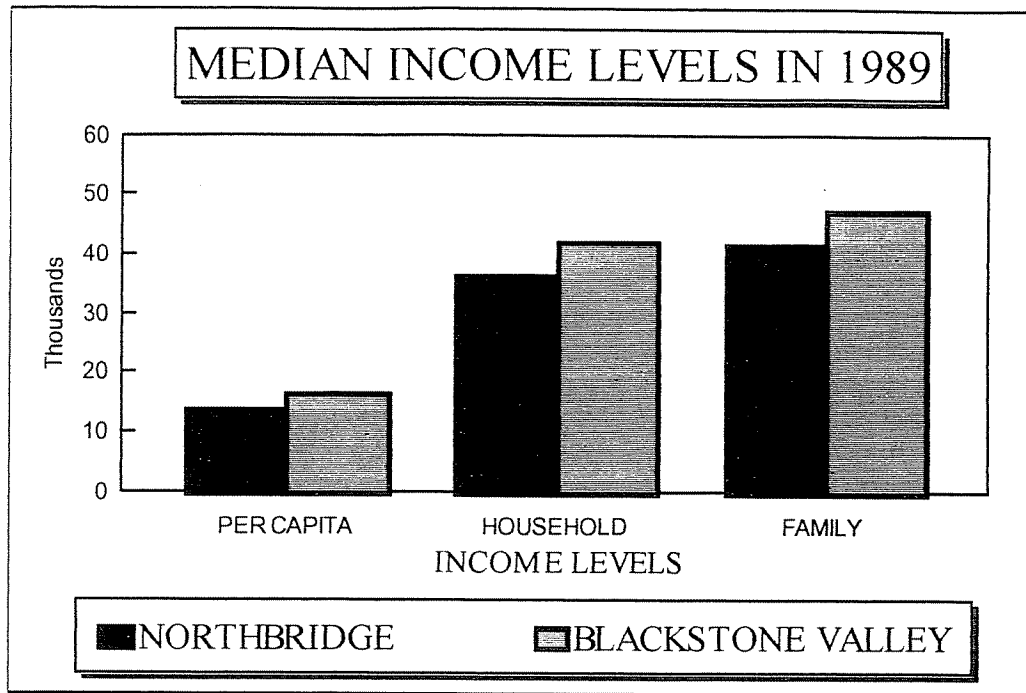


Figure 3-8

ACCESSIBILITY TO MAJOR ROUTES AND OTHER MODES OF
TRANSPORTATION (AIR, RAIL, ETC.):

Northbridge has development opportunities along three corridors. The first, the Route 146 Highway corridor is the major highway connecting Providence, Rhode Island to Worcester, Massachusetts. It will become a significant connecting highway when the proposed Massachusetts Turnpike Connector is completed. The second is the Providence and Worcester Railroad corridor which connects Worcester directly to a deep water port. The third is the Blackstone River Valley National Heritage Corridor with its evolving tourism and recreational development.

The weakest vehicular transportation link is the east-west connection. Route 495 is approximately 10 miles away but the access is over country roads that frequently jam up during commuting periods.

Northbridge is within 30 minutes of the Worcester Municipal Airport (although transportation in and out of the Worcester Airport is often problematic due to the airport's inability to handle poor weather conditions.) It is 20 minutes from the Hopedale-Draper Airport, a small airport which provides general aviation services, and 45 minutes from Green Airport in Warwick, Rhode Island.

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INDUSTRIAL DEVELOPMENT

When the zoning bylaws were adopted in Northbridge, the zone lines were drawn to reflect existing land uses. In other words, the areas that were then used as industrial or commercial sites were zoned for that purpose. Because the factories had been located along the rivers, these areas became the prime industrial zones. Today we are more concerned with potential flooding and the need to protect our water resources. This new attitude may mean that areas once considered acceptable for industrial development may, by today's standards, be unsuitable for many industrial uses.

Northbridge is fortunate that all of its existing mills are in use and most are used for industrial or commercial ventures. The Riverdale Mill is one of the success stories. After several years of abandonment it was rehabilitated in 1980. Several additions have been made to the building. It currently operates 3 shifts seven days a week. The Shop at Whitinsville, once the headquarters of the Whitin Machine Works, is now home to a variety of businesses adding to the industrial diversity that exists within the town. Nearly 1000 workers are employed at that facility. The Coz Chemical Factory also has multiple tenants both retail and industrial. The Linwood Mill is partially occupied by a furniture outlet. The former Whitin Machine Works research building was rehabilitated and now provides low and moderate income housing.

There has also been a tendency to place land unsuitable for other uses into the industrial category. More than 50% of the total industrial acreage is considered to be unsuitable for industrial development. The land zoned for industry is either in the floodplain or in areas having steep slopes or poor soil conditions or lack essential services making them difficult or unlikely to be developed.

Dr. John Mullin of the Center for Economic Development at the Department of Landscape Architecture and Regional Planning at UMass in Amherst, believes that siting of an industrial park is dependent upon a number of factors: 1) a large industrial park requires a minimum of one hundred acres, 2) sewer and water must be available to it. 3) it must have a clean 21-E, that all important environmental clearance, and 4) access to the site should not be through a residential area.

Northbridge does not have any existing sites that fit this criteria. The area along Rt. 146 has the potential for such a development. Northbridge does have industrially zoned land in this area but it probably will not be developed to its full potential unless Northbridge works with abutting communities and property owners to create a large enough parcel and then find the means to provide sewer and water to the site.

The industrially zoned area in the northeast corner of Northbridge abuts land in Grafton that is zoned for light industry. The site's major constraint is its lack of access. It may be possible to access the area through Grafton.

When considering the suitability of Northbridge for industrial development, we must be realistic about how much of its land is suitable for industrial development. Because we do not have the sites for large industrial

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development, it becomes even more important to nurture the large and small firms that are currently in town. Efforts should be concentrated on smaller scale developments on lots of perhaps 2-10 acres. The strategy should include promoting entrepreneurial businesses and growth in emerging industries to expand in Northbridge.

Two industrial subdivision plans were approved by the planning board in the late 1980s. One consists of 21 lots and the other 24 lots. Both sites have problems relating to access or availability of infrastructure. Nonetheless the sites should be evaluated to determine their potential development.

COMMERCIAL DEVELOPMENT

Northbridge has three commercial zones. They are (from the least restrictive to the most restrictive): Business 1, Business 2 and Business 3. Most of the commercially zoned land is in the three main village centers of: Whitinsville, Rockdale and Linwood. The villages developed around the mills during the Whitin era. From the earliest days, the commercial activity occurred in the village centers. The largest village center developed along Church Street in Whitinsville. It once met the shopping needs of the citizens of Northbridge as well as the surrounding area and is still primarily a retail area with a variety of stores along both sides of the street. Sections of Providence Road in Rockdale and Linwood are also village centers. The B-3 zone, adopted by the Town in 1992, is the highway-business zone. The only existing B-3 district lies is located on the west side of Providence Road north of Plummers Corner.

The "Main Streets" of the villages should be the best face of the community. Visitors often judge a locale by its Main Street. In addition, Main Streets serve a civic function as well as a mercantile one. "Main Streets" or "downtowns" can create vitality in a community and these village centers merit protection and enhancement. Dr. Mullin points out that studies have demonstrated that:

1. The post office naturally draws people and should never be moved off the main street. Both the Rockdale and Whitinsville village centers have a post office on the main street. They bring a large number of citizens downtown on a daily basis and are natural gathering places for the community.
2. An alcohol rehabilitation center or other social service agency should not be located on the main street.
3. Lack of parking is often a problem in downtown business areas and Northbridge is no exception. Parking is a problem in both Whitinsville and Rockdale. Merchants should be encouraged to park behind their buildings to open up parking on the street for their customers and the town should work with the merchants to find alternate off street parking.
4. Mixed use on a main street is a good idea because it keeps people around. Current zoning does not permit residential uses in the business zones. There are residential units in the downtown areas (particularly in the

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Rockdale section) only because they were pre-existing uses. Apartments should be permitted over store fronts in these areas.

5. To compete with shopping malls or super-sized outlet stores known as "Box Retailers", the main street should be primarily specialty stores, with a mix of financial and other service and professional institutions.

The Merchants Association in the village of Whitinsville, continues to promote that downtown area. In Rockdale, The Rockdale Neighborhood Association and the newly formed Mill Village Partnership for Commercial Revitalization are taking an active role in the revitalization of that area.

Commercial development along the Route 122 Corridor has expanded in the past decade. Some of the development occurred through the issuance of use variances and the results demonstrate the lack of a comprehensive development scheme. In 1990 a third Business Zone, B-3, was added. The B-3 zone is designed to regulate land uses, outside of the central business districts of Church Street, Whitinsville and Providence Road in Rockdale. An area along Route 122 was designated a B-3 zone.

Future development along Rt. 122 should be controlled. This is the central route along the Blackstone River Valley National Heritage Corridor. It will be the primary route used by tourists and its visual attractiveness should be maintained and enhanced. Development should take place in nodes rather than in ribbons or strips. In addition heavy industrial development requiring large trucks should be discouraged along this route. Sections of Route 122 are suitable locations for planned business developments. In addition, Northbridge must work closely with the neighboring towns of Grafton and Uxbridge to see that there is consistency in zoning at the borders between the towns. This cooperation is necessary to maintain Route 122 as a high quality, attractive roadway.

SUPPORT OF THE TOWN GOVERNMENT AND THE TOWN'S RESIDENTS
TO ENCOURAGE DEVELOPMENT.

Industrial and commercial businesses must feel welcome in a community. Towns that are unwilling or unable to provide the necessary infrastructure to support businesses and towns that have complex and lengthy permitting processes send a clear message to those businesses that the town does not really want them. It is necessary to take steps to demonstrate that the town wants these businesses and is willing to support them. In dealing with industrial development, Dr. Mullin has the following recommendations:

1. Pre-clear industrial sites. Determine the carrying capacity of each site by completing a build-out analysis. The analysis would deal with the environmental constraints and the wetland protection regulations so that a potential buyer would know exactly the development potential of the site.
2. Keep in mind that infrastructure guides growth. Industrial sites need sewer and water and a high quality roadway network.

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3. Don't say "no" to an industry say "where".
4. Pursue excellence. Demand high quality. Establish strong performance standards that are designed to control development projects in terms of potential noise, air and water pollution, vibration, smell and waste. Standards should also include limits on lot coverage, provisions for infrastructure, parking and roads, and landscaping. New development should be required to maintain or enhance community character.
5. Simplify the review process. Developers need to be able to do one stop shopping when applying for necessary approvals from town boards and agencies. The approval process should be predictable and timely.

INFRASTRUCTURE, INCLUDING WATER, AND SEWER, TO SERVICE THE INDUSTRIAL AND COMMERCIAL AREAS:

The condition of the Town's infrastructure will be discussed in greater detail in Chapter 6 of this document, therefore, only a brief description will be given here. Northbridge is blessed with ample water resources. The sewer capacity is somewhat limited.

ADEQUATE COMMUNITY SERVICES: POLICE, FIRE PROTECTION AND SCHOOL SYSTEM:

Town services are considered in great detail in Chapter 6.

A RELIABLE AND AFFORDABLE SYSTEM OF WASTE DISPOSAL:

Northbridge waste is picked up by private haulers and taken to the Wheelabrator Incinerator in Millbury, Massachusetts.

4. The Importance Of Regionalization In Economic Development

It is clear that the economic development of Northbridge can not be achieved in a vacuum. A regional approach is the best option. Three organizations have worked diligently toward the promotion of regionalism: The Blackstone Valley Chamber of Commerce, The Blackstone River Valley National Heritage Corridor and The Blackstone Valley Regional Development Corporation.

The Blackstone Valley Chamber of Commerce seeks to establish or enhance commercial activity in the Blackstone Valley. The Chamber has a task force in place that is charged with getting all eleven communities of the Blackstone Valley to deal with the impacts of the proposed Mass Pike interchange at Route 146 in Millbury. The goal of the Chamber is to re-establish the Blackstone Valley Regional Development Corporation. From 1985 through 1989, the Blackstone Valley Regional Development Corporation encouraged industrial growth in the Valley. The "packaging" of the eleven communities of the Valley as a diverse yet unified region in which to establish and grow an industry is a good way to combine precious town resources to effectuate positive change. Unfortunately budget constraints caused the dormancy of that organization. It would be beneficial for Northbridge and the ten other

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communities to re-establish this organization staffed with staff experienced in economic development strategies.

The Blackstone River Valley National Heritage Corridor, among its many functions, serves as a revitalization tool to boost the local economies. The Corridor Commission will promote tourism which will bring people with dollars to spend into our area.

GOALS AND ACTION ITEMS

TO SUPPORT AND ENCOURAGE EXISTING BUSINESSES.

- ♦ Provide municipal parking in the Church Street shopping area and in the Rockdale area.
- ♦ Support the efforts of the Merchants Association of Whitinsville, the Rockdale Neighborhood Association, the newly formed Mill Village Partnership for Commercial Revitalization and the Blackstone Valley Chamber of Commerce.
- ♦ Involve local businesses in problem solving and planning activities.
- ♦ Host an annual appreciation day to honor the achievements of local people in business and industry.

TO SECURE ADDITIONAL DEVELOPMENT OF ATTRACTIVE INDUSTRIES AND COMMERCIAL ESTABLISHMENTS TO IMPROVE THE ECONOMIC HEALTH OF NORTHBRIDGE THROUGH "BALANCED GROWTH".

- ♦ Re-establish the Industrial Development Commission and empower the commission (under M.G.L. Ch. 21-b) to locate properties for industrial use or renewal and then to work in conjunction with the revived Blackstone Valley Development Corporation to market the sites.
- ♦ Identify suitable sites for re-zoning to allow industrial development. Concentrate on sites near the Route 146 highway corridor or the railroad corridor.
- ♦ Ensure adequacy of the infrastructure to the sites deemed most desirable for development. Keep in mind that infrastructure guides growth. Undertake a comprehensive capital planning program with a schedule for improving the town's infrastructure. Provide industrial sites with sewer and water and a high quality roadway network.
- ♦ Provide incentives to developers who are willing to extend sewer and water lines and make roadway improvements, through measures such as tax relief.
- ♦ Pre-qualify sites so that a business looking for a site will have full knowledge of the capacity of each site.
- ♦ Review and improve all standards with regard to noise, odor, and pollution.

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- ♦ Expand the allowable uses in the industrial zones to include planned business developments and bio-tech industries.
- ♦ Expand the number of uses allowed in the commercial zones.
- ♦ Promote Northbridge as a good place for business by creating and distributing a marketing brochure.
- ♦ Simplify the permitting process to make it predictable. Make it possible for developers to do one stop shopping when applying for necessary approvals from town boards and agencies.
- ♦ Recognizing that the current conflict between the village name identity and the municipality name identity causes confusion to those who do not live here, find a strategy to clarify the identity of the town.

RECOGNIZE THE EXISTING VILLAGE CENTERS OF WHITINSVILLE, LINWOOD AND ROCKDALE AS ASSETS TO THE COMMUNITY AND TO PRESERVE, PROTECT AND ENHANCE THESE CENTERS.

- ♦ Preserve the historic districts in the mill villages.
- ♦ Provide municipal off-street parking. Consider the possibility of the Redevelopment Authority taking ,by eminent domain, suitable land in the downtown areas which could then be leased to the merchants for parking. This strategy would minimize the need for on-site parking in the downtown Business zones and encourage businesses to share parking facilities.
- ♦ Encourage the continuation of the facade improvement programs.
- ♦ Change the existing zoning bylaws to allow residential uses on the 2nd floors of commercial buildings in the downtown areas.
- ♦ Do not allow the Rockdale and Whitinsville Post Offices to be moved off of the "Main Streets". Encourage the Linwood Post Office to relocate to Providence Road.

TO PRESERVE THE RURAL CHARACTER OF THE OUTLYING AREAS AND ENHANCE THE ATTRACTIVENESS OF THE COMMUNITY TO TOURISTS AS WELL AS RESIDENTS BY CONCENTRATING DEVELOPMENT IN THE VILLAGE CENTERS .

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- ♦ Control development along Route 122, the major corridor of the Blackstone River Valley National Heritage Corridor, to minimize adverse impacts which would result from excessive development along this route.
- ♦ Avoid re-zoning strips along Route 122 to commercial use. Development should take place in nodes.
- ♦ Determine areas that would be suitable for non-residential development along Route 122 and re-zone them.
- ♦ Revise the signage bylaw to make signage attractive and readable.
- ♦ Continue to enhance the streetscapes through facade improvements and landscaping.

TO IMPROVE THE ECONOMIC VIATILITY OF THE BLACKSTONE VALLEY REGION. NORTHBRIDGE IS AN INTEGREL PART OF THE BLACKSTONE VALLEY REGION. STRENTHENING THE REGION AS A WHOLE WILL BENIFIT NORTHBRIDGE.

- ♦ Participate in regional planning activities.
- ♦ Work with neighboring communties to develop areas along the 146 Corridor for industrial use.
- ♦ Support the Blackstone River Valley National Heritage Corridor Commission.
- ♦ Coordinate zoning to be consistent with the zoning of abutting towns.

CHAPTER 4

NATURAL RESOURCES

1. Introduction

Natural resource protection addresses the issues of public health, recreation, visual attractiveness, and regional responsibility toward environmental goals. Resource protection also serves an economic function. A healthy environment contributes to the overall quality of life that boosts property values and the attractiveness of an area. It is also less expensive to prevent damage than to clean it up.

A coordinated approach to resource protection can produce many benefits. For example, development controls designed to protect watersheds and surface waters can also provide open space and recreation, and enhance the environmental and visual qualities of the landscape. For example, erosion controls enhance the attractiveness of subdivisions and contribute to water quality.

This chapter begins with an analysis of the physical characteristics of Northbridge, including: soils, topography, surface water bodies, wetlands, floodplain, and underground water resources including aquifers. It then takes a look at how the land is currently being used and the efforts that have been and are currently being undertaken to preserve and protect the vital resources. The chapter concludes with planning strategies that contribute to the achievement of environmental as well as historical and cultural preservation objectives.

2. Physical Characteristics Of Northbridge

The following information is a summary of a comprehensive analysis of the Town's physical characteristics which can be found in the 1985 Town of Northbridge Open Space and Recreation Plan, by Central Massachusetts Regional Planning Commission.

Northbridge is comprised of rolling hills, a low river valley, an upland ridge and a high plateau. The steepest slopes, above 8%, tend to occur in the eastern half of the town. The southwestern corner has several areas of steep slopes with grades greater than 15%. The northwestern side of town tends to be fairly level, while the central and south central lands contain gentle (less than 8%) and moderate (8-15%) slopes broken by areas of short steep grades.

The Blackstone River forms a low level strip running north to south through the center of town. the land rises steeply from the river's eastern shore to form an upland ridge. Elevation east of the ridge in general remains high. The

highest elevations in the Town are found in its northwest corner. The highest point in town -600' elevation- is found between Pollard Rd. and Sutton Street.¹

Soil Characteristics

Soil characteristics are important in determining the suitability of sites for various uses. Soils that are unsuitable for development may be well suited for passive recreation or conservation use. Soils are grouped together according to their characteristics. The soil groups that are present in Northbridge are:

- ♦ Group 1: Shallow to bedrock soils plus moderately well drained soils over hardpan²
- ♦ Group 2: Deep, well-drained soils that surround relatively small tracts of shallow to bedrock soils
- ♦ Group 4: Highly permeable, drought prone soils plus well drained and gravel soils on terraces
- ♦ Group 5: Drought prone and well-drained sand and gravel soils
- ♦ Group 7: Deep well drained soils without hardpan
- ♦ Group 9: Poorly drained mineral soils that are usually found in wetland areas.
- ♦ Group 10: Sand and gravel

The soil group (Group 10) which follows the floodplain of the Blackstone River consists of sandy and gravel soils subject to flooding. On-site septic systems function adequately here but they do indicate moderate limitations for high density development. Limitations are minimal for agriculture, woodland and recreational use.

The largest soil group (Group 1) in Northbridge is found on either side of the Blackstone River east and west of the Group 10 soils described above. The area has steep and stony hills with frequent bedrock outcrops. Roughly one-half of the soils in this area are shallow to bedrock while the remaining are moderately well-drained with hardpans. Soils with hardpans severely restrict the downward movement of water. The presence of bedrock close to the surface and the presence of hardpan severely restrict high density development on these soils. However, only slight limitations exist for woodland and recreational uses on these soils.

Group 2 soils are found in large amounts in an area running north to south in the west central section of the town. Most of the Group 2 soils are deep, well-drained soils that surround relatively small tracts of shallow to bedrock soils. These soils impose limitations on high density development but only slight limitations on agricultural, woodland and recreational uses.

A large area of Group 7 soils is found in the western portion of the town, west of Carpenter Reservoir. This area is characterized by low, irregular hills with shallow to bedrock soil and deep well-drained soils without hardpans. These soils

¹ Central Mass. Regional Planning Commission, Town of Northbridge Open Space and Recreation Plan. 1985.

² Hardpan is an impervious soil layer.

impose limitations on high density development, but, slight limitations for agricultural, woodland or recreational development.

Two areas of Group 4 soils are found in the southern sections of Northbridge east and west of the Blackstone River. These soils are drought prone to well-drained and gravel soils on terraces; all of these soils have a rapid permeability. Limitations are minimal for agricultural and recreational uses. In general, these soils can support higher density uses and are suitable locations for commercial and industrial development.

Smaller areas of soil Groups 5 and 9 are found in the western portions of the Town. Group 5 soils are composed of drought prone and well-drained sandy and gravel soils. Severe limitations exist for high density development although recreational uses may be accommodated. Group 9 soils are poorly drained mineral soils that are usually found in wetland areas. These soils are typically saturated with water for seven or more months of the year. As a result, these areas are best used as conservation sites.

VEGETATION

The vegetation found within Northbridge is characteristic of southern New England. The predominant tree is oak. White Oak and Red Oak are found throughout the community. Other common species are the Scarlet and Black Oaks, White Pine, White Birch and the Red Maple. The most common shrubs found are blueberry and the mountain laurel. Herbaceous plants include the wintergreen and the wood lily, the Christmas fern and the interrupted fern.

No rare or endangered plant species have been noted in Northbridge.

WATER RESOURCES

A. Surface Water

Northbridge relies in part upon surface water as public drinking supply. In addition surface water resources provide recreational opportunities such as fishing, swimming and boating as well as scenic beauty and wildlife habitat. The Surface Water Resources Map⁶ shows the location of Northbridge's ponds, reservoirs, rivers, and streams as well as their relationship to the floodplains, wetlands and watersheds. A watershed is the portion of the land whose surface water runoff contributes to the flow of a particular stream, river, or surface water body. Water flows from the higher elevations towards the low areas. Since all water flowing over the land within a particular watershed will drain into the same rivers, streams, lakes, or ponds, all of the natural and human-made conditions within a watershed will have an impact on a particular watercourse or waterbody. Potential non-point pollutant sources such as concentrations of septic systems and urban and agricultural runoff, can have cumulative adverse impacts.

Northbridge lies in the heart of the Blackstone River Watershed. The Blackstone River and two of its major tributaries, the Mumford, and West Rivers,

⁶ IEP, Inc. Natural Resources Mapping Project for the Towns of Northbridge, Sutton and Uxbridge. 1988.

run through the Town. The Blackstone River which originates in the Paxton/Holden area flows south into Rhode Island and eventually empties into Narragansett Bay. The river connects the second and third largest population centers in New England: Worcester and Providence. The river was the site of industrial development because of its series of steep drops which resulted in strong water flows. The river falls 50 feet in its 6 mile flow through Northbridge.⁴ The water power was harnessed to run the mills along its route. The river was known as "America's hardest working river" At one time, all but thirty feet of vertical falls (out of 430 feet)⁵ along the river from Worcester to Pawtucket were harnessed for mill power.

The river was severely polluted by the industries. Cleanup efforts began in the late 1970s, but there are still serious pollution problems. Sediment left by industry, inefficient wastewater treatment plants and non-point source pollution continue to effect the water quality. Efforts are being made to pressure the Federal Environmental Protection Agency (EPA), and the Massachusetts Department of Environmental Protection (DEP) to require discharge limits for metal when the waste-water treatment plants come up for re-licencing. These requirements would in turn require that Worcester area industries remove metals from their wastes before discharging them to the river.

The Town of Northbridge is not without fault in contributing to the pollution of the Blackstone River. The Massachusetts Department of Environmental Protection (DEP) studies indicate that the Northbridge Wastewater Treatment Facility discharges chromium, nickel, copper, cadmium, and zinc in to the river.

As the major fresh-water tributary to the Narragansett Bay in Rhode Island, the Blackstone River pollutants from Massachusetts contribute heavily to environmental problems there such as eutrophication, the poisoning of shellfish and other bottom-feeders, and harm to sensitive estuarine environments and resident rare and endangered species.

It is important to work toward a cleaner Blackstone River. In addition to its impact upon Narragansett Bay, there are numerous local benefits. A clean Blackstone River can provide recreational, educational, aesthetic, and long-term economic opportunities. The State has already committed substantial capital toward the planning and development of the Heritage State Park. The benefits from that effort include increased tourism, as well as a richer physical environment for the citizens. "Save the Bay", the Blackstone River Watershed Association and the Blackstone River Valley National Heritage Corridor and a number of local groups are currently actively involved in the effort to improve the river and its tributaries.

The Mumford River flows from the Town's western border southeast, joining the Blackstone River in Uxbridge. A number of industries are located on

⁴ Central Mass Regional Planning Com. Town of Northbridge Open Space and Recreation Plan. 1985. p.8.

⁵ Bickford, Walter and Dymon Ute, Eds. An Atlas of Massachusetts River Systems, Environmental Designs for the Future, UMass Press, Amherst. 1990. p.52.

its banks. The Mumford River is subject to pollution from an inefficient sewer system in Douglas as well as from numerous non-point sources. Efforts are underway to enhance the river including the development of a riverwalk along the eastern shore adjacent to Linwood Avenue.

The West River flows southerly through the town. The drainage area of this river has historically been subject to extensive flooding. Three hundred and nineteen acres of land in its floodplain are owned by the Federal government in connection with the West River Flood Control Project. For recreational purposes the Massachusetts Department of Fisheries and Wildlife manages a reservation area that includes among other features a hiking path, a small swimming beach, a small playground and a picnic area.

Reservoirs found in the Mumford River sub-watershed include Carpenter Reservoir, and Meadow and Linwood Ponds. Two major ponds (Riverdale and Rice City Ponds) are in the Blackstone River sub-basin. Numerous other small ponds including Swans, Arcade, and Riley Ponds are scattered throughout the town. Riley Pond is significant because it is preserved in its natural state in an undeveloped location. Although the drinking water sources need the greatest protection, the water quality of the non-drinking water sources is also important. These water bodies are important because they may provide: recreation opportunities, visual landscape values, wildlife habitat, flood control, and ground water filtration.

B. Groundwater

An aquifer is a geologic unit that yields significant quantities of water. In order to determine if aquifer yields are sufficient to support municipal water supplies, detailed ground water availability and delineation studies would be required. In general terms, yields should be of sufficient quantity to meet demand, risk of contamination should be low, and the aquifer should be large enough to enable consistent yields over time. The Town's largest potential aquifer area stretches from north to south in the town's eastern half, underlying the Blackstone River. This aquifer is reported as having potential medium-yields (50-250 gallons per minute) along its northern portion and eastern edge and potential low yields (<50 gpm) along its central and southern sections. Small pockets in the northern portion of this aquifer area are characterized as having potential high-yield (>250 gpm). Land zoned for industrial, commercial, residential and floodplain overlies this aquifer. This includes the Town's largest industrial district to the south and a relatively high density residential district to the north in the Rockdale area. Development of this land for these uses could have implications for the protection of this ground water resource. While Northbridge does not currently utilize this aquifer area as a municipal water supply, the town should take steps to prevent the pollution of this resource in order to ensure its viability as a future municipal water supply. The IEP Inc. report stated that there are no specific land use regulations which protect the Town's ground water resources.

The Town has 2 other smaller potential aquifer areas.

C. Municipal Water Supply

The Whitinsville Water Company provides the town with 75-80% of its municipal water supply. Those not served either directly or indirectly by the Whitinsville Water Company (WWC) use private wells. The WWC utilizes both ground and surface water sources, which in Northbridge consist of Carpenter Reservoir and Meadow Pond, and reservoirs #5 and #6 in Sutton. Ground water supplies consist of two wells located at the northern and southern ends of Whitin Pond on Carr Street and south of Whitins Pond on Main Street. The Water Company utilizes an additional ground water well on Mendon Road in Sutton. The WWC plans to construct a surface water treatment plant at Meadow Pond some time in the future. After that facility is operational, groundwater will only be used in emergency situations.⁶

Whitinsville Water Company owns much of the land surrounding Carpenter Reservoir, including a large part of its watershed. The land is zoned R-2 and is protected by only the 100-foot buffer around surface water bodies stipulated in the Town's Wetlands Ordinance and the minimal standards required for the narrow strip that lies within the 100 year flood plain.

The density of residential development allowed in the R-2 zone (one-half acre per unit) could pose a threat to the town's drinking water supply. This area is not served by sewer, so leachate from private septic systems could adversely affect the water supply. In addition, residential pollutants such as lawn fertilizer, motor oil, and improperly disposed of household chemicals are difficult to control. Erosion and increased run-off also present hazards. It is essential that steps be taken to ensure water quality protection.

In 1975, the USDA and the Massachusetts Water Resources Commission identified a potential reservoir site in Northbridge on an unnamed tributary to Carpenter reservoir approximately 3,300' upstream from Carpenter Road. The environmental health of this area should be safeguarded as well when planning for future water needs.

D. Floodplains and Floodways

The 100 year floodplain, defined by the Federal Emergency Management Agency for the purposes of administering the National Flood Insurance Program, comprises 1650 acres or 14% of Northbridge's 11,556 acres. The largest floodplain areas occur along the Mumford and Blackstone Rivers, and many of the surface waters in town are surrounded by a narrow band of floodplain.

Floodplain and floodway regulations can serve several functions. Maintaining permeability and open space in floodplains helps mitigate the severity of downstream flooding. Construction regulations protect the structures in the floodplain area. Prohibitions against the storage of toxic materials prevent further contamination of the river and adjacent lands in the event of a flood. The establishment of a buffer zone, protecting existing vegetation, prevents erosion and enhances aesthetic and wildlife habitats.

⁶ I.E.P. Natural Resources Mapping Project for the Towns of Northbridge, Sutton and Uxbridge. p.11. 1988.

E. Wetlands

A wetland is any wet area where the groundwater level is at or near the surface of the ground for a long enough period during the year to support a community of wetland-type vegetation. Wet areas include any salt or fresh-water marsh, meadow, swamp, or bog. These are the classic wetlands described in the Department of Environmental Protection regulations as : "Bordering Vegetated Wetlands". To be protected under the Massachusetts Wetland Protection Act, these wet areas must border any one of a list of water bodies: lakes, creeks, streams, rivers, ponds, estuaries or the ocean.

Wetlands are important because left in their natural state, wetlands provide many free services to the Town. These low areas provide floodways to channel storm waters and act as a buffer to prevent storm damage to nearby roads and buildings. These functions minimize the need for extensive engineering systems and seawalls. Wetlands provide temporary storage of flood waters, allowing floods to slowly recede and, in fresh water wetlands, recharging the groundwater aquifer. Directly or indirectly, some resource areas serve as sources of public or private water supply. In addition, the wetland can purify the water it receives. Wetlands provide natural settling ponds whose vegetation traps sediments which bind, and in some cases chemically break down, pollutants into non-toxic compounds. The wetland also retains nitrogen and phosphorus compounds which, in large amounts, can lead to nuisance plant growth in fresh or coastal waters. Wetlands are valuable to wildlife as a food source, nesting area and protective cover. The presence of wildlife provides recreation for hunters, bird watchers, artists and photographers.⁷

Wetlands comprise about 5% of the Town's total area, or approximately 557 acres. Most of the Town's wetlands are located to the north and west of Carpenter Reservoir. The location of Northbridge's wetlands are shown on the Surface Water Resources Map. Wetlands depicted on that map are based on the Central Mass Regional Planning Comm.'s Hydrology and Surface Water Divide Maps, derived from USGS topographic maps and aerial photography from Lockwood, Kessler, and Bartlett, Inc. This information is useful, but a more accurate and detailed wetlands maps may be required for specific planning or regulatory purposes.

Threats to wetlands have intensified as the pressure to develop land for commercial, industrial and residential uses has increased. The paving or filling of wetlands and other activities which replace pervious surfaces with impervious ones increases the runoff rates, reduces flood storage, and raises peak water flow, leading to greater storm damage. Northbridge adopted a local wetlands protection bylaw in 1987 which complements the Massachusetts Wetland Protection Act. The bylaw extends the range of protection to include erosion control, recreational interests and aesthetics. Any proposals impacting the resource areas or the buffer zones must be reviewed and approved by the Conservation Commission.

⁷ Northbridge Conservation Commission. A Guide to the Wetland Protection Act in Northbridge.

The combined State and local laws do not prohibit development in the described areas, but are designed to ensure that development meets certain performance standards and will not impact the wetlands in a negative way.

3. Wildlife

Northbridge is composed of a large variety of landscapes from open fields, swamps, thickets, to deep woods all of which provide habitats for a wide variety of wildlife. According to the Massachusetts Natural Heritage Program,⁸ no rare or endangered species are known to be indigenous to the town. Most wildlife species common to southern New England can be found in the town including: red fox, white tailed deer, raccoon, porcupine, opossums, mink, rabbit, beavers.

In the wetland areas, species such as the yellow spotted salamanders and wood frogs can be found. Painted and box turtles are among the commonly found reptiles. The Mass Division of Fisheries and Wildlife stocks the West River with trout each spring.

More than half of the 400 bird species which populate the state of Massachusetts can be found in Northbridge at various times throughout the year. The red-headed woodpecker and the snowy owl are two of the more unusual species which have been sighted. Other species can be found in abundance; the hairy woodpecker, cardinal, and woodthrush populate the oak forest; morning doves, crows and purple martins are found in open fields and thickets; sandpipers, swamp sparrow and the yellow warbler find food and cover near the freshwater marshes and swamps. Pheasant and giant blue herring are also sighted from time to time.

To preserve the diversity of the wildlife it is essential to preserve the wildlife habitats. Of particular importance in Northbridge is the preservation of open spaces such as meadowlands, agricultural land and pasture land. These areas provide food and shelter for many species.

4. Unique Features Of The Landscape

Several unique areas can be found in Northbridge:

1. SHINING ROCK: Located in the steep eastern half of Northbridge north of School Street, Shining Rock borders an abandoned granite quarry. An outstanding view of the town can be seen from the top of this 150 foot cliff. The massive rock face includes a high percentage of mica which gives it a reflective quality when viewed with the sun shining on it.
2. SCENIC ROADS: Several town roads have been designated as "scenic roads" under M.G.L. Chapter 40 S. 15c.; Castle Hill Road, Fletcher Street, Hill Street, Quaker Street and Cooper Road.
3. DISTINCTIVE LANDSCAPE: In 1982 The Massachusetts Department of Environmental Management published the

⁸ CMRPC. Town of Northbridge Open Space and Recreation Plan. 1985. p.11.

Massachusetts Landscape Inventory. The Study inventoried rural landscapes across the state and classified the best landscapes into one of three categories. "Distinctive" landscapes the areas of highest visual quality, make up about 4 % of the land area in the Commonwealth. Northbridge has such a distinctive landscape along Hill Street between Fowler Road to just north of Kelly Road. Stone fences border the road. Single family homes, several of architectural significance, can be found along the road in several areas. Open rolling fields slope away from the road in both easterly and westerly directions; this is an area of fairly intense agricultural activity. Safeguarding the unique qualities of these areas of the community is a goal of special importance to the town.

5. Open Space And Conservation Lands

Northbridge currently has more than 1500 acres of publicly owned conservation land. This includes a portion of the Upton State Forest (137.7 acres) and the West River Dam site (319 acres). The Town also owns a number of parcels:

1. A 33 acre parcel off of Fletcher Street. The town purchased this parcel from the Whitinsville Golf Club. It consists primarily of forest land on a steep slope. This parcel should be utilized more fully for passive recreation. It is valuable because it provides a beautiful backdrop to the village of Whitinsville viewed as one moves down Hill Street.
2. The Mason Property: This 19 acre parcel was donated by the Mason family to the town of Northbridge. The Masons provided an endowment to ensure the maintenance of the property. A portion of the 19 acre parcel is used for "victory gardens". Garden plots are rented annually for a small fee. The Conservation Commission, the designated management agency of the site, would like to broaden the use of the site for passive recreation and possibly an out-door classroom for the school children.
3. Bennet's Pasture. This 17 acre site is located off of Fowler Road. The Conservation Commission is the designated management agency of the site. Its potential use is limited because it does not have frontage on an existing way.
4. Arcade Pond. This site consists of 26.29 acres most of which is the pond itself. It is currently used for fishing and skating. The water quality is not high enough for swimming. The Conservation Commission is the designated management agency of the site.
5. Area on Linwood Avenue bordering the Mumford River. A riverwalk is proposed for this 10.97 acre site.

6. Shining Rocks: This 40 acre site was also selected as a unique landscape feature. The Conservation Commission is the designated management agency of the site.
7. Riley Pond. The 16.92 acre Riley Pond site was selected as a significant freshwater body preserved in an undeveloped location. The property includes a mix of vegetation including hardwoods, softwoods, thickets and a marsh vegetation. It is under the control of the Conservation Commission. According to the 1985 CMRPC open space plan, the water is slightly turbid but otherwise good and the site is retained in its natural condition.
8. Open Space land in subdivisions. The Planning Board has requested that areas within approved subdivisions be set aside as open space which may be taken over by the town when the subdivision has been completed. Some of these areas will be developed as recreational facilities and others for passive recreation. The Planning Board is also trying to set aside open space areas that may in the future be linked to each other and to town owned recreation and conservation areas. This effort should be made a priority in the future.

Data provided by the Northbridge Assessor's Office indicates that as of January 1, 1994, a total of 643.24 acres was under Chapter 61/61A and 61B. Properties under this classification receive tax benefits and if the property is put up for sale, the town has the right of first refusal to purchase it. Approximately 214 acres are protected under the Agricultural Preservation Restrictions (APR), a state program that allows the state to purchase development rights to agricultural lands.

Large privately owned tracts of land still exist through out the town. Of particular note are Kroll's Farm on Hill Street, designated as a "Distinctive" landscape in 1982 by The Massachusetts Department of Environmental Management and published in the Massachusetts Landscape Inventory, and the Vandenakker Farm on Purgatory Road. In addition the Whitinsville Water Company owns more than 300 acres of open land most of it in the Carpenter Reservoir area. That land is particularly important because it provides some of the town's drinking water, and must be protected. It is currently zoned R-2 which allows for 20,000 square foot lots.

6. Multi-Purpose Open Space Areas

Three sites are included in this category. They cover a total of 79.16 acres.

1. The Whitinsville Golf Club. This is a private club comprised of 44 acres. The main beneficiaries of the golf course are the members, who are only a small percentage of the total population. However, this beautiful golf course is very scenic and well-maintained and

⁹ Northbridge Board of Assessors. Inventory File January 1, 1994.

enjoyed by passers-by on Fletcher Street and from across the Mumford River on Linwood Avenue.

2. Whitinsville Memorial Park This .53 acre site is Northbridge's "town common". It is owned by the town and managed by the Conservation Commission. The World War I monument, the massive flag pole and numerous benches are located there.
3. Rockdale Memorial Park. This .62 acre park serves the same function as the Whitinsville Memorial Park. It is owned by the town and managed by the Conservation Commission. This beautiful park on a west facing slope in the center of the village of Rockdale includes a memorial, walkways and benches.

7. The Blackstone River And Canal Heritage State Park

The creation of the Blackstone River and Canal Heritage State Park represents one of the most exciting recreational opportunities in the region. Northbridge is located in the center of this park system. A Master Plan for the park was developed by the Massachusetts Department of Environmental Management (now called the Department of Environmental Protection -- DEP) and published as the Blackstone River and Canal Heritage State Park : Master Plan . The stated purpose of the park is to provide new recreational and educational opportunities which would help define the unique combination of resources and events that led to the development of the Blackstone Valley. The historic settings of the towns in the Valley will be preserved and enhanced and serve as focal points for local revitalization. The park shall serve as a vehicle for restoring the public sense of importance and vitality of the Blackstone Valley by focusing on the region's history. Similarly, the park shall become a tool for revitalizing local economies. The town should continue to work closely with the DEP as park facilities are developed in the town. The Heritage Park is an important historic and recreational resource within Northbridge and the Blackstone Valley as a whole.

The Northbridge link of the so-called "Heritage Trail" begins at Plummer's Landing on Church Street Extension. Parking and picnic facilities can be viewed from the road. From that point a trail follows the towpath south through a wooded section of floodplain eventually to the site of Goat Hill Lock at Rice City Pond in Northbridge. The old lock structure and holding pond will be restored to working order and visitors will be able to view barges passing through the lock chamber.

8. Air Quality

Good air quality is essential for good health. This is particularly true for the elderly, the very young and those with respiratory ailments. Possible threats to air quality include industrial emissions and the widespread and unregulated use of wood stoves

9. *Natural Resource Protection*

Landuse regulations can be used to protect natural resources by controlling and managing the development of floodplains, steep slopes, aquifer recharge areas, wetlands and watersheds as well as to protect and preserve historic and cultural resources. In addition, they can serve to maintain a community's character by discouraging strip development and the mixing of conflicting uses; limit adverse impacts on adjoining properties by separating "inconsistent" land uses; and reduce municipal expenditures for roads, schools, sewer, and water by limiting unplanned, scattered development.

The town does have many protections in place. Most of the existing regulations are specifically related to the protection of the town's water resources.

Federal and State Regulations

- ♦ Floodway and flood plain districts. M.G.L. Chapter 131, Sec. 40; The Wetlands Protection Act was enacted to safeguard wetlands, associated resource areas and floodplains from over-development. The interests protected by the act are: flood control, storm damage, prevention of pollution, marine fisheries, shellfisheries, groundwater, public or private water supplies. The activities subject to jurisdiction are those activities within any wetland resource area; within 100 feet of any wetland resource area (the buffer zone); within land subject to flooding; and within land subject to coastal storm flowage.

Local Regulations

- ♦ The Northbridge Zoning Bylaws Sec. 173-18 Floodway and Flood Plain Districts establishes the Floodplain District as an overlay district with regulations as to the uses allowed in those areas and construction requirements.
- ♦ The local Wetland Protection Bylaw goes beyond the Wetland Protection Act to include erosion control, wildlife habitat, recreation and aesthetics in the resource areas and the buffer zones. The state and local laws regulate any activities that involve filling, dredging, excavating or altering in or near a wetland or waterbody.

Public Ownership

- ♦ The State Department of Fisheries and Wildlife controls and protects the West River area to ensure a high degree of water quality.
- ♦ The Department of Environmental Protection controls the Rice City Pond. Public ownership of this area contributes to the visual, recreational and wildlife habits values of the area. Its water quality is not as easily controlled because it is fed by the Blackstone River.
- ♦ The town of Northbridge owns large portions of the Mumford River including much of Linwood Pond, and Arcade and Riley Ponds. The entire watershed is not town owned and therefore water quality protection is minimal. However, Northbridge, through encouraging

public access and maintenance, can enhance the recreational, aesthetic, and wildlife habitat qualities of these waterbodies.

The Natural Resource Study completed by IEP Inc. included a thorough review of the local bylaws and regulations relating to land use. The review raised a number of resource protection issues which were described in their written report which accompanied the natural resource maps. The description of the issues was followed by regulatory and non-regulatory recommendations designed to address the issues raised. Two issues regarding the protection of the Town's water resources was raised by the IEP Inc. Study. First, under the current zoning bylaw, a number of commercial and industrial uses, which may involve the use of hazardous materials, are permitted within the industrial and commercial districts by right. These include automotive repair and automobile services and garages allowed by right in the B-2 zone and manufacturing and light industries, railroads and railway express service, trucking service and warehousing, and other transportation services allowed by right in the I-1 and I-2 districts. While some of these uses represent a potential threat to water resources, they are not subject to review under the special permit process.

Secondly, the IEP Inc. Study points out that the maintenance of good water quality is important not only for drinking, but also for aesthetic and recreational purposes. Development has already taken place along the shores of some of Northbridge's ponds and rivers. In the future, pressure to develop the town's shoreland areas will likely increase. The development of these natural resource areas could threaten the water quality as well as the scenic beauty and recreational potential of these natural resource areas.

Thirdly, the IEP Inc. Study was concerned about the fact that development which occurs in unsuitable soils can result in non-functioning septic systems, particularly if those systems are not maintained. When wastewater disposal occurs on land with soils which cannot readily filter wastes, the potential for groundwater and surface water pollution exists. It is, therefore important for the town to promote septic system maintenance and be persistent in requiring that areas not serviced by municipal sewer meet strict guidelines with regard to wastewater disposal.

The IEP Inc. report pointed out some deficiencies in the town's "earth removal" permit. The report stated that mining and quarrying are allowed by special permit within the industrial districts, portions of which overlie the aquifer areas. These operations can leave an area more vulnerable to ground water contamination. If sand and gravel is extracted to a level which is too close to the ground water table, contaminants, such as hazardous materials, can rapidly and easily enter the water table. The mining can also lead to increased erosion and consequently, surface water contamination. "Northbridge does not currently regulate earth removal activities".¹⁰

The IEP Inc. Study raised several issues regarding the protection of openspace and rural character. First, the study found that open space is a major

¹⁰ IEP Inc. Natural Resources Study. 1988., p.18.

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NATURAL RESOURCES

component of Northbridge's special character. As growth pressures increase, open space acquisition becomes increasingly difficult and expensive; however, the town should continue to try to protect open space. A number of strategies have been incorporated in the goals section of this chapter.

The public shade trees in Northbridge have been severely neglected over the past several years. Many have sustained storm damage resulting in broken limbs and split trunks. These open wounds make them highly susceptible to disease and insects. In some locations, trees are severely deteriorated and pose a potential threat to persons and property. The Town has relied on the good graces of Mass Electric to do maintenance trimming near their power lines, but there are literally thousands of trees in need of trimming and maintenance that are not near power lines. The D.P.W. has begun to take some very small steps in this area, but the resources available are infinitesimal compared to the needs.

GOALS AND ACTION ITEMS

TO PROTECT THE QUALITY OF THE TOWN'S DRINKING WATER SUPPLY.

- ♦ Reduce the allowed zoning density in the areas surrounding Carpenter Reservoir and Meadow Pond. The lot sizes permitted in the R-2 zone, particularly in areas not serviced by municipal sewers are too small and the development which could occur under the existing zoning regulations could threaten the water supply.
- ♦ Establish a watershed overlay district for lands surrounding the Carpenter Reservoir, Meadow Pond and the additional reservoir site identified by the Massachusetts Water Resources Commission. The district should include any areas upgradient from the water resources which may adversely affect the water supply due to run off. The purpose of the overlay district would be to preserve and maintain the filtration and purification function of the land, the ground water table, the purity of the ground water and lake, conserve the natural environment, and protect the public health, safety, and welfare of the people. Development in such a district would be subject to: a prohibition of the use of toxic materials, automatic site plan review with stronger environmental criteria requirements, and the maintenance of buffer zone within 150' (one hundred and fifty feet) of the annual mean high water mark of Carpenter Reservoir and Meadow Pond and from the edge of all tributaries to the watershed. Within this buffer zone additional activities would be prohibited including those that would cause earth movement or disturbance; vegetation removal or cutting; construction or placement of any permanent structures; surface or sub-surface discharge and animal feedlots or storage of manure.
- ♦ Conduct a hydrogeologic study to accurately identify existing aquifers and establish an aquifer protection overlay district. The study should determine aquifer capacity, cones of depression, safe yield of wells and aquifers, zone 1,2, and 3 delineation, survey of potential sources of contamination, and areas of future supply. The aquifer protection study should lead to the adoption of a protective bylaw to prevent incompatible land uses within the delineated recharge areas. The protective by-law would define the boundaries of the aquifer overlay district and establish standards for the land use activities that would be allowed therein. the purpose of such a bylaw would be to limit activities that may occur in areas which have a high degree of potential ground water yield and which pose a threat to the quality or quantity of ground water that may be available in such areas.

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- ♦ Acquire land, development rights, or conservation easements to protect ground water resources, particularly in the Carpenter Reservoir watershed.
- ♦ Educate the public as to the importance of protecting the drinking water supply.
- ♦ Modify the zoning bylaw so that commercial or industrial uses which represent a potential threat to water resources are allowed only by special permit. Such uses would include those involving the manufacture, storage, use, transportation, or disposal of toxic or hazardous materials.
- ♦ Modify current industrial district boundaries surrounding Meadow Pond.
- ♦ Implement educational and informational programs to provide the general public with an understanding of the operation, proper use, and maintenance of septic systems and leach fields in order to prevent unnecessary system failures and protect surface and groundwater supplies.

**TO PROTECT THE AESTHETIC AND RECREATIONAL
VALUE OF OUR WATER RESOURCES.**

- ♦ Establish a water resource protection overlay district to preserve the purity, quality, and amenities of surface water resources with high scenic or recreational value. This district would include areas located within 300 feet of the particular water body and be subject to increased setback requirements as well as frontage and buffer requirements. Certain activities would be prohibited including: clear cutting; disturbances on slopes of greater than 15%; or removal of more than individual trees within 150 feet of the water body or water course.
- ♦ Develop riverwalks along the Mumford and Blackstone Rivers to foster an appreciation of the river and provide access to the river for swimming, boating, fishing and ice skating.

**TO PRESERVE THE TOWN'S RURAL CHARACTER AND
PROTECT THE TOWN'S NATURAL RESOURCES BY
DEDICATING AREAS AS OPEN SPACE.**

- ♦ Update the *Northbridge Open Space and Recreation* completed by Central Massachusetts Regional Planning Commission in 1985. One component of the updated plan would be the prioritization of areas with high open space value and determine the best use for identified areas (wildlife habitats, hiking trails, scenic views, public access, park). The plan would also indicate the best non-regulatory method to protect

each area for open space use such as: purchase, easement, purchase of development rights, land banking, or donation.

- ♦ After the key sites have been identified, apply regularly to all relevant Federal, State, and private sources for open space acquisition.
- ♦ Establish a capital reserve fund for open space acquisition.
- ♦ Publicize tax benefits of donating land for open space, recreation and public access use.
- ♦ Sell parcels held by the town with little value for open space, recreation, or other town use and apply the proceeds towards the purchase of valuable open space.
- ♦ Encourage owners of remaining farmland to consider making application to the Massachusetts Agricultural Preservation restriction Program.
- ♦ Establish a local land trust.
- ♦ Link the town's open spaces and conservation lands through the creation of a path system.

PROTECT THE TOWN'S ENVIRONMENT

- ♦ Amend the Special Permit process of the zoning bylaw to include consideration of a development's impact on the environment . The applicant must provide information to the permit granting authority that the proposed development will not degrade the environment. A development shall not be dangerous to the immediate neighborhood or the premises through fire, explosion, emission of wastes, or other causes; and shall not create such noise, vibration, dust, heat, smoke, fumes, odor, glare, adverse visual effects, or other nuisance or serious hazard so as to adversely effect the immediate neighborhood.
- ♦ Adopt an Earth Removal Bylaw requiring applicants for a special permit authorizing earth removal to submit a site plan. The site plan should show information that would be valuable to decision makers in their efforts to protect the town's natural resources including:
 1. All property where earth is to be removed, showing all lot lines and improvements and names of abutters;
 2. The elevations of abutting land at the lot lines;
 3. All adjacent roads, public or private, their elevations and established grades;
 4. Natural features, including; all wetlands on the site, and their respective elevations; the 100 year floodplain boundaries, if located within the site; water table elevations as determined by test pits and soil borings; and the soil types;
 5. Existing and proposed contours at two (2) foot intervals;
 6. Proposed contours and plans for site restoration and stabilization after excavation completion..

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The Earth Removal By-law should also require applicants to file an Environmental and Community Impact Analysis if more than five hundred cubic yards of earth in any one year are to be removed or excavated. The applicant should also be required to conduct all work according to certain specifications. These specifications would include such conditions as stockpiling of loam for later use; limitations on the size of the active excavation area; prohibitions regarding the accumulation of free-standing water; maximum slopes; conditions regarding alteration of drainage patterns; prohibitions regarding excavation depth in relationship to the water table; and site restoration requirements. Finally, this bylaw should specify the general requirements the Planning Board must consider in granting permits, such as whether the activity can be accomplished without adverse effects on the natural resources.

- ♦ Preserve the Town's public shade trees by adopting and carry out a maintenance program and replace trees that must be eliminated.

CHAPTER 5

HISTORICAL AND CULTURAL RESOURCES

1. Introduction

Northbridge has an extremely rich cultural and historic heritage that is primarily associated with the age of industrialization and the development of the area's mill villages. The history of Northbridge is etched in its landscape. Its distinctive settlement style and architecture give the Town its unique character. It is important for the town to capitalize on the tremendous opportunities that these resources hold.

Successful preservation of the historical and cultural resources can have a positive impact upon economic development by enhancing the citizen's sense of pride in their town and then capitalizing on that expressed pride to bring others into the community. Local citizens and particularly the local officials must recognize the value of protecting these resources against some of the immediate threats including possible demolition of historic buildings, lack of maintenance, inappropriate rehabilitation of existing structures or incompatible new construction and an absence of local awareness and appreciation.

2. Historical Preservation

Historical preservation is rarely accomplished without a lot of effort. Northbridge, fortunately, has always had citizens who appreciated the Town's treasures. The most important local governmental group charged with historical preservation, the Northbridge Historic Commission, has accomplished a great deal. It has documented the existing resources which include: significant buildings, cemeteries, farmscapes, designed landscapes, canals, waterways and archeological sites.

This documentation effort led to the establishment of several National Historic Register Districts. The National Historic Register of Historic Places is a listing of buildings, structures, sites, objects and districts that are significant in our nation's history, culture, architecture or archaeology. It is a Federal designation, administered by the Secretary of the Interior, through the Massachusetts Historical Commission as the State Historic Preservation Office. Listing in the National Register provides recognition for the property, tax incentives for the owners of income-producing property and limited protection from Federally funded, licensed, or assisted projects. A National Registry listing in no way limits the owners use of the property and places absolutely no restrictions or conditions on changes made by a private property owner unless there is Federal involvement in a project.

Three areas in Northbridge have been designated as National Register of Historic Districts:

CHAPTER 5
HISTORICAL AND CULTURAL RESOURCES

1. LINWOOD COTTON MILL DISTRICT: This district comprises both the industrial and residential buildings of the original Linwood Cotton Mill Complex. The mill is brick, the residential buildings are wood clapboard. Most of the buildings are Italianate and Greek Revival styles.
2. WHITINSVILLE HISTORIC DISTRICT: This district contains a number of significant public buildings most of which are concentrated near the mills in the Memorial Square area (at the junction of Main Street, Hill Street, Church Street and Linwood Avenue). Other buildings in the district are industrial and residential. Most were designed by architects between 1830 and 1920. The public buildings were, for the most part, gifts to the community from the Whitins and the Lasells.
3. ROCKDALE COMMONS HISTORIC DISTRICT: Includes the mill housing in the McBride Street , Church and School Street area of Rockdale.

The Historic Commission has completed more than half of the necessary work to establish Northbridge Center as an historic district. A number of historically significant buildings have been documented and the Commission would also like to preserve the remaining rural qualities of the area. In addition, the restoration work done on the Riverdale Mill has generated interest in establishing an historic district encompassing the mill and the surrounding area .

National Register Historic Districts are automatically listed on the State Register of Historic Places. This listing provides limited protection from adverse effects by state funded, licensed, or assisted projects and makes properties owned by municipalities or non-profit organizations eligible for grants from the Massachusetts Preservation Projects funds.

The establishment of the historic districts heightened the awareness of the town residents as to the significance of these special places. The Historical Commission continues to work toward protecting and enhancing the town's historic buildings and sites in the following ways:

1. The Commission sends letters of commendation to residents who have done outstanding restoration work on buildings of historic and architectural significance.
2. The Commission posts signs on buildings of historic and architectural significance.
3. The Commission has worked on a photographic survey as a follow-up on one done in 1889. The group is currently trying to raise money to complete the project.
4. The Commission has been active in efforts to preserve significant buildings such as the Cotton Mill (Apartments), the little Brick Mill and the Clark School. Unfortunately their efforts could not forestall the demolition of the Clark School. They were, however, instrumental in preserving the integrity of Whittin Park which was threatened by a proposed residential development on the site.

5. The Commission published a brochure which included a self-guided walking tour of the Whitinsville Historic District.
6. The Commission has sponsored trolley tours through the Whitinsville Historic District.

The need for preservation education is ongoing. The public must be aware of the significance of the Town's historic and cultural resources. The Historic Commission should be applauded for its past efforts and encouraged to continue with those activities in the future.

THE HERITAGE ZONE

Northbridge has also established a Heritage Zone as one of the land use zones set out in the Northbridge Zoning Bylaw. The purpose of this zoning district is to preserve and reinforce the visual and historical character of the Town's Memorial Square area. The Heritage Zone encompasses forty one acres, or less than one percent of the Town's land area. Within the zone, the type and intensity of uses are regulated to ensure that future development will be similar in character to what existed in the area at the time the bylaw was adopted (1987). The creation of a heritage zone is an old and powerful method of protection for historic properties and has been very effective.

IDENTIFICATION OF SIGNIFICANT SITES

Significant sites must be easily identifiable if preservation efforts are to be successful. The Resource Mapping Project completed in 1988 by IEP Inc.. of Northboro, MA includes a map which identifies the location of the existing and proposed National Register Historic Districts, other significant historic and cultural sites and the Town's scenic roads.

THE BLACKSTONE RIVER VALLEY AS A SIGNIFICANT HISTORIC AREA

While the efforts of the local groups have concentrated primarily on significant local architecture, other organizations have taken a regional focus. The Blackstone River and Canal are historic features of regional, statewide and even national importance. The establishment of the Blackstone River Valley Heritage State Park was mentioned earlier in this chapter. In addition, Congress established the Blackstone River Valley National Heritage Corridor in 1986 to encourage an integrated regional approach to retaining the cultural, historic and natural resource attributes of the corridor.

GOALS AND ACTION ITEMS

PROTECT THE TOWN'S HISTORIC AND CULTURAL RESOURCES.

- ♦ Work toward making the historic public buildings barrier free (handicapped accessible).
- ♦ Extend the existing Heritage Zone to include Oakhurst Retreat Center on Hill Street.
- ♦ Encourage the trustees of the Pine Grove Cemetery to actively pursue its listing on the National Historic Register.
- ♦ Establish a heritage overlay district along the Blackstone and Mumford Rivers which limits permitted uses to those consistent with the goals of the Heritage Corridor and is subject to specific design guidelines and performance standards.
- ♦ Provide funding to the Historical Commission to enable it to complete the photographic documentation project.
- ♦ Create additional National Historic Districts: Northbridge Center, and Riverdale and increase the size of the existing districts.

CHAPTER 6

COMMUNITY FACILITIES AND SERVICES

1. Introduction

The quality of life in a community is very dependent upon the quality of its community services and facilities, such as: police and fire protection, adequate and efficient provision of utilities, a well maintained and efficient system of roadways, a good school system, a well-stocked library and adequate recreation facilities and services. These are the basic public services. There are a number of others that are also important but that are targeted to specific sectors of the society. For example the senior center has become a valued facility in Northbridge.

Given the importance of these services, it is imperative that the town maintain its facilities, ensuring that they continue to meet the needs of the community. This chapter defines the type and scope of the existing Town services; identifies deficiencies that impede the delivery and quality of the services and looks at possible methods that may be used to alleviate these deficiencies. The third section examines possible future needs. The chapter concludes with a goals and objectives section.

The major theme that runs through this chapter is the struggle against a shrinking budget. "Through all of this painful period, however, one thing shines through: the spirit of Northbridge."¹ In 1994, the Northbridge appears to be emerging from this crisis. Total valuation for Fiscal Year 1994 increased by approximately 9.95 million dollars bringing the total value of the town to \$511,656,546.²

2. Public Safety

Public safety is perhaps the most essential service provided by a municipality. It includes police and fire protection. Northbridge has consistently rated high when measuring the quality of the services provided. Despite the major budget cutbacks that have occurred within the past few years, the departments charged with public safety have done an admiral job.

The implementation of the enhanced 911 system expected in 1995 will result in an even more efficient system.

THE FIRE DEPARTMENT

The Northbridge fire department has two stations; the headquarters is located on Main Street in Whitinsville and a smaller station is on Providence Road in Rockdale. These two stations serve the entire town. As of March 1994,

¹ Ferreira, Joseph. 1991 Northbridge Annual Report. p.48.

² *Annual Report of the Board of Assessors*. 1994 Northbridge Annual Report.

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COMMUNITY SERVICES AND FACILITIES

seven full time fire fighters/emergency medical technicians, and roughly thirty volunteers staff the department. According to Chief Madigan, the force is understaffed. Over the last few years 40%³ of the force has been eliminated. To man the department around the clock requires thirteen employees. In addition the chief feels that there should be ten employees to staff the department during daytime hours when many of the volunteers are unavailable. Chief Madigan is concerned because when there is an ambulance call, often times the Chief is the only one left at the station. This situation could seriously impede an adequate response to a fire.

The Town has found it difficult to maintain the quality of its fire fighting apparatus. Several pieces of used equipment were purchased ; a 1500 gpm pumper will go into service in early 1994, and a surplus van was obtained at no cost from the military. The van will be repaired and used to respond to hazardous materials incidents.

Chief Madigan has also expressed concern that the Plummer's and Linwood sections are not adequately served because of the stations' distance from those areas. The response time to get to some locations in those areas is too long. He would like to see a third station to alleviate this problem.

The town provides ambulance service to its residents for a fee. Ambulance receipts were used to purchase a new ambulance in 1993. A 1986 ambulance has been refurbished and provides back-up service.

THE POLICE DEPARTMENT

The Police Department moved into a new station in December of 1988. The facility is modern and efficient. It is adequate to meet the needs of the department for some time in the future.

In the past few years, the department has been operating with a bare minimum of employees. In 1992 the police department began using civilian dispatchers and using part time reserve officers. The Town now has fourteen police officers to cover twenty-four hours, seven days a week.

THE SAFETY COMMITTEE

The Safety Committee deals with complaints from citizens, police officers, the school department and various other town boards. Complaints range from safety concerns at new housing developments, street lights, parking problems, street signs, closing of streets and school bus concerns.

The adequacy of street lighting in the town continues to be a major concern. The Safety Committee has adopted a two phase street light policy to restore street lights at priority locations within the town by the Spring of 1994 (Phase 1) and restore street lights to neighborhoods (Phase 2) in 1995.⁴

³ Source: Firechief Madigan.

⁴ *Annual Report of the Safety Committee, 1993 Annual Town Report.*

3. *The Department Of Public Works*

The creation of a department of public works was mandated by the Charter which was adopted in 1990. Its first director, Richard Sasseville, began working in August of 1993. A number of departments that had previously been independent now comprise the Department of Public Works. Mr. Sasseville sees a need for utility upgrades and improvements.

The Sewer Division:

The sewer system serves about 66% of the towns population and the remainder use on-site septic disposal systems. The wastewater flow of 1.8 mgd. The town is served by two main interceptors which are defined as follows:

1. The Whitinsville interceptor from the treatment plant up to Arcade Pond.
2. The Rockdale interceptor runs from the treatment plant up to Sutton Street in the Rockdale section of town. See the map, Figure 1, which shows the location of the sewer system.

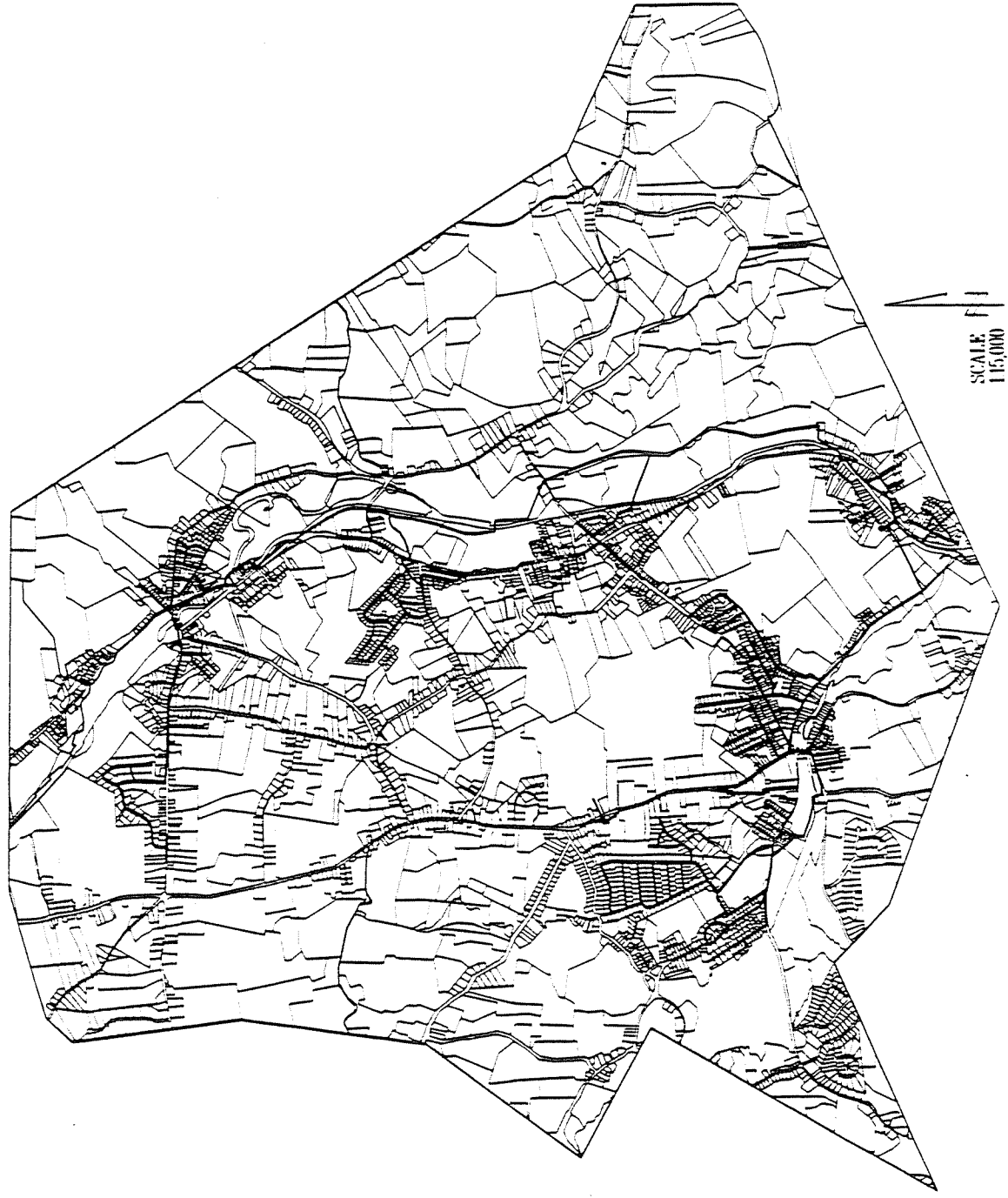
In 1987, an assessment was done by Camp, Dresser, and McKee, Inc. which identified several inadequacies of the sewer system:

- ♦ A New Wastewater Treatment Plant. The current plant was expected to last until 1990. The treatment plant design capacity is 1.8 mgd. Actual daily wastewater flow varies considerably based upon weather and seasonal variations. (During the dry summer months of 1993, daily flows were as low as 0.7 mgd, while during the spring snow melt of 1994, on occasions, daily flow exceeded 3.0 mgd.)⁵ According to the Camp, Dresser and McKee, Inc. report, the treatment plant was operating at near capacity and could only provide approximately 415 new services. The rights to those services had been "claimed" by developers. A moratorium on sewer hookups was in place. As the table in Figure 3 shows, the capacity is mainly limited by the trickling filters. Increased loadings to the filters have been attributed to a shift from industrial flow to residential flow, and an overall increase in the serviced population. Richard Sasseville, the D.P.W. director does not see a pressing need to expand the treatment plant. This is due to the fact that many of the residential subdivisions which were approved during the 1980s were never built. Speaking to the Master Plan Update Committee in March, 1994, he stated that he believes that there is some capacity to allow for limited growth. "It is very important to note that this additional capacity is finite and is the real limiting factor on where and how Northbridge can grow".⁶ The Sewer Division of the D.P.W. entered into a contract with Camp Dresser and McKee in September of 1993 to produce plans and specifications for the purpose of retrofitting the forty-seven year old trickling filter presently in use at the treatment plant. The project will be

⁵ Richard Sasseville, D.P.W. Director

⁶ Richard Sasseville, D.P.W. Director

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COMMUNITY SERVICES AND FACILITIES
NORTHBRIDGE SEWER LINES



SEWER LINE DISTRICTS
~ Parcel Boundaries
~ Sewer Lines

Figure 6-1

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COMMUNITY SERVICES AND FACILITIES

advertised for bidding purposes in early 1994 and completed by the end of 1994.⁷

TREATMENT PLANT CAPACITIES

COMPONENT	LOADS GPD/SQ. FT.	CAPACITY GPD/SQ.FT.	AVAILABLE CAPACITY GPD/SQ.FT.	AVAILABLE CAPACITY (SERVICES)
PRIMARY CLARIFIERS	700-800	800	79	1,370
TRICKLING FILTERS	800-1300*	1470*	90*	415
SECONDARY CLARIFIERS	700-800	700-800	50	779

*Lbs. of BOD5

Source: Northbridge MA. Sewer Capacity Analysis. Camp, Dresser and McKee. 1987

Figure 6-2

♦ Improvements On The Collection System

There is not sufficient capacity along most of the Whitinsville interceptor for total peak flows. To both improve flow and maintainability, there is a need for upgrading the interceptor in Rockdale, particularly in the area north of the Providence Road and Sutton Street intersection. The lines in this area are approximately 70 years old and appear to be a source of considerable inflow and infiltration which leads to surcharging during wet weather or spring melt. In addition the sewer mains in this area are located underneath the Coz Chemical mill complex.

Many of the pipes which make up the collection system are obsolete. These pipes, some of which have been in operation since 1904, were designed to handle less flow than is currently demanded of them. They need to be replaced with new pipes which are larger in diameter.

Another problem came to light in 1993. Federal inspection revealed that the treated sewer discharge was not going directly into the Blackstone River, as stated in the permit, but was discharging into an un-named brook about 1500' away. At the present time Camp, Dresser, McKee, with assistance from the organization "Save the Bay" and the State Office of Technical Assistance, is under contract to study the situation and to make recommendations on what needs to be done to bring the discharge system into compliance. What ever option is chosen it will require some capitol investment.

THE WATER DIVISION

Eighty-five per cent of the town has public water service, which is supplied by the Whitinsville Water Company. The water comes from reservoirs located along tributaries of the Mumford River. These are as follows: Swans Pond, Carpenter Reservoir, Meadow Pond, and three reservoirs labeled #4, #5,

⁷ D.P.W. Report of the Sewer Division. 1993 Northbridge Annual Town Report.

and #6. Water from the reservoirs is used to recharge ground water aquifers from which wells draw their supply for distribution. At the current time, there are three well systems. The first is the Sutton Well Field located adjacent to Reservoir #4. The other two, Whitin Well Field and Gravel Pack Well, are located adjacent to Meadow Pond.

The distribution system consists of approximately fifty miles of water mains. (Figure 4, Water Distribution System Map) It is divided into two zones, one low service and one high service. The low service zone is supplied directly by the wells. The high service zone is supplied by a booster pumping station on Hill Street.

The dependable yield in 1986 was estimated to be as follows:

DEPENDABLE YIELD

TYPE OF YIELD	SUTTON WELLFIELD (mgd)	WHITINSVILLE WELLFIELD (mgd)	TOTAL
Average annual daily dependable yield	0.5	2.2	2.7
Summertime average daily dependable yield	1	2.2	3.2

Source: *Review of Northbridge Public Service Study*. Central Massachusetts Regional Planning Commission.

Figure 6-3

Since these estimates in 1986, the gravel packed well has been taken out of use because of excessive odor, color, and iron levels. The dependable yield has lessened to 2.3. The "safe yield" as estimated by the Massachusetts Division of Water Resources is at 2.55 mgd. According to the manager of the Whitinsville Water Company, and a study of Northbridge public services by CMRPC, water supplies are sufficient to meet current Average Day Demand and Maximum Day Demand, which are estimated to be 1.02 and 1.06.

In determining the ability of the water service to meet future demands, projections by Amory Engineers, the Division of Water Resources, and CMRPC show different results:

PROJECTED DEMAND

Projection Year	Average Daily Demand (mgd)	Maximum Daily Demand (mgd)
CMRPC/2000	1.3	2.01
Amory Engineers/2000	1.72	3.4
Department of Water Resources	1.76	2.55

Source: *Review of Northbridge Public Service Study*. Central Massachusetts Regional Planning Commission. 1988.

Figure 6-4

All three of these average daily demand projections are well within the dependable yield of 2.3 (and the safe yield of 2.55). Amory Engineers projects a maximum daily demand which exceeds the yield. Their estimates, however, are considered to be on the high side due to the use of a higher MDD/ADD ratio (2.0), than Northbridge's historic average , MDD/ADD ratio (1.5). Also, the engineering firm projected a much higher population growth than seems realistic. Their estimate for the year 2000 is a population of 17,500. This figure is significantly higher than the CMRPC's figure of 13,898. As noted in Chapter 1 of this report, we project the population to be 15,000 in the year 2000, which is between the Amory and CMRPC estimates.

To meet future demand and to improve existing services, the Whitinsville Water Company is implementing a distribution system improvement plan which was drawn up by Amory Engineers in 1987.⁸ According to the Whitinsville Water Company, there is no foreseeable problem in keeping up with the town's future water demands.

Public water service in the town of Northbridge is unique in that the system is owned in part by the Whitinsville Water Company and in part by the Town of Northbridge. The Whitinsville Water Company owns the supply of water and part of the distribution system. The town owns some of the distribution system. This split has resulted in a disparity in the rates depending upon the location of one's property. An advisory committee was appointed by the Board of Selectmen in 1990 to consider the feasibility of either: the town selling its interest to the Whitinsville Water Company or the town purchasing the assets of the Whitinsville Water Company.

The committee concluded that a more in depth study of this issue was necessary. In 1993 the town was successful in obtaining a grant to complete a comprehensive study of the issue. Cullinan Engineering was contracted to do the work and began the process in March, 1994. The study, to be completed within 90 days, will include: an assessment of all of physical assets of the water service and an evaluation of each one, an assessment of current water needs and a projection of future needs, and finally a recommendation as to the best way to proceed. Basically there are three options:

1. The town could purchase the Whitinsville Water Company part of the system and operate under a "water authority".
2. The town could sell the distribution system that it owns to the Whitinsville Water Company.
3. Do nothing. Maintain the status-quo.

In 1992, the Town established a policy of having the town's water and sewer utilities be self-supporting so that local tax dollars no longer subsidize these services which in turn allows that money to be used elsewhere. While the Sewer Division currently operates as an "enterprise fund", the Water Division does not. This means that tax dollars appropriated at Town Meeting still pay for

⁸ Whitinsville Water Company Study. Amory Engineers. 1987.

the operation and maintenance of the Town's water system and for the water purchased from the Whitinsville Water Company to supply the Town's system. Revenue collected from the customers of the Town system are included in general revenues and do not directly pay for Water Division expenses. This causes some problems when expenses exceed budgeted amounts for items such as water purchases even though sufficient revenue to pay the bills has been collected from the Town's customers. The result is that a vote is required at a town meeting to increase the budget to meet expenses. It is hoped that the the current water system feasibility study will lead to a resolution of this problem.⁹ In conjunction with that policy, the town also began the implementation of a service shut off policy as a way to collect delinquent payments.

4. Education

Northbridge has one private school, Whitinsville Christian School, and a public school system consisting of 4 facilities. Local residents may also attend the Blackstone Valley Regional Technical School located in Upton.

The Whitinsville Christian School includes grades kindergarten through grade twelve. The 1993-94 total enrollment is 500 students. 261 of the students are residents of Northbridge.

The number of Northbridge residents enrolled in the Blackstone Valley Regional Technical School was 80 for the 1990-1991 school year and 86 for the 1991-1992 school year.

THE PUBLIC SCHOOL SYSTEM

The public school system is currently comprised of the following four schools:

1. The Aldrich School houses the kindergarten classes. The enrollment as of October 1993 was 196. The building was originally designed and built as the high school in 1892. It underwent major renovations in 1968.
2. The Primary School, located on Cross Street, houses the special education preschoolers, grades 1 and 2. A section of the building was constructed in 1952 and an addition was built in 1983. The enrollment as of October, 1993 was 352.
3. The Balmer School houses grades 3-6. The school was built in 1968. The enrollment as of October, 1993 was 518.
4. The Northbridge Middle School and The Northbridge High school are housed in different sections of the same structure. This school has undergone several renovations since it was built in the early part of the 1900s. A major renovation including a large addition was completed in 1986. As of October, 1993, the middle school, grades 6-8, had an enrollment of 475 students. (A pre-school class also meets in this building). The high school, grades 9-12, has an enrollment of 425 students.

⁹

Richard Sasseville, D.P.W. Director Richard Sasseville, D.P.W. Director

1993 PUBLIC SCHOOL SURVEY

TOWN	TOTAL SCHOOL ENROLL.	REGULAR TEACHING STAFF	AVERAGE TEACHER SALARY 1991-92	PER-PUPIL EXPEND. 1991-1992	% SENIORS IN CLASS OF 1992	% DROP OUT RATE FOR 91-92, GRADES 9-12	AV. ELEMEN- TARY CLASS SIZE 1991-92	AV. MID. SCHOOL CLASS SIZE 1991-92	AV. HIGH SCHOOL CLASS SIZE 1991-92
BLACKS- STONE	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
DOUGLAS	925	58	28,331	3,222	78	2.2	22	22	17
GRAFTON	1,927	110	35,820	4,086	75	3.8	21	24	19
HOPEDALE	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
MENDON	1,306	89	29,940	4,457	83	0.3	27	25	21
MILLBURY	1,502	102	34,957	4,477	76	2.7	18	18	18
MILLVILLE	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
NORTH- BRIDGE	2,100	111	34,471	3,426	72	6	27	26.5	24
SUTTON	1,197	70	36,717	3,954	69	1.9	21	26	17
UPTON	1,306	89	29,940	4,537	83	0.3	27	25	21
UXBRIDGE	1,604	100	33,638	3,869	62	1.8	21	24	14

SOURCE: 1993 Public School Survey compiled by Sarah E. Reynolds

FIGURE 6-5

The 1993 Public School Survey compiled by Sarah E. Reynolds,¹⁰ provides a comparison between the areas school systems. Figure 6-4 compares the systems in the eleven Blackstone Valley Towns.

¹⁰ Reynolds, Sarah. 1993 Public School Survey. Worcester Business Magazine. November, 1993.

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COMMUNITY SERVICES AND FACILITIES

The 1993 Public School Survey compiled by Sarah E. Reynolds,¹¹ provides a comparison between the areas school systems. Figure 6-5 compares the systems in the eleven Blackstone Valley Towns.

School Needs

According to the school facilities study, the public schools in Northbridge have some space deficiencies, which in some instances, tend to result in larger class sizes, and force classes to be conducted in non-classroom areas, such as the stage or library. In the study, comparisons were made between the facilities in Northbridge and the School Facilities Service Bureau's planning guidelines. These comparisons indicated that:

1. Classrooms in the Primary School are slightly undersized and limited specialized program space. The library and the gymnasium are undersized. Music facilities are deficient. The school needs an additional teaching station.
2. The science classroom at Balmer is inadequate. There is no art room. The gymnasium is undersized. At the time the study was done, the school was at maximum class size and there was a lack of adequate space for music, science, art and computers.¹²

**NORTHBRIDGE
SCHOOL ENROLLMENT**

	S. Y. 1993	1994 EST.
ALDRICH SCHOOL : KINDERGARTEN ,PRE.SCHOOL	196	191
PRIMARY SCHOOL	352	355
BALMER SCHOOL	518	545
MIDDLE SCHOOL	475	490
HIGH SCHOOL	425	411
TOTAL SCHOOL ENROLLMENT	1,966	1992

Source: Northbridge Superintendent Of Schools

Figure 6-6

School enrollment figures provided by the superintendent of schools indicate that despite a few bulges in the school age population the total enrollment is expected to increase only slightly by the 1994-1995 school year.

¹¹ Reynolds, Sarah. 1993 Public School Survey. Worcester Business Magazine. November, 1993.

¹² *School Facilities Study for Northbridge Public Schools*. Peat Marwick Main and Company. 1989.

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The Superintendent Ferreira stated that the pre-school levels tend to be unpredictable from year to year because the under age 5 population is usually high suggesting that there will be a rapid increase in the number of children entering pre-school and kindergarten. However the pre-school and kindergarten enrollment remains quite stable. This may be because of the high percentage of rental housing available in the town. Families with very young children living in rental units will often move to their own home when the children reach school age

Mr. Ferreira sees a decline in the enrollments of the Aldrich School in the next year, slight increases in the enrollments of the Primary, Balmer and Middle Schools and a slight decline in the High School enrollment.

SCHOOL STRUCTURE

The educational system in Northbridge is changing. The trend is toward a decentralized system with greater control at the individual school level. Budget constraints have placed a tremendous burdens on the teachers and administrators to provide quality education. With the reform legislation enacted in 1993, it is hoped that Northbridge can now begin to focus on providing a first class education for its children.

WHITINSVILLE SOCIAL LIBRARY

Public funding for the Whitinsville Social Library, the public library of the Town of Northbridge, was eliminated in 1991. The town appropriated \$10,000 to the library in 1993, while the cost to keep the library open for ten hours per week, with two part time staff members and ten dedicated volunteers, was \$56,846. The shortfall was met utilizing library endowment funds.

In February of 1994, the library's hours were extended to hours per week, under the direction of a new full time librarian.

The results of the Master Plan Survey ranked the library as the most important Town asset. Survey respondents also indicated a willingness to fund library operations through increased taxes.

5. Services For Specific Groups

THE NORTHBRIDGE HOUSING AUTHORITY

The Northbridge Housing Authority manages 84 housing units for the elderly and the handicapped.¹³ Applicants for the housing must be sixty-two years or older, or permanently handicapped/disabled with limited income.

THE NORTHBRIDGE SENIOR CENTER

The Northbridge Senior Center provides services and activities to the elderly population of Northbridge including: transportation, luncheon program

¹³ *Annual Report of the Northbridge Housing Authority, 1993 Northbridge Annual Report.*

and home delivered meals, information and referral for any problems that seniors may have, health clinics, recreational and educational programs.

The Senior Center was a victim of the town's budget woes and from 1990-1993 operated mostly on donations from the seniors themselves, area businesses, and organizations as well as on various grants. The FY 1994 budget restored some funding to the Senior Center.

6. Recreation

Northbridge has a number of facilities for active and passive recreation on 11 recreation sites. The total area of these properties comprises over 5% of the inventoried land or roughly 92 acres. The sites are as follows:

1. Plummer Park. The town owns this 2.5 acre site that is currently used for baseball, basketball and as a playground. It is located on Church Street Extension. Its major constraint is its lack of parking. It is managed by the Recreation Commission.
2. Linwood Field. This 10.4 acre site is managed by the Recreation Commission. It is used as a baseball field, a lighted basketball court, a soccer field and a tot lot. There are no summer programs at this site due to lack of interest.
3. Electric Pond. The town owns this 2.88 acre parcel on Providence Road. It has been suggested that it be utilized as a swimming area; however, it has severe limitations. The pond is dried up, it is directly on a heavily traveled major route (Rt. 122) and there is no direct access or parking. It is under the jurisdiction of the Conservation Commission.
4. Riverdale (Goulet) Playground. This 26.11 acre site is under-utilized. It is Town owned and managed by the Recreation Commission. The facilities include: softball field, swing set, slide, basketball court, volleyball net, and players benches. The Recreation Commission states that the ball field is too small. The main constraint of the site is the lack of access. The land is level and has the potential for two or three soccer fields.
5. Rockdale American Legion Field. This 9 acre site is owned by the Rockdale Foundation and is managed by the American Legion. The facilities include: baseball diamonds (one lighted), soccer areas , swing set, slide, and a spacious parking area.
6. Northbridge Center Field. The town owns this 3.19 acre site which is not currently being used. Site constraints include a lack of parking and difficult access. It is under the control of the Recreation Commission.
7. Vail Field. Northbridge owns this 9.04 acre site. It includes: basketball courts, baseball fields and playground equipment. Soccer is currently played on the baseball outfield. Soccer fields are planned for the other side of the Balmer School. It is managed by the Recreation Commission.
8. Whitin Park. This 3.84 acre site is owned by the Whitin Community Center and managed by them. It was formerly the grounds of the J.C. Whitin Estate. The facilities include a lovely park with numerous

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specimen trees, tennis courts and limited playground equipment. The tennis courts will be resurfaced in spring of 1994 after which their use will be restricted to those who are members of the Whitin Community Center. The park is used for Community Center events and by the area residents for passive recreation. The Community Center has posted "no trespassing" signs at the entrances of the park in hopes of limiting vandalism and potential liability problems.

9. Lasell Field: This 13.2 acre facility is adjacent to the Northbridge High School. It is Town owned and managed by the School Committee. It includes: a track, football field and baseball fields. In the summer of 1994 it will be used for a summer recreation program.

The budget crisis has had a large impact upon the recreational facilities. There has been minimum maintenance of the facilities in recent years and renovations need to be undertaken soon if the fields etc. are to be usable in the future.

One of the most popular sports in town is the soccer program. The Town needs additional soccer fields. One regulation and one practice field are being constructed behind the Balmer School.

The Town has no municipal swimming area. For many years, the town's children were taught to swim at the Gym (Whitin Community Center) as part of their public education. That cooperative program no longer exists. It has been suggested that Electric Pond in Rockdale might be a good site for a municipal swimming pool. This site, however, has several drawbacks:

1. It is subject to periodic flooding.
2. There is insufficient suitable land for a bath house.
3. There is insufficient suitable land for parking.
4. It is not centrally located in the town.
5. It is right on a heavily travelled relatively narrow roadway, making access and egress difficult.

Northbridge has no public tennis courts. For nearly 50 years the tennis courts at Whitin Park were available to the public. In 1993, the Whitin Community Center closed the courts because they were in deplorable condition.

The courts are being resurfaced but will no longer be available free of charge to the citizens of Northbridge. The Whitin Community Center plans to require that anyone using the courts must have a tennis membership. Over the years there have been opportunities for Federal and State funding to build tennis courts, because the Community Center Courts were available, the town never applied for funding to build public courts. Tennis is a popular sport and it is unfortunate that the residents of Northbridge do not have a tennis facility. One possible site is the lot on the corner of Main Street and West Street. It was once the site of the West Street School.

In 1993 the PTO was successful in completing a community build-a-park project which resulted in a large playground, Funway Park, installed in front of

the Balmer School. Funds are required to maintain Funway Park so that it does not fall into the same state of disrepair as other park and recreational facilities.

Parks and recreation were rated #2 on the Master Plan Survey both in importance to the community and in the willingness to fund them. Our parks and playgrounds have been neglected for a number of years. Comprehensive plans must be developed and adequately funded to properly meet the recreation needs of the community. Richard Sasseville, as D.P.W. Director, is now in charge of that effort.

7. Town Government

In 1991 the citizens of Northbridge voted adopted a new charter which mandated several basic changes in the town's governmental structure:

1. Town Manager
2. Changed some elected positions to appointed positions.
3. Consolidated the Sewer Dept., the Highway Department, and the Water Department into a Department of Public Works.
4. Establishment of a centralized budget process.

The transition has, for the most part, a smooth one. The first Town Manager, Mark Rees, was appointed in August of 1991. Unfortunately in the community was still mired in the most critical fiscal crisis in the Town's history, while going through this transition phase. Town services that the residents had long taken for granted; the library, school busing, and much of town's street lighting system were cut back. Budgets were cut back across the board, resulting in countless layoffs of teachers, firefighters and police patrolmen.

In FY 1994, the situation began to improve. Revenues increased and the town supported increased funding to the library, senior center and the highway department.

8. Waste Disposal

In 1996, the town contracted with the Wheelebrator Corp. in Millbury to accept the trash from the town for incineration. Private haulers collect the trash for transfer to that facility.

In 1991, a recycling committee was formed. The committee has worked on a strictly volunteer basis to man the monthly collection dates, find buyers for the collected materials, and maintain the Recycling center which is located on Douglas Road.

GOALS AND ACTION ITEMS

TO CREATE A FIRST CLASS EDUCATIONAL SYSTEM IN NORTHBRIDGE

- ♦ Expand the use of our school buildings for after school recreation and learning programs.
- ♦ Create a business/public partnership to develop programs for all ages during after school hours, early release days and vacation periods.

TO INCREASE ITS RECREATIONAL OPPORTUNITIES.

- ♦ Improve the recreational facilities throughout the Town.
- ♦ Develop a comprehensive plan for the maintenance of existing facilities and the creation of new ones.
- ♦ Provide the resources necessary to improve and adequately maintain fields, parks and playgrounds.
- ♦ Develop an adopt a park program.
- ♦ Work with the Whitin Community Center to preserve Whitin Park and allow public access during daytime hours.
- ♦ Create bike paths and pedestrian paths.
- ♦ Create a municipal swimming area at a suitable location.

TO CONTINUE TO PROVIDE ADEQUATE PUBLIC SAFETY AND OTHER TOWN SERVICES TO THE RESIDENTS AND VISITORS OF NORTHBRIDGE.

- ♦ Provide additional staff to man the fire department.

TO DEVELOP A SYSTEM TO ENSURE THAT MAINTENANCE AND REPLACEMENT OF TOWN EQUIPMENT IS CARRIED OUT IN A TIMELY MANNER.

- ♦ Strengthen the role of the Capitol Planning Committee and charge the committee to develop a comprehensive schedule of routine maintenance and replacement of town equipment including police and fire equipment, D.P.W. equipment etc.

PLAN FOR THE POSSIBLE EXPANSION AND RELOCATION OF TOWN FACILITIES.

- ♦ Complete a comprehensive study of all town owned property and determine the suitability of each as a location for a future town facility. For

CHAPTER 6
COMMUNITY SERVICES AND FACILITIES

example, if it became necessary to build another school, what town owned sites would be suitable for that purpose.

- ♦ The current location of the D.P.W. Headquarters is poor because it is in the floodplain. Find a suitable alternative site.

CHAPTER 7

LAND USE AND CIRCULATION

1. Introduction

Land use regulations are local government's primary planning tools. These tools include: zoning bylaws, the planning board's subdivision rules and regulations, site plan review requirements, and the special permit process. Generally speaking, they are intended to control the use and development of private land for public good. Land use regulations can be used to protect natural resources by controlling and managing the development of floodplains, steep slopes, aquifer recharge areas, wetlands, and watersheds as well as to protect and preserve historic and cultural resources. In addition, they can serve to maintain a community's character by discouraging strip development and the mixing of conflicting uses; limit adverse impacts on adjoining properties by separating inconsistent land uses; and reduce municipal expenditures for roads, schools, sewer, and water by limiting unplanned, scattered development.

The citizens shared vision of 'Northbridge in 2005' guides the formulation of future land use policies. The information on housing and population, economic development, natural and cultural resources has been thoroughly analyzed in the previous chapters. The next step is to re-examine the land uses allowed under the current zoning bylaws to see if they are consistent with the vision. Will it be possible to implement the vision guided by the existing regulations?

This chapter begins with an examination of the zoning districts and the uses allowed within each one. This is followed by an analysis of the land characteristics and the impact they have upon the suitability of development. The final section of the chapter recommends actions that might be undertaken to solve some of the land use problems.

2. Zoning Districts

RESIDENTIAL DISTRICTS

The zoning map depicts Northbridge's zoning districts. The vast majority of the land in the town, 86%, is zoned for residential use, classified according to six residential zones:

1. R-1 -- Residential 1. This is the largest residential district with approximately 4,587 acres. The minimum lot size in areas serviced by sewer is 30,000 square feet¹. In areas not serviced by sewer, the minimum lot size is 40,000 square feet.

¹ One acre is equal to 43,560 square feet.

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LANDUSE and CIRCULATION

2. R-2 -- Residential 2. This district comprises approximately 3,414 acres of land. The minimum lot size is 20,000 square feet in areas serviced by sewer, and 30,000 square feet in areas not serviced by sewer.
3. R-3 -- Residential 3. This district comprises approximately 1,609 acres. The minimum lot size is 15,000 square feet in areas serviced by sewer, and 20,000 square feet in areas not serviced by sewer.
4. R-4 -- Residential 4. Only 93 acres of the land area in Northbridge are zoned R-4. The minimum lot size is 5,000 square feet in areas serviced by sewer, and 5,000 square feet in areas not serviced by sewer.
5. R-5 -- Residential 5. The minimum lot size is 5,000 square feet in areas serviced by sewer, and 5,000 square feet in areas not serviced by sewer.
6. R-6 -- Residential 6. This district comprises approximately 121 acres. The minimum lot size is 30,000 square feet in areas serviced by sewer, and 40,000 square feet in areas not serviced by sewer.

Generally speaking, the R-1, R-2 and R-3 districts represent the town's lower density zones and the R-4 and R-5 districts its higher density zones. Single family detached dwellings are allowed in all six residential districts and two-family dwellings are allowed in all except the R-1 zone. Multi-family dwellings are limited to the R-4 and R-5 districts. Planned Townhouse Developments are allowed in the R-6 district by special permit. While few commercial uses are allowed in the residential districts, the following are allowed in some: hotels, motels, lodging homes, funeral homes, convalescent or nursing homes, membership clubs, communications and television towers, airports and landing strips, and accessory uses. Wholesale and manufacturing activities are not allowed in any of the residential districts.

COMMERCIAL DISTRICTS

The land in Northbridge zoned for commercial use is split between three business zones: B-1, B-2, and B-3. Generally speaking, both B-1 and B-2 allow most retail and service establishments as well as selected community facilities, agriculture, horticulture, and floraculture. Residential uses are not permitted. Manufacturing and light industry, railroads and railway express service are allowed in both districts by special permit. In addition, transportation services are allowed in the B-2 district. B-3 is the highway business zone it has more stringent setback and area requirements than the other two business zones have.

INDUSTRIAL DISTRICTS

Approximately 12% of the town's land area is zoned for industrial use. There are two industrial districts, I-1 and I-2. The I-1 district is larger, roughly 1,210 acres, and is less restrictive than the smaller I-2 district which includes 166 acres.

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Manufacturing and light industry, railroads and railway express service, trucking and warehousing, and wholesale and transportation services are allowed in both industrial districts. A variety of other uses including community facilities, limited agriculture, and retail and service oriented businesses, are allowed as well. A special permit is required to conduct mining, quarrying, or construction activities. Uses permitted in the I-2 district, which are further defined in Section 173-16 of the town's zoning bylaw, include: office, laboratory, light industrial, and printing and publishing establishments.

HERITAGE DISTRICT

Forty-one acres, or less than 1% of the land in Northbridge is zoned as the Heritage District. It was established to preserve and reinforce the visual and historical character of the town's Memorial Square area. The type and intensity of uses are regulated to ensure that future development will be similar in character to those that currently exist. This district allows single and two family dwellings as well as selected community and commercial facilities.

FLOODPLAIN AND FLOODWAY DISTRICTS

Northbridge has established Floodplain and Floodway districts. The Floodplain district is established as an overlay to all other districts and includes land within the 100-year floodplain. The floodway boundaries are further defined by the Flooding Data Tables contained in the Town's Flood Insurance Study.

3. Impact Of The Natural Land Features

The natural land features should be considered when making land use decisions. Chapter 4 of this document includes an indepth analysis of the Town's natural resources. A summary of the types of natural features is included here.

SLOPES

The town is hilly. Roughly three-quarters of the land area in Northbridge has slopes of less than 15%. Land with slopes of 8% to 15% are scattered throughout Northbridge, with the largest concentrations in the town's northern half. This slope category is about 1/5 th of the town's total land area. Approximately one-half of the town's land area has slopes of 3%-8%. Land in this slope category is distributed throughout the town. Less than 10% of the town's land area consists of 0%-3% slopes.

High density uses such as commercial and industrial development, apartment complexes, and roads and highways are usually best suited for land with slopes of 0-8% slope. Land with slopes of 0% to 3% is generally suitable for all types of residential, commercial, and industrial development. However, these areas are often associated with floodplains or wetlands, which pose additional development constraints.

SEPTIC SUITABILITY

Knowledge of the nature and properties of soils is critical to effective land use planning.

Soil properties and site features directly affect the functioning of on-site septic systems. Three-quarters of Northbridge's soils, contain severe limitations for septic systems.² Of these soils, 965 acres (11.2%) are zoned commercial or industrial and 7,684 acres (88.8%) residential or heritage. Areas with severe limitations can use on-site septic systems, major soil reclamation, special designs, or intensive maintenance is necessary.

Only 14% of the town's soils have slight septic system suitability limitations. The largest concentrations of these soils are located near the Blackstone River and Linwood and Whitins Ponds.

FLOODPLAINS

A large percentage of the land in Northbridge zoned for industrial use lies in the floodplain. This is because in the 1800s industries were sited along the rivers to take advantage of the water power to run their machinery. This proximity to the river caused serious pollution problems over time as well as made the structures vulnerable to flood damage. Unregulated development of floodplains can cause increased downstream flooding. This poses a potential hazard to persons and property in the floodplain area as well as those downstream who may be threatened by water contamination from flood-damaged septic systems and by debris swept downstream from flooded properties. Today the regulations regarding building in the floodplain, place strict limitations upon building in these areas. Northbridge needs to re-examine its zoning regulations to make the uses allowed in the floodplain areas ones that could realistically be located there.

WETLANDS

Most activities in wetlands are regulated under the Massachusetts Wetlands Protection Act, M.G.L. Ch 131, S.40. and under the Northbridge Wetlands Bylaw which gives additional protection to those areas. The town also has a 75% upland bylaw that states that in order to be a buildable lot, a lot must have 75% of the minimum area required for that district under the zoning bylaw, as contiguous dry, upland. This bylaw should be modified to set a minimum land area that must be dry, upland.

3. Circulation

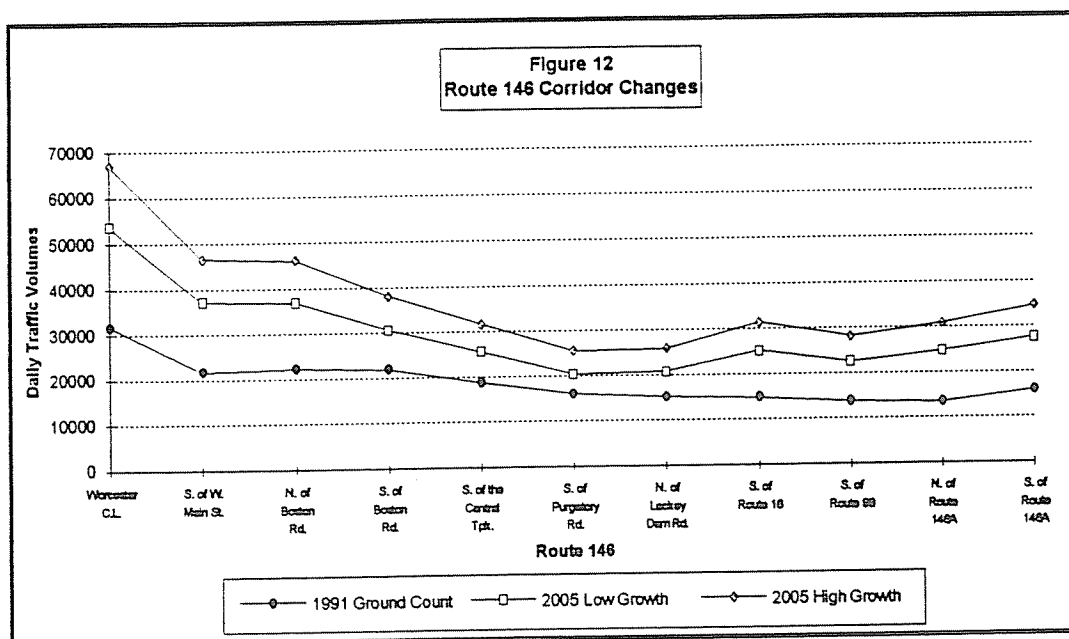
The Blackstone Valley Transportation and Growth Management Plan, Final Working Paper (April 1993) prepared by Central Mass Regional Planning Commission (CMRPC) provides valuable information on the existing traffic patterns through the town of Northbridge and projections of how the road

² IEP Inc., *Natural Resource Study for Northbridge*, 1988. P. 8.

CHAPTER 7
LANDUSE and CIRCULATION

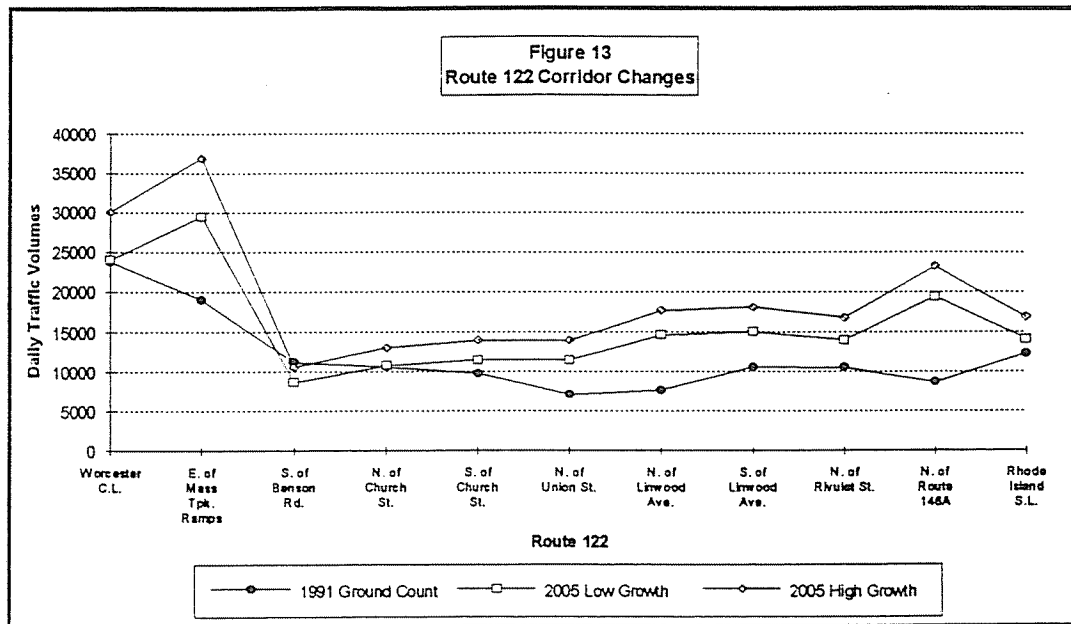
network will operate in the year 2005. The purpose of the study was to evaluate the adequacy and effectiveness of the highway network within the Valley. The study focused on the effects of the proposed Massachusetts interchange at Route 146 and Route 20 in Millbury. A model was developed to project increases in traffic by town for both low and high growth scenarios.

According to the model traffic, by 2005 traffic levels in Northbridge are projected to increase 30% under the low growth scenario and 60% under the high growth scenario. Large increases are expected to occur along Route 146. The Route 122 corridor is also expected to experience significant traffic increases during the forecast period. The charts, Figures 7-1 and 7-2 show where the greatest increases are expected.



Source: Blackstone Valley Transportation and Growth Management Plan

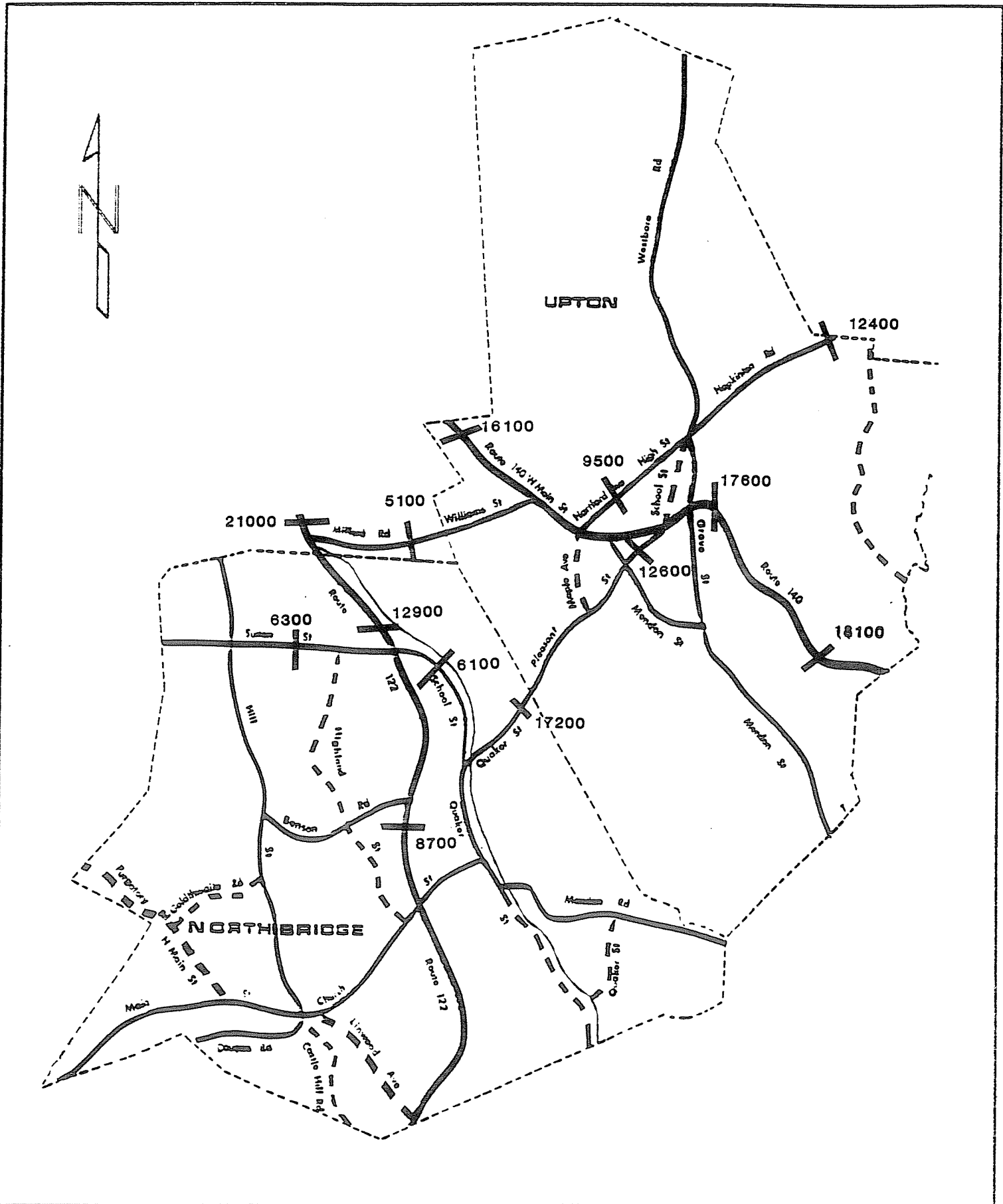
Figure 7-1



Source: Blackstone Valley Transportation and Growth Management Plan **Figure 7-2**

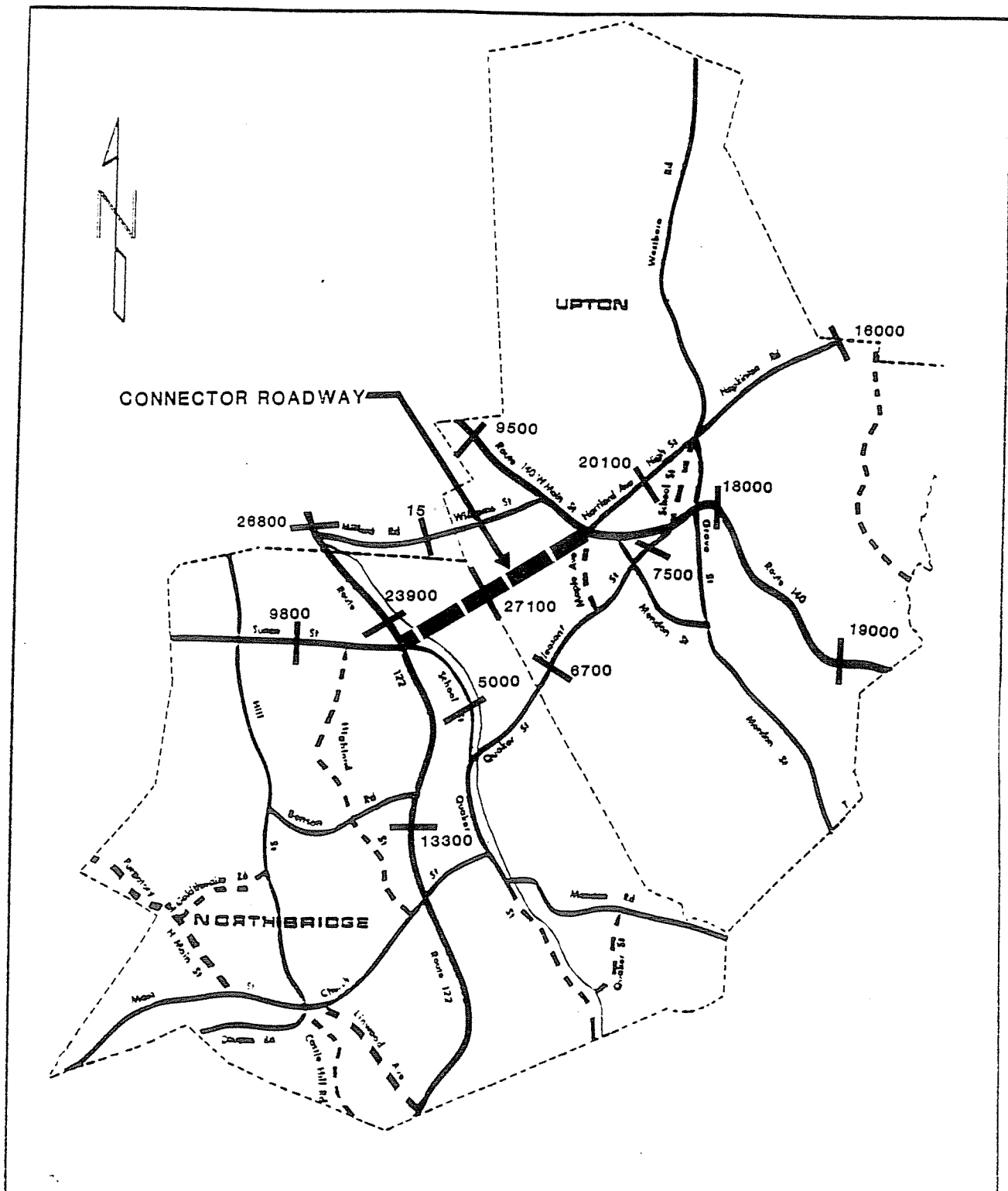
CMRPC's traffic model was also used to analyze the Northbridge-Upton connector roadway. The connector would extend Upton Street in the Rockdale section of Northbridge to Hartford Avenue in Upton. This connection would create an alternative east-west roadway to Route 16 in the Blackstone Valley. It would also facilitate travel between Route 395 in Oxford and Route 495 in Hopkinton. Figures 7-3 and 7-4 show the projected traffic volumes under the low growth scenario with and without the connector roadway. According to the study "Over 27,000 vehicles per day are expected to utilize this connector roadway. In addition, traffic levels are projected to dramatically decrease on the two existing roadways which are currently utilized to access I-495 in Hopkinton. Traffic on Quaker Street in Northbridge is expected to drop from 17,200 vehicles per day to approximately 6,700 vehicles per day. Likewise, traffic will decrease on Milford Road in Grafton from 5,100 cars per day to only 15. It should be noted that these traffic decreases appear to be somewhat large and demonstrate the travel time savings found by the model as a result of the new connector roadway. Traffic would also be expected to increase by approximately 3500 vehicles per day on Sutton Street, 11,000 vehicles per day on Route 122 north of the roadway, and by over 10,000 vehicles per day on Hartford Avenue in Upton."³

³ Central Mass Regional Planning Commission, Blackstone Valley Transportation and Growth Management Plan, Final Working Paper (April 1993), p.28



2005 LOW GROWTH TRAFFIC VOLUMES
WITHOUT UPTON CONNECTOR ROADWAY

CMRPC
FIGURE 16



2005 LOW GROWTH TRAFFIC VOLUMES
WITH UPTON CONNECTOR ROADWAY

CMRPC
FIGURE 17

The study went on to state that, at the current time, there is sufficient capacity available on existing roadways to handle the projected levels of traffic. "An Upton-Northbridge connector facility probably should be postponed until traffic demand is sufficient enough to warrant this roadway, either as a result of normal growth or as specific large scale developments occur in the area."⁴

4. Recommendations

After reviewing the existing zoning districts it is very clear that the development that changes are necessary. The existing zoning map is not a suitable blueprint for future development. The Zoning Bylaws, including the Zoning Map were adopted by the town in the 1960s and has never been subject to a comprehensive update. Of course, changes have been made, but the alterations were made in a piecemeal fashion. The Natural Resources Study completed in 1989 by IEP, Inc. noted several deficiencies in the local land use regulations. Over the past few years some of these issues were addressed:

1. In 1990, a stronger site plan review bylaw was adopted under the Zoning Bylaw. This bylaw gives the Planning Board, as the special permit granting authority, the authority to review multi-family residential, commercial, and industrial developments that exceed 6,000 square feet of building space. The Board may impose conditions on those developments to ensure that they do not adversely affect the community.
2. In 1991, the Planning Board rewrote the board's Subdivision Rules and Regulations, adding a number of items recommended by the IEP study. The revised regulations require an applicant to submit certain information which would be valuable to the Board in their efforts to allow development while protecting the town's resources.

Other problems cited by the IEP, Inc., study that have not been addressed were:

1. Inadequate control over earth removal.
2. Lack of control over the potential spillage of hazardous materials.
3. Non-residential developments that are not filed under the P.U.D. (Planned Unit Development) bylaw are subject to the town's conventional zoning provisions. These provisions tend to promote strip development which has both aesthetic and traffic safety implications.⁵
4. The Subdivision Rules and Regulations, do not specify what conditions would necessitate preparation of an environmental impact assessment.

⁴ Ibid.

⁵ IEP, Inc. Natural Resources Report, 1989. p.26.

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5. The criteria considered necessary for the granting of a special permit do not require consideration of the proposed development's impact on the Town's natural resources.

GOALS AND ACTION ITEMS

The recommended goals and action items related to land use regulations are detailed in the previous chapters. The major ones are restated below:

THE MOST IMPORTANT RECOMMENDATION OF THIS MASTER PLAN IS TO GET PROFESSIONAL HELP TO REVIEW AND UPDATE THE EXISTING ZONING BYLAWS AND THE ZONING MAP.

TO PROTECT THE NATURAL RESOURCES

- ♦ Enact a more effective earth removal bylaw. requiring applicants for special permits to remove earth to submit a comprehensive site plan and an environmental and community impact analysis if more than 500 cubic yards of earth are to be removed or excavated in any one year. The applicants would also be required to conduct all work according to specifications. These specifications would include such conditions as stockpiling of loam for later use; limitations on the size of the active excavation area; prohibitions regarding the accumulation of freestanding water; maximum slopes; conditions regarding alteration of drainage patterns; prohibitions regarding excavation depth in relationship to the water table; and site restoration requirements. Finally, this bylaw should specify the general requirements the Planning Board must consider in granting permits, such as whether the activity can be accomplished without unreasonable adverse effects on natural resources.
- ♦ Modify the zoning bylaw to require a special permit for commercial or industrial uses which represent a potential threat to the water resources. Such uses would include those involving the manufacture, storage, use, transportation, or disposal of toxic or hazardous materials.
- ♦ Limit industrial development near Meadow Pond by establishing a watershed protection overlay district. Provisions of the bylaw should restrict those uses that involve the manufacture, storage, use, transportation, or disposal of toxic or hazardous materials such as dry cleaning establishments; metal plating, finishing, or polishing; chemical laboratories; electronic circuit assembly; photographic processing , etc.

- ♦ Modify current zoning district boundaries surrounding Meadow Pond.
- ♦ Amend the Subdivision Rules and Regulations to require that an Environmental and Community Impact Analysis is a mandatory requirement for any subdivision creating more than fifteen lots. In addition, require applicants to submit an Environmental and Community Impact Analysis for specific non-residential uses. The Impact Analysis would address the environmental and community impacts of proposed development; adverse impacts which cannot be avoided; alternatives to the proposed development; and measures to be used to minimize adverse impacts, such as: air and noise pollution, water pollution, erosion, etc.
- ♦ Amend the special permit process under the zoning bylaw to include consideration of a development's impact on the environment such that, for example, the use shall not cause degradation of the environment; shall not be dangerous to the immediate neighborhood or the premises through fire, explosion, emission of wastes, or other causes; and shall not create such noise, vibration, dust, heat, smoke, fumes, odor, glare, adverse visual effects or other nuisance or serious hazard so as to adversely effect the immediate neighborhood.

TO PRESERVE AND ENHANCE COMMUNITY CHARACTER.

- ♦ Prevent uncontrolled development that detract from local character. Adopt anti-strip development provisions such as buffer zones, enhanced setback and frontage requirements, and limited curb cuts.
- ♦ Concentrate growth where development exists.
- ♦ Encourage cluster development.
- ♦ Encourage respect for the traditional scale and massing of buildings to maintain harmonious street scapes.
- ♦ Establish a heritage overlay district along the Blackstone River which limits permitted uses to those consistent with the goals of the Heritage Corridor and is subject to specific design guidelines and performance standards.
- ♦ The existing zoning bylaws and land use regulations should be diligently enforced in order to provide effective protection of its natural and cultural resources.
- ♦ Need to integrate land uses. Reduce the number of single use zones.

IMPROVE VEHICULAR CIRCULATION

- ♦ Development along Route 122 should be controlled to minimize traffic problems.

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- ♦ Efforts should be made to create an east west road through Northbridge, perhaps by joining with Upton to make Upton Street a through street.

Master Plan Survey

Northbridge's Planning Board is in the process of updating the town's Master Plan. This document will guide the decisions we make concerning the future development of our town. Therefore, we would like to get input from as many citizens as possible. If you would like your opinions to be considered, please complete this brief survey, and bring it to the Town Clerk's Office or mail it to: Master Plan Survey, c/o Northbridge Planning Board, Town Hall, Whitinsville, MA 01588. Thank you for your time!

1. How important is it to protect and maintain each of the following in Northbridge:
(1=Very important, 2=Somewhat important, 3=Not important)

<input type="checkbox"/> Downtown Shopping Areas	<input type="checkbox"/> Rural Character
<input type="checkbox"/> Historic Buildings, Cemeteries and Monuments	<input type="checkbox"/> Senior Center
<input type="checkbox"/> Historic Districts (Memorial Square, Rockdale Commons)	<input type="checkbox"/> Rivers and Lakes
<input type="checkbox"/> Open Space and Scenic Routes	<input type="checkbox"/> Whitin Park
<input type="checkbox"/> Parks and Recreational Areas	<input type="checkbox"/> Whitinsville Community Center
<input type="checkbox"/> Other: _____	<input type="checkbox"/> Whitinsville Social Library

2. How important is it to develop, expand or improve each of the following in Northbridge:
(1=Very important, 2=Somewhat important, 3=Not important)

<input type="checkbox"/> After School Program for Grades K-8	<input type="checkbox"/> Adult Day Care
<input type="checkbox"/> Assisted Living Facilities/Senior Housing	<input type="checkbox"/> Adult Vocational Training
<input type="checkbox"/> By-law/Rezoning to Limit Residential Growth	<input type="checkbox"/> Bike Paths
<input type="checkbox"/> Day Care for Early Release and Snow Days	<input type="checkbox"/> Classrooms to Reduce Class Sizes
<input type="checkbox"/> Expanded Industrial Base to Ease the Tax Burden	<input type="checkbox"/> Movie Theater
<input type="checkbox"/> Industrial Development to Provide Jobs	<input type="checkbox"/> Swimming Area
<input type="checkbox"/> Municipal Parking in Downtown Areas	<input type="checkbox"/> Tourism
<input type="checkbox"/> Land Trust to Buy Open Land	<input type="checkbox"/> Youth Center
<input type="checkbox"/> Stores & Restaurants (Commercial Development)	
<input type="checkbox"/> Tax Incentives for Attractive Industries	
<input type="checkbox"/> Other: _____	

3. Protecting and building assets costs money. Please circle those items in questions 1 and 2 above that you would be willing to pay for in the form of increased taxes?

4. How long have you lived in Northbridge? _____ Years
5. How old are you? _____ Years
6. Do you own your own home? _____ Yes _____ No
7. Are you a registered voter? _____ Yes _____ No

8. Address (optional):

9. Name (optional):

Master Plan Survey

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<input type="checkbox"/> Open Space and Scenic Routes	<input type="checkbox"/> Whitin Park
<input type="checkbox"/> Parks and Recreational Areas	<input type="checkbox"/> Whitinsville Community Center
<input type="checkbox"/> Other: _____	<input type="checkbox"/> Whitinsville Social Library

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<input type="checkbox"/> By-law/Rezoning to Limit Residential Growth	<input type="checkbox"/> Bike Paths
<input type="checkbox"/> Day Care for Early Release and Snow Days	<input type="checkbox"/> Classrooms to Reduce Class Sizes
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<input type="checkbox"/> Municipal Parking in Downtown Areas	<input type="checkbox"/> Tourism
<input type="checkbox"/> Land Trust to Buy Open Land	<input type="checkbox"/> Youth Center
<input type="checkbox"/> Stores & Restaurants (Commercial Development)	
<input type="checkbox"/> Tax Incentives for Attractive Industries	
<input type="checkbox"/> Other: _____	

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5. How old are you? _____ Years
6. Do you own your own home? _____ Yes _____ No
7. Are you a registered voter? _____ Yes _____ No

8. Address (optional):

9. Name (optional):

Master Plan Survey Results LAL 3/28/94	Rank	Average Rating	Number of Responses
Importance			
Whitinsville Social Library	1	1.11	57
Parks and Recreational Areas	2	1.32	57
Rivers and Lakes	3	1.36	56
Whitinsville Community Center	4	1.36	56
Industrial Development to Provide Jobs	5	1.42	57
Historic Buildings, Cemeteries and Monuments	6	1.44	57
Historic Districts (Memorial Square, Rockdale Commons)	7	1.46	57
Expanded Industrial Base to Ease the Tax Burden	8	1.51	55
Classrooms to Reduce Class Sizes	9	1.52	52
Open Space and Scenic Routes	10	1.55	56
Senior Center	11	1.56	57
Downtown Shopping Areas	12	1.60	57
Whitin Park	13	1.60	55
After School Program for Grades K-8	14	1.61	56
Stores & Restaurants (Commercial Development)	15	1.63	56
Tax Incentives for Attractive Industries	16	1.64	55
Bylaw/Rezoning to Limit Residential Growth	17	1.64	56
Rural Character	18	1.65	55
Assisted Living Facilities/Senior Housing	19	1.80	55
Youth Center	20	1.81	57
Municipal Parking in Downtown Areas	21	1.84	57
Day Care for Early Release and Snow Days	22	1.85	54
Swimming Area	23	1.96	56
Tourism	24	2.00	55
Land Trust to Buy Open Land	25	2.02	52
Bike Paths	26	2.04	56
Adult Day Care	27	2.05	56
Adult Vocational Training	28	2.09	56
Movie Theater	29	2.36	55
Other (Various Responses Written In)	30	1.00	6
Other (Various Responses Written In)	31	1.00	5
Willingness to Pay For			
Whitinsville Social Library	1		28
Parks and Recreational Areas	2		22
Classrooms to Reduce Class Sizes	3		17
Senior Center	4		17
Youth Center	5		14
After School Program for Grades K-8	6		12
Swimming Area	7		12
Rivers and Lakes	8		10
Historic Buildings, Cemeteries and Monuments	9		10
Land Trust to Buy Open Land	10		10
Open Space and Scenic Routes	11		8
Day Care for Early Release and Snow Days	12		8
Bike Paths	13		8
Whitin Park	14		6
Expanded Industrial Base to Ease the Tax Burden	15		5
Whitinsville Community Center	16		5
Other (Various Responses Written In)	17		5
Industrial Development to Provide Jobs	18		5
Historic Districts (Memorial Square, Rockdale Commons)	19		5
Rural Character	20		5
Adult Day Care	21		4
Tourism	22		4
Bylaw/Rezoning to Limit Residential Growth	23		4
Tax Incentives for Attractive Industries	24		4
Municipal Parking in Downtown Areas	25		3
Movie Theater	26		3
Other (Various Responses Written In)	27		3
Assisted Living Facilities/Senior Housing	28		3
Adult Vocational Training	29		3
Downtown Shopping Areas	30		2
Stores & Restaurants (Commercial Development)	31		2
How long have you lived in Northbridge?		Average =	26
How old are you?		Average =	47
Do you own your own home?		Yes = 51 No = 6	
Are you a registered voter?		Yes = 57	
Total Responses	57		

[illegible]

