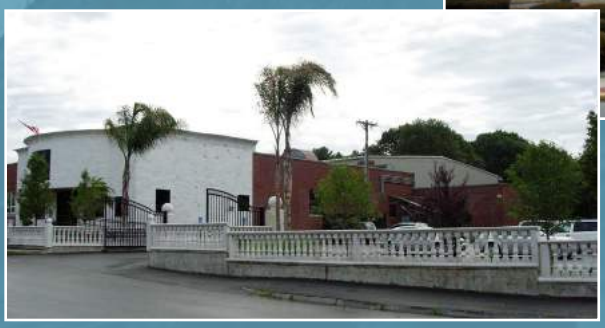
WOBURN VISION 2020

Community Development Plan

Funded Under Executive Order 418 by the Massachusetts Department of Housing and Community Development, Massachusetts Department of Economic Development, Executive Office of Transportation, and the Executive Office of Environmental Affairs

Supplemental funding provided by the City of Woburn

2005



John C. Curran, Mayor
Woburn Planning Board

WOBURN VISION 2020

COMMUNITY DEVELOPMENT PLAN

2005

Funded under Executive Order 418 by the Massachusetts Department of Housing and Community Development, Massachusetts Department of Economic Development, Executive Office of Transportation, and Executive Office of Environmental Affairs. Supplemental Funding provided by the City of Woburn.

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EXECUTIVE SUMMARY

The City of Woburn seeks to actively promote the improvement and vitality of the community for the benefit of all current and future residents of the City, through the acquisition and preservation of open space; the continuous improvement of cultural and educational resources; the continued enhancement and revitalization of Woburn's strong economic base; and maintaining the sense of community created by the strong neighborhoods within the City.

Project Overview

In 2003, the City of Woburn received a grant for planning services to create a Community Development Plan, pursuant to Executive Order 418. Executive Order 418 allowed communities to address future growth and development by creating visions, goals and strategies in six topic areas:

1. Natural resources and open space;
2. Housing;
3. Economic Development;
4. Water System;
5. Stormwater Piping System;
6. Transportation.

Four state agencies provided funding for this Plan: the Executive Office of Environmental Affairs, the Department of Housing and Community Development, the Executive Office of Transportation, and the Department of Economic Development. Supplemental funding was provided by the Mayor's Office, The City Council, and by the Woburn Planning Board.

Since Woburn participated in the *North Suburban Transit Opportunities Study* in 2002, the state granted the City equivalent plan status approval for the transportation component of EO 418. The City was also granted equivalent plan status for the open space and resource protection element based on the Woburn Open Space Plan. The scope of work for this project allowed the City to update the 1999 Woburn Open Space Plan (included in full in the appendix to this document) and to include other tasks necessary to integrate the open space work with the remainder of the Community Development Plan.

The Economic Development element of the plan was divided between the MAPC and the Woburn Planning Department. MAPC was to be responsible for preparation of an economic data profile and identifying the economic development opportunities area. The Woburn Planning Department was responsible for hosting the Economic development Forum and for developing alternative economic development strategies and recommendations.

Background

Woburn can best be described as a suburban industrial city. It has a large commercial base and densely developed downtown surrounded by suburban residential development.

The population of the City is 37,258 with a median age of 37.7 years old (based on the 2000 United States Census). The City has a low minority population. A majority of the housing stock (61 percent) is owner-occupied, while 39 percent is rental. In spite of Woburn's recent growth in housing units, much of its housing is relatively old, with much pre-war housing and a major growth spurt in the 1950's. Sale prices, rents, and the affordability gap have all risen rapidly. More than 2,000 tenant households face high rent burdens, and more than 6,610 households have incomes that qualify for subsidized housing.

Woburn is a regional jobs center with far more jobs in the City than there are residents in the workforce. This results in heavy commuting into the City every day. The greatest number of Woburn residents are employed in education, health and social services. The unemployment rate for Woburn residents has consistently been below that of the state as a whole. The level of education of Woburn residents has been steadily increasing over the years.

The City has a good parks system as well as a number of conservation areas. Residents would like to upgrade and enhance the open space and parks system with strategic acquisitions aimed at enhancing existing areas. The Horn Pond Conservation Area is the jewel in the open space system and is heavily used. It is also the area with the greatest concentration of environmentally sensitive features.

Community Development Plan

The Community Development Plan was developed with the help of Woburn Residents, City officials, and engineering and planning professionals. Through an extensive public outreach program (called "Putting It All Together") recommendations from individual topic areas were fit together to create one comprehensive improvement plan. In all cases, implementing these ideas will take a number of steps and many would involve a public process and City review process.

The following section summarizes the main components of the Woburn Vision 2020 Community Development Plan. Detailed descriptions of each of these components can be found in subsequent sections of this study. The Community Development Plan Map (Map 6, found later in this report) identifies those recommendations that entail a change in land use in the City (including zoning changes), ownership changes, or physical changes such as new facilities. The immediate action items from the recommended Transportation Improvement Plan Prioritization (see figure ES-1) are also included below.

Protect Spence Farm and Shannon Farm through use of a Conservation Subdivision Design Ordinance - Conservation Subdivision Design (CSD) is a relatively new concept of cluster-type development that allows land to be developed while still preserving community character and reducing environmental impacts. CSD is a cost-effective tool for preserving open space. It provides for partial open space preservation and resource protection at no cost to the municipality while still allowing development to occur. It is most appropriate where acquisition of the entire property would be prohibitively expensive.

Develop multi-use path on MBTA ROW – The City should pursue development of a multi-use path on the inactive MBTA railroad right-of-way that runs from approximately Cross Street at the Winchester Town line north through Woburn Center to just south of Route 128. Creating a multi-use path on the MBTA ROW would create transportation and recreational resources in a densely developed part of the City. It would clean up an area that is neglected and return it to a productive use. This development will move forward concurrent with a feasibility study of on-road bicycle accommodations along key City roads and bicycle detection loops at major intersections.

Acquire the Winchester Elks Property - This parcel is adjacent to Horn Pond Mountain. The parcel has been offered to the City and received the highest priority ranking by participants at the Open Space Forum. The parcel contains wetlands and rare vegetation. Horn Pond is the most used open space resource in the City.

Acquire the St. Anthony's Property – The City should acquire this 10 acre parcel owned by the Archdiocese adjacent to St. Anthony's Church. This parcel was identified as having recreation potential and is adjacent to the Middlesex Canal.

Acquire the Water Street Property - This is a residential parcel in the vicinity of Horn Pond that the City would like to acquire to provide a buffer to Horn Pond and to provide additional protection to the watershed.

Acquire the Shaker Glen Property – The acquisition of this 11 acre parcel on Russell Street, adjacent to the Shaker Glen Conservation Area could potentially be used to provide better access and parking for Shaker Glen. It includes wetlands and Shaker Glen Brook runs through the property.

Develop a plan with Burlington for the City of Boston (Cummings) Property - The property is owned by the City of Boston and includes 25 acres in Woburn and 150 acres in Burlington. While the property is currently protected under a trust, the City of Boston has been pursuing options for taking the land out of that trust with the potential that it could be sold and redeveloped in the future. The land has great potential for park and recreation purposes. The recommendation is to develop a plan for the property that is in harmony with the protected trust.

Zone for mixed use development across from St. Anthony's - The City should consider zoning the area across from St. Anthony's Church to allow a mix of residential and commercial uses. Allowing a mix of residential, commercial, and other uses where there is infrastructure to support it is a prime example of "smart growth."

Consider adaptive reuse of the Armory for housing – Adaptive reuse is the practice of allowing smaller units within larger residential structures or converting non-residential structures to residential uses or to a mix of uses, including residential, retail, etc. At the Housing Forum, residents expressed support for the concept of reusing the Armory for housing.

Encourage more residential uses in the South End Overlay District area. Residential uses, including more affordable housing, should be included in the revitalization plans for the Woburn Loop Corridor (near Horn Pond) in the South End.

Develop homeownership opportunities at the McGarr School – Reuse of the McGarr School site would be another opportunity for adaptive reuse of a municipal property. Participants at the housing forum felt that this site would be suitable for homeownership opportunities affordable to municipal workers.

Provide more senior housing in the downtown – In general, participants in the housing forum felt that the downtown would be a good location for additional senior housing.

Create homeownership opportunities on the Park Street site – The Woburn Housing Authority has a small site on Park Street in the downtown that could be used for owner-occupied housing.

Allow mixed-use development in commercial areas - The City should consider enacting mixed-use zoning that would allow a mix of residential, commercial and other uses. The City has already rezoned to allow conversion of upper floor space in B-D districts to multiple residential units. This concept could be extended to other commercial areas.

Pursue transit-oriented development at the Mishawum Train Station – The City has been pursuing a transit-oriented development consisting of residential development with some limited village convenience commercial to serve local residents and commuters at the Mishawum Train Station.

Provide better access to the Anderson Regional Transportation Center by rebuilding the New Boston Street Bridge – The reconstruction of the New Boston Street Bridge will help to provide more direct access for local and regional residents to this important regional facility. The reconstruction will also create an Industrial Traffic Belt.

Revitalize the industrial zones with cleaner, lower impact uses – The City would like to encourage newer industrial/office uses such as bio-tech and research and development and phase out the trucking terminals that currently dominate the industrial parks. The City would like to replace some of these terminals with appropriate manufacturing and/or office space.

Transportation Improvements to the Downtown area – These improvements include traffic, pedestrian, and bicycle enhancements as well as traffic circulation modifications that will enhance the area for all users.

Sidewalk Improvements – The City will begin a City-wide upgrade of sidewalk connections, including ADA compliant wheelchair ramps and audible pedestrian accommodations. This task would also include increased enforcement of pedestrian right of way laws, re-striping crosswalks and stop bars for maximum visibility, and improvements to street lighting.

Improve traffic operations throughout the City – The City is pursuing funding to improve traffic operations at three intersections:

- Salem Street at Wood Street/Wildwood Avenue;
- Winn Street at Kilby Street/Bedford Road (design plans underway); and
- Bedford Street at Cambridge Road.

Funding is also being sought for the following roadway improvements:

- Widening and reconstruction along Montvale Avenue, from I-93 to Washington Street (design plans underway);
- Reconstruction of New Boston Street, from New Boston Street Bridge to Industrial Parkway;
- Widening and reconstruction along Washington Street, from I-95 to Salem Street; and
- Extension and new construction of Monks/Warren/Baldwin Road.

Replace Salem Street Bridge – Replacing the state owned Salem Street Bridge would remove the only structurally deficient bridge in the City.

Parking Improvements – The City plans to improve accommodations at Walnut Street Lot, including circulation, beautification, re-striping, and investigation of the feasibility of a parking deck. Construction of a new parking facility at the Magazine Hill Park and Ride site is being pursued using state and federal money. Additional improvements could also include an increase in city-wide enforcement and the amendment of zoning regulations to control private development parking.

Additional Strategies and Recommendations

In addition to implanting the Development Plan identified above, the following sections present further strategies that can be executed to help the City achieve its Vision 2020 goals.

Natural Resources and Open Space

The following three strategies meet the goals determined as part of the Open Space forum held by the City in 2003. These strategies seek to protect different areas of the City by zoning, acquisition, or other means.

***Utilize the hotel/motel rooms tax to fund open space acquisition* -** Woburn should consider designation of the local portion of the hotel/motel rooms tax (MGL c. 64G Section 3A) to a dedicated fund for open space acquisitions.

***Review zoning ordinance to determine if open space provisions are sufficient* -** The City should review its existing zoning to determine if there are revisions that could be made that could create additional open space in new developments. The City should review the provisions in its ordinance versus the bylaws or ordinances of communities that have a "greener" look.

***Review Adoption of the Community Preservation Act* -** The City needs to tap the widest possible variety of sources in order to develop a fund that would be available when parcels come on the market. The primary new source of funding that could be made available is the Community Preservation Act. Adoption would also help to accomplish the housing goals of the City.

Housing

A main theme of the housing forum was identifying ways to provide housing for residents across a broad range of incomes. To do this, the City needs a broader range of housing types, locations, and affordability levels than the housing market and existing regulations are likely to produce. The following six measures were identified to help the City achieve this broader range of housing.

***Planning & Organizational Resources* -** The City should expand its planning and organizational resources for housing by designating a staff person responsible for housing issues. The City should also consider forming a housing development non-profit and a Community Land Trust.

***Undertake a public education campaign* -** The City could undertake a public education campaign to educate people about what's "affordable" and about how housing affects local citizens and the region's economy.

Financial Resources – To expand its financial resources, the City should join a consortium to receive an annual allocation of federal HOME funds and adopt the Community Preservation Act (CPA).

Zoning- There are a wide variety of zoning strategies that can be applied including:

- Adopting inclusionary zoning, which requires residential developers to provide for affordable housing;
  - Adopting incentive zoning, which provides developers beneficial treatment (such as increased density) in exchange for providing affordable housing;
  - Developing a linkage program, which requires a commercial developer to provide a financial contribution toward affordable housing or off-site housing;

- Increasing density in some districts, thereby consuming less land, which tends to lower housing costs; and
- Expanding the areas that allow mixed-use development (often office space, retail, and residential in one area) and reducing parking requirements.

Preservation of existing housing opportunities – This set of strategies includes monitoring expiring use properties, reusing municipally owned property, identifying public or institutional properties, utilizing tax title properties and code enforcement.

Develop new local production initiatives - This would include developing an affordable housing plan under the 40B Planned Production Program and developing a Local Initiative Program (LIP).

Economic Development

The six economic strategies identified below are expected to help the City meet economic development goals, revitalize City neighborhoods, and provide connectivity between different neighborhoods and economic sectors.

Examine areas where rezoning may help the City achieve its economic development goals – Examine rezoning some areas to meet the specific goals expressed in the Economic Development Discussions for industrial/commercial development. This could include creation of several mixed use, business, commercial and industrial zoning districts or overlay districts

Invest in strategic transportation improvements – Review transportation enhancements that will achieve enhanced traffic flow and reduce truck traffic in residential neighborhoods.

Improve public transit and pedestrian connections – Work with the MBTA and local businesses and employers to improve public transportation and pedestrian connections to employment centers and businesses

Promote workforce development – Develop partnerships with Colleges and Junior Colleges to offer courses to continue to increase the educational attainment of the City's residents and workforce

Partner with the Woburn Redevelopment Authority to revitalize target areas – Continue to work with and encourage the activities of the Woburn Redevelopment Authority in revitalizing downtown and other areas of the City such as the Woburn Loop

Develop information technology infrastructure – Develop a high bandwidth infrastructure that can expand and meet the growing needs of businesses and individuals throughout Woburn

Transportation

Currently, the challenge for the City of Woburn is to identify and provide the transportation infrastructure needed to enhance existing and active businesses; support and enhance the downtown area; and improve the economy and quality of life of the residents of the City. The recommended actions identify potential enhancements of intersections and roadways, parking areas, pedestrian paths, and bicycle connections. Each recommendation has been prioritized as an immediate, short-term or long-term item for implementation. The time line utilized for the immediate, short-term, and long-term recommendations is as follows:

- Immediate Action: 2-7 Years
- Short-Term Action: 7-12 Years
- Long-Term Action: 12-17 Years

The Recommended Action Plan ultimately developed from this process includes various alternative approaches to address the transportation needs identified from the existing and future conditions analyses. These alternatives are summarized in Figure ES-1. Immediate improvements are identified as part of the Community Development Plan section above. Short and long-term improvements should be considered as part of these alternative strategies. Alternatives regarding *intersections and roadways* were voted on and prioritized by the public. Alternatives regarding *parking, transit, and pedestrian/bicycle accommodations* were identified during the public participation process, but not prioritized by the public.

A total of 13 immediate action measures, 11 short-term improvements, and 12 long-term traffic, roadway and bridge improvements were developed. In addition, various parking, sidewalk, transit, and bicycle improvements are recommended as immediate, short, and long-term actions. A more detailed matrix, providing funding source, design status, and jurisdiction information can be found later in this document.

Figure ES-1: City of Woburn Recommended Transportation Improvement Plan Prioritization

Immediate Actions (2005-2010)

Project	Description	Investment*
Salem Street at Wood Street/Wildwood Avenue	Traffic signal installation and geometric improvements	$325,000
Winn Street at Kilby Street/Bedford Road	Traffic signal installation and geometric improvements	$400,000
Bedford Road at Cambridge Road	Traffic signal upgrade and geometric improvements	$325,000
Downtown Improvements	Traffic circulation and control modifications	$500,000
Salem Street Bridge	Bridge Replacement	$1,000,000
Montvale Avenue, from I-93 to Washington Street	Roadway Widening/Reconstruction	$3,400,000
New Boston Street Bridge	Bridge Construction	$3,200,000
New Boston Street, from New Boston Street Bridge to Industrial Parkway	Roadway Reconstruction	$325,000
Washington Street, from I-95 to Salem Street	Roadway Widening/Reconstruction	$850,000
Increased Enforcement	Improve enforcement of pedestrian right of way laws and school zones, restripe crosswalks and stop bars for maximum visibility, and improve street lighting	$250,000
Anderson RTC	Provide safer pedestrian accommodations to the Anderson RTC	TBD[1]
Magazine Hill Park and Ride	Construction of a park and ride parking lot to increase availability of long-term parking in the downtown area	$372,000

Short-Term Actions (2010-2015)

Project	Description	Investment*
Main Street - Winchester to Wilmington	Traffic signal interconnection/coordination project	$75,000
Commerce Way, Mishawum Road, New Boston Street	Traffic Signal coordination project along Woburn Industrial Loop	$200,000
Willow Street at Lexington Street	Feasibility of traffic signal installation and geometric improvements	350000
Four Corners	Traffic signal upgrade and geometric improvements	$500,000
Holton Street at Green Street	Feasibility of traffic signal installation and geometric improvements	$350,000
Mishawum Road at Olympia Avenue	Feasibility of traffic signal installation and geometric improvements	$350,000
Main Street at Montvale Avenue	Traffic signal controller upgrade	$15,000
Main Street at Salem Street	Traffic signal controller upgrade	$15,000
Draper Street	Roadway Extension/New Street Construction	$1,300,000
Breed Avenue	Roadway Extension/New Street Construction	$1,800,000
Holton Street	Roadway Reconstruction	TBD[1]

Long-Term Actions (2015 to 2020)

Project	Description	Investment*
Cambridge Road, from Bedford Road to Winchester Town Line	Roadway Widening/Reconstruction	$400,000
Main Street at Lake Avenue	Feasibility of traffic signal installation and geometric improvements	$400,000
Burlington Street at Lexington Street	Feasibility of traffic signal installation and geometric improvements	$400,000
Montvale Avenue at Wood Street	Traffic signal upgrade and geometric improvements	$400,000
Mishawum Road at Beach Street	Feasibility of traffic signal installation and geometric improvements	$400,000
Cross Street at Main Street	Feasibility of traffic signal installation and geometric improvements	$400,000
Locust Street at Cambridge Road	Feasibility of traffic signal installation and geometric improvements	$400,000
North Main Street, from Wilmington Town Line to West Dexter Avenue	Roadway Reconstruction	$210,000
Conn Street	Roadway Extension/New Street Construction	TBD[1]
Commerce Way	Roadway Widening/Reconstruction	TBD[1]
Washington Street, from Mishawum Road to Olympia Avenue	Roadway Widening/Reconstruction	TBD[1]

Figure ES-1 (cont'd): City of Woburn Recommended Transportation Improvement Plan Prioritization

Immediate Actions (2005-2010)		
Project	**Description**	**Investment***
Parking Improvements	Improve accommodations at Walnut Street Lot, including circulation, beautification, repaving, re-striping, and investigating the feasibility of a parking deck. Increase enforcement citywide, amend zoning regulations to control private development parking	TBD[1]
Sidewalk Improvements	Citywide sidewalk connections/upgrades; including implementing ADA compliant wheelchair ramps, audible pedestrian accommodations at traffic signals, and removing utility poles that block passageways	TBD[1]
Transit Accommodations	Potential reopening of Mishawum Station as part of a Transit Oriented Design development. Investigate feasibility of providing bus or shuttle service to the Anderson RTC, local bus service within the City, and a dedicated shuttle service for the elderly	TBD[1]
Bicycle Accommodations	Investigate the feasibility of on-road bicycle accommodations along key roadway corridors and the feasibility of bicycle detection loops at major intersections. Install bike racks in the downtown area	TBD[1]

Short-Term Actions (2010-2015)		
Project	**Description**	**Investment***
Parking Improvements	Investigate feasibility of permit or metered parking. Improve accommodations at the City Hall lot, Armory lot, Federal Street lot, and on-street	TBD[1]
Sidewalk Improvements	Complete citywide sidewalk connections/upgrades; including implementing ADA compliant wheelchair ramps, audible pedestrian accommodations at traffic signals, and removing utility poles that block passageways	TBD[1]
Transit Accommodations	If feasible, begin to provide bus or shuttle service to the Anderson RTC, local bus service within the City, and a dedicated shuttle service for the elderly	TBD[1]
Bicycle Accommodations	Work with Towns of Winchester and Stoneham to complete the Tri-Community Bikeway and Woburn Loop	TBD[1]

Long-Term Actions (2015 to 2020)		
Project	**Description**	**Investment***
Parking Improvements	Prohibit use of off-street parking as vehicle storage, begin reallocation of time limits throughout downtown, including increasing the number of handicapped parking spaces	TBD[1]
Sidewalk Improvements	Improve streetscape along key pedestrian corridors, improve pedestrian access along Presidential Way and Washington Street, and investigate the feasibility of pedestrian bridges at key locations	TBD[1]
Transit Accommodations	If feasible, continue to implement the provision of bus or shuttle service to the Anderson RTC, local bus service within the City, and a dedicated shuttle service for the elderly	TBD[1]
Bicycle Accommodations	Continue to provide bicycle accommodations throughout the City of Woburn	TBD[1]

* as reported by the City of Woburn
does not include design and/or right-of-way acquisition fees
1 to be determined

INTRODUCTION

In 2003, the City of Woburn received a grant for planning services to create a Community Development Plan, pursuant to Executive Order 418. Executive Order 418 allowed communities to address future growth and development by creating visions, goals and strategies in six topic areas: natural resources and open space; housing; economic development; water, stormwater piping; and transportation. Four state agencies provided funding for this Plan: the Executive Office of Environmental Affairs, the Department of Housing and Community Development, the Executive Office of Transportation and Construction, and the Department of Economic Development. In addition, supplemental funding was provided by the City of Woburn.

Since Woburn participated in the *North Suburban Transit Opportunities Study* in 2002, the state granted the City equivalent plan status approval for the transportation component of EO 418. However, the City did fund a transportation section which was completed by Vanasse Hangen Brustlin, Inc. (VHB). The City has also incorporated the key findings of a study of the City's Water and Stormwater Systems that was funded separately by the City. The City was also granted equivalent plan status for the open space and resource protection element based on the Woburn Open Space Plan. The scope of work for this project allowed the City to update the 1999 Woburn Open Space Plan and to include other tasks necessary to integrate the open space work with the remainder of the Community Development Plan.

The Economic Development element of the plan was divided between tasks to be prepared by the MAPC and those to be done by the Woburn Planning Department. MAPC was to be responsible for preparation of an economic data profile and for mapping the economic development opportunities area. The Woburn Planning Department was responsible for hosting the Economic Development Forum and for developing alternative economic development strategies and recommendations.

The City will be using the results of this plan as part of its on-going planning process. The City hired the Metropolitan Area Planning Council (MAPC) as its consultant. The MAPC worked under the direction of the Planning Director.

Over the course of a year, the Planning Department hosted six public forums:

- City-wide Visioning Forum, October 9, 2002
- Natural Resources and Open Space Forum, May 21, 2003
- Economic Development Forum, June 18, 2003
- Housing Forum, August 6, 2003
- Transportation Forum, September 17, 2003
- Final Plan Forum, September 30, 2003

Throughout this report, we provide perspective on trends in Woburn by comparing the City to larger geographic regions. Often we refer to the "MAPC region". This is the area covered by the Metropolitan Area Planning Council and includes the 101 communities of metropolitan Boston from Cape Ann to Duxbury and from Boston out to Bellingham,

Marlborough, Littleton and other communities along Interstate 495. We also refer to the "sub-region", which in Woburn's case is the North Suburban Planning Council (NSPC) sub-region. The sub-region is a subset of MAPC and includes nine communities: Burlington, Lynnfield, North Reading, Reading, Stoneham, Wakefield, Wilmington, Winchester and Woburn.

VISION

The Visioning Forum was held on October 9 2002. The participants were divided into four groups and asked to develop a list of strengths, weaknesses and opportunities in the City. Each group voted on what they saw as the most important items in each category and then all four groups reported on their top three highest priorities. The groups were then each assigned to discuss housing, natural resources, transportation and economic development. Each group developed themes and voted on the top priorities in each subject areas.

Following this forum, MAPC developed a brief vision statement that was reviewed by the City. The vision statement is as follows:

Vision Statement

The City of Woburn seeks to actively promote the improvement and vitality of the community for the benefit of all current and future residents of the City, through the acquisition and preservation of open space; the continuous improvement of cultural and educational resources; the continued enhancement and revitalization of Woburn's strong economic base; and maintaining the sense of community created by the strong neighborhoods within the City.

NATURAL RESOURCES AND OPEN SPACE

Key Findings

- Horn Pond is a major asset and deserves a high level of attention and protection.
- The City needs to encourage greater use of existing open spaces.
- It is important to include funds for maintenance for existing and any future open space acquisitions.
- The City should avoid selling any existing open space.
- Cluster zoning should be used as a means of protecting open space.
- Residents need to be educated about the existence of open space resources in the City as well as the benefits of this open space.
- New acquisitions should serve multiple purposes and be geographically distributed throughout the City.

  (The complete Open Space document is included in the appendix to this document.)

Results of the Natural Resources and Open Space Forum

The natural resources and open space forum was held on May 21, 2003. The forum had two major goals:

1. To discuss and further refine the open space and natural resource goals established during the initial visioning session.
2. To determine public goals for specific areas to be protected by zoning, acquisition or other means.

Overall Goals for Open Space and Recreation

The first task was to vote on priority goals and themes for open space and natural resource protection. A list of twelve themes was presented. These themes were taken from the City of Woburn 1999 Open Space and Recreation Plan and the October 2002 Visioning Session. After discussion, three themes were added, several were slightly revised and two were consolidated (# 1 and 5).

Each participant was given six dots and was instructed that they could use their dots to vote in any way they wanted to (i.e. use all on one theme or spread them among any number of themes). The results were as follows:

Figure 1: Open Space and Natural Resource Protection

	Theme	Votes
1.	Focus acquisition on contiguous parcels.	24
2.	Protect natural resources through acquisition and regulation/zoning.	22
3.	Provide active and passive recreation and places for community gathering for all residents; acquisitions should be geographically distributed and serve multiple purposes.	20
4.	Protection of water supply through acquisition and regulation.	18
5.	The City should use a variety of sources to establish a fund for the timely acquisition of parcels.	17
6.	Protect cultural and historic resources.	17
7.	Improve physical access to open space.	9
8.	Acquisitions should include funds for maintenance and a plan for using the space.	8
9.	Educate the public about the location of open space/recreational resources and the benefits of open space.	8
10.	Manage existing recreation and conservation lands for maximum benefits.	7
11.	Never sell open space unless the parcels are small and not functional.	5
12.	Open space for cemetery use.	5
13.	Acquire new open space lands through purchase and donations.	4
14.	Consider regional connections in open space planning efforts.	1

Suggested Locations for Open Space or Natural Resource Protection

The second task was to develop a list of the areas within the City that should be protected because of their importance for open space/natural resources protection or recreational purposes. The list began with parcels identified in the 1999 City of Woburn Open Space and Recreation Plan. To help in identifying the natural resource characteristics of these areas, a map entitled "Existing Natural Resources Identification – Map 2" was produced and displayed during the forum. This map used statewide data sources to show the following characteristics:

- Protected open space and recreation land
- Sub-basin boundaries
- Wetlands
- Pubic water supply
- Potential vernal pools
- BioMap core habitat
- Estimated habitats of rare wildlife
- Aquifers
- Zone IIs
- Interim wellhead protection areas
- Certified vernal pools
- Streams and water bodies
- BioMap supporting natural landscape
- Priority sites of rare species habitats

Information on these data layers can be found at http://www.state.ma.us/mgis/laylist.htm

These were listed on a chart along with the natural resource characteristics taken from Map 2. Next, individuals suggested parcels or areas that they felt should be protected and the reasons for protection (natural resource characteristics and recreational value) were recorded. The same procedure described above was used to vote on priorities for protection. The votes are recorded below. These parcels are shown on Map 3 "Suggested Locations for Open Space and Natural Resource Protection".

Figure 2 – Parcels Needing Protection

	Parcel	Natural Resource Attributes	Other Attributes	Votes
1	Mass. Rifle Association	Ch. 61B, medium yield aquifer, wetlands, interim wellhead protection area, Bio Map supporting natural landscape.		5
2	Water Street	Interim wellhead protection area, interim wellhead protection area for community.	Adjacent to City-owned open space.	16
3	Winning Farm	Potential vernal pool shown on map is not an actual vernal pool.	30 acres will be deeded to the city (under control of the Cons. Comm.) as part of the approved development plan.	0
4	Adjacent Battle Road	Intermittent stream	Access, parking.	5
5	Adjacent to Shaker Glen	Wetlands, Shaker Glen Brook, part of aquifer.	Access, parking.	12
6	Adjacent Lavacchia Field	Medium yield aquifer, wetlands, priority sites of rare species habitat.		0
7	South of Forest Weafer	Wetlands, potential vernal pool.		0
8	Winchester Elks	Adjacent to Horn Pond Mountain, wetlands, Zone II, municipal well, rare vegetation.	Has been offered to the City	31
9	Shannon Farm	Has been actively farmed for the past 100 years; access to Winning Farm, potential cemetery. Access to Shaker Glen.	Both side of Lexington Street; contiguous to municipal land.	16
10	Spence Farm	Wetlands, wellhead protection, medium yield aquifer, Zone II.	Recreation potential in an area with limited recreation.	14
11	Cummings		City should acquire even though currently protected in the event that the Trust is broken.	12
12	City of Boston land – Willow and Locust	Wetlands, flood zone, medium yield aquifer.	Adjacent to school.	2
13	Ryan Field		State-owned, old easement for Route 2, soccer fields	1
14	Tributaries to Horn Pond	Land along the five tributaries to Horn Pond, 50 square miles of Horn Pond Watershed.		0
15	Landfill		Recreation potential – 39 acres.	5
16	Adjacent to new conservation land at Philips Pond	Access to pond, fishing, otters, endangered species.		0
17	Adjacent to landfill.	Wetlands, vernal pool.		6
18	Archdiocese – adjacent to St. Anthony's Church	10 acres	Adjacent to Middlesex Canal	17
19	S. End MBTA ROW		Linear park.	16
20	Land adjacent to Walkers Pond			1

HOUSING IN WOBURN

Key Findings

- Demand for more, smaller households and a strong trade-up market have led to very low vacancy rates and very high housing costs.

- Woburn's changing age profile means the City can expect more need for family housing, a slight decline in first-time homebuyer demand, more trade-up pressure, and greater need for elderly housing, including housing with services.

- Woburn has some older housing and a historically stable rental stock with high multi-family growth, although the future balance is likely to shift toward more single-family, detached housing at lower densities and higher costs.

- Subsidized housing in the pipeline will bring Woburn close to compliance with the 10 percent goal of Chapter 40B. The 10 percent, however, is a moving target: the number of units required increases as market housing increases.

- Sale prices, rents, and the affordability gap have all risen rapidly. More than 2,000 tenant households face high rent burdens, and more than 6,610 households have incomes that qualify for subsidized housing.

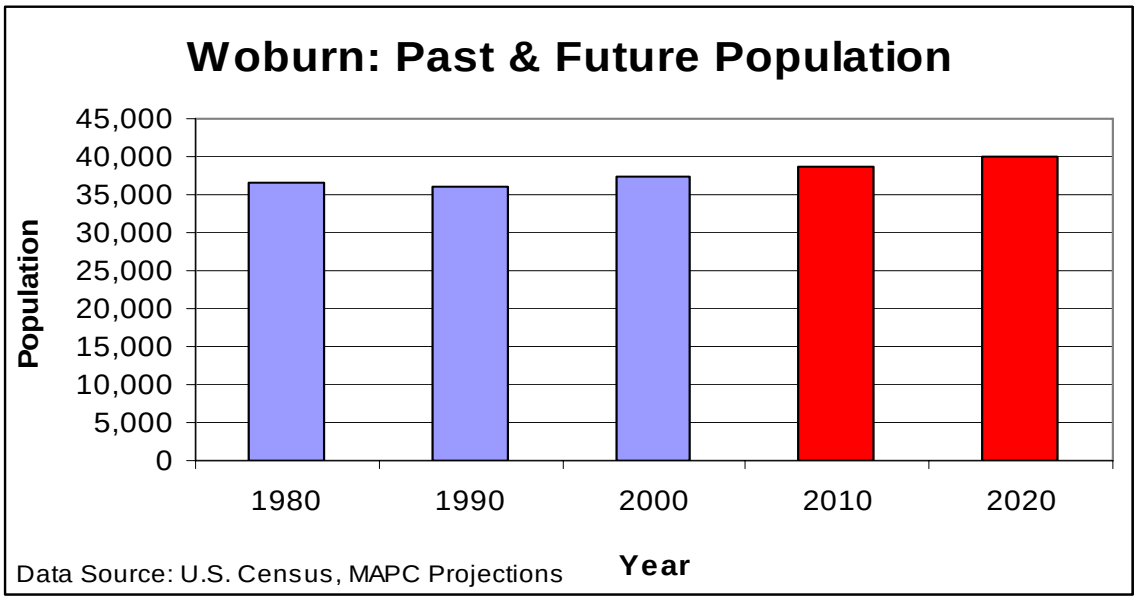
Assessment of Housing Demand

Recent Population and Household Trends

Population trends are among the key factors driving housing demand. In total numbers, Woburn's population declined slightly in the 1980s and rose more substantially in the 1990s. The decline during the 1980s ran counter to the sub-region, which had no change, and the MAPC region, which grew slightly. In the 1990s, all three areas grew in population, although Woburn grew less than either the sub-region or the region. Past and future population trends appear in Figure 3.

While Woburn's population grew less than 4 percent during the 1990s, the number of households grew by over 11 percent. This is in line with general trends toward more but smaller households. Thus, the number of households in the sub-region and the larger MAPC region has also grown, but not quite so much. Meanwhile the size of households has declined in Woburn, in the sub-region, and in the MAPC region as a whole.

Figure 3



As we will see, this increase in the number of households led to declining vacancy rates and escalating housing costs.

Changes in household size were accompanied by changes in household composition. During the 1990s, the number of family households grew by 4 percent, while the number of non-family households grew by 26 percent. The growth in family households roughly parallels the region as a whole, while the number of non-family households far exceeds the region's 15 percent gain. In Woburn, 81 percent of non-family households are householders living alone, slightly higher than the regional percent (77 percent). Many of these people are probably single professionals drawn by housing near jobs in Woburn or other job-rich nearby communities along Rt. 128 or I-93. This group also includes elders: about 35 percent of single-person households are occupied by a person 65 years old or over.

Single-parent families make up 6 percent of the City's total households. This group increased by over 25 percent during the 1990s.

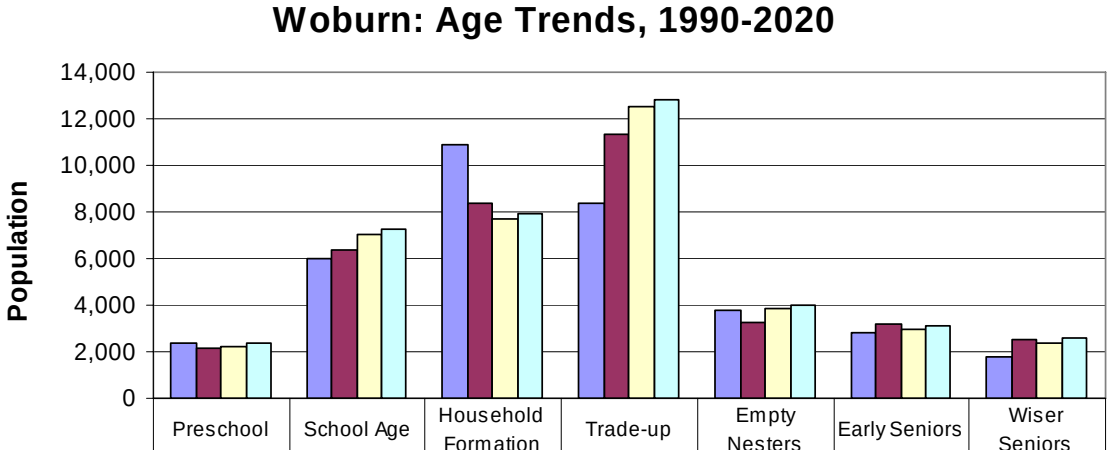
Changes in Woburn's age mix also affect housing demand and housing need. To show this relationship, we have clustered age groups to relate them loosely to various stages in the housing market (for past and future trends, see Figure 4). Thus in the last decade, Woburn has seen:

- a slight decline in the number of pre-school children and a slight increase in school-age children, suggesting a relatively stable demand for family housing;
- a decline in household-formation years (ages 20-34), signaling a possible decline in demand for rentals and first-time homebuyer opportunities;
- large growth in the middle years (ages 35-54), putting pressure on the trade-up market;

- a slight decline in the empty-nester years (ages 55-64), resulting in less pressure on smaller units with less maintenance than larger single-family homes; and
- an increase in both early & "wiser" seniors, suggesting a need for small-scale housing and housing with services.

This is generally consistent with regional patterns, except that, at the regional level, empty-nesters have increased slightly while early seniors have declined.

Figure 4



	Preschool (0-4)	School Age (5-19)	Household Formation (20-34)	Trade-up (35-54)	Empty Nesters (55-64)	Early Seniors (65-74)	Wiser Seniors (75+)
1990	2,400	5,975	10,858	8,380	3,777	2,790	1,763
2000	2,148	6,366	8,360	11,359	3,295	3,208	2,522
2010	2,192	7,006	7,727	12,545	3,869	2,950	2,384
2020	2,338	7,240	7,961	12,848	4,017	3,092	2,600

Source: U.S. Census & MAPC

Age Group

Housing Demand: What will the Future Bring?
Between 2000 and 2020, Woburn's population is expected to grow by 7.6 percent. The number of households is also expected to grow, and household size is expected to continue to decline. The City's population growth rate is expected to exceed the regional rate of 3.5 percent.

Woburn can expect:[1]

- some growth in the number of children, especially school-age children, with more demand for family housing;
- slight decline in the household-formation years, with slightly less pressure for first-time homebuyer and rental housing opportunities;

[1] Some of these age categories aggregate more ages than others, which contributes to the visual difference in the proportions of the groups (i.e., trade-up group includes the 20 years from age 35 to age 54, while empty nesters covers only the 10 years from age 55 to age 64).

- continued increase in trade-up demand;
- some increase in the number of empty-nesters; and
- slight decline, followed by growth, of the senior population, both early and older, suggesting continued need for housing with services.

Housing Supply Inventory

Quantity & Characteristics of Woburn's Housing

The number of housing units in Woburn grew 10.9 percent in the 1980s and 9.1 percent in the 1990s, for an overall 20-year rate of 21 percent. The sub-region grew more in the 1980s but less in the 1990s, with an almost identical overall rate of 20.8 percent. The region as a whole grew less in both the 1980s (8.2 percent) and the 1990s (5 percent), for an overall growth rate of 13.6 percent.

Vacancy rates in Woburn, especially for homeownership, were quite low as the 1990s began (see Figure 5). Both rental and homeownership vacancies declined during the decade. By 2000, vacancy rates for both rental and homeownership were extremely low.

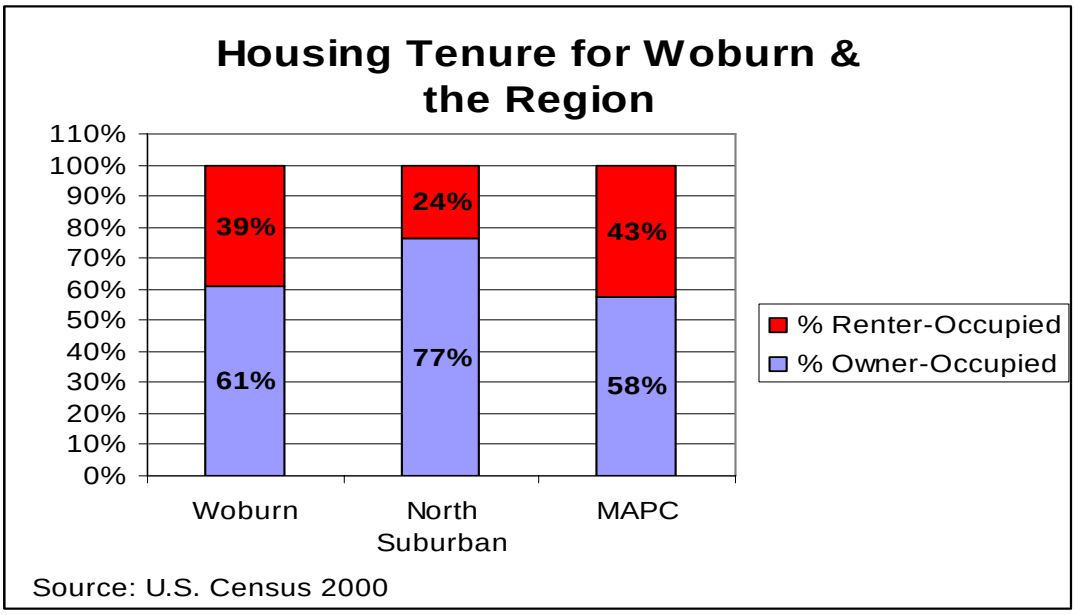
Figure 5: Woburn Vacancy Rates, 1990 and 2000

Year	Homeownership	Rental
1990	1.4 percent	5.8 percent
2000	0.4 percent	2.2 percent

Source: U.S. Census 1990 and 2000

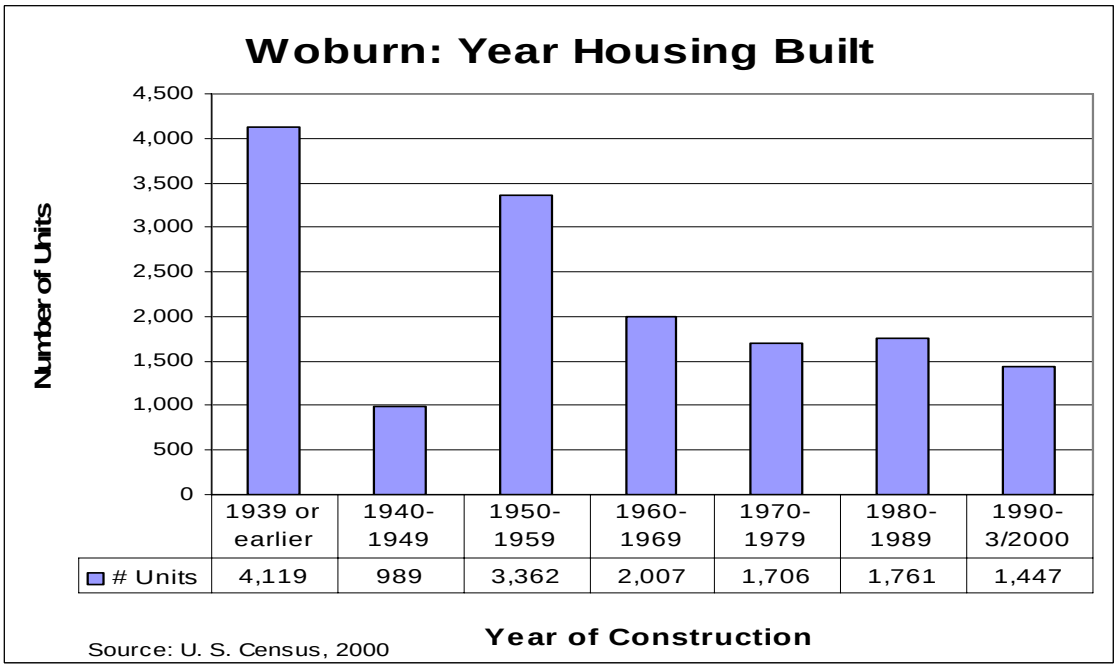
Of Woburn's housing, 61 percent is owner-occupied, while 39 percent is rental. As Figure 6 shows, this is a higher proportion of rental housing than the North Suburban sub-region (24 percent) but lower than MAPC as a whole (43 percent). The proportion of rental in Woburn has remained almost constant over the last 20 years, declining by only a small fraction. This stability in the proportion of rental housing is unusual: the proportion of rental in the sub-region and the region has declined considerably more during this period of time.

Figure 6



In spite of Woburn's recent growth in housing units, much of its housing is relatively old, with much pre-war housing & a major growth spurt in the 1950s (see Figure 7). This may imply a need for rehabilitation, repairs, and lead paint removal.

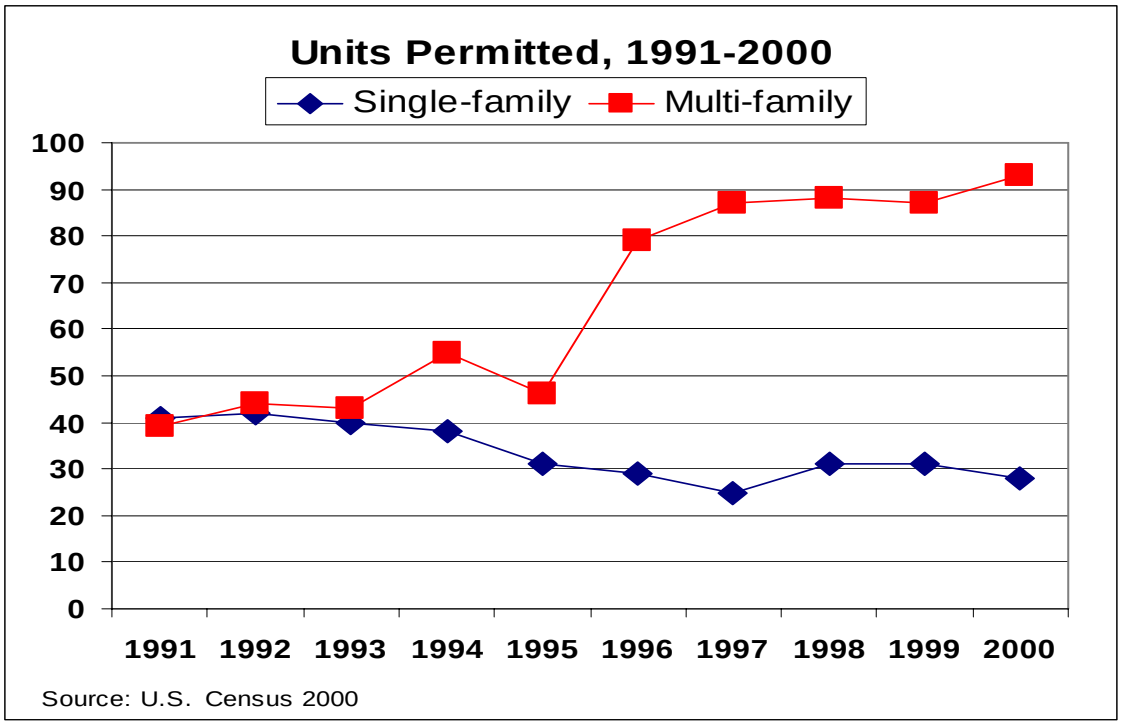
Figure 7



As the 1990s began, the City was issuing permits for just about the same number of multi-family units as single-family units. As the decade progressed, single-family permits declined while multi-family units permitted more than doubled. This is a much higher proportion of multi-family than is typical but is consistent with the City's trend of retaining a consistent proportion of rental housing.

About 53 percent of Woburn's housing is single-family detached. Of the 1,286 units added in the 1990s, 48 percent were single-family detached, 13 percent were single-family attached, and 37 percent were in buildings of 20 units or more (see Figure 8).

Figure 8



Housing Supply: What Will the Future Bring?

Based on Woburn's available land, existing zoning, and land use constraints, the City may see about 1,100 additional dwelling units (see Figure 9). Of these, 77 percent could be single-family, 11 percent two-family, and 12 percent multi-family. This is more heavily single-family than the historic mix of the City, representing a possible shift away from rental housing. It is also lower density, predominantly on larger lots, and hence more expensive than Woburn's earlier housing. From a housing policy standpoint, Woburn may wish to reconsider its zoning in light of its impact on rental housing and on housing affordability.

Figure 9: Potential New Housing and Its Impact[2]

Zoning District	Lots	Dwelling Units	Residents	Students
Single-family (R1)	746	746	1,924	242
Single & 2 Family (R2)	159	223	575	72
Apartments (R4)		131	337	42
Total	**905**	**1,100**	**2,836**	**356**

Source: MAPC Build-out Study

This "build out" would result in just over 2,800 new residents, including 356 new school children. These results do not consider possible zoning changes, 40B developments outside present zoning, or teardown/redevelopment options.

Affordable Housing Inventory

According to the state's April 2002 Subsidized Housing Inventory, which keeps track of all housing that qualifies under M.G.L. Chapter 40B, Woburn has 877 subsidized housing units out of 15,312 total year-round units (see Figure 10). This is 5.73 percent, or 654 units short of the 10 percent goal (1,531 units). The Subsidized Housing Inventory includes 515 units of public housing (239 elderly and disabled and 276 units for families) and 362 units of privately owned housing (351 units of mixed income housing at Kimball Court and 11 units in Warren House). Of the 276 family public housing units, 10 are one bedroom, 137 are two bedrooms, 119 are three bedrooms, and 10 are four bedroom.

There are additional units completed or in the pipeline but not yet appearing on the official state list. These include Kimball 1 and 4 (174 units), JPI Cedar St. (3 units) and the Pilgrim Building (4 units created by the Woburn Redevelopment Authority). There are also two 40B developments partway through the approval process but still contested. These are the Archstone development (300+ units) and North Main St. (168 units).

Figure 10: Subsidized Housing (Chapter 40B)

Development	Number of Units
Existing 40B (on DHCD list)	877
Kimball 1 & 4	174
JPI Cedar St. LIP	3
Pilgrim Building (WRA)	4
TOTAL Existing	**1,058**
Archstone	300
No. Main St.	168
TOTAL including pipeline	**1,526**

Source: DHCD and City of Woburn

If all of these units come on line and are approved by the state, Woburn will have 1,526 units that count toward 40B, just five units short of 10 percent.

It is important to note, however, that 10 percent is a moving target. As new market-rate housing is produced, the amount of subsidized housing needed to achieve 10 percent rises

[2] EOEA-funded MAPC Build-out Study

as well. The City may wish to consider not only achieving 10 percent in the present, but designing strategies to maintain 10 percent as new market housing is built.

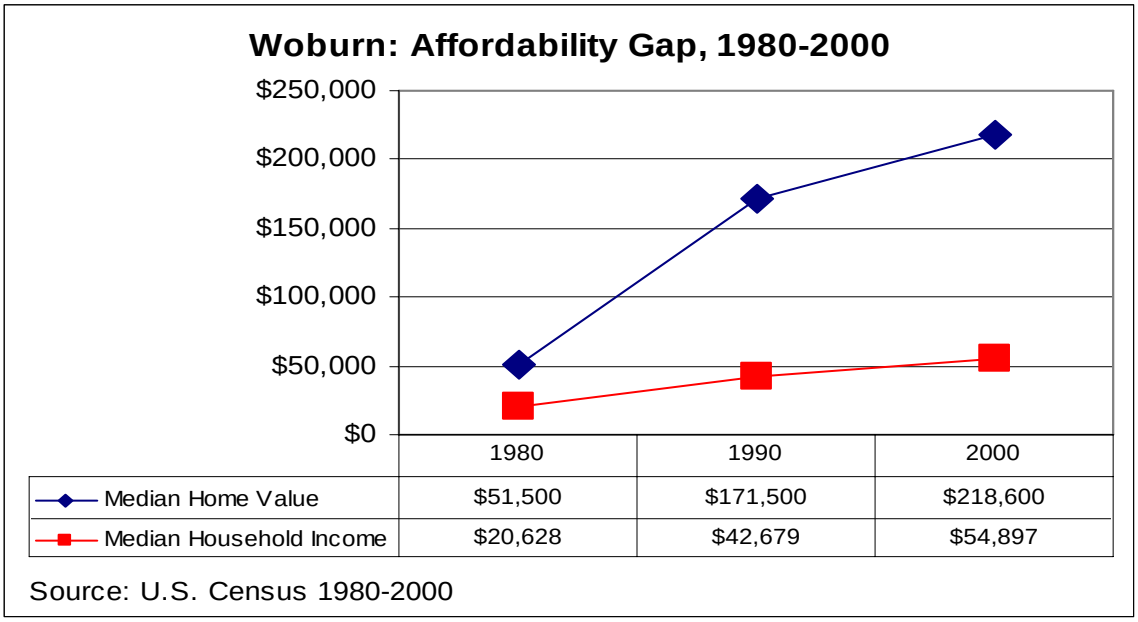
Linking Supply, Demand, & Affordability

High demand and limited supply have cut vacancy rates and forced up the costs of both owning and renting a home.

The Costs of Buying a Home

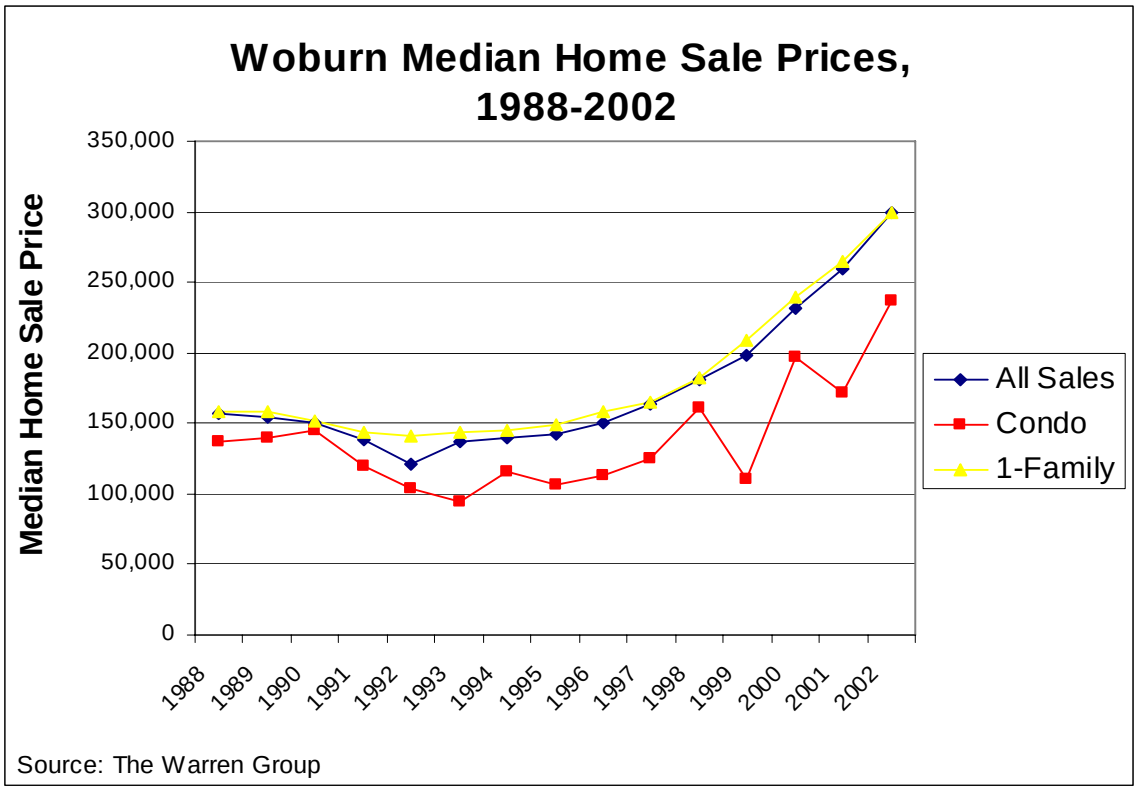
Woburn's "Affordability Gap" – the relationship between income and home values – has grown substantially since 1980 (see Figure 11). In 1980, typical home values were 2.5 times incomes, a ratio that is often considered affordable. In 2000, home values were about 4 times incomes, far exceeding this affordability rule of thumb. Clearly, housing prices have risen much faster than incomes and housing has become much less affordable during this time.

Figure 11



Woburn's home sale prices almost doubled between 1988 and 2002. In 2002, the median home sale price for all sales was $299,950. For single-family homes it was $300,000, and for condominiums it was $237,000. In spite of this rise, Woburn's home sale prices remain among the lowest of its neighboring communities; with Lexington and Winchester far exceeding their neighbors (see Figure 12).

Figure 12



In current terms, the Boston area median income for a family of 4 is $80,800; 80 percent of median – "moderate" income -- is $62,650. Using the affordability rule of thumb, the median income household could afford to buy a home costing up to $202,000. Thus the "typical" household is $98,000 short of being able to afford the "typical" Woburn house.

Future housing is likely to be even more expensive. For new single-family homes permitted in 2002, average construction cost alone, not counting land and other costs, was almost $140,000.

The Cost of Renting

The costs of rental housing also rose precipitously during this time period. Rents rose 120 percent during the 1980s and 24 percent in the 1990s, or 174 percent over the 20-year timeframe. Rents in Lexington, Burlington, and Winchester are highest of Woburn's neighbors, and Woburn remains 5th highest. The median rent in Woburn in 2000 was $881, requiring an annual income of just over $35,000.

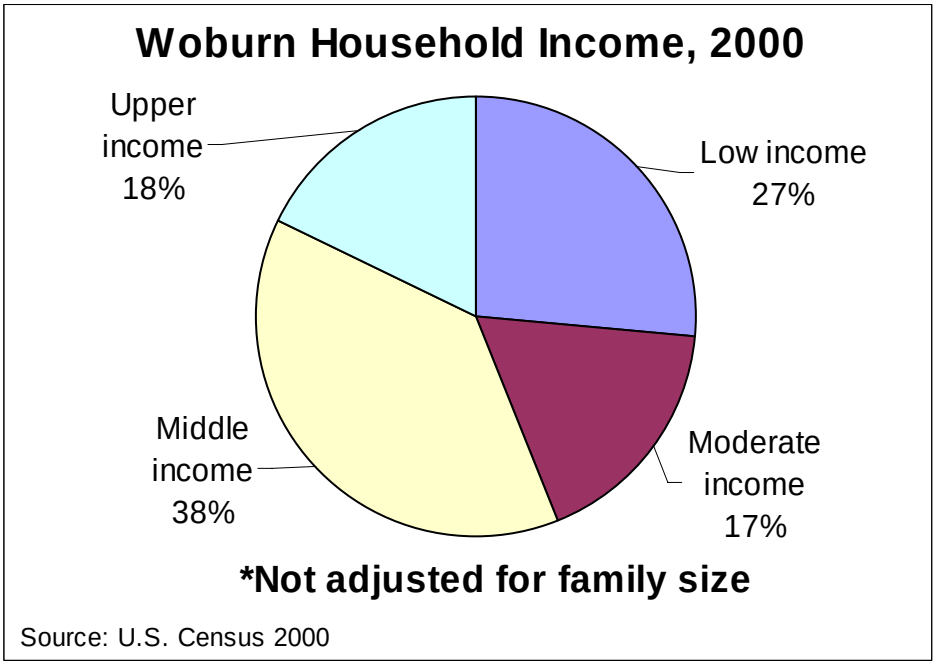
Rents as reported in the Census seem low. They are as reported by tenants in 1999, when the Census was taken. Thus they are relatively old. More importantly, they reflect rents paid by in-place tenants who may be long term and have rents that rise only incrementally from year to year. Newcomers seeking market rentals today most likely face considerably higher rents.

Housing Cost Impacts and Housing Need

High housing costs have the most severe impact on those on the lowest wrung of the income ladder. Of Woburn's renter households, 37 percent -- 2,048 households -- pay more than 30 percent of their income for rent; 28 percent -- or 1,537 households -- have incomes below $35,000 and pay more than 30 percent of their income for rent. The elderly are even more deeply affected: 50 percent of elderly renter households, or 374 households, pay more than 30 percent of their income for rent.

Of Woburn's households, an estimated 44 percent -- or 6,610 households -- have incomes below 80 percent of median (see Figure 13). This is considered to be "moderate income" and is the income level that qualifies for affordable housing. Of these households, 3,983 are estimated to have incomes below 50 percent of median, considered "low income." Middle-income households – those with incomes up to 150 percent of median – make up about 38 percent of Woburn's households, while upper-income households constitute about 18 percent.[3]

Figure 13



According to the federal Department of Housing and Urban Development (HUD), 13,017 people, or 35 percent of Woburn residents, have low-to-moderate incomes.

Waiting lists maintained by the Woburn Housing Authority provide another indication of housing need for low-income people, including the elderly, and the disabled, who are listed in the elderly category but who face separate selection criteria and limitations. It is

[3] This is a statistical estimate only and does not adjust for family size. Cut-offs used in chart are for the year 2000, coincident with Census data. Low income (50 percent of median) = $32,750; moderate income (80 percent of median) = $50,200; middle (81 percent-150 percent) = $98,250; upper income (over 150 percent) = over $98,251.

important to note that the same people may appear on more than one list, and the Section 8 list is a 43-community, regional list; lists are open to non-Woburn residents.

Figure 14: Subsidized Housing Waiting Lists

Housing/Subsidy Type	Number of Households
State-aided elderly	188
State-aided family 2 bedroom	370
State-aided family 3 bedroom	121
Fed-aided family	329
Sec. 8 leased housing (multi-city list)	34,000

Source: US Census 2000

Housing Profile Summary and Conclusions

- Demand from more, smaller households and a strong trade-up market have led to very low vacancy rates and very high housing costs.

- Woburn's changing age profile means the City can expect more need for family housing, a slight decline in first-time homebuyer demand, more trade-up pressure, and greater need for elderly housing, including housing with services.

- Woburn has some older housing and a historically stable rental stock with high multi-family growth, although the future balance is likely to shift toward more single-family, detached housing at lower densities and higher costs.

- Subsidized housing in the pipeline will bring Woburn close to compliance with the 10 percent goal of Chapter 40B. The 10 percent, however, is a moving target: the number of units required increases as market housing increases.

- Sale prices, rents, and the affordability gap have all risen rapidly. More than 2,000 tenant households face high rent burdens, and more than 6,610 households have incomes that qualify for subsidized housing.

In order to provide housing for people across a broad range of incomes, the City needs a broader range of housing types, locations, and affordability levels than the housing market and existing regulations are likely to produce.

Results of the Housing Forum

The Woburn Planning Board held a housing forum on August 6, 2003. MAPC presented detailed background data and attendees brainstormed and prioritized overall goals for housing in Woburn.

Woburn residents have identified several priority themes as underpinnings of the City's housing strategy. They have recommended that Woburn should:

- Plan for the population's needs. Those in attendance felt that the City should plan for specific needs and not just to comply with 40B. This incorporates the need for empty-nester housing and the necessity of doing a needs-assessment to determine the needs of various groups.
- Use "smart growth" principles to plan future housing. This includes determining where housing should and should not go in terms of its relationship to transit, services, and shopping, and the need for resource protection.
- Plan for affordability in perpetuity – The City should require that new affordable housing (both 40B and other) remain affordable in perpetuity and maintain the affordability of existing affordable housing.
- Maintain at least 10 percent affordable housing. The City should maintain at least 10 percent affordable housing as new market units are created by adopting inclusionary zoning and other planning and zoning measures.

Identifying Potential Locations for Housing

Woburn residents identified some locations where housing might be desirable. The Housing Opportunities map (Map #4) and the following list of potential sites, with some preliminary ideas about who might live there and what type of housing might be most appropriate, is a "starter set" for future investigation by the City and other partners. The numbers refer to locations identified on the map; "yes" indicates locations and/or housing types that had broad support and "no" indicates those that did not. Because the list and "vote" were done quickly with a small group, they should be considered a preliminary starting point only. Further study will be needed to determine development potential and feasibility and to address a range of issues including parking, site design, ownership, affordability levels, and more.

Figure 15: Potential Locations for Housing

Map #	Support	Location & Possible Uses
1	Yes	Salem Street • Change R-3 to R4 • Require 10-12 percent affordable
2	Yes	Woburn Loop Overlay District • Encourage residential uses & phase out industrial district
3	Yes	Downtown • Senior housing
3A	Yes	Park St. – the block to which WHA has deed (small site) • Homeownership
4	Yes	Commercial areas (generally), especially lower Main St. (south) & North Main St. (north) • Housing above retail
5	--	Main St. – south (included in #4 above)
6	Yes	Commercial strip at 880 Main St., includes Dunkin' Donuts • Mixed use –2nd & 3rd floor residential
7	Yes	Veterans' School (now senior center) • Add housing
8	No	W.R. Grace site (if clean) • Commercial with housing above
9	Yes	Armory site • Possible housing &/or senior center • Has brownfields and parking issues
10	No	Library Place • Now library & senior housing • More senior housing
11	Yes	McGarr School • Homeownership, including municipal workers
12	Yes	Tarky School • Mixed-income housing
13	No	4 Corners West • Mixed use, housing above stores
14	No No	Adjacent to Battlemarch Way (landlocked parcel above Shaker Glen) • Senior housing • Family housing
15	Yes	Farm sites (generally) • Promote cluster

Seizing Opportunities and Overcoming Barriers
During the final segment of the housing forum, participants were asked to respond to a number of questions including:

- What factors limit Woburn's ability to achieve its housing goals?
- What factors contribute to Woburn's achieving its goals?
- Which ones can be changed?
- What tools and strategies would help Woburn achieve its goals?

The results of that discussion are summarized below.

Woburn's ability to preserve and create housing to meet its needs depends on many factors, including available land and buildings, funding and financial resources, staff, public awareness and political will, organizational resources, laws, regulations, policies, and programs.

Certain of these factors work in Woburn's favor. It has, for example, a strong Public Housing Authority (WHA) and an active Redevelopment Authority (WRA). The WRA is the City's community development agency, has interest and expertise in housing, and has access to financing and development funds. The City also has a proactive City government with a Mayor, City Council, and Planning Director; it has recently hired a Grant Development Coordinator to actively seek funding. The City also has ownership and control of some property.

Other factors may limit development. Some of these are assets the City wishes to protect for other purposes, such as wetlands, conservation land, and historic sites. Others are obstacles to work around or overcome, such as some lack of ownership and site control, onsite pollution, inadequate road infrastructure, parking regulations that may be unnecessarily onerous, lack of funding, and misperceptions about affordable housing.

City residents suggested a number of strategies the City could pursue to capitalize on these opportunities and overcome the barriers. Suggestions included: educating people about what's "affordable"; forming a non-profit housing development corporation; seeking grants, especially from the federal government; maintaining and promoting open space in balance with affordable housing; amending zoning to support desirable housing development, including housing on the potential sites list; becoming more proactive in promoting housing; creating more single-family neighborhoods and opportunities for trading up; creating smaller units within large structures; maintaining and building affordable rentals, especially via the Housing Authority; encouraging housing not just for the "affordable" category; using the special permit process to encourage affordable housing; and seeking other ways to control property's future use.

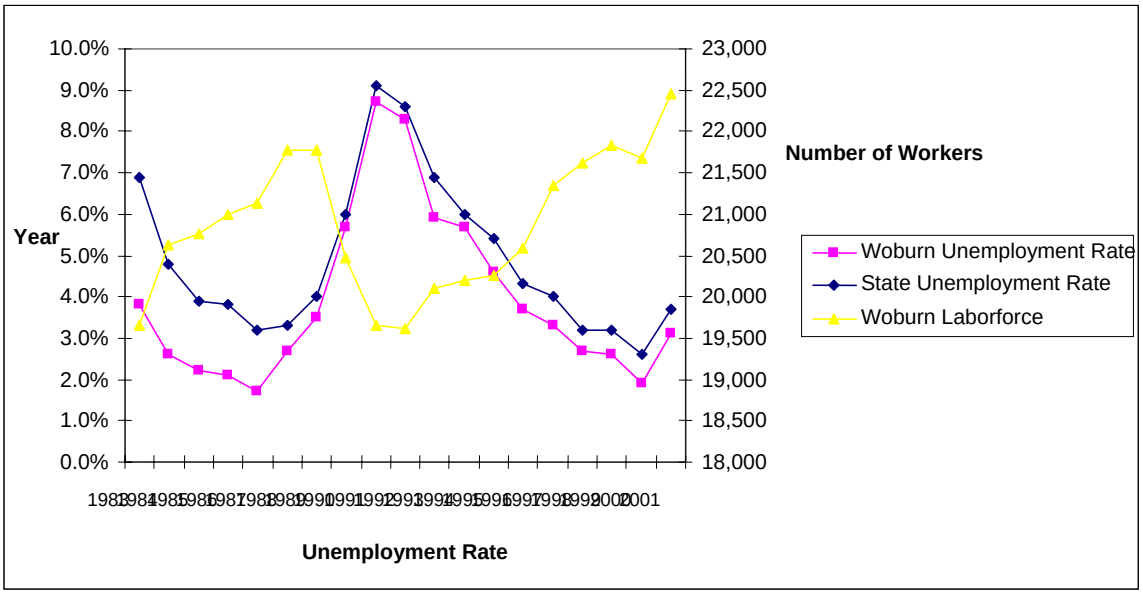
ECONOMIC DEVELOPMENT

Key findings

- Woburn is a net importer of labor. It has more jobs than it does people in the labor force.
- The industry that employs the greatest number of Woburn residents as of 2000 is education, health, and social services.
- Woburn residents are increasingly well educated, and likelier to pursue higher paying managerial and professional occupations than in the past. However, the resident workforce still generally trails the Boston region in both regards.
- The trade and services sectors are the largest providers of jobs in Woburn.
- Woburn is a 'high-tech' job center.
- Average wages paid by Woburn businesses have outpaced inflation.
- Woburn's median household income is the lowest median income as compared with surrounding towns. Woburn's median income, however, is greater than the Boston CMSA and the state's 2000 median income.

Economic Profile

Figure 16: Woburn and Massachusetts Unemployment Rates and Woburn Labor Force 1983-2001



Source: MA Division of Employment and Training

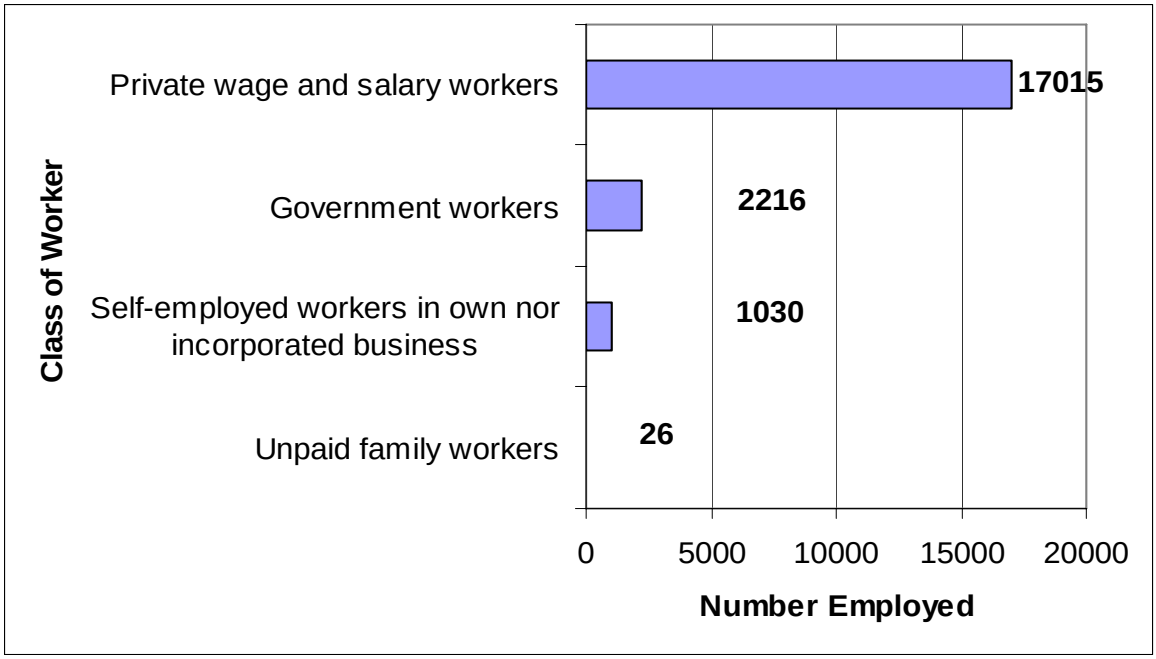
Figure 17: Unemployment Rates 1983 - 2001

Year	Woburn Unemployment Rate	State Unemployment Rate	Woburn Labor Force
1983	3.8 %	6.9 percent	19,657
1984	2.6 %	4.8 %	20,627
1985	2.2 %	3.9 %	20,771
1986	2.1 %	3.8 %	20,987
1987	1.7 %	3.2 %	21,134
1988	2.7 %	3.3 %	21,781
1989	3.5 %	4.0 %	21,773
1990	5.7 %	6.0 %	20,480
1991	8.7 %	9.1 %	19,655
1992	8.3 %	8.6 %	19,615
1993	5.9 %	6.9 %	20,092
1994	5.7 %	6.0 %	20,189
1995	4.6 %	5.4 %	20,248
1996	3.7 %	4.3 %	20,586
1997	3.3 %	4.0 %	21,341
1998	2.7 %	3.2 %	21,613
1999	2.6 %	3.2 %	21,826
2000	1.9 %	2.6 %	21,681
2001	3.1 %	3.7 %	22,450

Source: Massachusetts Division of Employment and Training (Local Area Unemployment Statistics)

Woburn's resident unemployment rate has consistently been below the rate of the state. During the early 1990's, Woburn's unemployment rate peaked while the number of people in its labor force sank to a 15 year low, reflecting the impacts of the recession and people giving up looking for work for a period of time. The reverse has occurred in recent years as the job market turned around (this comment does not reflect the employment and labor market changes of the early 2000's). Woburn is a net importer of labor, with about 40,000 jobs to the 22,450 people in the labor force. However, it is also important to note that the correlation between the number of jobs and the labor force is not direct since many Woburn residents (75 percent) travel outside of the City for work and vice versa.

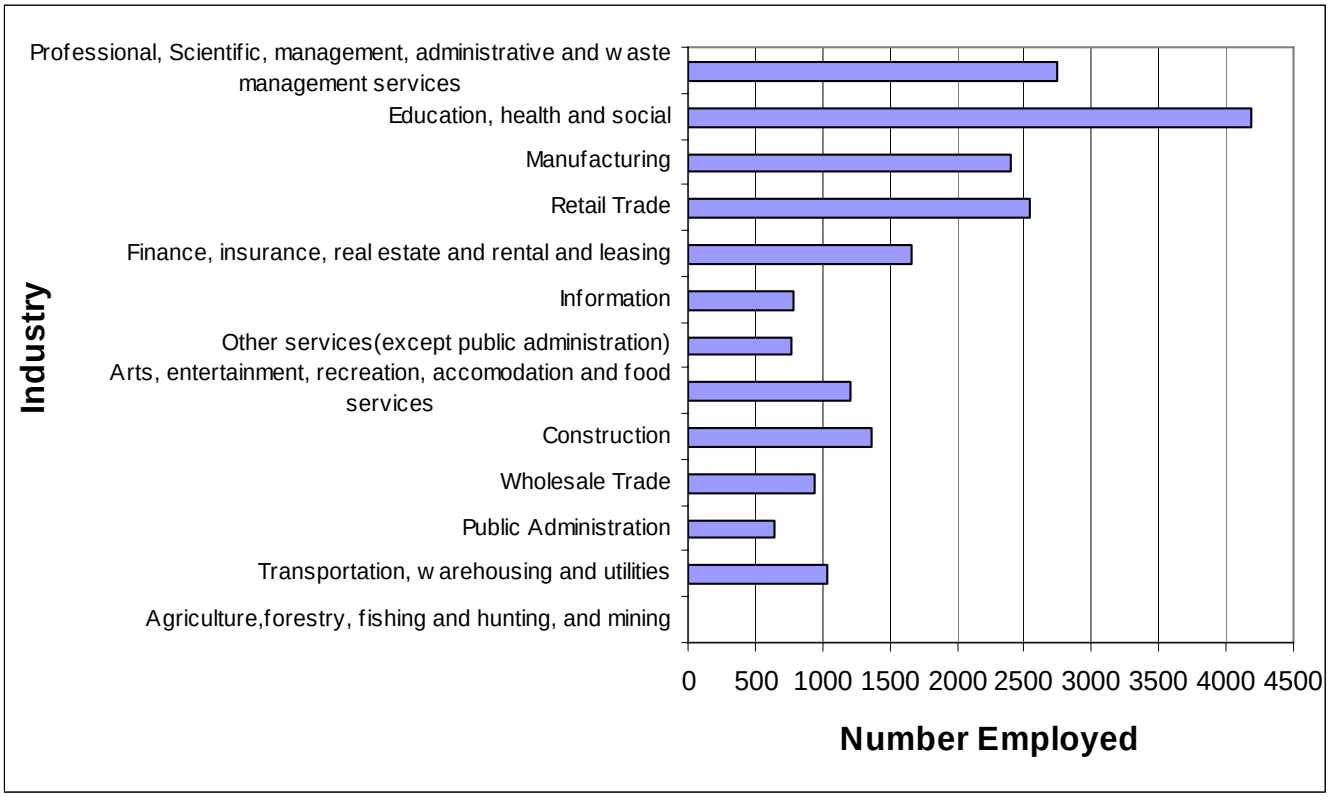
Figure 18: Woburn Residents by Class of Worker



Source: U.S. Census, 2000, SF3

Figures 18 through 26 give a sense of the type of employees and employers in Woburn. According to Figure 18, the majority of Woburn residents are private wage and salaried workers. Figure 19 tells us that the industries in which the majority of Woburn residents work are in education, health, and social services and professional, scientific, management, administrative and waste management services.

Figure 19: Woburn Residents' Occupation by Industry, 2000



Source: U.S. Census, 2000, SF3

Figure 20: Woburn Occupations by Industry

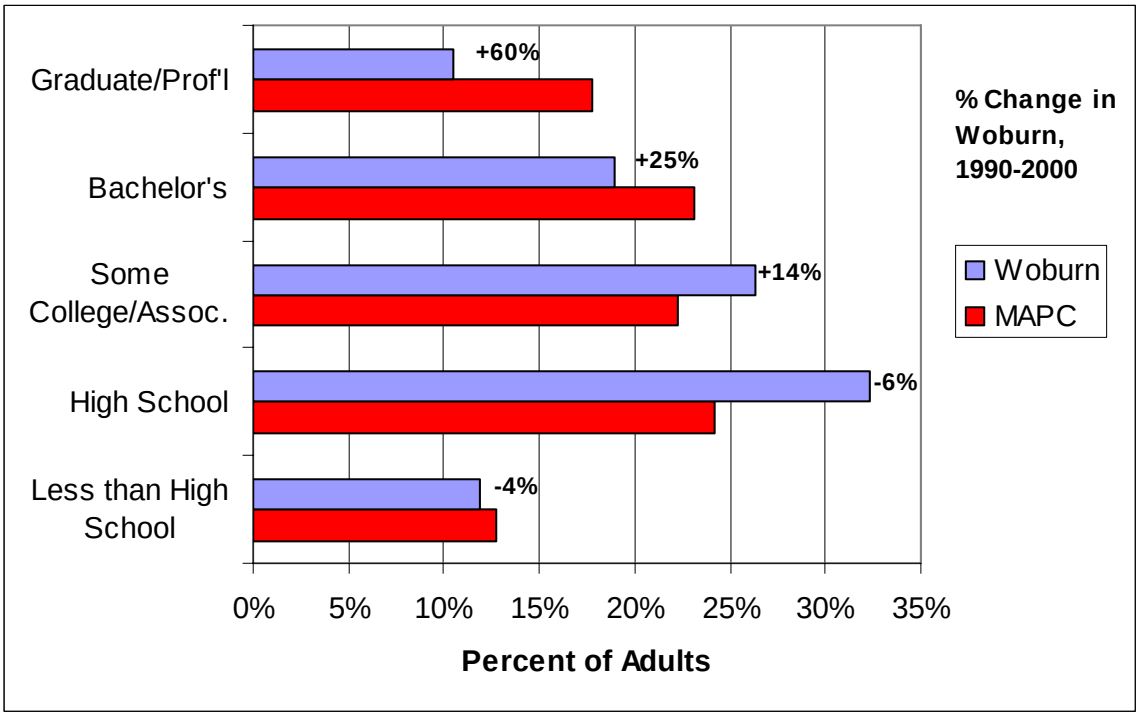
Industry	Number
Agriculture forestry, fishing and hunting, and mining	12
Transportation, warehousing and utilities	1035
Public Administration	646
Wholesale Trade	943
Construction	1358
Arts, entertainment, recreation, accommodation and food services	1203
Other services(except public administration)	774
Information	780
Finance, insurance, real estate and rental and leasing	1663
Retail Trade	2544
Manufacturing	2405
Education, health and social	4185
Professional, Scientific, management, administrative and waste management services	2739

Source: U.S. Census, 2000

The areas in which Woburn residents are employed are influenced by the level of educational attainment of the population. As can be seen in Figures 21 and 22, Woburn's educational levels have risen dramatically in the past decade. This shift is mirrored in the shift toward more managerial and professional occupations in the City. However, Figure 21 shows Woburn's educational attainment relative to the region and its level is still in general less than the region as a whole – 29 percent of Woburn residents had

college degrees while for the region 41 percent of adults had reached that goal (the Metro Boston work force is one of the most highly educated in the U.S.). The number of Woburn residents with some college experience and especially those with advanced degrees increased dramatically, while the number with no college experience declined.

Figure 21: Woburn Educational Attainment for Adults 25+ as Compared with the MAPC Region



Source: U.S. Census 1990, 2000

Figure 22: Woburn Educational Attainment of Population 25+, 1990 & 2000

	Some High School	High School	Some College/ Associate's	Bachelor's	Graduate School
1990	3343	9,206	6,162	4,056	1,766
2000	3204	8,672	7,049	5,080	2,824
percent Change	-4.2 %	-5.8 %	14.4 %	25.2 %	59.9 %
1990 % of Total population 25+	13.6 %	37.5 %	25.1 %	16.5 %	7.2 %
2000 % of Total population 25+	11.9 %	32.3 %	26.3 %	18.9 %	10.5 %

Source: U.S. Census 1990, 2000

Figures 23 and 24 show the types of business sectors that are located in Woburn and how many employees are supported by each sector. According to this graph, the industries in Woburn with the greatest number of employees are in the trade and services sectors. Figures 23 and 24 further show how employment has changed in various industries over time. We can see that the manufacturing and trade sectors in Woburn have undergone overall declines since 1985, reflecting a national trend, while the services sector has

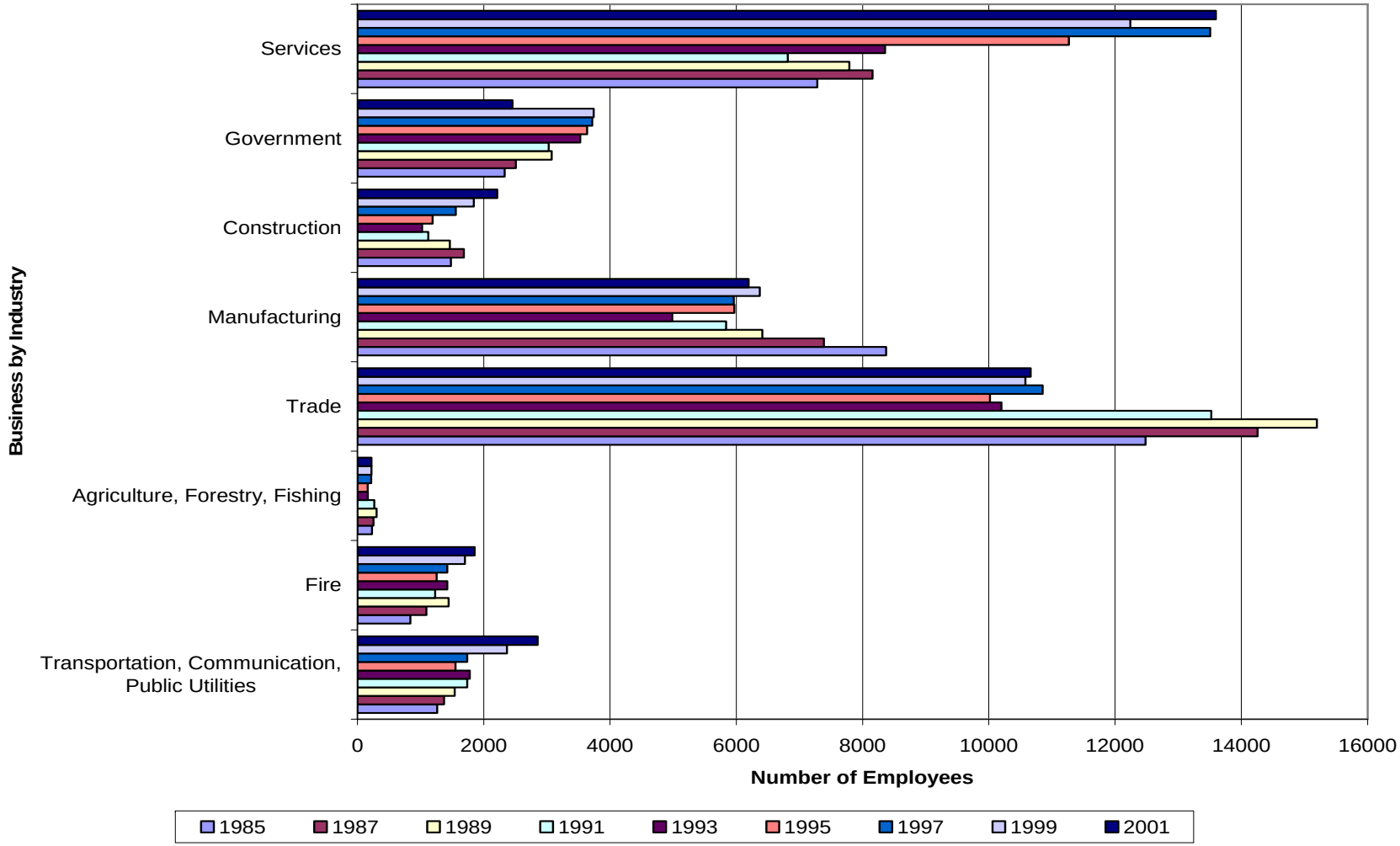
grown almost continually since its 1991 low. In addition, there has been some growth in the FIRE (Finance, Insurance, and Real Estate) and construction sectors while the government sector has dropped off in recent years.

Figure 23: Employers of Businesses by Industry

Year	Transportation, Communication, Public Utilities	Finance, Insurance, Real Estate	Agriculture, Forestry, Fishing	Trade
1985	1261	840	230	12482
1987	1371	1093	255	14259
1989	1540	1442	304	15196
1991	1740	1230	266	13523
1993	1778	1424	167	10200
1995	1554	1256	161	10020
1997	1740	1424	217	10855
1999	2368	1701	221	10578
2001	2855	1855	220	10662
Year	**Manufacturing**	**Construction**	**Government**	**Services**
1985	8374	1482	2331	7245
1987	7388	1686	2509	8160
1989	6412	1465	3077	7791
1991	5840	1121	3028	6818
1993	4984	1026	3528	8357
1995	5969	1189	3640	11269
1997	5963	1557	3717	13507
1999	6373	1843	3742	12239
2001	6197	2216	2455	13597

Source: Mass. Division of Employment and Training, ES-202 (based on place of work)

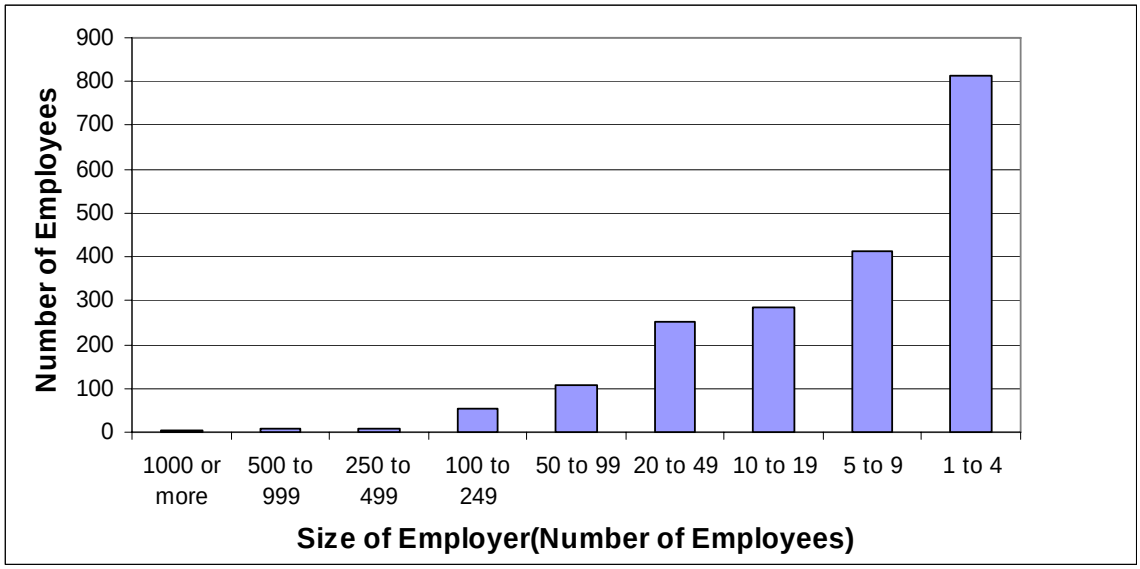
Figure 24: Employees of Woburn Businesses by Industry 1985-2001



Source: Massachusetts Division of Employment and Training, ES-202 (based on place of work)

Finally, Figures 25 and 26 reflect the relatively small size of businesses in the community, most of which employ 1-49 people.

Figure 25: Estimated Number of Employers by Size in Woburn, 2000



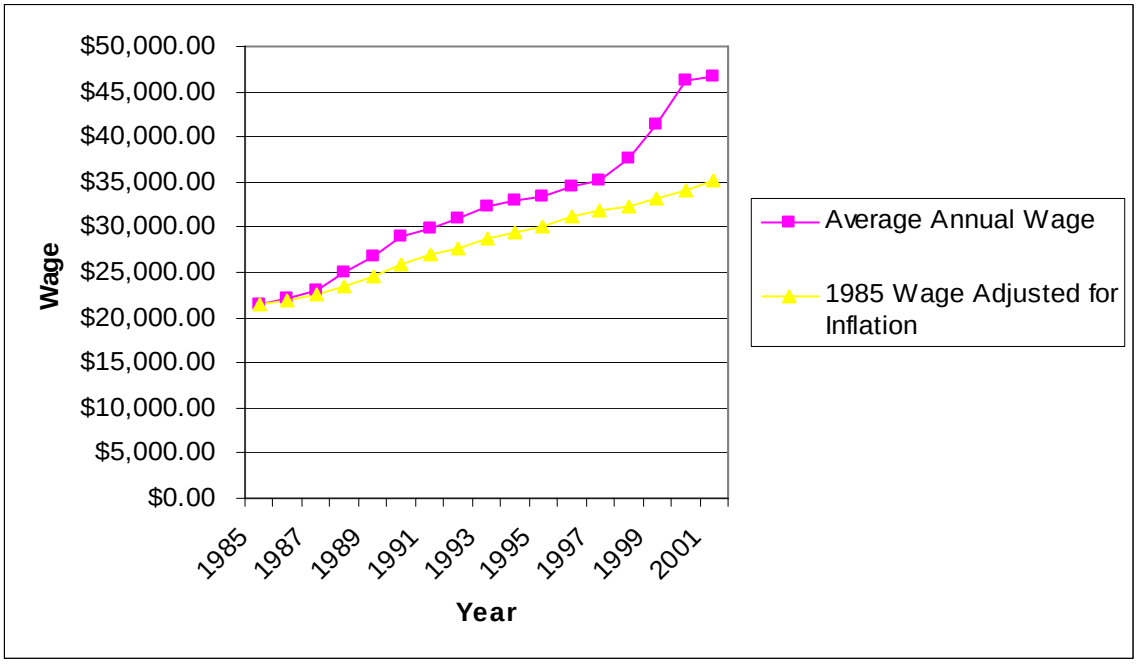
Source: U.S. Census, County Business Patterns

Figure 26: Employees per Firm

Size of Category: Employees per Firm	Number of Firms in Size Category
1000 or more	3
500 to 999	7
250 to 499	9
100 to 249	52
50 to 99	107
20 to 49	252
10 to 19	285
5 to 9	414
1 to 4	814

Source: U.S. Census, County Business Patterns

Figure 27: Average Annual Wage Paid by Woburn Businesses, 1985-2001



Source: Massachusetts Department of Employment and Training, ES-2-3 and U. S. Bureau of Labor Statistics (inflation adjustments)

Figure 27 above compares actual average wages with 1985 dollars that were converted to current dollars based on inflation adjustments from the Bureau of Labor Statistics. According to this table, Woburn's average annual wage outpaced inflation, with the 2001 average annual wage of $46,722.49 exceeding the 1985 wage adjusted for inflation by about $11,000. This is a significant and positive change for the City and may reflect the changes noted earlier in the types of industry sectors that are growing in the City today.

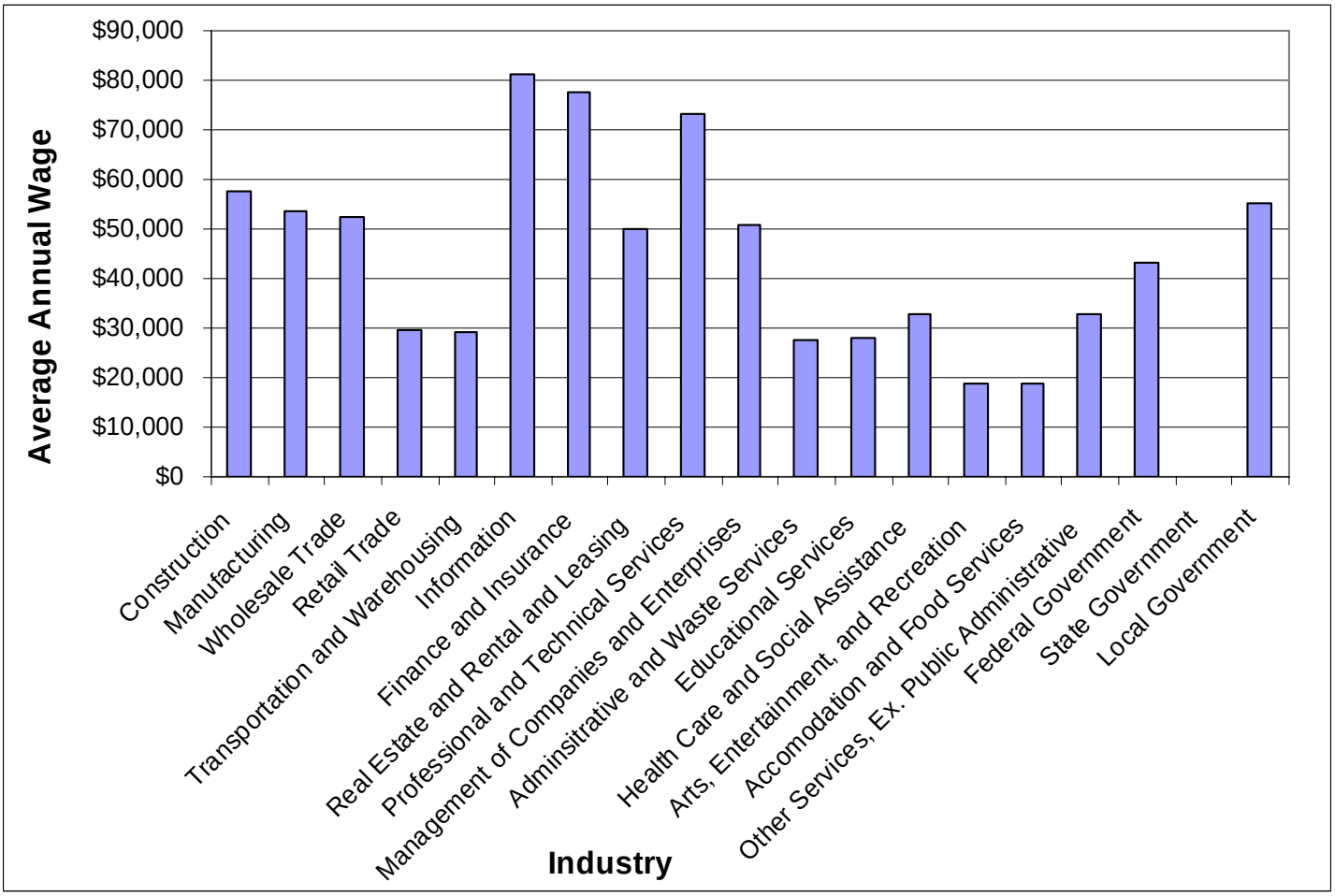
Figure 28: Table of Average Annual Wages Paid by Woburn Businesses

Year	Average Annual Wage	1985 Wage Adjusted for Inflation
1985	$21,364.00	$21,364.00
1986	$22,044.00	$21,840.52
1987	$22,985.00	$22,634.72
1988	$25,063.00	$23,428.92
1989	$26,755.00	$24,620.22
1990	$29,061.00	$25,811.52
1991	$29,938.00	$27,002.83
1992	$31,013.00	$27,729.03
1993	$32,375.00	$28,789.78
1994	$32,956.00	$29,385.43
1995	$33,429.00	$30,179.63
1996	$34,552.00	$31,172.38
1997	$35,126.00	$31,966.58
1998	$37,580.00	$32,363.68
1999	$41,308.00	$33,157.88
2000	$46,224.54	$34,150.63
2001	$46,722.49	$35,143.38

Source: Massachusetts Department of Employment and Training, ES-2-3 and U. S. Bureau of Labor Statistics (inflation adjustments)

As can be seen in Figure 29 below, the industry sectors that pay the highest wages in Woburn are in Information, Finance and Insurance, and Professional and Technical Services, all of which paid average wages of $73,000 or greater as of 2001. The existence of these industries in the City have been instrumental in increasing the average annual wage figure and indicate a diversity of employment opportunities within the City, from jobs for lower-skilled, less-educated workers or those seeking flexible hours to more professionally-oriented positions requiring higher levels of educational attainment.

Figure 29: Average Wage Paid by Industries in Woburn, 2001



Source: MA Division of Employment and Training, ES-202

Figure 30: Average Annual Wage by Industry

Industry	Average Annual Wage Paid in Woburn
Construction	$57,512
Manufacturing	$53,716
Wholesale Trade	$52,208
Retail Trade	$29,484
Transportation and Warehousing	$29,016
Information	$81,224
Finance and Insurance	$77,792
Real Estate and Rental and Leasing	$49,816
Professional and Technical Services	$73,008
Management of Companies and Enterprises	$50,648
Administrative and Waste Services	$27,560
Educational Services	$27,976
Health Care and Social Assistance	$32,916
Arts, Entertainment, and Recreation	$18,824
Accommodation and Food Services	$18,616
Other Services, Ex. Public Administrative	$32,864
Federal Government	$43,212
State Government	$0.00
Local Government	$55,380

Source: MA Division of Employment and Training, ES-20

Woburn has been designated a 'high-tech' job center for the metro north region, according to an analysis conducted by Dr. Michael Goodman, Director of Economic and Public Policy Research for the UMASS Donahue Institute. Goodman has divided the region into three sectors – high-tech job centers; higher skill communities; and lower skill communities – using three factors: Ratio of jobs to population; percentage of high-tech employment; and percentage of adults with a BA degree or better. Woburn ranks first in percentage of high-tech employment for the region and third in ratio of jobs to population, making it one of four high-tech job centers in the metro north region with Burlington, Cambridge, and Wilmington. During the 1990s, over half the region's new jobs were created in the four high-tech job centers. Figure 31 highlights Woburn's position relative to the other communities in the region.

Figure 31: Metro North Communities Skill and Job Centers

Towns	Ratio of Jobs to Population	Percent Tech Employment	Percent of Adults with a BA or better
High Tech Job Centers			
Burlington	1.71	43%	43%
Cambridge	1.12	52%	65%
Woburn	1.08	56%	29%
Wilmington	1.05	45%	31%
Higher Skill Communities			
Watertown	0.62	28%	47%
Wakefield	0.60	31%	40%
North Reading	0.40	3%	41%
Winchester	0.38	4%	65%
Reading	0.31	2%	48%
Somerville	0.30	3%	41%
Belmont	0.26	3%	63%
Melrose	0.24	7%	40%
Arlington	0.21	4%	53%
Lower Skill Communities			
Revere	0.18	3%	13%
Winthrop	0.13	0%	29%
Chelsea	0.39	9%	10%
Stoneham	0.39	6%	32%
Medford	0.34	4%	32%
Everett	0.34	4%	15%
Malden	0.31	3%	26%

Source: Michael Goodman, Ph.D.,Director of Economic and Public Policy Research, UMass Donahue Institute, June 6, 2003

The metro north region's cities are home to a growing number of younger workers, but many lack the education needed in the high-tech job center of metro north. Figures 32 and 33 help to highlight this issue and makes the retention and development of a highly skilled and educated workforce an important goal of the economic development section of the Plan.

Figure 32: Age Job Centers for the Metro North Region

Population Change (1990-2000)	High-Tech Job Centers	Higher-Skilled Communities	Lower-Skilled Communities	Metro North Region
Under 19	4.2%	6.9%	10.5%	7.6%
20-24	-1.3%	-23.5%	-19.8%	-15.4%
25-44	0.2%	-2.0%	**5.5%**	1.2%
45-64	20.1%	16.5%	15.7%	17.0%
65 and over	14.5%	-3.5%	0.2%	1.3%

Figure 33: Education by Skill for the Metro North Region
Educational Attainment of Population Over 25 in 2000

	High-Tech Job Centers	Higher-Skilled Communities	Lower-Skilled Communities	Metro North Region
Less Than High School	10.1%	11.1%	19.9%	14.1%
High School	20.5%	21.2%	34.4%	25.9%
Some College/Associates	18.8%	20.3%	23.3%	21.9%
BA or greater	50.6%	47.4%	22.3%	39.0%

Source: U.S. Census Bureau

In addition, Woburn has the greatest number of households and the lowest median household income of nearby communities, as shown in Figure 34. Though its median household income is low as compared to its neighbors, it is above the Boston CMSA and State median income levels. Fortunately for Woburn residents, the local tax bill for 2002 and the 2000 average single family home value are relatively affordable as compared with many of the neighboring Towns and also as compared with the Boston Metro region in general. However, it is important, since the community is a high tech job center, that community residents attain higher skills that should result in a rise in the median household income of the community.

Figure 34: Comparison of Household Income and Wealth Data

Town	Median Household Income	State rank	Total Households	Percent Households with income over $200,000	Average Single Family Home Value	Ratio Local Tax Bill to State Median (FY02)
Lexington	$96,825	15	11,110	15.0 %	$477,709	2.09
Burlington	$75,240	51	8,289	5.0 %	$266,446	0.94
Wilmington	$70,652	68	7,027	2.0 %	$221,297	1.11
North Reading	$76,962	48	4,795	6.0 %	$318,080	1.53
Reading	$77,059	47	8,688	6.0 %	$320,839	1.52
Wakefield	$66,117	86	9,747	3.0 %	$285,451	1.18
Stoneham	$56,605	154	9,050	2.0 %	$220,618	1.39
Winchester	$94,049	19	7,715	1.7 %	$532,459	2.28
Woburn	$54,897	168	14,997	2.0 %	$235,872	0.83
Boston CMSA	$52,699					
Mass.	$50,502					

Data Source: Census 2000, Massachusetts Department of Revenue

Finally, looking at the overall economy of the state, according to MassBenchmarks, the quarterly publication of the University of Massachusetts, the state has been working its way through a recession that began in December 2000 and ended in March 2003 lasting 27 months. This recession was not as bad as the1989-1992 recession which lasted 40 months. The present recovery is proceeding at the same pace as after the 1992 recession. As of the end of 2004, the recovery had been underway for 21 months, but it maybe a couple of more years before it will feel like the recession has ended. Growth of the

Massachusetts economy remains slow and steady as the state continues to record output and employment growth. However, both are below the country as a whole.

The office market vacancy rate in the Route 128 area consisting of Bedford, Burlington, Concord Lexington, Lincoln and Woburn has seen a slight decline since the end of the recession, according to Meredith & Grew, reducing from 23.5% in the first quarter of 2003 to 22.2% in the second quarter of 2005. These vacancy rates include sublease space. This is the ninth consecutive quarter of declining vacancy rates which had been in excess of 25%. Rent levels continue in the low $20 per-square-foot range. This is down considerably from the $50 range achieved during the 2000-2001 peak. The most recent sale of office real estate, at the time of this Plan, was 195 Presidential Way which was sold to Alexandria Real Estate Equities by Arqule for $40.1 million, or $321 per square foot. Arqule has leased back the building for ten years with annual rent increases. However, development of new office space has been virtually non-existent during the last few years as a result of the recession and the slow comeback of the economy.

Results of Economic Development Forum

The Economic Development Forum was held on June 18, 2003. It was planned and conducted by the Woburn Planning Director.

Overall Goals and Themes for Economic Development

- Maintaining an appropriate balance between economic development and the protection of natural resources, open space, and residential land uses;
- Promoting transportation improvements that enhance the flow of traffic while protecting the residential areas of the community from commercial traffic;
- Providing a public transportation system that links important activity centers and major development centers with residents and workers;
- Partnering with higher education to invest in developing a highly skilled and educated workforce;
- Promoting the redevelopment of or improvement of existing under utilized industrial/ commercial property;
- Pursuing a communications infrastructure that is consistent with the technology of the 21st century.

Potential Locations for Economic Development

DOWNTOWN

- Continue to promote zoning that encourages revitalization of downtown and enhance mixed use zoning opportunities
- Improve parking on and off street

INDUSTRIAL PARK ZONING AREAS

- Retain and promote this area for revitalization of existing sites, redevelopment of underutilized sites, and development of properly zoned sites.
- Encourage Research and Development uses particularly in the Life Sciences

- Create more certainty in the zoning ordinance for development by encouraging positive uses and discouraging unwanted uses
- Encourage environmentally-friendly development
- Improve transportation infrastructure
- Expand public transportation opportunities
- Improve technology infrastructure

According to the Woburn Planning Director, the City would like to encourage newer industrial/office uses such as biotech and research and development and phase out the trucking terminals that currently dominate the industrial parks. The City would like to replace some of these terminals with appropriate manufacturing and/or office space.

WOBURN LOOP

- Encourage utilization of opportunities created in the Woburn Loop Overlay Zoning District
- Continue to pursue bike trail and open space opportunities to enhance area

The Woburn Loop district is so named because the intent is for the Woburn Loop Bike Path to play a key role in revitalizing this area. The hope is to use mixed-use development to help transition from industrial to residential uses closer to the downtown and south to the Woburn/Winchester line.

Mishawum Transit Station Redevelopment - Although this was not a major part of the economic development forum, this future development will clearly help to shape the future of the City. This property has been studied as a possible transit-oriented development site in conjunction with the Mishawum Commuter rail station.

Other Areas for Potential Economic Development

At the end of the Open Space and Natural Resources Forum, participants were asked to identify any areas of the City that they felt would be suitable for either housing or economic development. The following locations were identified:

- The McGarr School site
- Consolidated Freight
- Inwood Office Park
- Commerce Way access to Anderson Station
- 8-10 Green Street
- Main Street downtown

Since the Open Space and Natural Resources Forum, several developments have occurred that indicate these sites will not be developed as commercial sites. The McGarr School site has been recommended for housing. The Consolidated Freight site has been rezoned and constructed as a 100 unit residential development (condominiums) known as Salem Place. The Inwood Office Park has received a zoning change to allow residential development and a developer has obtained a special permit for a residential development.

The zoning is an overlay district which keeps the underlying office uses as permitted uses. The movement for residential development on these sites mirrors the weak market for office developments at this time.

The Commerce Way access to the Anderson Regional Transportation Center is closer to becoming a reality as the City of Woburn and the Town of Wilmington have recently come to an understanding on the replacement of the New Boston Street Bridge. When this project is completed, it will strengthen the retail and office market in this area.

Economic Development Strategies/Future Plans and Resources

1. Encourage economic development that adequately balances any impact on residential and open space land uses.

2. Examine rezoning some areas to meet the specific goals expressed in the Economic Development Discussions for industrial/commercial development. This could include the creation of several mixed use, business, commercial and industrial zoning districts or overlay districts.

3. Review Transportation enhancements that will achieve enhance traffic flow and reduce truck traffic in residential neighborhoods (See specific Transportation Implementation Actions)

4. Work with the MBTA and local businesses and employers to improve public transportation and pedestrian connections to employment centers and businesses.

5. Develop partnerships with Colleges and Junior Colleges to offer courses to continue to increase the educational attainment of the City's residents and workforce.

6. Continue to work with and encourage the activities of the Woburn Redevelopment Authority in revitalizing downtown and other areas of the City such as the Woburn Loop.

7. Develop a high bandwidth infrastructure that can expand and meet the growing needs of businesses and individuals throughout Woburn.

WATER SYSTEM

Key Findings

- Since the 1870s, the City of Woburn has supplied water to its residents.

- In 1999, the City engaged Camp Dresser & McKee Inc., of Cambridge, Massachusetts, to evaluate the existing water system, identify deficiencies, and prioritize future capital improvements in a Master Plan to address the system deficiencies.

- Woburn's water system is comprised of two major service areas; the main service area and the Shaker Glen high service area.
    - The main service area serves approximately 85 percent of the city.
    - The Shaker Glen High Service area serves the area west of Cambridge Street.
    - There are also eleven other small water booster pumping stations that supply water to discrete high-pressure service areas within the city.

- Woburn's average water demand is approximately 6 million gallons per day (mgd), which can mostly be met by the City's local groundwater supply.

- All five of the well pumping stations enclose a single motor/pumping unit combination. None of the well pumping stations have standby power.
    - In addition to the well pumping stations, there are three major booster pumping stations within the system: Shaker Glen Booster Pumping Station, Blueberry Hill Booster Pumping Station, and Janis Terrace Booster Pumping Station.

- Woburn's water supply is conveyed through approximately 165 miles of distribution mains that range in diameters from 4-inch to 24-inch. A large percentage of the transmission mains (12 inches and greater) are in relatively good condition. However, there is a significant percentage of older (55-100 years old) 6-inch diameter, unlined cast iron pipe in the system with severely limited flow capacities.

- Future water consumption projections were based on future population and historic trends in water use. The overall per capita water consumption has remained stable at an average of approximately 160 gpcd.

- A computer simulation model of Woburn's water distribution system was developed to evaluate the system under existing and estimated future water demand conditions. Based on this analysis, the existing storage volume in the high service area is adequate for the design year 2020. No emergency storage is required for the main service area. In addition, the existing storage tanks in the high service area could meet some emergency storage needs for the system.

- For the main service system, maximum day demand is met by both the Horn Pond wellfield and MWRA system. The MWRA system is considered reliable and can meet the City's water demands. Thus, the water supply is considered adequate for the City.

- At the Shaker Glen Pumping Station, system capacity is considered inadequate because the station cannot meet maximum day demands (2.0 mgd) with the largest pump out of service.
    - In addition, the existing pumping station no longer meets current electrical codes and operational standards for water system facilities.

- Overall, the distribution system computer model analyses indicate that most of the City's distribution system piping is adequate with the exception of streets with older, unlined cast iron water mains.

- The Recommended Improvements Program is detailed in the appendix. In summary, it includes capital investments in the following areas:
    - Piping Improvements;
    - Meter Improvements;
    - Facilities Improvements;
    - Storage Tank Rehabilitation;
    - and an Annual Planning Program.

- The total estimated cost of the Recommended Improvements is approximately $11.4M.

- The full Water System Master Plan is contained in the appendix of this document.

STORMWATER PIPING SYSTEM

Key Findings

- The City of Woburn owns and operates a separate stormwater drainage system within its corporate boundaries, consisting of an 8,390 acre land drainage area.

- The drainage system has more than 153 miles of pipe including circular pipes with diameters that range from 8- to 60-inches and box culverts that are as large as 6-feet high by 16-feet wide.

- Woburn's drainage system discharges stormwater into 13 water bodies, including ponds, canals, brooks, and a river. The complete list is included in the appendix to this document.

- Priority resource areas in the City include Horn Pond, which is adjacent to the Woburn's groundwater supply. In addition, Horn Pond and the Aberjona River area listed as impaired waters. There are no other priority resources areas in Woburn.

- The City has developed environmental awareness brochures that discuss hazardous household waste and the city's hazardous household waste collection plan; the City's Water Supply, and the network of conservation land and trails in the City (including access and environmental information). Residents in the City have also formed the Woburn Residence Environmental Network (WREN). WREN is an active volunteer environmental watch group that is dedicated to protecting and increasing the public use and awareness of conservation lands in Woburn.

- Several departments within the City review site plans proposed by developers based on the size and scope of the development and previous site approvals. Development plans are reviewed for wetland and other environmental impacts and compliance with site management policies. Large site developments are required to provide runoff mitigation, including stormwater detention ponds designed to help recharge the groundwater and reduce peak runoff flows. The Conservation Commission applies the Massachusetts Stormwater Policy in areas that impact adjacent wetlands according to the Wetlands Protection Act requirements.

- The City implements a variety of other best management practices designed to minimize the impact to the environment, reduce contamination in stormwater runoff, and protect the existing resources, and are described in the appendix to this document.

- As part of the Phase II Stormwater Program, the City's drainage system is currently under review and analysis to identify areas of contamination. In addition, the City is conducting field investigations to determine area with insufficient capacity, which may be causing street flooding.
    - This is the first phase of several phases of work that will eventually be completed to identify improvements to be implemented to address discrete areas with street and drainage channel flooding.

- The full Stormwater Piping System Master Plan is contained in the appendix of this document.

TRANSPORTATION

Key Findings

- Woburn is situated along the upper Mystic Valley of the Greater Boston Area, approximately 10 miles northwest of Boston. It is strategically located at the interchange of two regional highways, I-93 and I-95 (Route 128). Route 38 provides north-south access through the City.

- Increased commercial development along the Industrial Loop and increased congestion on regional highways has led to increased traffic on Woburn's roadways.

- A large amount of traffic traveling through the City of Woburn results from Woburn's proximity to Interstates 93 and 95 (Route 128).

- To assess the needs for the Transportation component of the Master Plan, the existing conditions were reviewed. Future conditions were forecasted using data supplied from various sources. Infrastructure deficiencies, both existing and projected, were identified. Public input was solicited via an outreach program (the Woburn 2020 Vision Meeting). This led to the development of Transportation alternatives that will allow the City of Woburn to better manage existing and future travel demands.

Existing Conditions

The provision of excellent transportation access is central to the success of the City's development. Key elements of an ideal transportation system consist of:

- a well-defined and direct access from the regional highway system
- an internal circulation system that is user-friendly and easy to understand
- a convenient and available parking
- a convenient and available public transportation
- a well-planned bicycle and pedestrian connections between residential areas and major activity centers

This section describes existing access to and within the City of Woburn and defines deficiencies in the existing system in terms of how it meets the ideal elements listed above.

To better understand the magnitude of the traffic issues in the study area, the following transportation components were evaluated and are discussed in the sections that follow:

- roadway systems
- intersection traffic operations
- roadway infrastructure : Roadway pavement & bridges
- intersection safety analysis
- parking activity
- public transportation
- pedestrian and bicycle facilities

Roadway System

The City of Woburn's roadways have been categorized as either regional access or local roadways. The local roadways section includes a description of the intersections that have been analyzed in detail in this study.

Regional Access

The City of Woburn, located in Eastern Massachusetts, occupies 13.1 miles of the Fells Upland and is situated along the upper Mystic Valley of the Greater Boston Area. The City is bordered by Wilmington to the north, Stoneham and Reading to the east, Winchester to the south, Lexington to the southwest, and Burlington to the west. State Route 38 and US Route 3 both provide north-south access through the City. East-west access is provided via urban principal arterial (Lexington Street, Pleasant Street, Montvale Avenue) and several Urban Collectors (see Figure 35). The City of Woburn is located approximately ten miles north of Boston.

Two regional highways, I-95 (Route 128) and I-93 provide access to Woburn. These roads are located through the center and to the east side of the City, respectively. An interchange between the two highways is located just to the east of the City Line in Reading, Massachusetts. Along I-95, interchange access is provided at Main Street

(Route 38) and at Washington Street within the City of Woburn. Access to I-93 within the City is provided via Montvale Avenue.

INTERSTATE 95 (ROUTE 128)

Interstate I-95 is a major north/south limited access highway under the jurisdiction of the Massachusetts Highway Department (MassHighway). Near Woburn, it generally has an east/west alignment. Within Massachusetts, I-95 extends from the Rhode Island state line in the south to the New Hampshire State line in the north and provides access to I-295 in Attleboro, I-93 in Braintree and Reading, I-495 in Foxboro and Salisbury, and I-90 in Newton. Between Canton and Lynnfield, Massachusetts, I-95 is designated as Route 128. The posted speed limit is 55 miles per hour along the section of I-95 designated as Route 128, which is essentially serves as a ring road around the City of Boston. The remainder of the highway (within Massachusetts) has a posted speed limit of 65 miles per hour.

Route 128 continues to the north and east of Lynnfield, connecting the Interstate system to the North Shore and Cape Ann communities.

INTERSTATE 93

Interstate I-93 is a state-maintained highway and part of the Interstate highway system. Near Woburn, it has a general north/south alignment. Within Massachusetts, I-93 extends north from I-95 in Canton, through the City of Boston, to the New Hampshire state line. It offers access to I-95 in Canton and Reading and I-90 in Boston, as well as to many state routes in the Greater Boston Area. The posted speed limit is 65 miles per hour.

Local Roadways

The major roads that traverse the City are Route 38 (Main Street), Route 3 (Cambridge Street), Montvale Avenue, Mishawum Road, Washington Street, Salem Street, Lexington Street, Wildwood Avenue, Wood Street, Olympia Avenue, Winn Street, Merrimack Street, Bedford Road, School Street, Russell Street, Green Street, Commerce Way, New Boston Road, Presidents Way, Nashua Street, Holton Street, Bow Street, and Vernon Street.

As shown in Figure 35, the majority of these roadways are considered to be under City jurisdiction. I-95, I-93, Cambridge Road, and Lexington Street are under MassHighway jurisdiction[4], as are portions of Main Street, Salem Street, Washington Street, and Montvale Avenue.

This study examined 15 key intersections situated throughout the City (as depicted in Figure 36):

- Cambridge Road at Bedford Street
- Four Corners: Lexington Street at Cambridge Road, Russell Street
- Main Street at Merrimack Street and School Street

[4] Massachusetts Highway Department Bureau of Transportation Planning and Development, MassHighway Road Inventory File, August 2003

- Main Street at Lake Street
- Main Street at Cross Street
- Main Street at Salem Street
- The Square: Main Street at Pleasant Street, Winn Street, and Montvale Avenue
- Salem Street at Wood Street and Wildwood Avenue
- Winn Street at Kilby Street and Bedford Street
- Mishawum Road at Washington Street
- Olympia Road at Mishawum Road
- Washington Street at Montvale Avenue
- Green Street at Montvale Avenue
- Willow Street at Lexington Street
- North Warren Street at Pleasant Street

In addition to these 15 intersections, the study examined the traffic volumes at the I-95 interchange with Route 38 and the I-95 interchange with Washington Street. Descriptions of the major roadways and study intersections are presented below and depicted in Figure 36.

MAJOR ROADWAYS

- **Main Street** – Main Street is a state-numbered (Route 38), city maintained two-lane roadway extending from the New Hampshire Border to the north to Route 28 in Somerville to the south. Near Woburn, Main Street connects Routes 129 and 62 (Wilmington) with I-95. Main Street is generally oriented in a north/south direction and is classified as an Urban Principal Arterial by MassHighway. The speed limit is 30 mph in each direction.

- **Cambridge Road (Route 3)** – Route 3 is a state numbered roadway that travels in a north/south direction between North Cambridge and the New Hampshire state line. Through Woburn, Cambridge Road is designated as State Route 3 and provides one travel lane in each direction. Cambridge Road serves as a regional arterial, providing access to I-95 as well as many retail and office uses in the area. The posted speed limit along Cambridge Road varies between 35 and 40 mph.

A detailed inventory of key roadways within the City of Woburn is presented in the Existing Roadway Infrastructure section below (Figure 42).

INTERSECTIONS

Figure 36 graphically presents the location of each study intersection within the City of Woburn.

- **Bedford Road at Cambridge Road** – Cambridge Road intersects South Bedford and Bedford Roads to form a four-way signalized intersection. The Cambridge Road southbound approach provides one general-purpose lane and a channelized right-turn lane. The northbound Cambridge Road and the eastbound South Bedford Road approaches provide one general-purpose lane in each direction. The westbound

Bedford Road approach provides a shared left-turn/through lane and an exclusive right-turn lane.

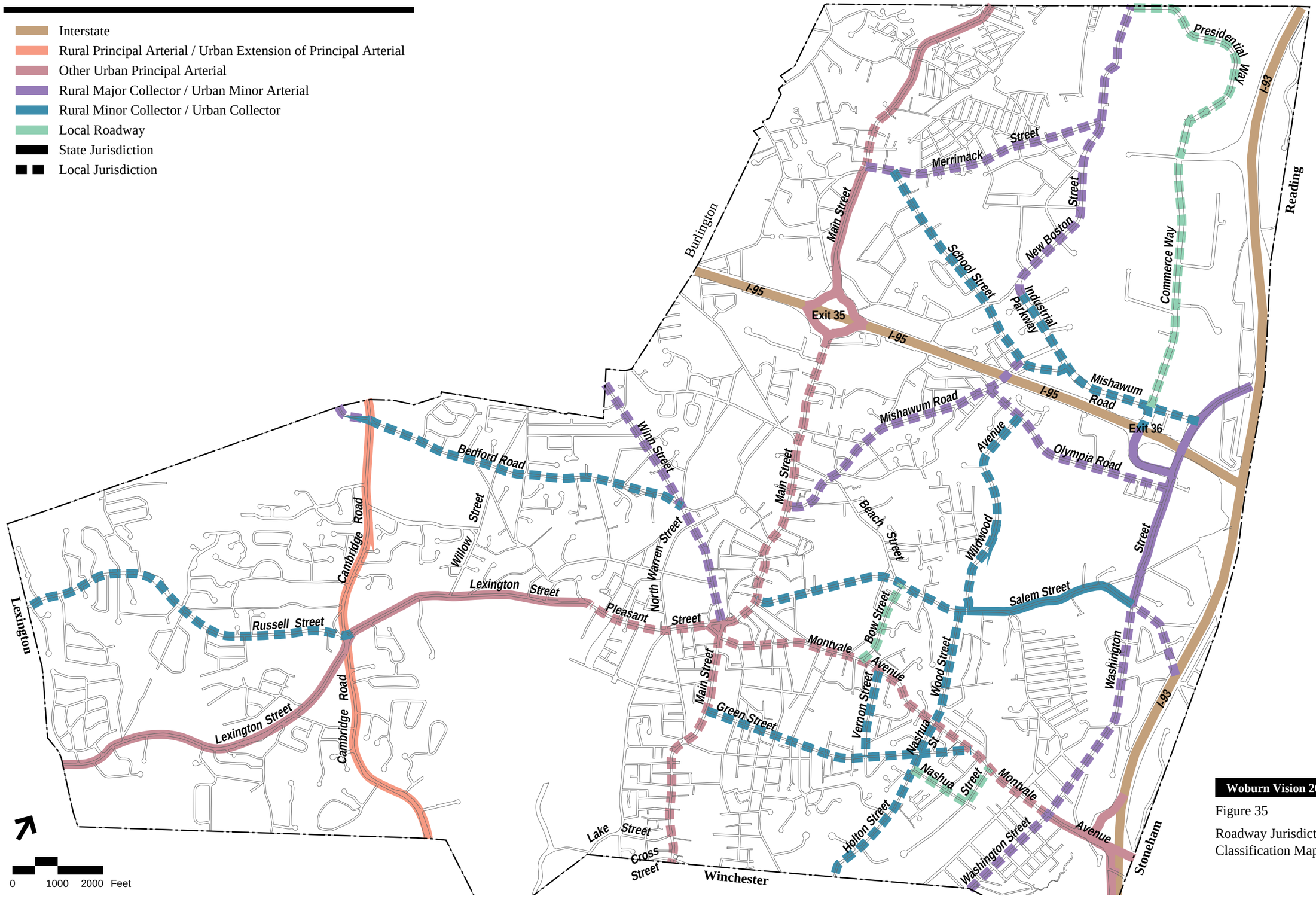
- **Four Corners: Lexington Street at Cambridge Road and Russell Street** – Cambridge Road intersects Lexington Street and Russell Street to form the five-legged, double traffic signal intersection commonly referred to as Four Corners. The northbound and southbound Cambridge Road approaches each provide a shared left-turn/through lane and a shared through/right-turn lane. The eastbound Russell Street approach provides a shared left-turn/through lane and an exclusive right-turn lane. The eastbound Lexington Street approach provides an exclusive left-turn lane, a through lane, and a channelized right-turn lane. Westbound, an exclusive left-turn lane and shared through/right-turn lane is provided from Lexington Street, as well as a smaller, offset general-purpose lane for movements onto Russell Street.

- **Main Street at Merrimack Street and School Street** – Merrimack Street intersects Main Street to form a three-legged signalized intersection. The southbound Main Street approach provides an exclusive left-turn and exclusive through lane, while the northbound Main Street approach provides exclusive through and right-turn lanes. To the east of the intersection, School Street intersects Merrimack Street at an unsignalized location. One general-purpose lane is provided along each approach to the intersection. School Street is under STOP-sign control.

- **Main Street at Lake Street** – Main Street meets Lake Street to form a three-legged 'T-type' unsignalized intersection. Lake Street is under STOP-sign control. Each approach to the intersection provides one general-purpose lane.

- **Main Street at Cross Street and Border Street** – Main Street meets Cross and Border Streets to form a four-legged unsignalized intersection. Cross and Border Streets are under STOP-sign control. Each approach to the intersection provides one general-purpose lane.

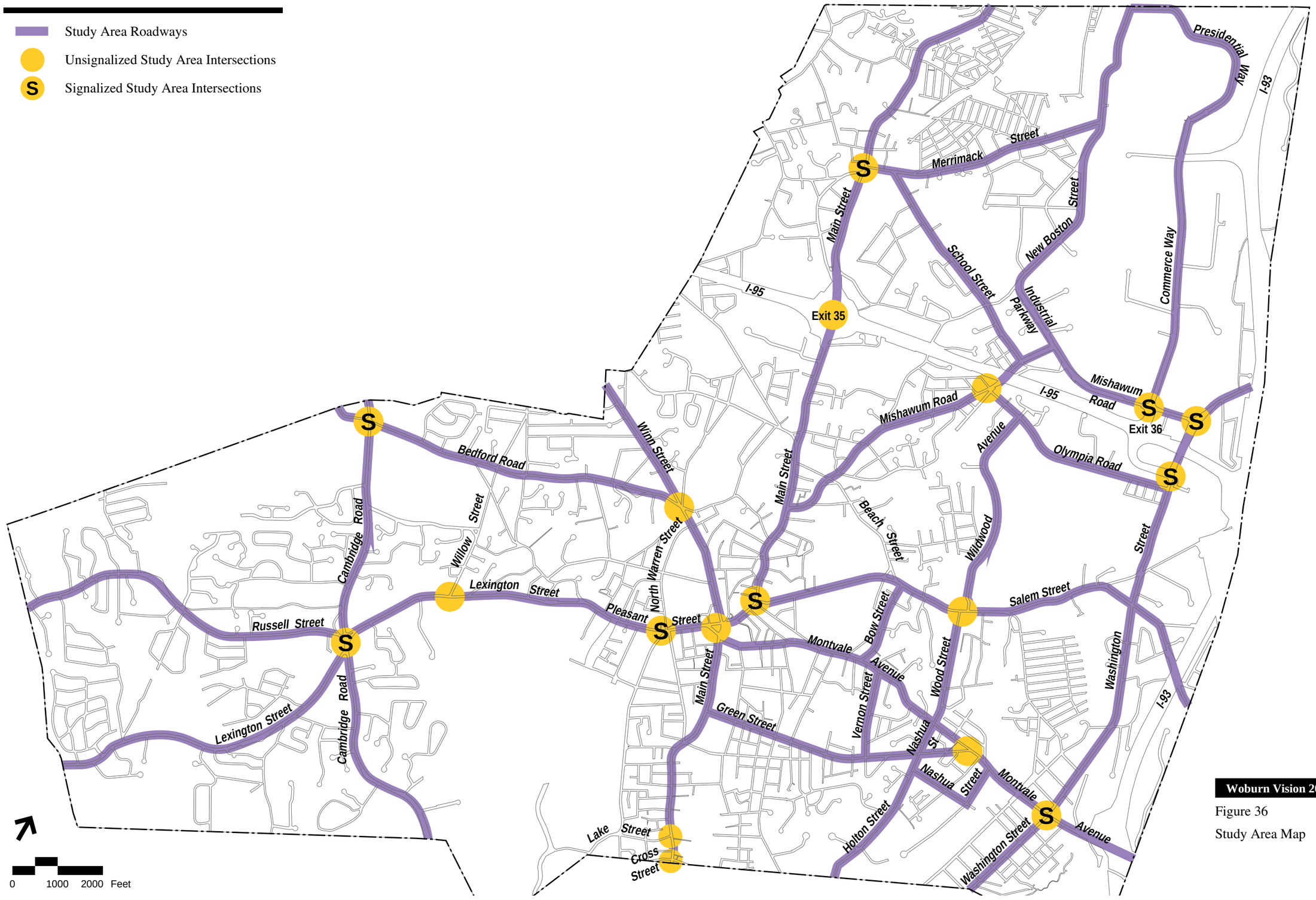
- **Main Street at Salem Street** – Salem Street intersects Main Street to form a 'T-type' signalized intersection. Each approach to the intersection provides one general-purpose lane. An exclusive pedestrian phase is provided at this location.



Woburn Vision 2020

Figure 35

Roadway Jurisdiction \ Classification Map



Woburn Vision 2020

Figure 36

Study Area Map

- **The Square: Main Street at Pleasant Street, Winn Street, and Montvale Avenue** – These four roadways join Common Street and Federal Street to form Woburn's downtown center, known as Woburn Square. The square provides a one-way traffic circulation pattern similar to a roundabout, with three lanes provided along each of its sides. The Common Street/Main Street corner and the Main Street/ Pleasant Street corner are controlled by traffic signals. Flashing signals indicating stop control manage the other conflict points within the square. Access to off-street parking, downtown shops, and City Hall is provided within the square. With the exception of Main Street, no parking is permitted within the square.

- **Pleasant Street at Warren Street, North Warren Street, and Arlington Road** – Warren Street, North Warren Street, and Arlington Road meet Pleasant Street to form a five-way, off-set intersection. North Warren Street is designated as one-way away from the intersection. The Arlington Road, Warren Street, and Pleasant Street westbound approaches all provide one general-purpose lane. The eastbound Pleasant Street approach provides an exclusive left-turn lane and a shared through/right-turn lane. This intersection is under traffic signal control.

- **Salem Street at Wood Street and Wildwood Avenue** – Wood Street and Wildwood Avenue intersect Salem Street to form an off-set four-legged unsignalized intersection. Both Wood Street and Wildwood Avenue are under STOP-sign control. All approaches to the intersection provide one wide general-purpose lane.

- **Winn Street at Kilby Street and Bedford Road** – Winn Street is intersected by Bedford Road and Kilby Street to form a skewed unsignalized intersection. Due to the expanse of pavement within the intersection, a yellow flashing caution beacon has been installed. Both Bedford Road and Kilby Street are under STOP-sign control. Both Kilby Street approaches provide an exclusive left-turn lane and shared right-turn/through lane. Winn Street and Bedford Road each provide one general-purpose lane.

- **Mishawum Road at Washington Street** – Washington Street meets Mishawum Road and a private driveway to form a four-way, fully-actuated signalized intersection. The eastbound Mishawum Road approach provides an exclusive left-turn lane, a through lane, and a channelized right-turn lane. The westbound private driveway provides a shared left-turn/through lane and a shared through/right-turn lane. The northbound and southbound Washington Street approaches each provide a shared left-turn/through lane a through lane, and a channelized right-turn lane.

- **Olympia Road at Mishawum Road** – Olympia Road meets Mishawum Road and Rumford Park (a residential way) to form a skewed, four-legged unsignalized intersection. Olympia Road and Rumford Park are both under STOP-sign control. One general-purpose travel lane is provided on each approach.

- **Washington Street at Montvale Avenue** – Montvale Avenue intersects Washington Street to form a four-way signalized intersection. All four approaches to

the intersection provide exclusive left-turn lane and a shared through/right-turn lanes.

- **Green Street at Montvale Avenue** – Green Street intersects Montvale Avenue to form a 'Y-type' unsignalized intersection. Green Street is under STOP-sign control. All approaches to the intersection provide one general-purpose lane.

- **Willow Street at Lexington Street** – Willow Street intersects Lexington Street to form a three-legged 'T-type' intersection. All approaches to the intersection provide one general-purpose lane. Willow Street is under STOP-sign control.

- **I-95 and Main Street** – Main Street forms a rotary with the Route 128 entrance and exit ramps. Route 128 crosses over of the rotary. Main Street forms the north and south legs of the rotary, while the Route 128 exit and entrance ramps form the east and west legs of the rotary. All approaches to the rotary consist of a single lane, each approximately 20 feet wide and under YIELD-sign traffic control. The circulating roadway is approximately 30 feet wide. Raised channel islands separate the entrance and exit flows on the Main Street legs of the rotary.

- **I-95 and Mishawum Road and Washington Street** – Mishawum Road meets the I-95 ramps to form a four-way signalized intersection, controlled by a fully-actuated traffic signal. The Mishawum Road eastbound approach consists of an exclusive left-turn lane, two through lanes, and a channelized right-turn lane. The I-95 ramp northbound approach and Commerce Way southbound approach each consist of an exclusive left-turn lane, a shared through/left-turn lane, a through lane, and a channelized right-turn lane.

- **I-95 ramps/Washington Street and Tower Park Road** – These all meet to form a four-legged signalized intersection. The I-95 northbound off-ramp approach consists of an exclusive left-turn lane and a shared left-turn/through lane. The approach also provides a channelized right-turn lane that is under YIELD-sign control. The Tower Park Road westbound approach provides an exclusive left-turn lane and a shared through/right-turn lane. The northbound Washington Street approach provides an exclusive left-turn lane, a through lane, and a shared through/right-turn lane. The Washington Street southbound approach provides a shared left-turn/through lane and a through lane. Right-turns from the Washington Street southbound approach are not under traffic signal control.

Traffic Volumes

The following sections present daily and peak hour traffic volumes for key study area roadway links and intersections. Traffic counts were compiled from various City sources.

Daily Traffic Volumes

Automatic traffic recorder (ATR) counts were conducted as part of several traffic studies prepared for the City of Woburn. A summary of a typical weekday traffic volumes for key roadway locations available are presented below in Figure 37.

Based on the available data, the busiest roadway in the City (other than I-95 and I-93) is Main Street (near Elm Street), which carries approximately 34,400 vehicles per weekday. However, Main Street carries half that amount of daily traffic along other segments within the City. The percentage of daily traffic traveling Main Street during the peak hours varies between 7 and 9 percent.

The next busiest roadway is Washington Street (south of Olympia Avenue), which carries approximately 31,700 vehicles per day during a typical weekday. Mishawum Road, Montvale Avenue, and Cambridge Road all carry more than 20,000 vehicles per day during a typical weekday. Along the key roadways, between 7 and 13 percent of the daily volume occurs during the peak periods. Of the roads and traffic data reviewed as part of this study, Merrimack Street accounts for the least amount of daily traffic, with just over 2,000 vehicles per day.

PEAK PERIOD TURNING MOVEMENT COUNTS

In addition to ATR collection, peak period turning movement counts (TMCs) were also compiled from previous traffic studies made available from the City. TMC data are typically collected during the weekday morning (7:00 AM – 9:00 AM) and weekday evening (4:00 PM – 6:00 PM) peak periods.

Figure 37: Existing Weekday Traffic Volume Summary

Location	Count Date	Daily Vol (vpd)[1]	Morning Peak Hour Vol (vph)[2]	Morning Peak Hour K [3]	Morning Peak Hour Dir Dist [4]	Evening Peak Hour Vol (vph)	Evening Peak Hour K	Evening Peak Hour Dir Dist
Main Street, south of Elm Street	5/1999	34,400	2,475	7.2	58 % SB	2,510	7.3	51 % SB
Washington Street, south of Olympia Avenue	4/1999	31,700	2,355	7.4	60 % SB	2,605	8.2	60 % NB
Mishawum Road, west of Route 95 SB Ramps	6/1998	27,600	1,620	5.8	n/a	1,925	7.0	n/a
Montvale Avenue, east of Unicorn Park Drive	5/2000	23,100	1,734	7.5	64 % WB	1,825	7.9	59 % EB
Montvale Avenue, west of Unicorn Park Drive	5/2000	22,100	2,650	11.9	59 % WB	2,855	12.9	51 % EB
Cambridge Road, North of Sylvanus Wood Lane	4/2003	21,600	1,500	7.0	61 % NB	1,800	8.0	59 % SB
Commerce Way, north of Target	3/2003	19,000	1650	8.7	n/a	1620	8.5	n/a
Main Street, south of Wilmington town line	10/2000	17,500	1,385	7.9	55 % SB	1,455	8.3	57 % NB
Winn Street, south of Bedford Road	1/2003	16,800	1,300	7.7	n/a	1,425	8.5	n/a
Main Street, south of Breed Avenue	6/2001	16,600	1,335	8.0	n/a	1,330	8.0	n/a
Winn Street, north of Bedford Road	1/2003	14,100	1,115	7.9	n/a	1,210	8.6	n/a
Main Street, north of Davis Street	5/2003	14,100	1,110	8.0	55 % SB	1,325	9.0	58 % SB
Lexington Street, East of Woburn/Lexington town line	11/2000	7,800	655	8.4	70 % WB	790	10.2	69 % EB
Bedford Road, west of Winn Street	1/2003	4,900	380	7.8	n/a	440	9.1	n/a
Kilby Street, east of Winn Street	1/2003	4,300	325	7.6	n/a	455	10.7	n/a
Merrimack Street, north of North Maple Street	6/2001	2,100	220	10.3	n/a	240	11.3	n/a

source: ATR counts conducted by various agencies (1998-2003)
1 weekday daily traffic volumes expressed in vehicles per day
2 weekday peak hour volumes expressed in vehicles per hour
3 percent of daily traffic occurring during the peak hour
4 percent of peak hour traffic, by direction
n/a not available

This compilation of intersection volumes is presented in Figures 38 and 39 and represents existing morning and evening peak hour traffic volumes for the study-area intersections.

Woburn Vision 2020

Figure 38

Existing Morning
Peak Hour Traffic Volumes

Woburn Vision 2020

Figure 39

Existing Evening
Peak Hour Traffic Volumes

Existing Traffic Operations

Traffic operations analysis measures existing traffic volumes and quantifies traffic flow within the study area. To assess quality of flow, intersection capacity analyses were compiled from traffic studies provided by the City. Capacity analysis provides an indication of how well an intersection serves the traffic demands placed on it. Operating conditions are classified by calculated levels of service as described below.

Level-of-Service Criteria

Level of service (LOS) is the term used to denote the different operating conditions, which occur at a given intersection under various traffic volume loads. It is a qualitative measure of the effect of a number of factors, including roadway geometry, speed, travel delay, freedom to maneuver, and safety. The term 'level of service' provides an index to the operational qualities of an intersection. Level-of-service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. Generally, intersections are considered to operate at an acceptable level of service if they operate at LOS D or better for this type of area.

Level-of-service designation is reported differently for signalized and unsignalized intersections. For signalized intersections, the analysis considers the operation of each lane or lane group entering the intersection and the level of service designation is for overall conditions at the intersection. For unsignalized intersections, however, the analysis assumes that traffic on the mainline is not affected by traffic on the side streets. The level of service is only determined for left-turns from the main street and all movements from the minor street. The reported level of service is for the most critical movement, which is most often the left-turn out of the side street. Depending on the year of the study provided, the evaluation criteria used to analyze area intersections are based on either the 1997 or 2000 *Highway Capacity Manual*[5].

Unsignalized Intersection Capacity Analysis

A summary of the unsignalized capacity analysis results is presented in Figure 40.

The analyses show there are long delays experienced by traffic on the minor street approaches to many of the intersections within the study area. These include:

- Main Street at Lake Street
- Main Street at Cross and Border Streets
- Mishawum Road at Olympia Road
- Salem Street at Wildwood Avenue and Wood Street
- Main Street at Pleasant Street
- Pleasant Street at Common Street

[5] Transportation Research Board, *Highway Capacity Manual*, Special Report 209, Washington, D.C., 1997
Transportation Research Board, *Highway Capacity Manual*, Washington, D.C., 2000

These minor streets operate at LOS F in the morning and/or evening peak hours because of high volumes along the major street, which make it difficult for vehicles to exit the side streets.

The analysis results indicate that long delays are experienced on the Bedford Street and Kilby Street approaches to Winn Street. This intersection is currently being evaluated for signalized control.

At the Main Street/I-95 rotary, delay is experienced on northbound Main Street during the morning peak hour. This is likely due to local residents headed toward the Interstate during the morning commute. During the evening peak hour, high delay is experienced on the I-95 northbound ramp, which is consistent with travel patterns throughout the region.

Figure 40: Existing Unsignalized Intersection Capacity Analysis Results

Location	Weekday Peak Hour	Count/ Analysis Year	Critical Movement [1]	Existing Conditions Delay [2]	LOS [3]	Average Queue (ft)
Lexington Street at Willow Street	Morning	2003	Willow Street	22	C	73
			Lexington Street EB L	3	A	8
			Lexington Street WB L	0	A	0
	Evening	2003	Willow Street	30	D	80
			Lexington Street EB L	4	A	16
			Lexington Street WB L	0	A	0
Winn Street at Bedford Street/Kilby Street	Morning	2003	Winn Street NB L	9	A	12
			Winn Street SB L	9	A	5
			Bedford Street	>120	F	n/a
			Kilby Street	>120	F	625
	Evening	2003	Winn Street NB L	9	A	8
			Winn Street SB L	9	A	8
			Bedford Street	>120	F	n/a
			Kilby Street	>120	F	n/a
Main Street at Lake Street	Morning	2003	Lake Street	51	F	159
			Main Street NB	6	A	23
			Main Street SB	0	A	0
	Evening	2003	Lake Street	>120	F	426
			Main Street NB	6	A	32
			Main Street SB	0	A	0
Main Street at Cross Street / Border Street	Morning	1998	Border Street LTR	> 120	F	n/a
			Cross Street LTR	54	F	n/a
			Main Street L	9	A	n/a
			Main Street L	9	A	n/a
	Evening	1998	Border Street LTR	> 120	F	n/a
			Cross Street LTR	> 120	F	n/a
			Main Street L	8	A	n/a
			Main Street L	12	B	n/a
Mishawum Road at Olympia Road	Morning	2003	Olympia Road WB	16	C	79
			Mishawum Road NB	0	A	0
			Mishawum Road SB	7	A	22
	Evening	2003	Olympia Road WB	>120	F	1400
			Mishawum Road NB	0	A	0
			Mishawum Road SB	7	A	36
Salem Street at Wood Street/Wildwood Avenue	Morning	2003	Wood Street NB L	50	E	40
			Wildwood Street SB	84	F	188
			Salem Street EB	0	A	0
			Salem Street WB	3	A	22
	Evening	2003	Wood Street NB	13	B	14
			Wildwood Street SB	14	B	31
			Salem Street EB	1	A	8
			Salem Street WB	1	A	5

1 SB = southbound, NB = northbound, EB = eastbound, WB = westbound, L = left, R = right, T = through
2 average delay expressed in seconds per vehicle
3 level of service
n/a not available

Figure 40 (continued): Existing Unsignalized Intersection Capacity Analysis Results

Location	Weekday Peak Hour	Count/ Analysis Year	Critical Movement [1]	Existing Conditions Delay [2]	LOS [3]	Average Queue (ft)
Montvale Avenue at Green Street	Morning	2003	Green Street	14	B	38
			Montvale Avenue EB R	0	A	0
			Montvale Avenue WB L	4	A	15
	Evening	2003	Green Street	15	B	47
			Montvale Avenue EB R	0	A	0
			Montvale Avenue WB L	4	A	24
Main Street at Pleasant Street (Woburn Square)	Morning	2003	Main Street NB LT	>120	F	600
			Winn Street SB R	>120	F	540
	Evening	2000	Main Street NB LT	>120	F	631
			Winn Street SB R	119	F	575
Pleasant Street at Common Street (Woburn Square)	Morning	2003	Pleasant Street WB L	18	C	147
	Evening	2000	Pleasant Street WB L	41	E	324
Main Street at Route 128 (Rotary)	Morning	1999	I-95 NB	26	C	240
			I-95 SB	7	B	20
			Main Street NB	58	E	390
			Main Street SB	2	A	120
			Overall	21	C	--
	Evening	1999	I-95 NB	> 120	F	715
			I-95 SB	37	D	195
			Main Street NB	3	C	295
			Main Street SB	20	C	343
			Overall	50	D	--

1 SB = southbound, NB = northbound, EB = eastbound, WB = westbound, L = left, R = right, T = through
2 average delay expressed in seconds per vehicle
3 level of service
n/a not available

Signalized Intersection Capacity Analysis

Figure 41 summarizes the results of the analyses. As the table shows, many of the intersections operate at deficient LOS F under existing conditions. Of note, these intersections are largely along Washington Street, a main roadway in the City providing a direct connection to both I-95 and I-93.

Figure 41: Existing Signalized Intersection Capacity Analysis Results

Location	Count/ Analysis Year	Weekday Peak Hour	Existing Conditions v/c[2]	Delay [3]	LOS [4]
Cambridge Road at Bedford Road	2003	Morning	>1.0	69	E
	2003	Evening	>1.0	>80	F
Cambridge Road at Russell Street	2003	Morning	0.74	16	B
	2003	Evening	0.77	15	B
Cambridge Road at Lexington Street	2003	Morning	>1.0	39	D
	2003	Evening	0.95	36	D
Pleasant Street at North Warren Street	2003	Morning	2.01	>120	F
	2003	Evening	4.65	>120	F
Common Street at Montvale Avenue (Woburn Square)	2003	Morning	0.63	22	C
	2000	Evening	0.73	25	C
Main Street at Merrimack Street	2003	Morning	1.31	112	F
	2003	Evening	0.89	29	C
Mishawum Road at Commerce Way /I-95 SB Ramps	2001	Morning	>1.0	>80	F
	2003	Evening	0.93	45	D
Washington Street at Mishawum Road	2001	Morning	0.75	16	C
	2001	Evening	>1.00	>80	F
Washington Street at Tower Park Road/I-95 Ramps	2001	Morning	0.89	>80	F
	2001	Evening	0.96	>80	F
Washington Street at Montvale Avenue	2000	Morning	1.42	120	F
	2000	Evening	1.56	>120	F
Main Street at Salem Street	2003	Morning	0.61	12	B
	2003	Evening	0.57	11	B

1 SB = southbound, NB = northbound, EB = eastbound, WB = westbound, L = left, R = right, T = through
2 volume-to-capacity ratio
3 average delay expressed in seconds per vehicle
4 level of service

Existing Roadway Infrastructure

The following sections provide a summary of the existing roadway infrastructure within the City of Woburn. A more detailed matrix of all study area roadway conditions is presented in Figure 42.

Figure 42: Study Area Roadway Inventory

Roadway	Section	General Land Use	Approximate Lane Width (feet)	Speed Limit	Vehicular Speeds (High, Moderate, Low)	Sight Distance Issues	Access Management Issues	Capacity Issues/Traffic Congestion	Comments
Cambridge Rd.	City Line to Bedford Rd. Bedford Rd. to Locus St. Locus St. to Revere Rd. Revere Rd. to Four Corners Four Corners to Day Circle Day Circle to Crossman Rd. Crossman Rd. to City Line		14' NB / 17' SB 15' NB / 13' SB 15' NB / 15' SB Variable NB / SB 18' NB / 18' SB 15' NB / 15' SB Variable NB / SB	40 mph; 30 mph in Four Corners Area Speed Limit is appropriate for roadway	Low	None	Four Corners area from Church to Olsen's	Four Corners Area	
Main St.	Breed Ave. to Nicholas East Nicholas to School School to Elm Alfred/Elm/Main Rotary Fischer Terrace to Wyman Wyman to Common St. Common St. to Fowle St. Fowle St. to Cross St.	R-2 B-H R-1, R-2 R-2 B-D, S-I. B-N B-N R-2	14' NB / 14' SB 21' NB / 21' SB 14' NB / 14' SB Variable 19' NB / 16' SB 16' NB / 16' SB 20' NB / 20' SB 17' NB / 17' SB 20' NB / 20' SB	Speed Limit is appropriate for roadway	None	Issues at Breed Ave. and from minor roads along Wilmington Town Line	In downtown area	Throughout downtown	Better signage of square is necessary. Many vehicles do not stop at flashing red signal
Montvale Ave.	Main St. Everett Everett to Auburn St. Auburn prior to Campbell Campbell to Theresa Theresa to Tremont Tremont to Washington St. Washington St to Albany Albany to Hill St.		16' EB / 16' WB 14' EB / 14' WB 14' EB / 14' WB 14' EB / 14' WB 15' EB / 15' WB 20' EB / 20' WB 17' EB/ 17'WB Variable	30 mph Speed Limit is appropriate for roadway	None	All along Montvale Ave.	Poor access management Vernon St. through Woods Hill (fatalities)	Near I-93	
Mishawum Rd.	Main St. at Beach St. Beach to Olympia Ave. Olympia Ave to Ryan Rd Ryan Rd to Industrial Way Industrial to Commerce Way Commerce Way to Garden Garden to Washington St.	R-2 R-1 OP/R-1 OP B-1 B-1 B-1	14' NB / 14' SB 13' NB / 13' SB 21' NB / 21' SB 16' EB / 16' WB 23' EB / 23' WB New Widening New Widening	Speed Limit is appropriate for roadway	High between Forest Park and Olympia Ave.	Locations around Forest Park	Some near interchange	Near Mall area	Truck restrictions in place
Washington St.	Town Line to Richard Circle Richard to Washington 128 Bridge to Olympia Olympia to Cedar St. Cedar St. to Mill St. Mill St. to Montvale Montvale to D St.	R-1 B-N/R-2 B-1 O-P R-1 R-2 R-2	15' NB / 15' SB 23' NB / 23' SB 22' NB / 22' SB 26' NB / 23' SB 13' NB / 13' SB 18' NB / 18' SB 18' NB / 18' SB	Speed Limit is appropriate for roadway	Low	Left-turns heading southbound Overgrowth could be cut back	Comings Rd. vicinity	At Richards Circle	High left-turn accidents

Figure 42 (continued): Study Area Roadway Inventory

Roadway	Section	General Land Use	Approximate Lane Width (feet)	Speed Limit	Vehicular Speeds (High, Moderate, Low)	Sight Distance Issues	Access Management Issues	Capacity Issues/Traffic Congestion	Comments
Salem St.	Main St. to Bow St. Bow to Wildwood St. Wildwood to Washington Washington to Mill St.	R-2 R-1 R-3/I-G-I-P R-1	15' EB / 15' WB 17' EB / 17' WB 16' EB / 16' WB 15' EB / 15" WB	Speed Limit is appropriate for roadway	Low	At Bow St.	None	None	
Lexington St.	Pleasant St. to Cambridge Cambridge to City Line	R-1 R-1	20' EB / 20' WB 20' EB / 20' WB	Speed Limit is appropriate for roadway	Moderate	At Waltham St.	None	At Four Corners	There have been fatalities at this intersection
Wildwood Ave.	Salem St. to Olympia	I-P	22' NB / 22' SB	Speed Limit is appropriate for roadway	Low	At Hinston Rd.	None	None	
Wood St.	Salem St. to Montvale Ave.	R-1	14' NB / 14' SB	Speed Limit is appropriate for roadway – 30 mph	High 40-45 mph	None	None	None	
Olympia Ave.	Mishawum to Washington	I-P	18' EB / 18' WB	Speed Limit is appropriate for roadway 30 to 35 mph	Low	None	None	None	High truck traffic
Winn St.	Pleasant St. to Middlesex Middlesex to Sheridan Sheridan to City Line	B-H R-2 R-1	17' EB / 17' WB 17' EB / 17' WB 17' EB / 17' WB	Speed Limit is appropriate for roadway 30 to 35 mph	High	At Bedford/Kilby	Towards downtown	None	
Merrimack St.	School St. to North Maple North Maple to New Boston	R-2 I-P	16' EB / 16' WB 15' EB / 15' WB	Speed Limit is appropriate for roadway	Moderate to High	At School St. At Industrial Park	None	None	
Bedford Rd.	Winn St. to Burlington St. Burlington to Cambridge	R-1 R-1/R-3	13' EB / 13' WB 14' EB / 14' WB	Speed Limit is appropriate for roadway; Portion of roadway is school zone	Moderate	At Winn St.	None	At major intersections	
School St.	Main St. to Merrimac Merrimac to Forest St. Forest to Mishawum	B-H R-2 R-2	13' EB / 13' WB 13' EB / 13' WB 17' EB / 17' WB	Speed Limit is appropriate for roadway 20-35 mph	Low	None	None – existing truck restrictions	None	
Russell St.	Cambridge Rd to Town Line	R-1	15' EB / 15' WB	Speed Limit is appropriate for roadway	Low	None	No	At Four Corners	

Figure 42 (continued): Study Area Roadway Inventory

Roadway	Section	General Land Use	Approximate Lane Width (feet)	Speed Limit	Vehicular Speeds (High, Moderate, Low)	Sight Distance Issues	Access Management Issues	Capacity Issues/Traffic Congestion	Comments
Green Street	Main St to Montvale	R-1/R-2	14' EB / 14' WB	Speed Limit is appropriate for roadway; Portion of roadway is school zone	Low	At western end	Yes; heavy truck restriction in place	No congestion, but too narrow to accommodate demands	Look into possibility of one-way
Presidential Way Commerce Way New Boston St	Commerce to New Boston Commerce to Cabot Cabot to Atlantic Ave Industrial Pkwy to Merrimac Merrimac to Bridge	IP-2 B-I/I-P I-P2 I-P I-P	22' NB / 22' SB 14' NB / 18' SB 2 lanes 26' NB / 15' SB 2 lanes 24' NB / 24 SB 14' NB / 14' SB	Speed Limit is appropriate for roadway – 40 mph	None None Low to Moderate	At some turning movements and driveways At some sharp curves	None	At shopping center	Look into making roadway wider. Median growth needs to be addressed/maintained
Nashua Street	Montvale Ave to Draper Draper to Holton Street	R-1 R-1	11' NB / 11' SB 10' EB / 10' WB	Speed Limit is appropriate for roadway	None	None	None	None	Truck complaints
Holten Street	Green St to Blueberry Hill Blueberry Hill to Town Line	R-1 I-G	10' NB / 10' SB 16' NB / 16' SB	Speed Limit is appropriate for roadway	None	Towards end at curves	Heavy truck use	None	Width too small
Bow Street	Salem St to Montvale Ave	R-1/R-2	13' NB / 13' SB	Speed Limit is appropriate for roadway	None	None	Truck restriction in place	None	School being built
Vernon Street	Montvale Ave to Green St	R-1	13' NB / 13' SB	Speed Limit is appropriate for roadway	Low	None	None	None	Roadway too narrow for permitted parking on both sides

Figure 42 (continued): Study Area Roadway Inventory

Roadway	Section	Approximate Shoulder Width	Drainage Treatment	Pavement Markings	Sidewalks	On-Street Parking
Cambridge Road	Town line to Bedford	0	Closed	Excellent	NB	No
	Bedford to Locust	4' SB	Closed	n/a	NB	No
	Locust to Lexington	0	Closed	Moderate	NB	No
	Lexington to Crossman	0	Closed	Moderate	NB/SB	No
	Crossman to Town Line	0	Closed	Moderate	None	No
Main Street	Town Line to Breed	4'NB-3'SB	Closed	Excellent	NB/SB	No
	Breed to School	2.5 SB	Closed	Excellent	NB/SB	No
	School to Rotary	0	Closed	Excellent	NB/SB	No
	Rotary to Kilby	0	Closed	Moderate	NB/SB	No
	Kilby to Winn	0	Closed	Excellent	NB/SB	Campbell to Winn St
	Winn to Green	0	Closed	Excellent	NB/SB	NB/SB
	Green to Town Line	0	Closed	Moderate	n/a	NB/SB
Montvale Avenue	Main to Bow	0	Closed	Excellent	EB./WB	No
	Bow to Ingalls	0	Closed	Moderate	EB/WB	No
	Ingalls to Green	0	Closed	Moderate	WB	No
	Green to Washington	0	Closed	Moderate	NB/SB	No
	Washington to Town Line	0	Closed	n/a	n/a	No
Mishawum Road	Main to Forest Park	0	Closed	Excellent	NB/SB	No
	Forest Park to Olympia	0	Closed	Moderate	EB	No
	Olympia to Ryan	0	Closed	Moderate	NB/SB	No
	Ryan to Industrial	0	Closed	Poor	NB	No
	Industrial to Commerce	0	Closed	Moderate	EB	No
	Commerce to Washington	0	Closed	Excellent	WB	No
Washington Street	Town line to Mishawum	7' NB/SB	Closed	Excellent	NB/SB	No
	Mishawum to Forbes	1' NB/SB	Closed	Excellent	SB	No
Washington Street	Forbes to Pernokas	0	Closed	Moderate	NB	No
	Pernokas to Washington	0	Closed	Moderate	NB	No
	Circle	0	Closed	Moderate	NB/SB	No
	Washington Circle to Wash St					
	Wash St to Erie St	0	Closed	Moderate	NB/SB	No
	Erie St to D Street	0	Closed	Moderate	NB	No
Salem Street	Main St to Wood St	0	Closed	Excellent	EB/WB	No
	Wood St to Cedar	3' EB/WB	Closed	Excellent	WB	No
	Cedar to Washington	0	Closed	Excellent	WB	No
	Wash St to Mill	0				

Figure 42 (continued): Study Area Roadway Inventory

Roadway	Section	Approximate Shoulder Width	Drainage Treatment	Pavement Markings	Sidewalks	On-Street Parking
Lexington Street	Pleasant to Totman	6' EB/4'WB	Closed	Excellent	EB	No
	Totman to Cambridge	8' EB	Closed	Excellent	EB	No
	Cambridge to Waltham	7.5' NB/SB	Closed	Excellent	EB/WB	No
	Waltham to Town Line	7.5' NB/SB	Closed	Excellent	EB/WB	No
Wildwood Avenue	Salem to Olympia	0	Closed	Excellent	SB	N0
Wood Street	Salem to Montvale	0	Closed	Poor	No	NB
Olympia Avenue	Mish to Washington	n/a	Closed	Poor	No	n/a
Winn Street	Woburn Center Cummings	0	Closed	n/a	WB	No
	Cummings to Town Line	0	Closed	n/a	EB/WN	n/a
Merrimack Street	School to Dexter	0	Closed	Poor	EB/WB	No
	Dexter to New Boston	0	Closed	Moderate	No	No
Bedford Road	Winn to Rock St.	0	Closed	Poor	WB	No
	Rock St to Willow	0	Closed	Poor	EB/WB	No
	Willow to Cambridge Rd.	0	Closed	Moderate	EB	No
School Street	Main to Danfourth	0	Closed	Moderate	WB	No
	Danfourth to New Boston	0	Closed	Poor	EB	No
Russell Street	Cambridge to Town Line	2.5' EB/WB	Closed	Moderate	EB	No
Green Street	Main St to Montvale	0	Closed	Moderate	No	No
Industrial Belt: Commerce Way/New Boston Street/Presidential Way	Mishawum to President's Way	4'NB/0'SB	Closed	Excellent	NB	No
	Presidential way to Atlantic	3' NB/SB	Closed	Excellent	NB/SB	No
	#120 to New Boston	0	Closed	Excellent	WB	No
	Ryan Rd. to N. Maple	0	Closed	n/a	SB	No
	N. Maple to end	0	Closed	n/a	No	No
Nashua Street	Montvale to Holton St.	0	Closed	Poor	No	No
Holton Street	Green St. to City Line	0	Closed	Poor	NB	No
Bow Street	Salem to Montvale	0	Closed	n/a	No	No
Vernon Street	Montvale to Green	0	Closed	Poor	NB/SB	No

Roadway Pavement
The City of Woburn maintains approximately 190 miles of roadways. The City performs surface maintenance on as many linear feet of roadway as financially possible each year, (depending on the Chapter 90 money available). The poorest quality roads serving the most traffic are given priority by the City of Woburn's Department of Public Works, based on the Pavement Management Program .

Bridges
Nineteen bridges exist within the City. Of these, only the Salem Street Bridge over the MBTA railroad tracks has a posted weight restriction. A detailed inventory of the 19 bridges is presented in Figure 43. Along with a city-wide traffic signal inventory, an existing bridge structure inventory is presented in Figure 44.

As shown in the table, all bridges are owned and maintained by MassHighway. The Salem Street Bridge is the only bridge in the City considered structurally deficient by the AASHTO[6] criteria. Four bridges are considered functionally obsolete. They are:

- I-95 northbound bridge over Forest Park Road
- I-95 southbound bridge over Forest Park Road
- Mishawum Road Bridge over I-95
- I-93 northbound off-ramp over the Boston – Maine Railroad

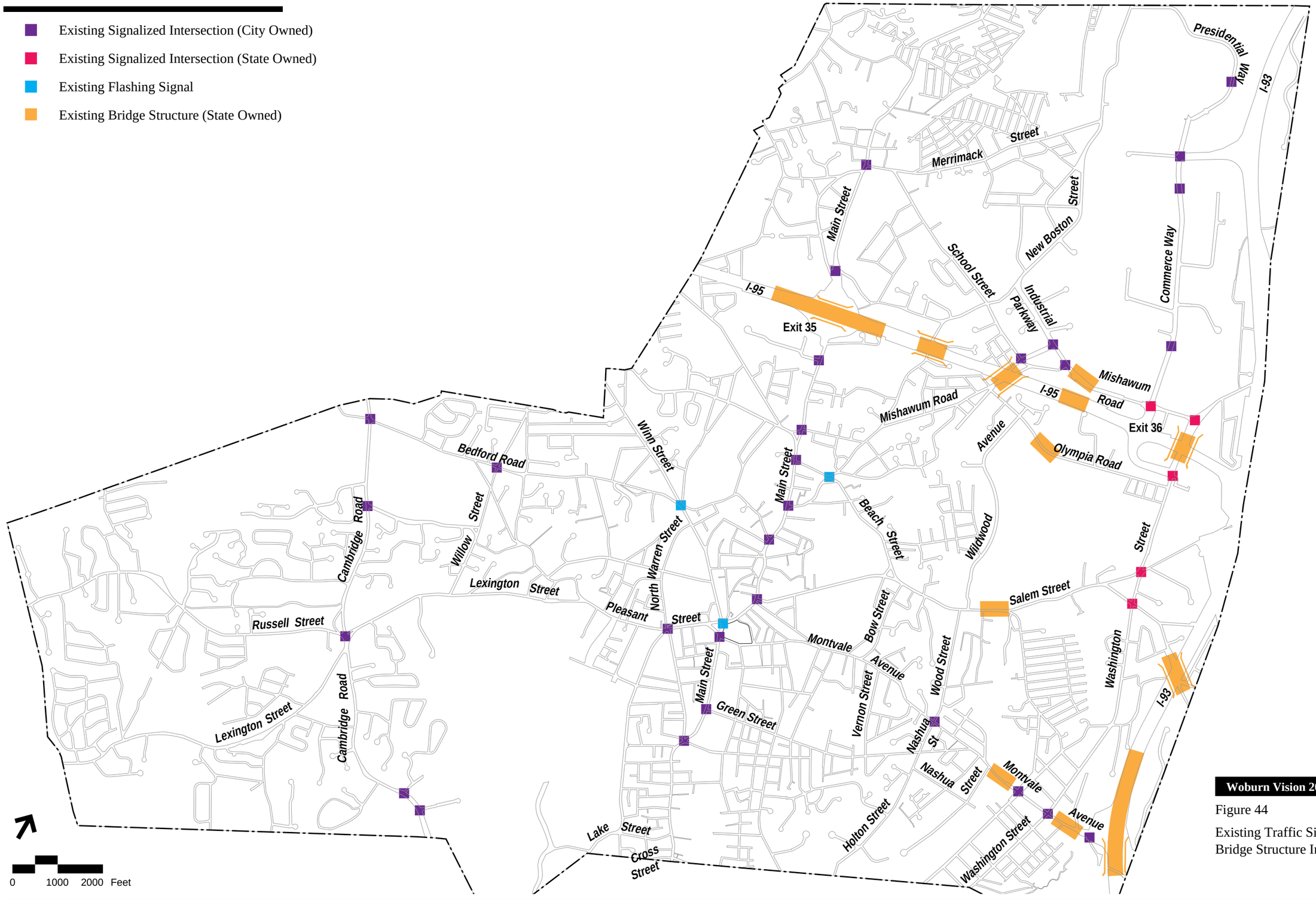
Signalized Intersection Inventory
An inventory of all traffic signals that exist within the City of Woburn is presented in Figure 44. This figure distinguishes between state and city-owned traffic signals. According to this inventory, there are 29 city-owned traffic signals, 5 state-owned traffic signals, and 3 flashing beacons that are operated by the City.

[6] American Association of State Highway and Transportation Officials, 2000

Figure 43: Existing Bridge Inventory

Bridge Number	Structure Type	Year Built	Facility Carried	Features Intersected	Condition[1] Deck	Superstructure	Substructure	Posted (Tons) 2 Axle	3 Axle	5 Axle	Deficiency[2]	AASHTO Rating[3]	FHWA Select List
W-43-002	1 Span Prestressed Concrete Box Beam or Girders	1987	Local Montvale Ave.	Railroad MBTA/BMRR	7	7	8	-	-	-	-	92.2	No
W-43-003	5 Span Steel Stringer/Girder	1928	Local Salem Street	Railroad MBTA/BMRR	5	5	6	16	18	24	SD	46.6	Yes
W-43-004	1 Span Steel Stringer/Girder	1977	Local Mishawum Rd.	Railroad MBTA/BMRR	7	8	7	-	-	-	-	94.5	No
W-43-022	3 Span Steel Continuous Stringer/Girder	1949	I-95 NB/ST 128 NB	ST 38 EB/Main St.	6	7	6	-	-	-	-	92.0	No
W-43-022	3 Span Steel Continuous Stringer/Girder	1949	I-95 SB/ST 128 SB	ST 38 EB/Main St.	6	7	6	-	-	-	-	91.0	No
W-43-024	3 Span Concrete Continuous Slab	1950	I-95 NB/ST 128 NB	Local Forest Park Rd.	6	6	6	-	-	-	FO	67.5	No
W-43-024	3 Span Concrete Continuous Slab	1950	I-95 SB/ST 128 SB	Local Forest Park Rd.	6	6	7	-	-	-	FO	67.5	No
W-43-025	4 Span Steel Stringer/Girder	1961	Local Mishawum Rd.	I-95/ST 128	7	6	6	-	-	-	FO	75.8	Yes
W-43-026	3 Span Steel Continuous Stringer/Girder	1961	I-95/ST 128	Railroad MBTA/BMRR	5	6	6	-	-	-	-	93.0	No
W-43-028	2 Span Steel Continuous Stringer/Girder	1961	Local Washington St.	I-95/ST 128	7	7	7	-	-	-	-	75.9	No
W-43-031	1 Span Concrete Frame	1949	I-95 NB/ST 128 NB	ST 38 WB/Main St.	N	7	7	-	-	-	-	96.0	No
W-43-031	1 Span Concrete Frame	1949	I-95 SB/ST 128 SB	ST 38 WB/Main St.	N	7	7	-	-	-	-	96.0	No
W-43-035	2 Span Steel Continuous Stringer/Girder	1957	Local Salem Street	I-93	6	7	6	-	-	-	-	89.7	No
W-43-036	2 Span Steel Stringer/Girder	1958	I-93	Local Montvale Ave.	6	7	6	-	-	-	-	79.0	No
W-43-037	1 Span Prestressed Concrete Box Beam or Girders	1958	I-93	Railroad BMRR Spur (Aband)	7	6	7	-	-	-	-	92.0	No
W-43-039	1 Span Prestressed Concrete Slab	1958	I-93 NB Off Ramp	Railroad BMRR Spur (Aband)	6	6	7	-	-	-	FO	93.1	No
W-43-040	1 Span Prestressed Concrete Box Beam or Girders	1958	I-93 SB On Ramp	Railroad BMRR Spur (Aband)	6	6	7	-	-	-	-	94.3	No
W-43-041	1 Span Prestressed Concrete Slab	1958	Local Montvale Ave.	Water Aberjona River	7	7	5	-	-	-	-	87.0	No
W-43-044	4 Span Prestressed Concrete Box Beam or Girders	1963	Local Olympia Ave.	Railroad MBTA/BMRR	7	7	6	-	-	-	-	90.6	No

note: all bridges within the City of Woburn are owned and maintained by the state of Massachusetts
1 see appendix for description of conditions
2 SD = Structurally Deficient; FO = Functionally Obsolete
3 The sufficiency rating formula described herein is a method of evaluating highway bridge data by calculating four separate factors to obtain a numeric value, which is indicative of bridge sufficiency to remain in service. The result of this method is a percentage in which 100 percent would represent an entirely sufficient bridge and zero percent would represent an entirely insufficient or deficient bridge.



Woburn Vision 2020

Figure 44

Existing Traffic Signal and Bridge Structure Inventory

Safety

To identify vehicle crash trends, safety concerns, and/or roadway deficiencies within the study area, vehicle crash data were obtained from MassHighway for the three-year period from January 1, 2001 to December 31, 2003. The vehicle crash data was compiled for the 15 study-area intersections as well as the three intersections created from the I-95 ramps within the City. A summary of the vehicle crash data is presented in Figure 45.

As the tables show, a total of 583 crashes have occurred at the study-area intersections since January 1, 2001. The highest crash incidence was experienced at I-95 and Main Street (125 crashes). This high number likely includes crashes occurring on the entrance/exit ramps, within the rotary, and on the I-95 mainline near the interchange. Similarly, the next highest incidence was at I-95 and Washington Street (74 crashes). The local intersection (with no connection to the interstate system) with the highest crash incidence is Mishawum Avenue at Washington Street (59 crashes), followed by Main Street/Winn Street/Pleasant Street/Montvale Avenue (53 crashes), and Cambridge Street at Russell Street/Washington Street (45 crashes).

The majority of crashes at the above locations are angle or rear-end. Angle-type crashes are often indicative of vehicles from the minor road turning onto a high-speed/ high-volume major road or vise-versa. Rear-end crashes are often indicative of vehicles attempting to turn onto or from a minor road or highway ramp and the vehicles behind them either not slowing in enough time, or advancing, thinking that the turning vehicle has already proceeded. The high number of personal injury crashes occurring at study-area intersections can also be attributed to the volume and speed of traffic coming off the highway ramps.

MassHighway has prepared a list of the top 1,000 high crash locations through the entire state of Massachusetts. The most current list (2002) compiles data from 1997, 1998, and 1999. Nine of the study-area intersections in Woburn are designated as a high crash location[7]. They are:

- I-95 at Washington Street
- I-95 at Main Street Circle
- I-93 at Montvale Avenue
- Montvale Avenue at Washington Street
- Pleasant Street at Winn Street
- Elm Street at Main Street
- Cambridge Street at Russell Street
- Mishawum Street at Washington Street
- Bedford Street at Cambridge Road

Due to the limited data available through MassHighway, the City of Woburn police department was contacted to identify any fatalities or crash trends that have occurred during 2002 and 2003. Based on the 2003 City data available and discussions with the City's traffic safety officer, no additional fatalities or observed crash trends have developed since 2003. Complete 2003 data is provided in the appendix.

[7] High Crash Intersection Report; prepared by the MassHighway Safety Management Unit, 2002

Figure 45: Intersection Accident Summary – 2001 to 2003

	Mishawum at Olympia	I-95 at Main	I-95 at Washington	I-95 at Mishawum	Main at Merrimac-School	Bedford at Cambridge	Mishawum at Washington	Main at Cross	Willow at Lexington	Main at Lake	Cambridge at Russell-Lexington	Main at Salem	Winn at Kilby-Bedford	Green at Montvale	N. Warren at Pleasant	Main at Pleasant-Winn-Montvale	Washington at Montvale	Salem at Wood-Wildwood	Total
Year																			
2001	4	54	35	7	6	14	20	10	3	5	18	7	9	2	4	18	19	9	244
2002	2	39	19	3	1	18	17	4	2	0	13	2	4	0	1	14	14	6	159
2003	4	32	20	14	4	9	22	6	3	2	14	3	3	1	4	21	9	9	180
Total	10	125	74	24	11	41	59	20	8	7	45	12	16	3	9	53	42	24	583
Collision Type																			
Angle	4	17	12	7	5	23	21	12	4	2	27	1	8	0	3	32	23	15	216
Head-on	1	0	3	0	2	4	1	0	0	0	1	0	1	0	1	1	1	0	16
Rear-end	3	89	41	9	3	8	29	2	1	4	6	8	5	2	2	8	11	6	237
Sideswipe	0	4	6	2	0	0	4	1	0	0	2	1	0	0	0	2	3	1	26
Single-vehicle crash	0	2	6	4	0	1	1	1	1	0	0	0	0	0	1	4	1	0	22
Unknown	2	13	6	2	1	5	3	4	2	1	9	2	2	1	2	6	3	2	66
Total	10	125	74	24	11	41	59	20	8	7	45	12	16	3	9	53	42	24	583
Severity																			
Hit and Run	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	3
Injury	4	32	28	7	5	9	17	6	2	2	11	2	2	1	1	13	8	6	156
Property-related	6	76	43	16	2	22	29	13	5	4	20	9	11	2	6	31	27	12	334
Unknown	0	16	3	1	4	10	12	1	1	1	14	1	2	0	2	8	7	6	89
School Bus	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Total	10	125	74	24	11	41	59	20	8	7	45	12	16	3	9	53	42	24	583
Time of day																			
Weekday, 7:00 AM - 9:00 AM	0	19	11	5	1	11	8	3	2	0	2	2	2	2	2	10	6	1	87
Weekday, 4:00 PM - 6:00 PM	0	13	12	1	0	3	5	3	1	0	1	3	0	0	0	4	2	4	52
Saturday, 11:00 AM - 2:00 PM	1	1	2	1	1	1	0	1	1	0	5	0	0	0	0	0	3	1	18
Weekday, other time	8	78	44	12	9	16	42	13	2	6	26	5	12	0	4	24	22	17	340
Weekend, other time	1	14	5	5	0	10	4	0	2	1	11	2	2	1	3	15	9	1	86
Total	10	125	74	24	11	41	59	20	8	7	45	12	16	3	9	53	42	24	583
Pavement Conditions																			
Dry	7	98	59	17	6	29	46	13	4	5	28	8	11	2	6	35	35	17	426
Wet	3	19	8	5	3	10	12	6	2	1	14	3	4	0	3	12	4	5	114
Snow	0	1	1	1	1	1	1	1	0	0	1	1	0	1	0	1	0	0	11
Ice/Slush	0	4	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	7
Other	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Unknown	0	2	5	0	1	1	0	0	1	1	2	0	1	0	0	4	3	2	23
Total	10	125	74	24	11	41	59	20	8	7	45	12	16	3	9	53	42	24	583

source: compiled by Vanasse Hangen Brustlin, (VHB) Inc. from data supplied by MassHighway

Parking Activity

This section presents information of existing parking conditions throughout the City of Woburn. The majority of parking is located within the downtown Woburn Square area. There are two main parking areas outside Woburn Square. These areas are Anderson Regional Transportation Center (which provides 2,000 parking spaces as described in the Public Transportation Section below) and the Mishawum Park and Ride lot (220 spaces). In addition to these two major parking lots, some streets provide limited parking.

Outside Woburn Square

As presented in Figure 42, other study area roadways have on street parking allocations:

- Main Street
- Wood Street

Woburn Square

The Woburn Square downtown stretches along Main Street from Franklin Street in the north to High Street in the south. The following is discussed, in relation to the Woburn Square area:

- The locations and restrictions for on and off-street parking
- The results of a parking utilization study
- The Woburn Square Revitalization Plan short-term parking improvements
- The Woburn Square Revitalization Plan long-term parking improvements

PARKING SUPPLY

Figure 48 shows the locations and restrictions for on-street and off-street parking within Woburn Square. There are a total of 1,324 parking spaces within the Square. On-street parking with a one- to two-hour limit is permitted throughout the Square, along with several handicapped parking locations and No Parking locations. Off-street parking is permitted at the library, City Hall, adjacent to Walnut Street, and adjacent to Hovey Street. Additional off-street spaces are proposed at the Magazine Parking Lot on Main Street and Mann Court as discussed below in the Long-term Parking Improvements section. Figure 46 summarizes the available parking in the downtown area.

Figure 46: Existing Parking Inventory [1]

	Commercial [2]	Civic	Total
Public On-Street	179	63	242
Public Off-Street	434	276	710
Private	264	108	372
Total Spaces	**877**	**447**	**1,324**

1 based on information presented in the City of Woburn Woburn Square Revitalization Project May, 2002

2 The Revitalization Study defines the border between Commercial Downtown parking spaces and Civic downtown parking spaces as Main Street, Magazine Hill, and Woburn Square

PARKING OCCUPANCY

A parking inventory and utilization study of the Square area was conducted by the City of Woburn from 7:00 AM to 7:00 PM on Monday, August 10, 1998. Figure 47 presents the

results. For the purposes of the Woburn Square Revitalization Project, the City chose a 60-minute timeframe. The parking utilization study entails recording the number of vehicles parked in a particular area at a given time. Statistics of peak occupancy, periods of greatest utilization, and areas of greatest utilization can be drawn from this study. From these, information on improper/illegal parking with regard to time-restricted parking areas can be identified. Utilization data help to quantify parking demand and establish parking patterns in the area.

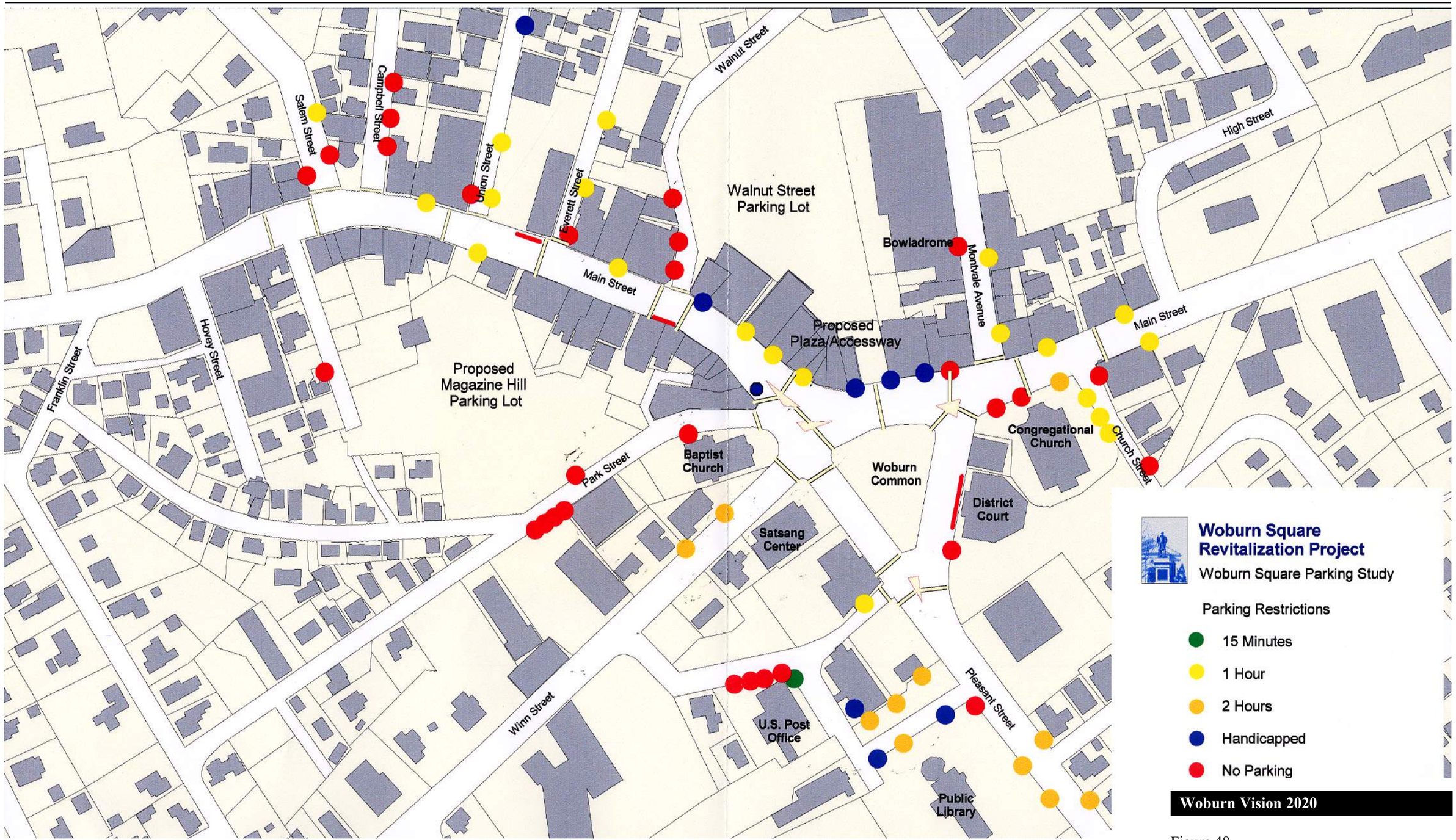
The peak occupancy for the entire Square occurred at 10:00 AM, with approximately 57 percent of the spaces occupied. On-street parking peaks at 10:00 AM and 12:00 PM with approximately 65 percent of spaces occupied. Off street, the public parking lots that see the highest occupancy are the City Hall and Library lots. The City Hall lot reaches its peak at 10:00 AM with approximately 90 percent of spaces full. The Library lot reaches its peak at 2:00 PM at approximately 89 percent of capacity.

The Walnut Street parking lot (see Figure 48) was the most underutilized lot in the Square, having only 41 percent of its spaces occupied during its peak occupation period (11:00 AM). To quantify the effect of seasonal change on parking in the Square, a second utilization count was taken at the Walnut Street parking lot on September 18, 1998. The results of this second data collection effort show that between 60 and 65 percent of the lot was full between 10:00 AM and 4:00 PM. While this shows some seasonal variation in parking patterns, occupancy rates in the Walnut Street parking lot are substantially below the occupancy rates of the other public off-street parking facilities within the Square.

Figure 47: Woburn Square: Parking Accumulation Summary [1]

Time	On-Street Parking (percent)	Total Public Lot (percent)	Total Private Lot (percent)	Total Average Spaces (percent)
7:00	30	9	16	12
8:00	38	19	27	25
9:00	54	54	38	49
10:00	62	**59**	46	**55**
11:00	58	57	45	54
12:00 noon	**63**	50	**51**	52
1:00	61	47	48	49
2:00	55	50	48	50
3:00	55	48	42	48
4:00	49	41	39	41
5:00	45	28	29	31
6:00	48	22	28	18
7:00	43	25	26	27
Capacity	**242 spaces**	**952 spaces**	**372 spaces**	**1,324 spaces**

source: City of Woburn
1 parking utilization study conducted in August 1998



Not to Scale

Source: Woburn Redevelopment Authority

Figure 48

CBD Parking Locations

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ACTION PLAN: SHORT-TERM PARKING IMPROVEMENTS

The Action Plan of the Woburn Square Revitalization Plan identified two major capital investments as part of the short-term parking improvements. These include construction of the new Magazine Hill Park and Ride facility and improvements to the Walnut Street Parking Area. In addition, the short-term plan identified the following four objectives:

- On Street Parking – The plan proposed re-striping on-street spaces, establishing short-term parking zones, and relegating long-term parking to off-street parking lots. Some of these recommendations have already been implemented.
- Hovey Street Municipal Lot – Recommendations included re-striping and landscaping. The lot was repaved and striped in 2000.
- Pedestrian Connections – Recommendations included improving pedestrian access through vacant parcels along Main Street and Montvale Avenue.
- Crosswalks – The plan recommended clearer marking of crosswalks throughout the downtown area. This step was implemented in 1998.

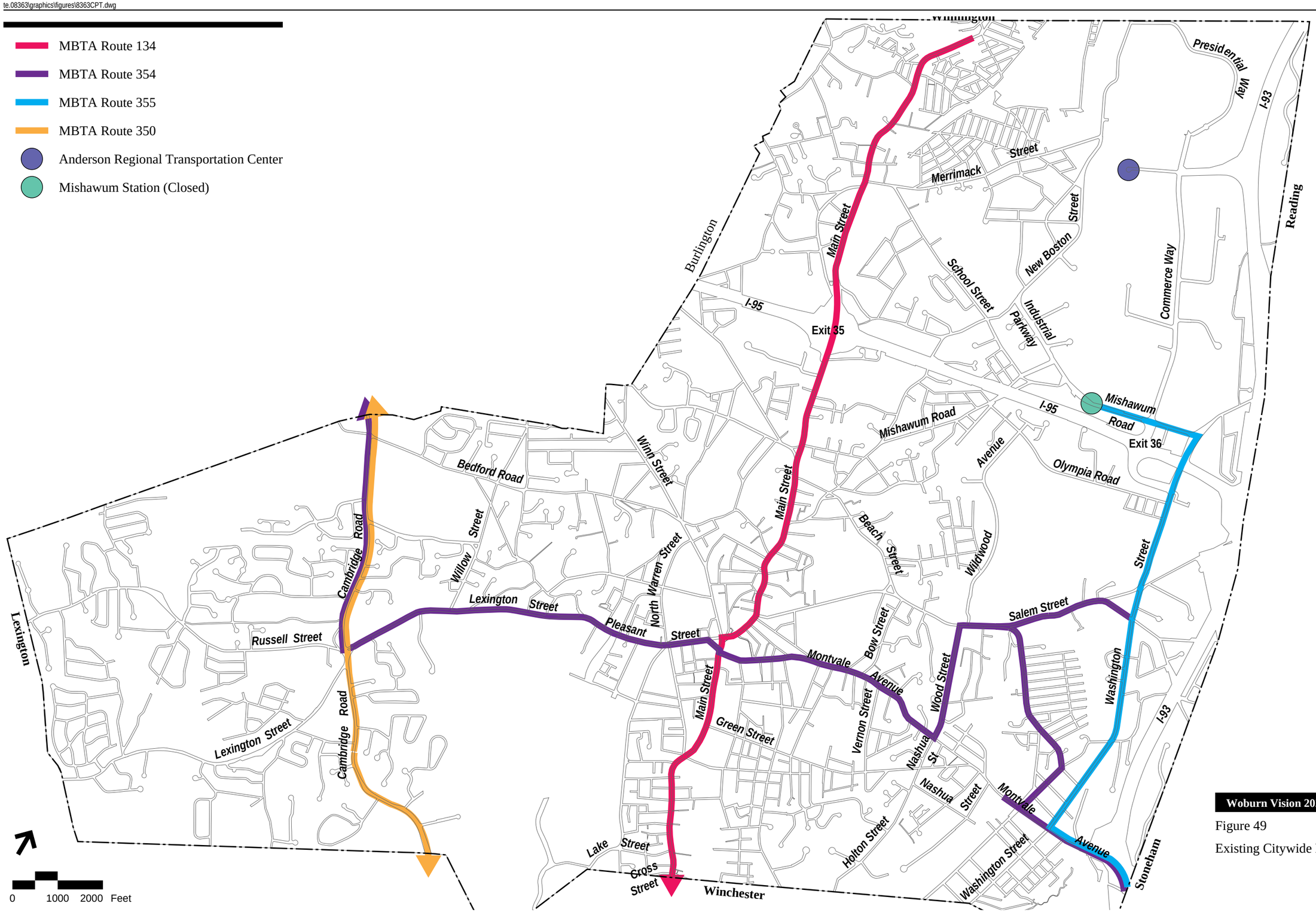
ACTION PLAN: LONG-TERM PARKING IMPROVEMENTS

The long-term parking recommendations identified two major capital improvements: continued construction of the Magazine Hill Park and Ride facility; and an upgrade of the Walnut Street parking lot. The City has proposed a 100 – 125 space park and ride facility in the center of Woburn Square. This facility is expected to provide a more convenient bus- and carpool-oriented alternative for residents in South Woburn and Woburn Square. Completion of this lot's construction (see below) is vital to the Walnut Street lot improvements due to the loss of spaces as a result of that improvement.

Improvements to the Walnut Street lot include re-striping parking spaces to provide perpendicular parking striped to existing standards, 24-foot circulation lane widths, pedestrian islands at the ends of each lane, new lighting at the end of each lane, and adequate storm drainage. Improvements will result in the loss of approximately 40 parking spaces. Therefore, improvement to the Walnut Street parking lot is contingent on the construction of the new Magazine Hill park and ride lot.

Public Transportation

Public transportation within the City of Woburn includes Massachusetts Bay Transit Authority (MBTA) commuter rail service and MBTA bus service. Commuter Rail Service is provided on the Lowell Line, with access to the Anderson Regional Transportation Center (RTC). Bus Service is provided on the MBTA Route 134, 350/351, 354, and 355 buses. Figure 49 presents the service routes for transportation within the City.



Woburn Vision 2020

Figure 49

Existing Citywide Public Transportation

MBTA Commuter Rail Service

The Lowell Branch of the Commuter Rail line provides service to North Station in Boston from Woburn. Stations along the line include Lowell, North Billerica, Wilmington, Anderson RTC (Woburn), Winchester Center, Wedgemere, West Medford, and Boston North Station. The travel time from Woburn to North Station is approximately 27 minutes. The Anderson RTC station, the only full-service commuter rail station within the City of Woburn, is located adjacent to the Woburn Industrial Belt, off of Commerce Way. Limited reverse commute service is available at Mishawum Station. There are no grade-crossing locations within the City of Woburn. There are five overpass crossings (road over rail): Montvale Avenue, Salem Street, Mishawum Road, I-95, and Olympia Avenue.

There are 2,000 spaces available at Anderson RTC, with 24 of those designated as handicapped parking. As mentioned above, 220 parking spaces are available at Mishawum Station. The daily parking rate is $2. The fare for a one-way trip from Woburn to Boston is $3.50. A 12-ride pass is available $42 and monthly passes are available for $118.

From Anderson RTC, there are 23 inbound (to Boston) and 23 outbound (from Boston) trains departing/arriving Woburn on a typical weekday. The train is available on weekdays from Anderson RTC Station to Boston from 5:55 AM until 10:55 PM and from North Station to Woburn from 5:45 AM until 11:59 PM. The trains generally operate on 30-minute headways during the peak periods (6:40AM – 8:05AM and 4:30PM to 6:05PM). From Mishawum Station, there are three outbound trains (7:00 AM – 8:30 AM) and three inbound trains (4:00 PM - 5:00 PM) departing/arriving daily.

Bus Service

Four MBTA buses serve the Woburn Area. These are the Route 134, Route 350/351, Route 354, and Route 355 buses. The portions of these routes that run on roadways in the City of Woburn are presented in Figure 49.

- *Route 134* – The Route 134 Bus runs between North Woburn and Wellington Station, via Woburn, Winchester, Winthrop Street, Medford Square, Riverside Avenue, and Meadow Glen Mall. Travel costs $0.90 for service within one zone or between two zones. For travel among three zones, the cost is $1.55. The service runs 15 buses on 60-minute headways in each direction during a typical weekday. The one-way trip between North Woburn and the Meadow Glenn Mall is 44 to 48 minutes long.

- *Route 350* – The Route 350 Bus runs between North Burlington and Alewife Station, via Burlington Mall, Oak Park, and Route 3. Travel costs $0.90 for service within one zone or between two zones. For travel among three zones, the cost is $1.55. The service runs 29 inbound (to Alewife Station) and 27 outbound (from Alewife Station) buses on 30- to 60-minute headways during a typical weekday. The one-way trip between Woburn and Alewife Station is 20 minutes long.

- *Route 354* – The Route 354 Bus runs express service between Van de Graff Avenue (Burlington) and Boston via Woburn Square and I-93. Within Woburn, travel costs $0.90 for service. Express service to Boston costs $3.45. The service runs 23 buses on peak 15-minute headways in each direction during a typical weekday. The one-way trip between Woburn and State Street, Boston is 30 to 35 minutes long.

- *Route 355* – The Route 355 Bus runs express service between the Anderson RTC Station and Boston via I-93. Within Woburn, travel costs $0.90 for service. Express service to Boston costs $3.45. The service runs two trips daily in each direction during a typical weekday. The one-way trip between Mishawum Station and State Street, Boston is 45 minutes long.

Existing Pedestrian and Bicycle Facilities

Based on data provided by the City, a pedestrian and bicycle inventory was completed. The data show that an extensive and well-connected sidewalk system is present throughout the City. Currently, there are no dedicated bicycle facilities.

Pedestrian Activity

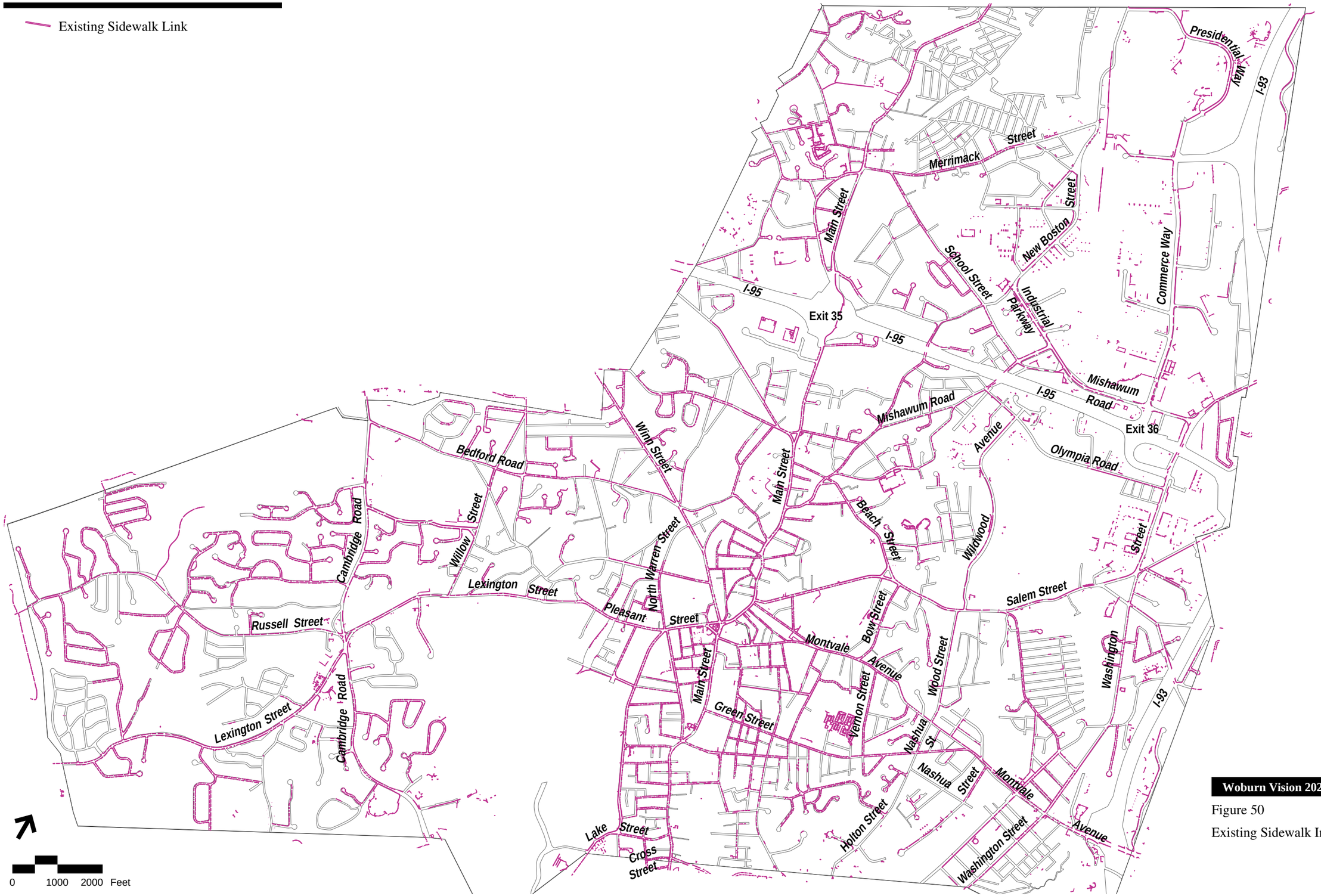
Figure 50 presents a summary of the exiting sidewalk network in place throughout the City of Woburn. The figure distinguishes between locations with sidewalk on one side of the road versus two sides of the road. As illustrated in the figure, the sidewalk network is fairly comprehensive, particularly in the downtown Square area. Sidewalks are provided on most of the major roads.

Pedestrian Accidents

According to the MassHighway accident data files, there have been eight pedestrian-related accidents over a three-year period (1999-2001). These accidents occurred at:

- Main Street at I-95 (2 accidents)
- Cambridge Street at Bedford Street
- Washington Street at I-95 (2 accidents)
- Woburn Square (3 accidents)

Accidents involving pedestrians that are not reported to the police are not included in the available data. While the majority of these pedestrians sustained some personal injury, no fatalities were reported.



Woburn Vision 2020

Figure 50

Existing Sidewalk Infrastructure

Bicycle Facilities
Currently, the City has no designated bicycle facilities. Bicyclists who choose to bicycle along the roadways must share the road with vehicular traffic. However, several of the main roadways within the City provide wide shoulders that accommodate bicyclists and provide a buffer from vehicular traffic. The Woburn Redevelopment Authority is in the process of securing support and funding for the Woburn Loop, a portion of the Tri-Community Bicycleway/Greenway. A detailed description of this proposed facility is provided later in this document.

Bicycle Accidents
According to the MassHighway accident data files, there have been three bicycle-related accidents over a three-year period (1999-2001). These accidents occurred at:

- Main Street and I-95 Exit 35
- Woburn Square
- Main Street at Cross Street

Accidents involving bicyclists that were not reported to the police department are not included in the data. No fatalities were reported as a result of these three bicycle accidents.

City Input on Existing Issues
A meaningful component of this Transportation Plan is the information collected through weekly meetings with key City staff. Prior to developing a feasible set of strategies for the City of Woburn, the study team first gained a full understanding of the existing transportation issues within the area. Much of the information used to identify the issues came from these meetings. Input from the local community is not only important in gaining a clear idea of the issues, but also is critical in developing support for the recommended strategies. As part of the public process, an initial meeting on town-wide issues, including transportation, was held. In addition, a transportation-related public meeting was held in September 2003. At this meeting, local residents were given the opportunity to voice transportation concerns and prioritize these concerns. The meetings notes for these meetings are included in the appendix.

Future Conditions
This section describes expected future transportation conditions in the City. The purpose of this section is to provide a broad understanding of the likely future transportation needs that, together with the existing issues defined previously, should be addressed by a proposed transportation improvement program.

Long-term Forecast
The project team's understanding of the future land use potential was developed by soliciting input from City officials and regional planning agencies, reviewing past history of development in the City, understanding current land use patterns, and identifying areas of potential development. The information presented herein has been compiled as a guide

for the City. This material can be used as a reference as traffic studies are submitted for projects proposed within the City. This information is also useful in determining a prioritization of traffic improvements based on their proximity to the large developments. Future intersection traffic analysis was not conducted as part of this study. However, an understanding of the potential future growth in traffic is helpful in the development and prioritization of improvements.

US Census Journey-to-Work Data

The United States Census Bureau released journey-to-work data from the 2000 US Census in July 2003. This data currently identifies people working in Woburn and where they live as well as people living in Woburn and where they work. A comparison of the available residential and workforce data to the 1990 trends shows that overall, there is little difference in the number of people commuting to/from Woburn between 1990 and 2000 data.

Figure 51 presents the work and residence based Woburn trips for 1990 and 2000. As expected, the heaviest travel patterns are between Woburn and Essex County, MA, Woburn and Suffolk County, MA, and Woburn and other towns/cities within Middlesex County, MA. Of particular note, the greatest growth is seen between Woburn and Worcester County (to the west). Those commuting from communities in Essex County (to the northeast) and New Hampshire have also significantly increased.

Of the people working in Woburn, the 1990 US Census mode share data show that 85 percent of the weekday daily commuters drive alone, 10 percent ride in a carpool of two or more people, 3 percent take transit, 2 percent bicycle, and a nominal number walk. Of the people living in Woburn, the 1990 US Census mode share data show that 84 percent of the weekday daily commuters drive alone, 9 percent carpool, 4 percent take transit, 3 percent walk, and a nominal number bicycle.

Figure 51: Commuter Growth – 1990 vs. 2000

County	By Workplace [1]			By Residence [2]		
	1990 Journey to Work Data [3]	2000 Journey to Work Data [4]	Percent Difference [5]	1990 Journey to Work Data	2000 Journey to Work Data	Percent Difference
Barnstable Co. MA	54	67	19 percent	--	--	--
Berkshire Co. MA	--	3	--	--	--	--
Bristol Co. MA	144	204	29 percent	15	19	21 percent
Essex Co. MA	4,556	5,111	11 percent	1,015	1,053	4 percent
Hampden Co. MA	19	38	50 percent	--	13	--
Hampshire Co. MA	--	9	--	--	--	--
Middlesex Co. MA	20,578	20,849	1 percent	16,013	15,658	(2 percent)
Norfolk Co. MA	905	1,217	26 percent	410	451	9 percent
Plymouth Co. MA	525	416	(26 percent)	38	33	(15 percent)
Suffolk Co. MA	1,926	2,058	6 percent	2,439	2,374	(3 percent)
Worcester Co. MA	311	962	68 percent	96	195	51 percent
Connecticut	21	27	22 percent	--	--	--
Maine	109	36	(203 percent)	--	--	--
New Hampshire	1,690	2,092	19 percent	178	159	(12 percent)
Rhode Island	87	141	38 percent	24	16	(50 percent)
Vermont	--	5	--	--	--	--
Total	**30,925**	**33,235**	**7 percent**	**20,228**	**19,971**	**(1 percent)**

source: United States Census Bureau
1 represents people working in Woburn and from where they commute
2 represents people living in Woburn and to where they commute
3 1990 journey to work data based on 1990 census count
4 2000 journey to work data based on 2000 census count
5 XX percent indicates an increase, (XX percent) indicates a decrease

Regional Growth

A large amount of traffic traveling through the City of Woburn results from Woburn's proximity to Interstates I-95 and I-93. Any prediction of future traffic volumes would not be complete without accounting for regional growth that will impact Woburn's traffic network in the year 2020. To calculate a reasonable growth rate for the year 2020, growth projections from a number of sources were reviewed, as was historic growth. Historically, the population trends for Woburn and the surrounding cities and towns as well as overall trends for Middlesex County. Also reviewed were population projections provided by the Metropolitan Area Planning Council (MAPC) and the Central Transportation Planning Staff (CTPS).

Figure 52 shows the actual growth from 1990 to 2000 for Woburn and surrounding communities, the average annual growth rate for each community, and an overall average annual growth rate for all communities. As the table shows, the City of Woburn could expect an average annual growth rate between 0.37 and 0.57 percent per year between 2003 and 2020.

Figure 52: Historic Regional Population Growth

Community	1990 Population [1]	2000 Population [2]	Percent Change (1990-2000)	Annual Growth
Woburn	*35,943*	*37,258*	*3.7*	*0.37*
Winchester	20,267	20,810	2.7	0.27
Wilmington	17,651	21,363	21.0	2.10
Reading	22,539	23,708	5.2	0.52
Lexington	28,974	30,355	4.8	0.47
Burlington	23,302	22,876	(1.8)	(0.18)
Middlesex County	1,398,468	1,465,396	4.8	0.47
			Average Annual Growth	**0.57 percent**

1 1990 population based on 1990 census count
2 2000 population based on 2000 census count

To confirm the level of relevancy the historic data has on future population projections, data provided by the MAPC and CTPS were reviewed. Based on the population projections provided by MAPC, an overall decrease in Woburn's population (approximately 0.8 percent per year) is expected between 2000 and 2020. The expected 2020 population is 34,150.

Further investigation of information provided by the Massachusetts Institute for Social and Economic Research (MISER) show a decreasing population projection trend similar to that shown by MAPC and CTPS. However, these data are based on 1990 US Census data and have not yet been updated to represent the actual 2000 population levels.

WORKFORCE

While population estimates are down, the workforce estimates for the City of Woburn are expected to increase. Based on the information provided, the workforce within the City is expected to increase from 40,057 (2001) to 44,649 (2020), a 6.6 percent increase over 19 years. Therefore, despite a decrease in population, traffic levels can be expected to increase.

A portion of this regional growth in employment can be attributed to several smaller developments in the Woburn area that are planned, currently under construction, or recently constructed. These projects are described below and the locations identified in Figure 53:

- *Sixth Road Office Building* – The Sixth Road office building consists of the construction of a 58,124 square foot office building. Approximately 8,000 square feet of the building is proposed to be basement storage space and 5,013 square feet will be built as common space including lobby area, hallways, etc. For the purpose of assessing traffic impacts from this development, 45,111 square feet of gross leasable area (GLA) was used. The primary access will be provided to the site from a new curb cut on the south side of Sixth Road, with a rear entrance/exit at the end of Torrice Drive. There are 163 parking spaces planned on site.

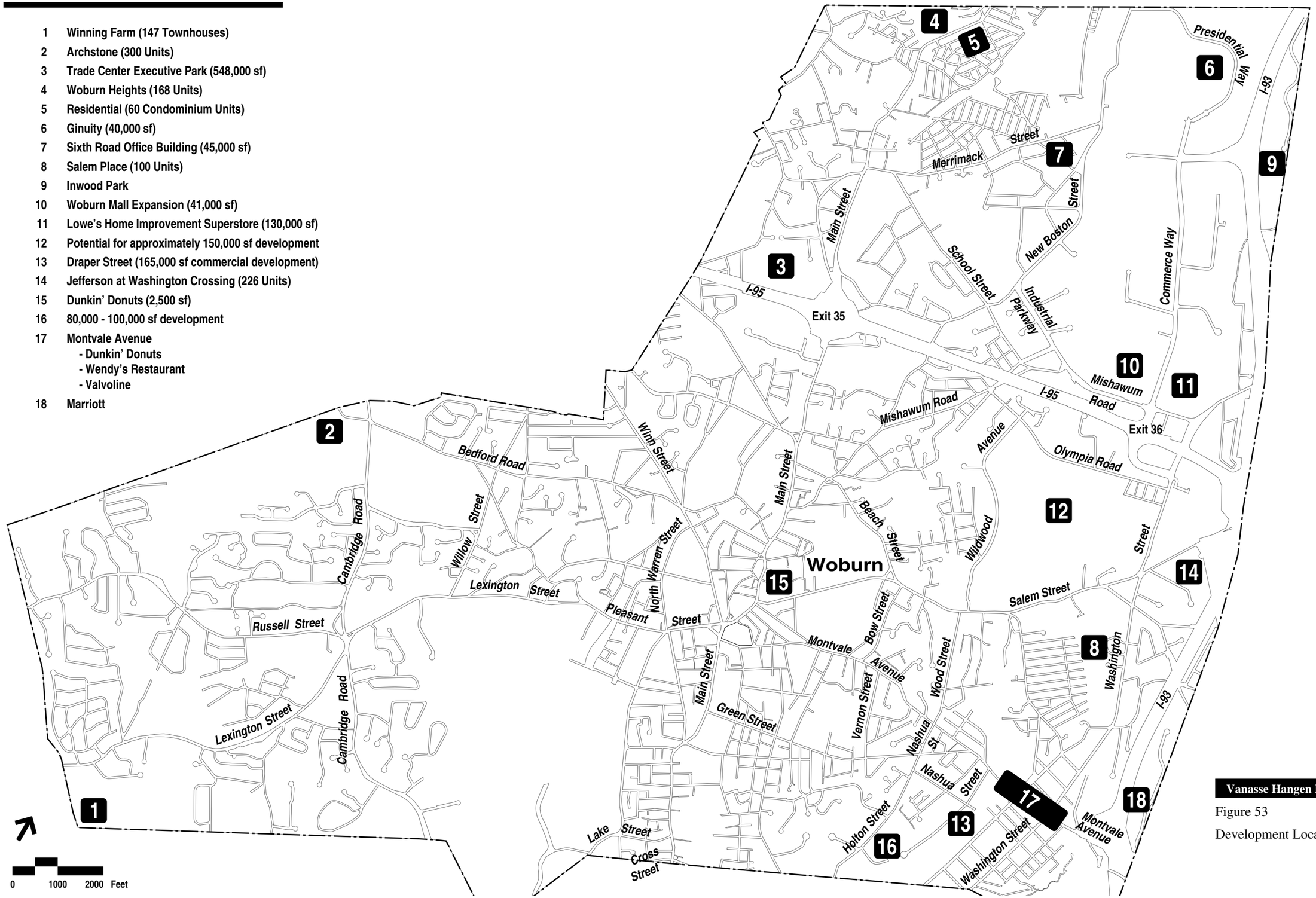
- *Woburn Mall Expansion Project* – The Woburn Mall expansion project, located in the northwest corner of the Mishawum Road and Commerce Way intersection, includes the renovation and expansion of the existing mall by approximately 41,000 square feet. The parking area will be reduced from 1,350 spaces to 1,245 spaces and access to and egress from the mall is provided via four curb cuts: two on Mishawum Road and two on Commerce Way.

- *Dunkin Donuts* – A Dunkin Donuts/mixed use project is proposed to occupy the 2,500 square foot building located at the intersection of Main Street and Walnut Street. The store will be accessed by customers via the store entrance on Main Street, as there are no provisions for on-site parking. Customers arriving by vehicle can park along Main Street or in the adjacent municipal parking lot as is consistent with the existing restaurant use.

Trip-generation estimates are presented in Figure 54 for each of the previously-mentioned developments. Some of these estimates were based on a compilation of previously submitted reports. This data is presented for informational purposes only. If traffic forecasts were developed, it would be assumed that the developments under 60,000 sf would be accounted for in the regional growth rate of approximately one half percent per year as described previously. Such developments included in this regional growth rate are

- *Dunkin' Donuts* on Montvale Avenue;
- *Salem Place* on Salem Street (approximately 100 townhouse/condominium units);
- *Wendy's* restaurant at Washington Street (replacing the former Friendly's restaurant); and
- *Valvoline* automotive care center at Washington Street (replacing the former Friendly's restaurant).

1 Winning Farm (147 Townhouses)
2 Archstone (300 Units)
3 Trade Center Executive Park (548,000 sf)
4 Woburn Heights (168 Units)
5 Residential (60 Condominium Units)
6 Ginuity (40,000 sf)
7 Sixth Road Office Building (45,000 sf)
8 Salem Place (100 Units)
9 Inwood Park
10 Woburn Mall Expansion (41,000 sf)
11 Lowe's Home Improvement Superstore (130,000 sf)
12 Potential for approximately 150,000 sf development
13 Draper Street (165,000 sf commercial development)
14 Jefferson at Washington Crossing (226 Units)
15 Dunkin' Donuts (2,500 sf)
16 80,000 - 100,000 sf development
17 Montvale Avenue
- Dunkin' Donuts
- Wendy's Restaurant
- Valvoline
18 Marriott



Vanasse Hangen Brustlin, Inc.

Figure 53

Development Locations

Figure 54: Trip Generation Summary

Name	Sixth Road Office Building	Woburn Mall Expansion [1]	Dunkin Donuts / Baskin Robbins [2]	Office (Former MVP) [3]	Commercial/ Industrial [4]
ITE LUC	**LUC 710**	**LUC 820**	**LUC 833**	**LUC 710**	**LUC 110**
Size	45,111 GLA	41,000 sf	2,500 sf	45,000 sf	40,000 sf
Date of Study	Dec 2000	Apr 2003	Jul 2003	No Study	No Study
Location	New Boston St	Mishawum Road	489 Main Street	Lexington Street	Constitution Way
Weekday Daily [a]	720	1,240	620	719	279
Morning Peak Hour [b]					
Entering	87	n/a	59	87	32
Exiting	12	n/a	59	12	4
Total	99	n/a	118	99	36
Evening Peak Hour [b]					
Entering	22	54	16	22	5
Exiting	108	62	16	108	34
Total	130	116	32	130	39

1 pass-by trips (approximately 34 percent) not included
2 pass-by trips (approximately 60 percent) not included
3 referenced in proposed Archstone development project
4 referenced in proposed Woburn Mall Expansion report, prepared by GPI-Greenman Pederson, Inc. – April 2003
a vehicles per day (vpd)
b vehicles per hour (vph)

SITE SPECIFIC DEVELOPMENT GROWTH

In addition to the regional growth rate and smaller developments discussed above, future conditions would not be complete without accounting for specific parcels that are currently being developed or are anticipated to be developed and are expected to have a considerable impact on the transportation infrastructure. As with the smaller projects, trip generation was obtained from existing traffic reports (where available) for each of the developments identified. The following describes the specific projects included for consideration beyond regional growth.

- *Wining Farm Subdivision* – The Wining Farm Subdivision consists of the construction of 147 residential townhouses on a 59.82-acre site. The project will include a road network, detention ponds, tennis courts, and swimming pool. Parking for each of the townhouses as well as tennis courts and swimming pool will be provided. Access will be provided to the site from a new curb cut on the south side of Lexington Street.

- *Jefferson at Washington Crossing* – The Jefferson at Washington Crossing project entailed the construction of a five-building residential apartment community consisting of 226 one, two, and three-bedroom apartments on a parcel of land bounded by Cedar Street to the north and west; Forbes Road and private properties to the south; and private properties to the east. Access to the development is provided by way of three driveways onto Cedar Street. The northern and southern driveways are gated and provide access for emergency vehicles only. The center driveway serves as the main entrance to the community. On-site parking is provided for 414 vehicles, in

excess of Town zoning requirements. Construction of this site was completed in 2003.

- *Draper Street Development* – This development consists of approximately 165,000 sf of floor area on five new lots. The site is located at the end of Nashua Street. Primary access to the site is by Draper Street. The site will have 365 parking spaces. Construction is being done on each lot separately with completion expected in 2006.

- *Archstone* – The Archstone development is located on the west side of Cambridge Road (Route 3), just south of South Bedford Street and the Burlington Town line. The development program consists of at least a 300-unit apartment complex. Access for the site will be provided by a full-access, unsignalized driveway located approximately 800 feet north of Sylvanus Wood Lane. Emergency vehicle access will be provided by a secondary driveway at Sylvanus Wood Lane; will be gated at all times; and will not provide general access to/from the site.

- *Woburn Heights* – Woburn Heights is a proposed residential development to be located along the eastern side of Main Street. The site is bounded by vacant land to the north, Main Street to the south, and residential properties to the east and west. The proposed development will consist of a six-level residential apartment building containing a total of 168 apartment units ranging in size from 900 to 1,200 square feet. There will also be 149 covered parking spaces located beneath the proposed apartment building. The site contains approximately nine acres of land and is currently vacant with no existing curb cuts on Main Street. Access to and egress from the proposed apartment building will be provided one driveway located on Main Street.

- *Trade Center Executive Park* – The proposed Trade Center Executive Park office development on Sylvan Road includes the construction of a 548,000 square foot, 7-story office building and a 1,065 space, 5-story parking garage. The site covers approximately 18.16 acres and currently contains the existing Trade Center Park office building. The existing 2-story, 156,409 square foot office building will remain on the site. The site is bounded by the Alpha Industries building to the west, Sylvan Road to the south, residential properties to the north, and the Stop & Shop retail plaza to the east. There are two existing driveways on Sylvan Road providing full access and egress to the site. These two driveways will be improved to provide access to the proposed office building.

- *Inwood Drive residential development* – This residential development would be constructed in two portions. One portion consists of 44 units of age-restricted housing (55 years and older) in a condominium complex. The other portion consists of 446 units of rental housing. These two sites are bound by Interstate 93 on the west and Reading on the east. Access and egress to the sites would be provided by Inwood Drive. The site would have 980 parking spaces to serve both development portions.
-

- *Lowe's Home Improvement Superstore* – A Lowe's home improvement superstore is located on the northeasterly corner of the intersection of Mishawum Road and Commerce Way. This development occupies approximately 130,000 square feet. The project provided approximately 640 parking spaces, including 90 parking spaces provided by the construction of parking decks over portions of the Bertucci's restaurant and On The Border restaurant/Red Roof Inn sites. The total impervious area of this project is approximately 9.5 acres. Access/egress to the site is provided via a single driveway on Commerce Way. The driveway also provides shared access with other existing commercial uses on the eastern side of Commerce Way.
-

- *Burlington Office Park* – The Burlington Office Park I – Phase II (located in Burlington) was referenced in the Archstone project as a background development.

- *Oracle* – The proposed Oracle development (also located in Burlington) site was referenced in the Archstone project as a background development.

For the specific developments expected to have a considerable impact to the transportation infrastructure, trip generation from previous traffic studies were reviewed or new trip generation was calculated for developments that do not yet have Traffic Impact and Access Studies prepared or readily available. Figure 55 summarizes the traffic generated during the weekday morning and evening peak hour periods.

In addition to developments slated for construction, the City has identified several parcels throughout Woburn that may reach their development potential by 2020. As of this time there are no proposed development plans for these areas. The parcels include:

- 80,000 to 100,000 square feet of development along Holton Street at the existing park and ride facility
- 150,000 square feet of development in the area bounded by Washington Street, Olympia Avenue, Wildwood Avenue, and Salem Street
- 100,000 square feet of mixed-use development at the previous Mishawum Station site

Figure 55: Woburn Trip Generation Summary Specific Developments: Trip Generation

Name	Winning Farm Subdivision	Jefferson at Washington Crossing	Draper Street Commercial Development	Archstone	Woburn Heights	Trade Center Executive Park	Inwood Residential Development	Lowe's Improvement Superstore [1]	Burlington Office Park I – Phase II [2]	Oracle Development [2]
ITE LUC	LUC 230	LUC 220	LUC 140	LUC 220	LUC 220	LUC 710	LUC 230 and 220	LUC 862	LUC 710 LUC 220	LUC 710
Size	147 Townhouses	226 apartments	165,000 sf	300 units	168 Units	548,000 sf	44 and 446	130,000 sf	160,000 sf / 180 Units	84,000 sf
Date of Study	Feb 2001	Oct 1999	--	Apr 2003	Oct 2000	Dec 1999	--	Feb 2000	No Study	No Study
Location	Lexington Street	Cedar Street	Draper Street	Cambridge Rd	Main Street	Sylvan Road	Inwood Street	Mishawum Rd	Wall Street	Van Graff Drive
Weekday Daily [a]	903	1,490	520	1,954	1,142	4,900	3,150	5,780	3,117	1,161
Morning Peak Hour [b]										
Entering	12	19	70	30	14	637	49	100	254	143
Exiting	57	97	20	121	73	87	200	92	111	19
Total	69	116	90	151	87	724	249	192	365	162
Evening Peak Hour [b]										
Entering	56	94	35	119	73	118	191	231	122	29
Exiting	28	47	65	64	37	576	102	260	253	144
Total	84	141	100	183	110	694	293	491	375	173

1 includes 25 percent pass-by traffic (only data available)
2 referenced in the proposed Archstone development project
a vehicles per day (vpd)
b vehicles per hour (vph)

Future Planned Projects

The Metropolitan Planning Organization (MPO) Transportation Improvement Program (TIP) identifies a number of improvement projects for the City of Woburn. The TIP includes projects for funding that are consistent with the regional and state transportation and air quality objectives. All of the projects in the program have long-term, capacity-building benefits but may also have short-term construction impacts on traffic. The following sections provide a brief overview of the City of Woburn's TIP projects.

Woburn Projects on the MPO TIP

The following Woburn-related projects are listed on the Circulation Draft of the Transportation Improvement Program and Air Quality Conformity Determination (TIP) for the 2006-2010 fiscal years:

- *Montvale Avenue ($1.5M)* – reconstruct Montvale Avenue
- *Construction of Magazine Hill Park and Ride Facility ($1.35M)* – construct a park 'n ride facility at Magazine Hill in Woburn Square, bordered by Main Street, Manns Court, and the historic First Burial Ground; currently at 25% design status
- *Tri-Community Bike Path - Phase 2 ($600k)* – design a 5.7-mile bicycle facility in Stoneham, Winchester, and Woburn
- *Tri-Community Bike Path - Phase 3 ($4.4Mk)* – construct a 5.7-mile bicycle facility in Stoneham, Winchester, and Woburn
- *Breed Avenue Extension* – extend Breed Avenue between Main Street (Route 38) and Merrimack Street
- *Route 3/Bedford Road ($300k)* – Upgrade the traffic signals at the intersection of Route 3 and Bedford Road

The City has also petitioned the MPO to include the New Boston Street Bridge project in the TIP.

Future Intersection Operations

Without roadway improvements or development related mitigation, traffic volume associated with the developments above can degrade the intersection operations at critical locations throughout the City. Based on the existing conditions level-of-service analysis results previously reported, the majority of study-area intersections and both of the study-area interchanges can be expected to degrade to an unacceptable level of service in the future. Similar to existing conditions, it is expected that under future conditions these intersections would show long delays for traffic on the side streets or minor approaches to many intersections along Main Street, Cambridge Road, Lexington Street, Pleasant Street, Salem Street, Washington Street and other major roadways throughout the City.

With the planned improvements identified by the City, some of the traffic deficiencies – both existing and projected – can be mitigated. Specific mitigation proposed as part of the individual projects identified will also help alleviate congestion in localized areas of the City.

Future Pedestrian and Bicycle Facilities

In conjunction with Stoneham and Winchester, the City of Woburn is in the planning and design stages of constructing the Woburn Loop portion of the Tri-Community Bicycleway/Greenway. Phase I and II of this project will develop a 6.6-mile pedestrian and bicycle path through Stoneham, Winchester, and Woburn, as shown in Figure 56. The bicycle way is expected to begin at Recreation Park near the Center of Stoneham, follow the abandoned Boston and Maine railroad right-of-way north, and then southwest to the right-of-way paralleling Montvale Avenue and leading under I-93. Once under I-93, the path enters Woburn along Montvale Avenue to the Aberjona River (with a side link to Washington Street), and then southwest along the river to Winchester.

Approximately 0.74 mile of bicycle way will be within Woburn as part of Phases I and II. This western segment will loop around the north and east sides of Horn Pond and connect Lake Street to the Horn Pond Brook bicycle path, which runs into Winchester. Phase III of this project will connect Woburn Square with the segment built as part of Phases I and II. This route will follow the abandoned MBTA right-of-way from High Street to Cross Street. Riders will take Cross Street to Main Street, travel one block to Lake Street, and two blocks along Lake Street to connect with the path at the southern end of Horn Pond.

In compliance with AASHTO[8] design guidelines, the bicycle way will consist of a 10-foot wide paved surface with two-foot graded shoulders. Within Woburn, key crossing improvements will be completed at Washington Street and Main Street. The bicycle way is expected to create new links to public transportation facilities throughout the three communities, as well as local businesses, schools, parks, and civic buildings. It will also enhance and preserve the historic landscape of the Aberjona River greenway and provide safe, off-road access to Winchester Center and Wedgemere commuter rail stations.

Consistency with Regional Systems

The development of the bicycle way will advance the policies of the Boston Metropolitan Planning Council as outlined in its 1997 Transportation Plan for the Boston Region. It also will advance the policies of the MAPC's MetroPlan 2000 by relieving traffic congestion, protecting open space, reducing air emissions, and improving water quality.

Furthermore, the bicycle way will contribute significantly to the development of a regional bicycle/pedestrian system by connecting via the Mystic Valley and Alewife Parkways to the Red Line Linear Park bicycle path, Mystic River bicycle path, and

[8] American Association of State Highway and Transportation Officials (AASHTO), Guide for the Development of Bicycle Facilities, 1999

Minuteman bicycle way. Figure 56 presents the Tri-Community Bicycleway as it is currently proposed.

CITYWIDE BICYCLE FACILITIES

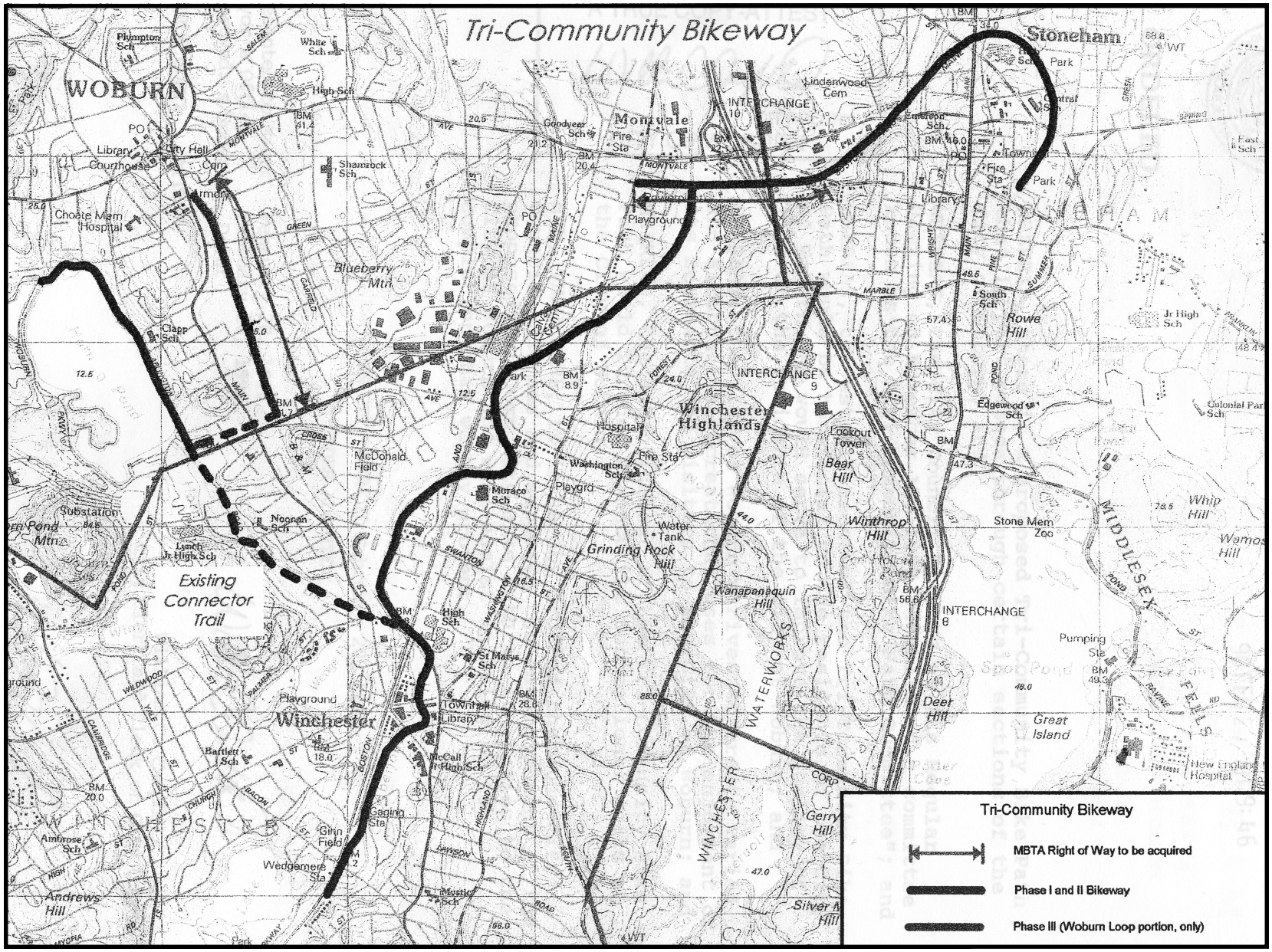
As mentioned in previous sections, none of the key roadways within the City provide on-road bicycle accommodations. As the City moves forward with its transportation planning efforts, it is possible to accommodate bicycle facilities on many roadways. Figure 57 provides minimum roadway width guidelines for on-road bicycle accommodations as specified by the Federal Highway Administration (FHWA). The table should be used as a guide to the minimum design for any roadway on which a bicycle is permitted. MassHighway has adopted these federal guidelines as they begin to incorporate bicycle guidelines into the MassHighway Design Guidelines. Although FHWA has several tables to which it refers (depending on parking, land use, etc.), this table is best suitable to the City's roadway system (urban roadways, no parking). All minimum roadway widths include adjustments for heavy vehicles

As the speed limits on the majority of key roadways in Woburn range from 30 to 40 mph, the table indicates that wide curb lanes of 14 or 15 feet (depending on the annual average daily traffic (AADT) on a specific roadway) are sufficient to accommodate bicycles.

Figure 57: Minimum Roadway Width Requirements for Bicycle Accommodations – Urban Roadways, No Parking[1]

	Average Annual Daily Traffic (AADT) Volume[2]					
	Less than 2,000 vpd		*2,000 to 10,000 vpd*		*Over 10,000 vpd*	
Average Vehicle Speed	**Adequate Sight Distance**	**Inadequate Sight Distance**	**Adequate Sight Distance**	**Inadequate Sight Distance**	**Adequate Sight Distance**	**Inadequate Sight Distance**
Less than 30 mph	SL 12	WC 14	WC 14	WC 14	WC 14	WC 14
30 – 40 mph	WC 14	WC 15	WC 15	WC 15	WC 15	WC 15
41 – 50 mph	WC 15	WC 15	WC 15	SH 6	WC 15	SH 6
Over 50 mph	SH 6	SH 6	SH 6	SH 6	SH 6	SH 6

1 source: Selecting Roadway Design Treatments to Accommodate Bicycles, FHWA 1994
2 vpd = vehicles per day
3 SL = shared lane; WC = wide curb lane; SH = shoulder; BL = bicycle lanes, "SL 12" = 12 foot shared lane



Woburn Vision 2020

Figure 56

Proposed Woburn Loop Bikeway/Greenway

IMPROVEMENT ALTERNATIVES

Recommended Action Plan

This chapter overviews the process of developing transportation improvement alternatives and provides a complete description of each of the recommended actions. The review of existing and future transportation conditions in Woburn helped to clarify the City's physical and operational transportation needs. In addition, throughout the planning process, the project team received input from City stakeholders to develop a clear understanding of the issues. The Recommended Action Plan includes various alternative approaches to address the transportation needs identified from the existing and future conditions. Figures 58 and 59 presented at the end of this chapter summarize the transportation improvement plan.

Goals

Each recommendation has been prioritized as an immediate, short-term or long-term item for implementation. The time line utilized for the immediate, short-term and long-term recommendations is as follows:

- Immediate Action: 2-7 Years
- Short-Term Action: 7-12 Years
- Long-Term Action: 12-17 Years

Currently, the challenge for the City of Woburn is to identify and provide the transportation infrastructure needed to enhance existing and active businesses; support and enhance the downtown area; and improve the economy and quality of life of the residents of the City. The proposed recommended actions identify potential enhancements of intersection and roadways, parking, pedestrian paths, and bicycle connections. The recommendations are organized in the following manner:

- Traffic Management (operations and safety)
- Parking
- Public Transportation
- Pedestrian and Bicycle Accommodations

Traffic Management

The first portion of the traffic management recommendations focuses on intersections that were reviewed for conceptual improvements. More general traffic management strategies are also presented.

Improve Operational and Safety Conditions at Selected Intersections

The list of intersections that were reviewed as part of this study was developed in consultation with City officials. The intersections listed were chosen for potential improvement alternatives based on existing and projected operations and safety characteristics at these intersections. The intersection improvements have been subdivided into immediate, short-term and long-term improvements and can be funded

through both City and state funding sources. In addition, intersections affected by private development could be funded as part of the mitigation package for the development.

IMMEDIATE ACTIONS: INTERSECTIONS

A. Salem Street at Wildwood Avenue and Wood Street

A traffic signal has been proposed at the intersection of Salem Street at Wildwood Avenue and Wood Street for several years. Due to the off-set nature of Wood Street and Wildwood Avenue, and the volume of traffic exiting both minor-street approaches, a traffic signal at this location could accommodate higher future volumes and improve safety as well as help delineate right-of-way.

B. Winn Street at Kilby Street and Bedford Road

Due to excessive delay and queuing along the minor-street approaches to the intersection, a traffic signal is proposed at the Kilby Street, and Bedford Road intersection with Winn Street. Signalizing this intersection provides safe and efficient traffic operations at this location as well as helping to rectify the safety hazard created by the intersection geometry and the slopes existing on some approaches. Current signalization plans at this intersection provide exclusive left-turn lanes northbound and southbound along Winn Street. All other approaches will remain one general-purpose lane.

C. Bedford Road at Cambridge Road

An upgrade to the existing traffic signal is recommended at this location. This upgrade would provide more efficient traffic operations in the future. In addition to a traffic signal upgrade, geometric improvements to the southbound Bedford Street approach have also been identified.

D. Downtown Improvements

Traffic circulation and control modifications have been recommended throughout the downtown area as part of the Woburn Square Revitalization Plan and the proposed Magazine Hill Parking Facility.

SHORT TERM ACTIONS: INTERSECTIONS

E. Main Street Corridor Traffic Signal Coordination

Portions of the roadway experience a daily traffic volume in excess of 20,000 vehicles per day and many of the City's other key roadways meet along the corridor. As such, there are numerous traffic signals, which are sometimes spaced closely together, especially in the downtown area.

A coordinated traffic signal system should be considered for the signalized intersections along Main Street from the Wilmington Town Line to the Winchester Town Line. Due to the proximity of the traffic signals, a coordinated signal system could help alleviate queuing issues along the corridor during the peak periods. Proper coordination reduces the likelihood that vehicles may have to stop at every signal and helps facilitate traffic flow through the area.

F. Woburn Industrial Loop Traffic Signal Coordination

Similar to Main Street, the Woburn Industrial Loop also experiences heavy traffic volumes, particularly during the peak commuting periods and in part due to the industrial area's proximity to the I-95/I-93 interchange. A coordinated traffic signal system within the loop could help alleviate queuing and congestion during the peak periods. However, some of the intersections along the Loop (Mishawum Road at Commerce Way and at Washington Street and Washington Street at I-95) are state-owned and controlled. Therefore, traffic signal coordination in this section of the City requires careful City and state coordination and management.

G. Willow Street at Lexington Street

Based on feedback from the residents of Woburn, it is recommended that traffic signal warrants be evaluated at this intersection. If traffic signal warrants are met, a traffic signal should be installed at this location. Minor geometric improvements may also be necessary as part of this improvement.

H. Four Corners

A traffic signal upgrade and geometric improvements should be considered at this location.

I. Holton Street at Green Street

Based on feedback from the residents of Woburn, it is recommended that traffic signal warrants be evaluated at this intersection. If traffic signal warrants are met, a traffic signal should be installed at this location. Minor geometric improvements may also be necessary as part of this improvement.

J. Mishawum Road at Olympia Avenue

Based on feedback from the residents of Woburn, it is recommended that traffic signal warrants be evaluated at this intersection. If traffic signal warrants are met, a traffic signal should be installed at this location. Minor geometric improvements would also be necessary as part of this improvement.

K. Main Street at Montvale Avenue

A traffic signal controller upgrade is proposed at this location.

L. Main Street at Salem Street

As part of the short-term improvement plan, a traffic signal controller upgrade is proposed at this location.

LONG TERM ACTIONS: INTERSECTIONS

M. Main Street at Lake Avenue

Based on feedback from the residents of Woburn, it is recommended that traffic signal warrants be evaluated at this intersection. If traffic signal warrants are met, a traffic signal should be installed at this location. Minor geometric improvements would also be necessary as part of this improvement.

N. Burlington Street at Lexington Street

Based on feedback from the residents of Woburn, it is recommended that traffic signal warrants be evaluated at this intersection. If traffic signal warrants are met, a traffic signal should be installed at this location. Minor geometric improvements would also be necessary as part of this improvement.

O. Main Street at Salem Street

A traffic signal controller upgrade is proposed at this location.

P. Mishawum Road at Beach Street

Based on feedback from the residents of Woburn, it is recommended that traffic signal warrants be evaluated at this intersection. If traffic signal warrants are met, a traffic signal should be installed at this location. Minor geometric improvements would also be necessary as part of this improvement.

Q. Main Street at Cross Street

Based on feedback from the residents of Woburn, it is recommended that traffic signal warrants be evaluated at this intersection. If traffic signal warrants are met, a traffic signal should be installed at this location. Minor geometric improvements would also be necessary as part of this improvement.

R. Locust Street at Cambridge Road

Based on feedback from the residents of Woburn, it is recommended that traffic signal warrants be evaluated at this intersection. If traffic signal warrants are met, a traffic signal should be installed at this location. Minor geometric improvements would also be necessary as part of this improvement.

S. Roadway and Bridge Upgrades

Based on discussions with the City, several roadway projects have been proposed. These projects fall into three categories, reconstruction, widening, and extension.

- *Immediate Action Improvements* – The Immediate Action Improvements propose roadway reconstruction on Montvale Avenue (from I-93 to Washington Street), New Boston Street (from the New Boston Street Bridge to Industrial Parkway), and Washington Street (from I-95 to Salem Street). A roadway extension should be constructed connecting Monks, Warren, and Baldwin Roads. Structural enhancements recommended as part of the Immediate Action Plan include Salem Street bridge reconstruction and New Boston Street bridge construction.

- *Short-Term Action Improvements* – Short-Term Action Improvements propose roadway extensions at Draper Street and at Breed Avenue. It is also recommended that the City pursue roadway reconstruction along Holton Street.

- *Long-Term Action Improvements* – As part of the long-term improvement plan, roadway widening and/or reconstruction is proposed along five roadways: Cambridge Road (from Bedford Road to the Winchester Town Line), North

Main Street (from the Wilmington Town Line to West Dexter Avenue), Commerce Way, Washington Street (from Mishawum Road to Olympia Avenue), and Pleasant Street (from Woburn Square to Arlington Road).

T. Parking

Several parking improvements have also been identified through 2020 in the improvement plan.

- *Immediate Action Improvements* – These include construction of the Magazine Hill Park and Ride parking lot and improving accommodations at the existing Walnut Street parking lot. Increased City-wide enforcement and amended zoning regulations should also be on the City's immediate priority list.

- *Short-Term Action Improvements* – It is recommended that the feasibility of permit and/or metered parking be considered in the downtown Square area. Improvements to the existing parking lots at City Hall, the Armory, and Federal Street should also be considered.

- *Long-Term Action Improvements* – The City should seek to prohibit the use of off-street parking as vehicle storage and begin the reallocation of time limits throughout the downtown area, including increasing the number of handicapped parking spaces provided.

U. Public Transportation

- *Immediate Action Improvements* – As with parking, the City has several immediate needs with regard to public transportation. The most comprehensive of which may be the reopening of Mishawum Station as part of a Transit Oriented Design development. It is recommended that the City focus on the feasibility of re-opening this station and developing the surrounding area. In addition, it is recommended that the City begin to assess the feasibility of providing local shuttle service to the Anderson RTC and throughout the City of Woburn, as well as the feasibility of an elderly persons shuttle service.

- *Short- and Long-Term Action Improvements* – If deemed feasible, the City should begin to implement local bus and shuttle service as part of the short and long-term action plans.

V. Pedestrian and Bicycle Accommodations

- *Immediate Action Improvements* – An immediate action item, the City of Woburn should begin to improve enforcement of pedestrian right-of-way laws, re-stripe crosswalks, and improve street lighting. In addition, a City-wide plan to upgrade and provide Americans with Disabilities (ADA)-compliant pedestrian accommodations should also be implemented. The City of Woburn recognizes the importance of providing ADA-compliant accommodations at intersections throughout the City. Though this process should begin immediately, it is likely to be a long-term goal of the City due to the number of intersections within City limits. The City should plan to prioritize areas with heavy pedestrian volume (such as the downtown) and any areas near hospitals, medical centers, or rehabilitation centers should be treated first; followed by commercial and residential areas as appropriate.

- *Short-Term Action Improvements* – As a short-term improvement action, the City should also begin to investigate the feasibility of on-road bicycle accommodations along the key roadway corridors and the feasibility of bicycle detection loops at major intersections. Bicycle racks should also be provided in the downtown area. Again, a prioritization plan can be developed to help the City identify key locations to provide bicycle accommodations.

- *Long-Term Action Improvements* – Over the longer term, the City should work with the surrounding communities of Winchester and Stoneham to complete the Tri-Community Bikeway and Woburn Loop.

Figure 58: City of Woburn Recommended Improvement Plan Prioritization

Immediate Actions (2005-2010)		
Project	**Description**	**Investment***
Salem Street at Wood Street/Wildwood Avenue	Traffic signal installation and geometric improvements	$325,000
Winn Street at Kilby Street/Bedford Road	Traffic signal installation and geometric improvements	$400,000
Bedford Road at Cambridge Road	Traffic signal upgrade and geometric improvements	$325,000
Downtown Improvements	Traffic circulation and control modifications	$500,000
Salem Street Bridge	Bridge Replacement	$1,000,000
Montvale Avenue, from I-93 to Washington Street	Roadway Widening/Reconstruction	$3,400,000
New Boston Street Bridge	Bridge Construction	$3,200,000
New Boston Street, from New Boston Street Bridge to Industrial Parkway	Roadway Reconstruction	$325,000
Washington Street, from I-95 to Salem Street	Roadway Widening/Reconstruction	$850,000
Increased Enforcement	Improve enforcement of pedestrian right-of-way laws and school zones, restripe crosswalks and stop bars for maximum visibility, and improve street lighting	$250,000
Anderson RTC	Provide safer pedestrian accommodations to the Anderson RTC	TBD[1]
Magazine Hill Park and Ride	Construction of a park and ride parking lot to increase availability of long-term parking in the downtown area	$372,000

Short-Term Actions (2010-2015)		
Project	**Description**	**Investment***
Main Street - Winchester to Wilmington	Traffic signal interconnection/coordination project	$75,000
Commerce Way, Mishawum Road, New Boston Street	Traffic Signal coordination project along Woburn Industrial Loop	$200,000
Willow Street at Lexington Street	Feasibility of traffic signal installation and geometric improvements	350000
Four Corners	Traffic signal upgrade and geometric improvements	$500,000
Holton Street at Green Street	Feasibility of traffic signal installation and geometric improvements	$350,000
Mishawum Road at Olympia Avenue	Feasibility of traffic signal installation and geometric improvements	$350,000
Main Street at Montvale Avenue	Traffic signal controller upgrade	$15,000
Main Street at Salem Street	Traffic signal controller upgrade	$15,000
Draper Street	Roadway Extension/New Street Construction	$1,300,000
Breed Avenue	Roadway Extension/New Street Construction	$1,800,000
Holton Street	Roadway Reconstruction	TBD[1]

Long-Term Actions (2015 to 2020)		
Project	**Description**	**Investment***
Cambridge Road, from Bedford Road to Winchester Town Line	Roadway Widening/Reconstruction	$400,000
Main Street at Lake Avenue	Feasibility of traffic signal installation and geometric improvements	$400,000
Burlington Street at Lexington Street	Feasibility of traffic signal installation and geometric improvements	$400,000
Montvale Avenue at Wood Street	Traffic signal upgrade and geometric improvements	$400,000
Mishawum Road at Beach Street	Feasibility of traffic signal installation and geometric improvements	$400,000
Cross Street at Main Street	Feasibility of traffic signal installation and geometric improvements	$400,000
Locust Street at Cambridge Road	Feasibility of traffic signal installation and geometric improvements	$400,000
North Main Street, from Wilmington Town Line to West Dexter Avenue	Roadway Reconstruction	$210,000
Conn Street	Roadway Extension/New Street Construction	TBD[1]
Commerce Way	Roadway Widening/Reconstruction	TBD[1]
Washington Street, from Mishawum Road to Olympia Avenue	Roadway Widening/Reconstruction	TBD[1]

Figure 58 (cont'd): City of Woburn Recommended Improvement Plan Prioritization

Immediate Actions (2005-2010)		
Project	**Description**	**Investment***
Parking Improvements	Improve accommodations at Walnut Street Lot, including circulation, beautification, repaving, re-striping, and investigating the feasibility of a parking deck. Increase enforcement citywide, amend zoning regulations to control private development parking	
Sidewalk Improvements	Citywide sidewalk connections/upgrades; including implementing ADA compliant wheelchair ramps, audible pedestrian accommodations at traffic signals, and removing utility poles that block passageways	
Transit Accommodations	Potential reopening of Mishawum Station as part of a Transit Oriented Design development. Investigate feasibility of providing bus or shuttle service to the Anderson RTC, local bus service within the City, and a dedicated shuttle service for the elderly	
Bicycle Accommodations	Investigate the feasibility of on-road bicycle accommodations along key roadway corridors and the feasibility of bicycle detection loops at major intersections. Install bicycle racks in the downtown area	

Short-Term Actions (2010-2015)		
Project	**Description**	**Investment***
Parking Improvements	Investigate feasibility of permit or metered parking. Improve accommodations at the City Hall lot, Armory lot, Federal Street lot, and on-street	
Sidewalk Improvements	Complete citywide sidewalk connections/upgrades; including implementing ADA compliant wheelchair ramps, audible pedestrian accommodations at traffic signals, and removing utility poles that block passageways	
Transit Accommodations	If feasible, begin to provide bus or shuttle service to the Anderson RTC, local bus service within the City, and a dedicated shuttle service for the elderly	
Bicycle Accommodations	Work with Towns of Winchester and Stoneham to complete the Tri-Community Bikeway and Woburn Loop	

Long-Term Actions (2015 to 2020)		
Project	**Description**	**Investment***
Parking Improvements	Prohibit use of off-street parking as vehicle storage, begin reallocation of time limits throughout downtown, including increasing the number of handicapped parking spaces	
Sidewalk Improvements	Improve streetscape along key pedestrian corridors, improve pedestrian access along Presidential Way and Washington Street, and investigate the feasibility of pedestrian bridges at key locations	
Transit Accommodations	If feasible, continue to implement the provision of bus or shuttle service to the Anderson RTC, local bus service within the City, and a dedicated shuttle service for the elderly	
Bicycle Accommodations	Continue to provide bicycle accommodations throughout the City of Woburn	

* as reported by the City of Woburn
does not include design and/or right-of-way acquisition fees
1 to be determined

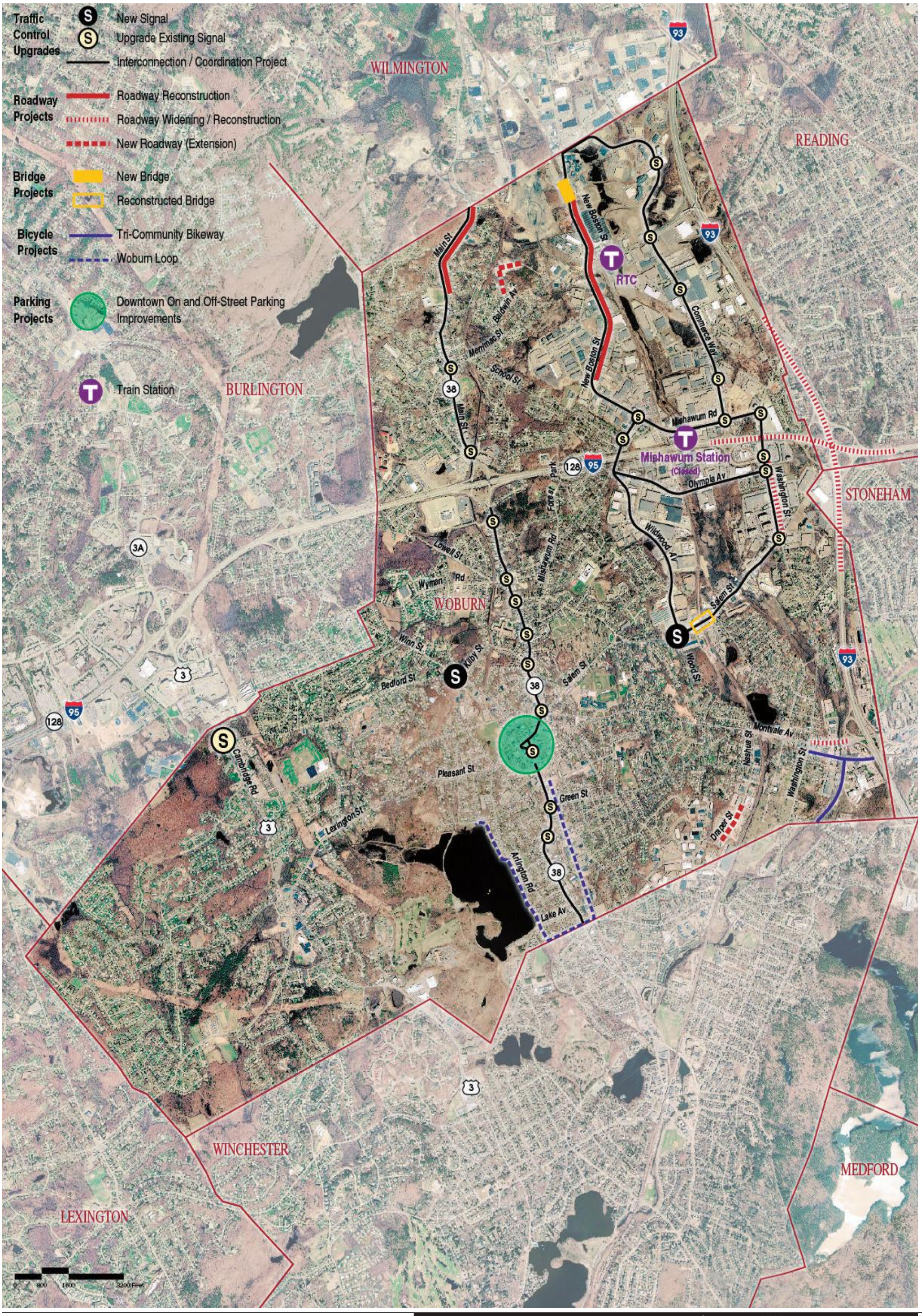


Figure 59
Recommended Improvement Plan

PUTTING IT ALL TOGETHER

"Putting it all Together" refers to the process of taking the recommendations from the individual topic areas and reconciling conflicts that may have arisen between the topic areas and identifying how the elements fit together. Map 6, the Community Development Plan Map, is the product of this process. Additional strategies are discussed in this section as well.

Strategies include mapped strategies where the City envisioned and described the future of specific areas in the City and non-mapped strategies that if implemented, would not necessarily result in a change in the land use of an area, and those strategies that are not location specific. In all cases, implementing these ideas will take a number of steps, many of which would involve public processes and reviews.

Community Development Plan Map

The Community Development Plan Map (Map 6) shows those recommendations that entail a change in land use in the City including zoning changes, ownership changes or physical changes such as new facilities. The recommendations for these areas are described below and on the map. These recommendations are ways to reach a vision for a specific area and in some cases a way to meet a specific need that the City is facing such as housing needs.

1. Protect Spence Farm and Shannon Farm through use of a Conservation Subdivision Design Ordinance.

Conservation Subdivision Design (CSD) is a relatively new concept of cluster-type development that allows land to be developed while still preserving community character and reducing environmental impacts. CSD is a cost-effective tool for preserving open space. It provides for partial open space preservation and resource protection at no cost to the municipality while still allowing development to occur. It is most appropriate where acquisition of the entire property would be prohibitively expensive.

***Rationale* -** Using Conservation Subdivision Design would allow the City to work with a developer to protect the most important features of the land, site the development in such a way that the views could be maintained and still keep the land on the tax rolls with no expenditure of public funds.

***Resources* -** More information on CSD, including case studies and a model bylaw/ordinance can be found at http://www.mapc.org/regional_planning/land_use.html

2. Develop multi-use path on MBTA ROW – The City should use all funding sources including Transportation Enhancements to develop a multi-use path on the MBTA ROW. There is an inactive MBTA railroad right-of-way that runs from approximately Cross Street at the Winchester Town line north through Woburn Center to just south of Route 128. There is interest in converting this right-of-way to a multi-use trail. From a brief review of the tax assessors' records, the ownership and status of much of this right-of-way is unclear. Some of the parcels appear to have been sold to abutters while there is no

ownership information for others. There needs to be a complete study of the status and ownership of this right-of-way before any determination can be made as to the feasibility of converting it to a multi-use path.

Rationale – Creating a multi-use path on the MBTA ROW would create a transportation alternative and a recreational resource in a densely developed part of the City. It would clean up an area that is neglected and return it to a productive use.

Resources - Sources of additional development on rail-trail development include:

http://www.railtrails.org
http://www.trailsandgreenways.org

Sources of information on the Transportation Enhancements Program include:

http://www.state.ma.us/mhd/publications/other.htm
http://www.fhwa.dot.gov/environment/te_final.htm

3. Acquire the Winchester Elks Property
This parcel is adjacent to Horn Pond Mountain. The parcel has been offered to the City and received the highest priority ranking by participants at the Open Space Forum.

Rationale - The parcel contains wetlands and rare vegetation. It is also within the Zone II of a municipal well. Horn Pond is the most used open space resource in the City.

Resources - See Appendix II Open Space and Natural Resources Strategies and Resources.

4. Acquire the St. Anthony's Property
Acquire the 10 acre parcel owned by the Archdiocese adjacent to St. Anthony's Church.

Rationale – This parcel was identified as having recreation potential and is adjacent to the Middlesex Canal.

Resources - See Appendix II Open Space and Natural Resources Strategies and Resources.

5. Acquire the Water Street Property
Acquire the Water Street Property. This is a residential parcel in the vicinity of Horn Pond that the City would like to acquire.

Rationale- Acquisition of this property would provide a buffer to Horn Pond and would provide additional protection to the watershed.

Resources - See Appendix II Open Space and Natural Resources Strategies and Resources.

6. Acquire the Shaker Glen Property
This is an 11 acre parcel on Russell Street that is adjacent to the Shaker Glen Conservation Area.

Rationale- This parcel could potentially be used to provide better access and parking for Shaker Glen. It includes wetlands and Shaker Glen Brook runs through the property. It also contains an aquifer.

Resources - See Appendix II Open Space and Natural Resources Strategies and Resources.

7. Work with the Town of Burlington to develop a plan for the City of Boston (Cummings) Property.
Both the City of Woburn and the Town of Burlington have identified the continued protection of the Cummings Property as a critical open space need. The property is owned by the City of Boston and includes 25 acres in Woburn and 150 acres in Burlington. While the property is currently protected under a trust, the City of Boston has been pursuing options for taking the land out of that trust with the potential that it could be sold and redeveloped in the future. All parties should work together to develop a plan for the property that is harmony with the protected trust.

- Inventory and map all of the natural resources on the site.
- Involve City of Woburn and Burlington residents in determining what uses are appropriate.
- Evaluate the costs, benefits and impacts of potential uses.
- Develop zoning that would implement the plan.

Rationale – The property is used little by the City of Boston. It has been used sparingly by the Town of Burlington over the years for a few formal and informal recreational activities. The land has great potential for park and recreation purposes. The recommendation to develop a plan for the property that is in harmony with the trust is a first step that would allow all parties to explore the issues and develop alternatives in a public process. The results of that plan may eventually lead to a change in ownership to the City of Woburn and the Town of Burlington.

8. Rezone Salem Street from R-3 to R-4
Residents participating in Woburn's Housing Forum suggested allowing more density by changing R-3 to R-4 along Salem Street, allowing multi-unit apartment buildings where development is now limited to townhouses, condominiums, and garden apartments. Both districts have a minimum lot size of 12,000 square feet.

Rationale - Single-family development, even with Woburn's relatively modest lot requirements, is rapidly consuming the City's remaining open space, much of it until

recently in agricultural use. Increased density consumes less land, tends to lower housing costs, and makes more efficient use of infrastructure. Woburn has already taken steps to allow higher densities in some areas. It has expanded the zoning districts that allow townhouses, adding these uses in the S-1 (mixed-use) and B-N (neighborhood business) districts. New areas have also been added to the S-1 zone. This has enabled Woburn to continue to produce more multi-family housing than many communities. This proposed rezoning would allow for more housing options.

9. Zone for Mixed Use Development across from St. Anthony's
The City should consider zoning the area across from St. Anthony's Church to allow a mix of residential and commercial uses.

Rationale- Allowing a mix of residential, commercial, and other uses where there is infrastructure to support it is a prime example of "smart growth." The City has already rezoned to allow conversion of upper floor space in B-D district to multiple residential units. This concept should be extended to the area across from St. Anthony's Church.

10. Develop housing at the Veteran's School
The City should consider adding housing to the Veteran's School property. The City has already employed adaptive reuse of the school building by turning it into the Senior Center. The remainder of the site could accommodate some housing.

Rationale – Developing housing on this site would be a further adaptive reuse of this City-owned property.

11. Consider adaptive reuse of the Armory for housing
Adaptive reuse is the practice of allowing smaller units within larger residential structures or converting non-residential structures to residential uses or to a mix of uses, including residential, retail, etc. At the Housing Forum, residents expressed support for the concept of reusing the Armory for housing.

Rationale – This technique makes more efficient use of existing buildings, promotes greater affordability and smart growth, and helps revitalize underutilized or distressed properties. Converting non-residential buildings to housing or to a mix of housing, retail, and perhaps office, is particularly appropriate for communities like Woburn with considerable older, underutilized property.

12. Encourage more residential uses in the South End (Woburn Loop) Overlay District area
Residential uses, including more affordable housing, should be included in the revitalization plans for the Loop Corridor in the South End.

Rationale – This is an area that is undergoing revitalization. This area offers a good opportunity for the continued partnership among the City, the Woburn Redevelopment Authority, and perhaps the Woburn Housing Authority.

13. Develop homeownership opportunities at the McGarr School
Reuse of the McGarr School would be another opportunity for adaptive reuse of a municipal building. Participants at the housing forum felt that this site would be suitable for homeownership opportunities affordable to municipal workers.

Rationale – The reuse of this municipal property to provide housing that is affordable to municipal workers would allow more City employees to live in the community in which they work.

14. Provide more senior housing in the downtown
In general, participants in the housing forum felt that the downtown would be a good location for additional senior housing.

Rationale – Additional senior housing in the downtown would allow seniors who may no longer be driving to have easy access to stores and services.

15. Create homeownership opportunities on the Park Street site
The Woburn Housing Authority has a small site on Park Street in the downtown that could be used for owner-occupied housing.

Rationale – Creating owner-occupied public housing opportunities in the downtown would expand the range of housing options beyond the rentals commonly provided.

16. Allow mixed-use development in commercial areas
The City should consider enacting mixed-use zoning that would allow a mix of residential, commercial and other uses. The City has already rezoned to allow conversion of upper floor space in B-D districts to allow multiple residential units. This concept could be extended to other commercial areas.

Rationale – Mixed-use zoning revitalizes commercial areas in two ways; it helps to provide more housing opportunities and it helps businesses by creating more of a round-the-clock customer base so that businesses may find it profitable to stay open later in the evening.

17. Pursue transit-oriented development at the Mishawum Train Station
The City has been pursuing a transit-oriented development consisting of a mixed use development that would justify a fully re-opened Mishawum Train Station.

Rationale – Transit-oriented development provides residents with an opportunity to live within close proximity to transit so that they can commute easily without reliance on a personal automobile if they so choose. Transit oriented development is a major component of Smart Growth.

18. Provide better access to the Anderson Regional Transportation Center by rebuilding the New Boston Street Bridge
The reconstruction of the New Boston Street Bridge will help to provide more direct access for local residents to this important regional facility. The City of Woburn and the Town of Wilmington have recently come to an agreement on the value of reconstructing this bridge.

***Rationale* –** This bridge will help to reduce vehicle miles traveled to access the transportation center by local residents.

19. Revitalize the industrial zones with cleaner, lower impact uses.
The City would like to encourage newer industrial/office uses such as bio-tech and research and development and phase out the trucking terminals that currently dominate the industrial parks. The City would like to replace some of these terminals with appropriate manufacturing.

Additional Strategies

Natural Resources and Open Space

Utilize the hotel/motel rooms tax to fund open space acquisition.
Woburn should consider designation of the local portion of the hotel/motel rooms tax (MGL c. 64G Section 3A) to a dedicated fund for open space acquisitions. The City of Franklin adopted a 4 percent tax on March 24, 1999 although the City has not yet spent any of these funds on open space acquisition.

***Resources* –** City of Franklin Conservation Agent Richard Vacca (508) 520-4929 or rvacca@franklin.ma.us

Review zoning ordinance to determine if open space provisions are sufficient.
The City should review its existing zoning to determine if there are revisions that could be made that could create additional open space in new developments. The City should review the provisions in its ordinance against the bylaws or ordinances of communities that have a "greener" look. The City of Newton has a tree preservation ordinance that might serve as a good model.

Resources – http://www.ci.newton.ma.us/legal/ordinance/Chapter_20.htm#art4

Adopt the Community Preservation Act
Participants in the visioning and open space forum identified funding as the primary obstacle to acquisition. The City needs to tap the widest possible variety of sources in order to develop a fund that would be available when parcels come on the market. The primary new source of funding that could be made available is the Community Preservation Act.

The idea of a property tax surcharge was signed into law on September 14, 2000 as the Community Preservation Act (CPA)**.** The Community Preservation Act is statewide

enabling legislation that allows cities and towns to exercise control over local planning decisions by providing a new funding source which can be used to address three core community concerns:

- Acquisition and preservation of open space
- Creation and support of affordable housing
- Acquisition and preservation of historic buildings and landscapes

The City of Woburn voted on the CPA in November 2001 and the act did not pass. Because the passage of the Community Preservation Act would help the City to fund projects that would meet multiple goals of this plan, it is worth reconsidering.

A minimum of 10 percent of the annual revenues of the fund must be used for each three core community concerns. The remaining 70 percent can be allocated for any combination of the allowed uses. This gives each community the opportunity to determine its priorities, plan for its future, and have the funds to make those plans happen.

As of June 2003, approximately $55 million in Community Preservation Act projects have been approved by cities and towns. Overall, 42 percent of approved funds have been directed to the development of affordable housing, 38 percent to land protection, 17 percent to historic preservation, and 3 percent to public recreation. Together, CPA communities have already funded projects creating 259 units of affordable housing, conserving approximately 1,690 acres of open space, and purchasing or preserving more than 70 historic sites. Information on the types of projects that communities have successfully completed can be found at http://www.communitypreservation.org.

Housing Strategies

Based on this input and further research, MAPC recommends that Woburn carefully consider the following strategies:

Planning & Organizational Resources
- Designate a staff person responsible for housing
- Form a housing development non-profit
- Form a Community Land Trust (CLT)

Public Information & Outreach
- Undertake a public education campaign

Financial Resources
- Join a consortium to receive an annual allocation of federal HOME funds
- Adopt the Community Preservation Act (CPA)

Zoning
- Expand the areas that allow mixed use zoning, including housing above stores
- Adopt Inclusionary or Incentive Zoning
- Adopt Linkage

- Increase density in some residential districts
- Increase density and housing by means of "adaptive reuse"
- Encourage residential uses and phase out industrial uses in the Woburn Loop Overlay District
- Cluster zoning
- Reduce parking requirements, especially for senior housing, housing near transit, and mixed used housing where shared parking possible
- Encourage accessory apartments, accompanied by an "amnesty program" for existing units and affordability provisions

Property Resources – Preservation

- Monitor expiring use properties to ensure that they remain affordable
- Enact the "residential exemption" to offer a tax incentive for owner occupancy
- Develop a plan for reuse of surplus municipally owned property, including a property inventory, priority list, and implementation steps.
- Identify other potentially available public or institutional property as well as privately owned vacant and underutilized properties.
- Develop a system to track & pursue tax title property
- Offer rehab loans &/or grants with funds from state CDBG, HOME consortium, or other sources
- Strengthen code enforcement

Local Production Initiatives

- Develop an Affordable Housing Plan under 40B Planned Production Program
- Develop a Local Initiative Program (LIP)

Additional materials elsewhere in this report provide information to help you decide which strategies deserve priority attention and to begin to move ahead. The materials are:

- A Comprehensive Matrix of Housing Strategies, which appears in the Appendix, lists a broad range of strategies for consideration by the City of Woburn. Those with a check mark in column 3 are deemed to be especially applicable to Woburn, but others may be worthy of future exploration.

- A list of Sources and Resources to consult follows the Matrix in the Appendix.

Planning and Organizational Resources

Designate a staff person responsible for housing

The City needs a plan to meet its housing needs and a person charged with implementation. Staff support would serve as staff to the housing committee and as liaison to other planning functions, lead the community's housing efforts, and enable it to be more proactive in promoting housing.

Form a housing development non-profit
Much of the affordable housing preserved, rehabilitated, or created in recent years has been done by non-profit developers. They provide expertise in development and financing, have access to additional funding sources, and offer an added proactive voice for housing. The Woburn Housing Authority has been considering forming a non-profit and should continue on this course. An alternative would be to partner with an existing non-profit with skills in housing development, rehabilitation, & financing.

More information, see http://corp.sec.state.ma.us and see http://www.mhp.net

Form a Community Land Trust (CLT)
A CLT is a member-controlled non-profit that acquires and holds land but sells or rents the housing on it to residents. Founded on the principle that land is a common heritage and not a commodity, the CLT holds title to the land in trust for the community. This technique keeps housing permanently affordable by removing the cost of land from the housing equation and limits the increases in future housing costs. The lease of the land to the homeowner is the legal instrument that allows the trust to control the resale price. Some Community Land Trusts serve multiple purposes, combining affordable housing with open space preservation.

One successful example in the MAPC region is the Community Land Trust of Cape Ann, which has been developing affordable housing since 1990. It has four completed projects, one in progress, and one on the drawing boards. The complexity of the projects has increased with their learning curve. The housing they have produced is very affordable, is addressing the needs of local workers, and is contributing to community revitalization efforts.

For more information about CLTs in general, contact the Institute for Community Economics (ICE) at www.iceclt.org . For information about the Community Land Trust of Cape Ann, visit www.cltca.org.

Public Information & Outreach

Undertake a public education campaign
In Woburn, many people have misperceptions about what "affordable housing" is and about who cannot afford market-rate housing in the current market. The City could undertake a public education campaign to educate people about what's "affordable" and about how housing affects local citizens and the region's economy.

Many of the materials in this report, along with the full set of Powerpoint slides presented at the Housing Forum, are a good start. The local press, which provided excellent coverage of the Community Development Plan process, could publish these materials and supplement them with additional information and human-interest stories of affected citizens. The City could also contact local cable for assistance.

Financial Resources

Join a consortium to gain access to federal HOME funds

Many communities that do not have direct access to federal housing funds gain access by joining a consortium with abutting communities. One of Woburn's abutting communities, Wilmington, is a member of the North Shore Consortium based in Peabody. Thus Woburn would be eligible to join.

Federal money would enable the City to have greater control over housing development and more resources to create and maintain affordable housing. HOME funds can be used for rental housing production or rehabilitation, first-time homebuyer assistance, tenant-based rental assistance, and rehabilitation assistance for homeowners. Funds are relatively flexible; and the predictability of funding allows communities to plan ahead.

As an alternative, Woburn can apply directly to the state for HOME funds on a competitive basis for rental housing production and rehabilitation programs, first-time homebuyer assistance, and rehabilitation assistance for homeowners.

For more information about joining the North Shore Consortium, Woburn should contact the City of Peabody Community Development Department at (978) 532-3000, extension 318. For information about state programs, contact DHCD at (617) 573-1100.

Adopt the Community Preservation Act (CPA)

The City failed to pass CPA earlier. An improved economy could increase support. To date, 61 Massachusetts communities have adopted CPA, raising $55 million. Of this, 42 percent has been used for housing and has produced about 260 housing units. Adoption of CPA would provide more locally controlled resources and more partners with resources and expertise. It would help the City balance housing, open space, and other priorities.

For information on local campaigns to adopt CPA and success stories about how funds have been used, visit www.communitypreservation.org and www.tpl.org.

Zoning

Expand the areas that allow mixed use zoning, including housing above stores

Allowing a mix of residential, commercial, and other uses where there is infrastructure to support it is a prime example of "smart growth." The City has already rezoned to allow conversion of upper floor space in B-D district to multiple residential units. This concept could be extended to other commercial areas.

On the Potential Sites List and Housing Opportunities Map, potential sites appear as **H4, 6, 13**.

Adopt Inclusionary or Incentive Zoning

"Inclusionary" zoning requires residential developers to provide for affordable housing. "Incentive" zoning provides that developers seeking special permits may receive some

sort of beneficial treatment, such as increased density, in exchange for providing affordable housing. In either case, the law may limit the developer to producing units within the development or it may allow off-site production or in-lieu payment into a housing fund to support a range of housing programs.

Inclusionary/incentive zoning offers a scattered site, low-impact mechanism for communities to control growth and increase affordable housing in proportion to new market-rate housing. It uses an "internal" subsidy, using the proceeds from the market-rate units to support the affordable units. It does not require additional financial support, and it works especially well in strong markets.

Many communities in Massachusetts have adopted this technique, with varying degrees of success. Communities include Arlington, Belmont, Brookline, Cambridge, Lexington, and Newton. There is considerable difference in the models used. The Newton ordinance is among the oldest, is fairly structured, and promotes housing for those earning low incomes. Lexington, on the other hand, has a policy rather than a by-law, with a series of flexible options including a range of affordability levels. With no land zoned for multi-family housing, the Town uses the policy to guide the Planning Board in determining whether to recommend development-enabling zoning changes to Town Meeting.

In designing a local ordinance, it is probably most useful to look at the most recently adopted laws, since they benefit from the experience of others. Belmont and Arlington are among the most recent, and both by-laws are available on their websites: for Belmont, see Section 6.10 of the Zoning By-law at www.town.belmont.ma.us and for Arlington see Section 11.08 at www.town.arlington.ma.us. In its brief existence, Arlington's law has been very successful. The Town has six units that are completed and occupied, five that are approved but not yet under construction, and about six to ten in the proposal phase.

For an excellent discussion of the issues involved in formulating a good law, see Inclusionary Zoning: Guidelines for Cities and Towns," prepared by Edith M. Netter, Esq., and appearing on the Massachusetts Housing Partnership website, www.mhp.net. Other relevant documents on the same site are *Inclusionary Zoning: Lessons Learned in Massachusetts* and *Zoning for Housing Affordability*. As with many housing strategies, a good starter discussion also appears in CHAPA's *Taking the Initiative* (see www.chapa.org).

On the Potential Sites List and Housing Opportunities Map, potential sites appear as **H1** and **H15**, as well as other areas.

Adopt Linkage

Linkage is similar to inclusionary zoning but applies to commercial and industrial development and requires either a financial contribution to affordable housing or off-site housing produced through new construction or acquisition and rehabilitation. The basis of linkage is the premise that the new non-residential development causes a direct and

measurable need for more affordable housing; thus there must be a documented "link" or "nexus" between the non-residential development and the resultant housing impact.

Boston and Cambridge both have long had highly successful linkage programs. Such programs work best in communities where there is substantial new commercial development with sufficient demand to absorb the added costs of linkage. Where commercial growth is less secure, there may be concern about jeopardizing development revenue by "killing the goose that lays the golden egg."

If Woburn decides to consider linkage, the City should first evaluate the strength of the commercial and industrial market to ensure that it can withstand added costs without losing developers to other communities.

Increase density in some residential districts
Single-family development, even with Woburn's relatively modest lot requirements, is rapidly consuming the City's remaining open space, much of it until recently in agricultural use. Increased density consumes less land, tends to lower housing costs, and makes more efficient use of infrastructure.

Woburn has already taken steps to allow higher densities in some areas. It has expanded the zoning districts that allow townhouses, adding these uses in the S-1 (mixed-use) and B-N (neighborhood business) districts. New areas have also been added to the S-1 zone. This has enabled Woburn to continue to produce more multi-family housing than many communities.

Residents participating in Woburn's Housing Forum suggested allowing more density by changing R-3 to R-4 along Salem Street, allowing multi-unit apartment buildings where development is now limited to townhouses, condominiums, and garden apartments. The City might consider increasing density in other areas and other districts as well.

On the Potential Sites List and Housing Opportunities Map, the Salem Street site appears as **H1**; other areas should also be considered.

Increase density and housing by means of "adaptive reuse," allowing smaller units within larger residential structures or converting non-residential structures to residential uses or to a mix of uses, including residential, retail, etc.

This technique makes more efficient use of existing buildings, promotes greater affordability and smart growth, and helps revitalize underutilized or distressed properties. Allowing conversion of large residences to smaller units is quite similar to adding accessory apartments (see below). Converting non-residential buildings to housing or to a mix of housing, retail, and perhaps office, is particularly appropriate for communities like Woburn with considerable older, underutilized property. Woburn has a recent adaptive reuse "success story" in the conversion of the Pilgrim Building to retail with four affordable housing units on two upper floors.

On the Potential Sites List and Housing Opportunities Map, adaptive reuse should be considered for sites **H7, 9, 11, 12** & elsewhere

Encourage residential uses and phase out industrial uses in the Woburn Loop Overlay District

Residential uses, including more affordable housing, should be included in the revitalization plans for the Loop Corridor in the South End. This area offers a good opportunity for the continued partnership among the City, the WRA, and perhaps the WHA.

The South End Loop is **H2** on the Potential Sites List and Housing Opportunities Map. The City should also consider extending this concept elsewhere.

Cluster zoning

Cluster zoning allows more flexible site design than traditional single-family zoning. It allows developers to cluster housing units at greater density in some parts of a site while protecting open space or other natural resources on other parts of the site. Designs respect and work in concert with the natural contours and features of the land. Cluster development makes more efficient use of a site, promotes a balance of housing and open space, improves site design, and offers better protection of critical natural resources

Clusters alone do not necessarily make housing more affordable, but cluster ordinances can be designed to encourage inclusion of affordable housing units through use of a density bonus or other benefits.

Woburn has adopted a cluster ordinance to offer an alternative pattern of single-family development in its R-1 and R-2 districts. This concept should be considered for other areas, and the City should consider adding affordability provisions to its existing cluster provisions.

Cluster zoning should be considered for Site **H15** in the Potential Sites List and Housing Opportunities Map and elsewhere, and affordability provisions should be considered for all existing and current cluster zones.

Reduce parking requirements, especially for senior housing, housing near transit, and mixed used housing where shared parking possible

Parking requirements often act as impediments to development and drive up costs. Sometimes these requirements are unnecessarily onerous, especially when some residents are less likely to have cars and when different users may need parking at different times. Seniors and people living near transit may have lower parking need, while mixed-use development may be an opportunity for shared parking.

The City should review parking requirements for possible reductions, looking especially at Site **H9** on the Potential Sites List and Housing Opportunities Map and in other locations as well.

Encourage accessory apartments, accompanied by an "amnesty program" for existing units and affordability provisions

An accessory apartment is generally a second, subordinate dwelling unit within a single family house. Accessory units provide rental opportunities for tenants, added income for owners, and more efficient use of space. For older homeowners, tenants may offer additional benefits by assisting with chores or yard work and providing a sense of security.

Other accessory dwelling units (ADUs) may involve the reuse or adaptation of secondary structures – e.g., barns, garages, or carriage houses – on the same lot but in a separate structure. The same general principle applies to the conversion of large, single-family residences to two or more unit structures. In all these variations, units provide similar benefits.

Many communities allow accessory units in some or all residential zoning districts, sometimes by right and sometimes by special permit, usually with some restrictions on size and appearance, and occasionally with provisions to encourage affordable rents, income eligibility of tenants, and inclusion of units in the state's Chapter 40B Subsidized Housing Inventory.

There are also illegal accessory units that remain "under the radar." Some communities have taken steps to legalize these units by enacting "amnesty" provisions to encourage code compliance and more affordable housing.

The examples below show how local communities have used these approaches.

> **Lexington: amnesty and encouragement.** Lexington set up an amnesty program as part of a larger program to encourage accessory apartments. According to Lexington's 1983 by-law, the purpose of accessory units is to:
>
> - increase the number of small dwelling units available for rent in the town,
> - increase the range of choice of housing accommodations,
> - encourage greater diversity of population with particular attention to young adults and senior citizens, and
> - encourage a more economic and energy-efficient use of the town's housing supply while maintaining the appearance and character of the town's single-family neighborhoods.
>
> When Lexington passed the by-law, the amnesty provision allowed a two-year period in which to get a certificate of occupancy for a non-conforming second dwelling unit. In 1988, it provided for a way to legalize a dwelling unit in an accessory structure. According to the building commissioner, by June of 1987 the Town had received and reviewed 265 applications, and 234 were determined to be legal units. The remaining 31 were awaiting either special permits, repairs to bring them into compliance with the State Building Code, or additional research to verify

their history. Of the 265 units, only 27 would be considered accessory apartments; the others were classified as two-family houses.

Lexington also has fairly lenient rules regarding existing units and creation of new units. Their requirements, for example, limit the accessory unit to two bedrooms but do not specify the number of people who may live in it. They require only one parking space for the accessory unit and specify that only one parking space have direct access to the street.

How Affordable Accessory Apartments can "Count" on the 40B Subsidized Housing Inventory

To encourage local affordable housing initiatives, the state has designed a Local Initiative Program (LIP) setting forth requirements and standards for units that will qualify as low or moderate income housing on the Subsidized Housing Inventory. Under this program, affordable accessory apartments would be considered "Local Initiative Units" or "LIP Only" units and would need to meet State Sanitary Code requirements, be occupied by a household earning no more that 80 percent of the area median income, and be subject to a Use Restriction of at least 15 years. The latter may be revocable upon sale of the principal residence.

Requirements are detailed in state regulations – 760 CMR 45.00 (especially 45.03). They cover the need for local action, income and asset limits, affordability, use restrictions, reporting, and nondiscrimination in tenant and buyer selection.

Barnstable: affordability. Barnstable has a by-law that links accessory dwelling units to affordability and is designed to ensure that the units "count" toward the 40B Subsidized Housing Inventory. It applies to both new and existing accessory units. New units are limited to single units in single-family homes, while existing units may also include more than one unit in a multi-family structure or in a detached structure such as barn, carriage house, or garage. The original by-law was amended to allow construction of new units attached to existing structures as well as conversion of existing structures. The text of the by-law appears in the Appendix at the end of this report.

The intent of the law is to bring un-permitted units into compliance and to encourage the use of existing dwellings to create additional affordable housing. To comply with state law, Barnstable established a local Chapter 40B program which helps owners of accessory units by waiving certain fees, assisting with the process, and identifying funds for rehabilitation. To qualify for amnesty or to receive a permit for new units, properties must meet several criteria and owners must agree to rent to people with incomes under 80 percent of median, charge affordable rents, and execute a deed restriction to ensure affordability. Barnstable also uses CDBG money for grants to assist with code compliance and to monitor program compliance (i.e., income verifications and rent restrictions).

In the three years of the program, over 60 units have been approved for inclusion in the 40B Inventory. The program is spurring creation of new units, with the greatest interest in the conversion of detached structures.[9]

Scituate: affordability. More recently, Scituate has proposed revisions to its Zoning By-Law to encourage affordable accessory apartments and to ensure that they will "count" on the Chapter 40B Subsidized Housing Inventory consistent with the most recent regulations and guidance from the state's Department of Housing and Community Development (DHCD).

Property Resources – Preservation

Monitor expiring use properties to ensure that they remain affordable

Affordability in some privately owned, mixed-income developments is governed by use restrictions that allow owners to sell or rent at market rates after a given number of years. There are steps communities can take to extend affordability, beginning by investigating the status of the property and its restrictions and getting technical advice and assistance. The list of expiring use properties and information about maintaining affordability is available at www.chapa.org. Expert guidance is available at CEDAC at (617) 727-5944 or www.cedac.org . Communities should consider this issue a priority; it is almost always preferable and more cost-effective to preserve existing affordable housing rather than build new affordable housing.

In Woburn, Kimball Ct. was in this category, but the City has succeeded in working out an agreement that will maintain affordability. Officials should continue to monitor the property to ensure future compliance.

Enact the "residential exemption" to offer a tax incentive for owner occupancy

At local option, communities may exempt a percentage of the average assessed value of residential parcels from owner-occupants' bills. The intent is to promote owner occupancy, providing proportionately greater benefit to lower valued homes. Is a disincentive to absentee ownership and may promote better property maintenance and repair.

Develop a plan for reuse of surplus municipally owned property, including a property inventory, priority list, and implementation steps.

Use of public property for housing dramatically lowers acquisition and land costs, thus lowering the cost of housing built there. Surplus property provides an opportunity to address a range of local needs. Communities should view this property and their various needs comprehensively and develop a plan to balance the need for housing, open space, and other priorities. With an overall plan, communities can prepare in advance for timely implementation actions.

[9] Source: Paulette McAuliffe & Kevin Shea, Town of Barnstable.

Identify other potentially available public or institutional property as well as privately owned vacant and underutilized properties.
Types of properties include those owned state, federal, or county governments; authorities and quasi-publics; the MBTA; colleges and universities; and religious organizations.

Develop a system to track & pursue tax title property
Tax title property may offer affordable housing opportunities. The City of Waltham, for example, acquired a tax title property that is being demolished and rebuilt as affordable housing. Communities where such property is likely to exist should develop a system where the assessor, the planner, and other relevant officials share information in the pursuit of affordable housing opportunities.

Offer rehab loans &/or grants with funds from state CDBG, HOME consortium, or other sources
These programs maintain and improve existing property. For information, contact DHCD at (617) 573-1100 or at www.state.ma.us/dhcd or contact MassHousing at (617) 854-1000. Appendix B of CHAPA's *Taking the Initiative* (see www.chapa.org) includes a comprehensive catalogue of common funding sources. It includes grants, loans, and financing tools for predevelopment activities; affordable homeownership, rental housing, and housing for seniors and special needs; and preservation of existing affordable housing.

Strengthen code enforcement
For communities where property maintenance and absentee ownership are significant issues, more vigorous and consistent code enforcement programs can help improve property. Advanced publicity alone may encourage improvements. It is less heavy handed to temper the "sticks" of code enforcement with the "carrots" of rehab loans or grants, technical assistance, or other types of help and support.

Local Production Initiatives

Develop an Affordable Housing Plan under 40B Planned Production Program
The state provides an option for communities to exercise greater control over housing development based on an Affordable Housing Plan and progress toward achieving the 10 percent goal. Communities develop a plan pursuant to DHCD guidelines and request certification of compliance by demonstrating that low and moderate income housing has increased by at least ¾ of one percent of total year round housing units during the calendar year for which certification is requested. Once they are certified, they may deny comprehensive permit applications for a year; if they have produced 1.5 percent, they may deny applications for two years. The plan must include a needs assessment, housing goals, strategies, and a description of use restrictions. Communities may use existing plans in part or in total, but must include a summary document in the appropriate format. *Guidelines for Planned Production Regulation 760 CMR 31.07* (1)(i) are available at www.mass.gov/dhcd along with samples of local plans that have received certification.

Local Initiative Program (LIP)
The Local Initiative Program (LIP) is a state housing initiative designed to encourage communities to produce low and moderate income housing. The program operates through state regulation (760 CMR 45.00 et. seq.) and agency-issued Guidelines. Communities may produce units eligible for the Chapter 40B subsidized housing inventory through local zoning or other agreement with the developer (see "Local Initiative Units," 760 CMR 45.03). Projects with a minimum of 25 percent affordable units for households at or below 80 percent of median income, or 20 percent of affordable units for households at or below 60 percent of median income that require the issuance of a Comprehensive Permit are also eligible for inclusion in the inventory through the "Local Initiative General Program" (760 CMR 45.05).

These options offer communities an opportunity to tailor programs to local needs and to get credit toward 40B for housing units meeting the statutory qualifications. In addition to meeting the affordability criteria above, the units must be subject to use restrictions and be sold/rented using affirmative marketing procedures.

The LIP program options could be used to promote accessory apartments, housing above stores, mixed-use development, infill, adaptive reuse, substantial rehabilitation, or other types of housing. The program is especially useful in supporting small, relatively low density, scattered site development consistent with community character as an alternative to large-scale housing development.

Applications and information are available in the 40B section of the DHCD website at www.mass.gov.dhcd .

Economic Development Strategies

- ***Examine areas where rezoning may help the City achieve its economic development goals-*** Examine rezoning some areas to meet the specific goals expressed in the Economic Development Discussions for industrial/commercial development. This could include in several mixed use, business, commercial and industrial zoning districts or overlay districts

- ***Invest in strategic transportation improvements*** -Review transportation enhancements that will achieve better enhance traffic flow and reduce truck traffic in residential neighborhoods.

- ***Improve public transit and pedestrian connections*** - Work with the MBTA and local businesses and employers to improve public transportation and pedestrian connections to employment centers and businesses

- ***Invest in workforce development -*** Develop partnerships with Colleges and Junior Colleges to offer courses to continue to increase the educational attainment of the City's residents and workforce.

- ***Partner with the Woburn Redevelopment Authority to revitalize target areas -*** Continue to work with and encourage the activities of the Woburn Redevelopment Authority in revitalizing downtown and other areas of the City such as the Woburn Loop.

- ***Develop information technology infrastructure -*** Develop a high bandwidth infrastructure that can expand and meet the growing needs of businesses and individuals throughout Woburn.

Other Related Transportation Plans

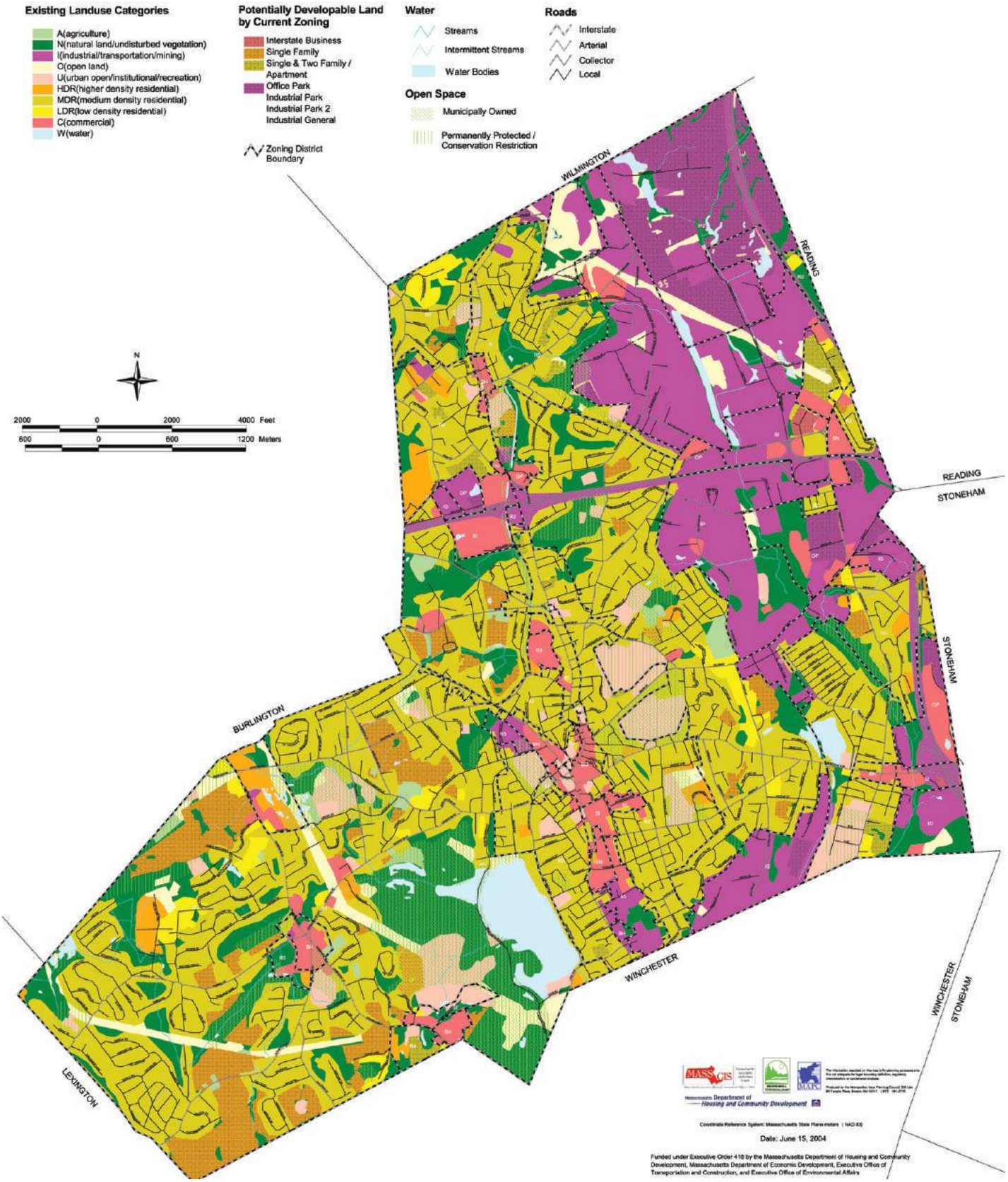
The consulting firm of Vanasse Hangen Brustlin, Inc. (VHB) has been doing transportation planning work for the City. VHB conducted a transportation forum on September 17, 2003. Figure 60 presents the results of the forum.

Based on input from the City as well as participants at the forum, VHB developed 17 immediate actions (2005-2010), 15 short-term actions (2010-2015) and 16 long-term actions (2015 –2020). These actions were presented in Figure 58 above.

Figure 60: City of Woburn Transportation Issues

Issue	Priority[1]
Traffic Congestion and Volume Citywide problem locations	1 (22 votes)
Public Transportation Lack of public transit/commuter rail connections Inadequate transit available to Woburn residents Bus should service Anderson RTC Need for more comprehensive private shuttle for elderly residents	2 (17 votes)
Truck Traffic Need for restriction through residential areas	3 (11 votes)
Access Management Lack of local input on necessary development mitigation Inadequate roadway width Need for smart-growth (mixed use development)	4 (9 votes)
Parking Illegal Parking Lack of parking	5 (8 votes)
Traffic Safety Dangerous Intersections Lack of protected left-turn movements at traffic signals Sight distance restrictions Lack of directional signage	6 (7 votes)
Neighborhood Issues Need for traffic circulation improvements Need for traffic calming measures (roundabouts)	7 (6 votes)
Handicap Accommodations Lack of ADA compliance Need for better access	8 (5 votes)
Speed Increased enforcement needed	9 (4 votes) Tie
Pedestrian Safety Dangerous crosswalks/lack of protected crosswalks Inadequate street lighting	9 (4 votes) Tie
Bicycle Accommodations Need for accommodations on all key roadways Need for completion of Tri-Community Bikeway	9 (4 votes) Tie
Pavement Conditions/Pavement Management	12 (3 votes)

1 each resident in attendance was allowed to vote for what they felt were the top four Transportation Issues



Woburn Vision 2020

Figure 1
Existing Conditions and
Future Land Use

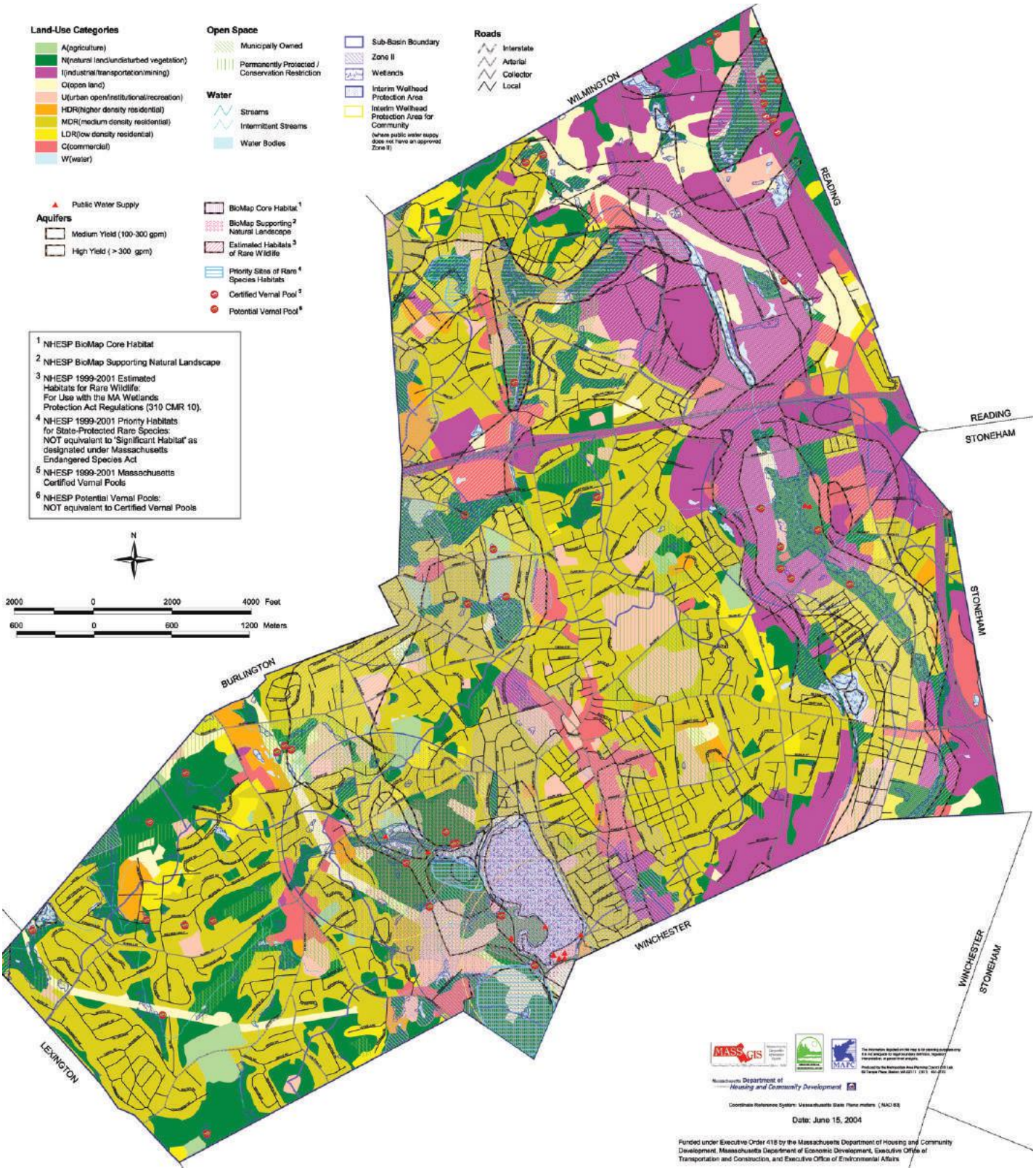
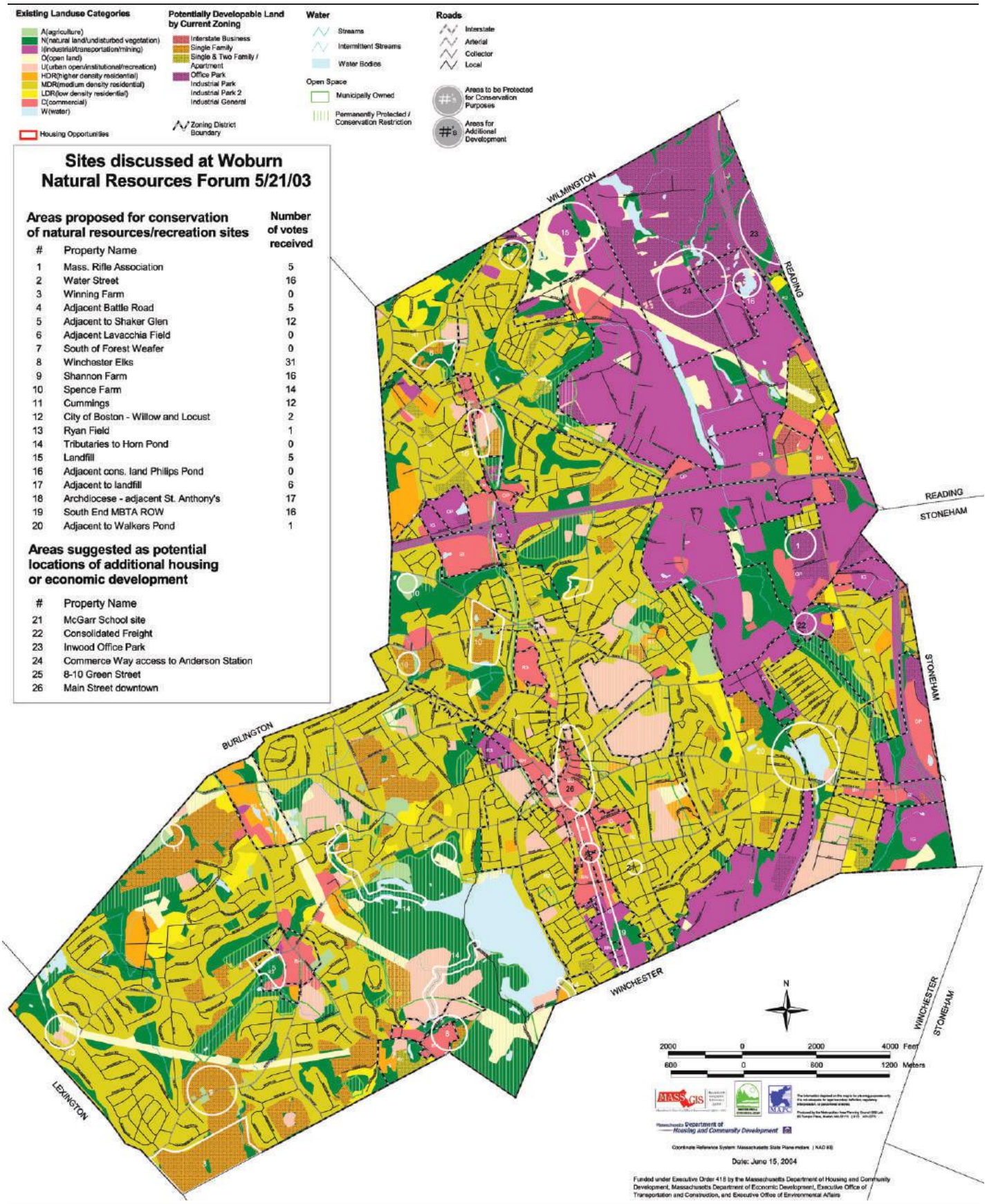


Figure 2
Existing Natural Resources



Sites discussed at Woburn Natural Resources Forum 5/21/03

Areas proposed for conservation of natural resources/recreation sites

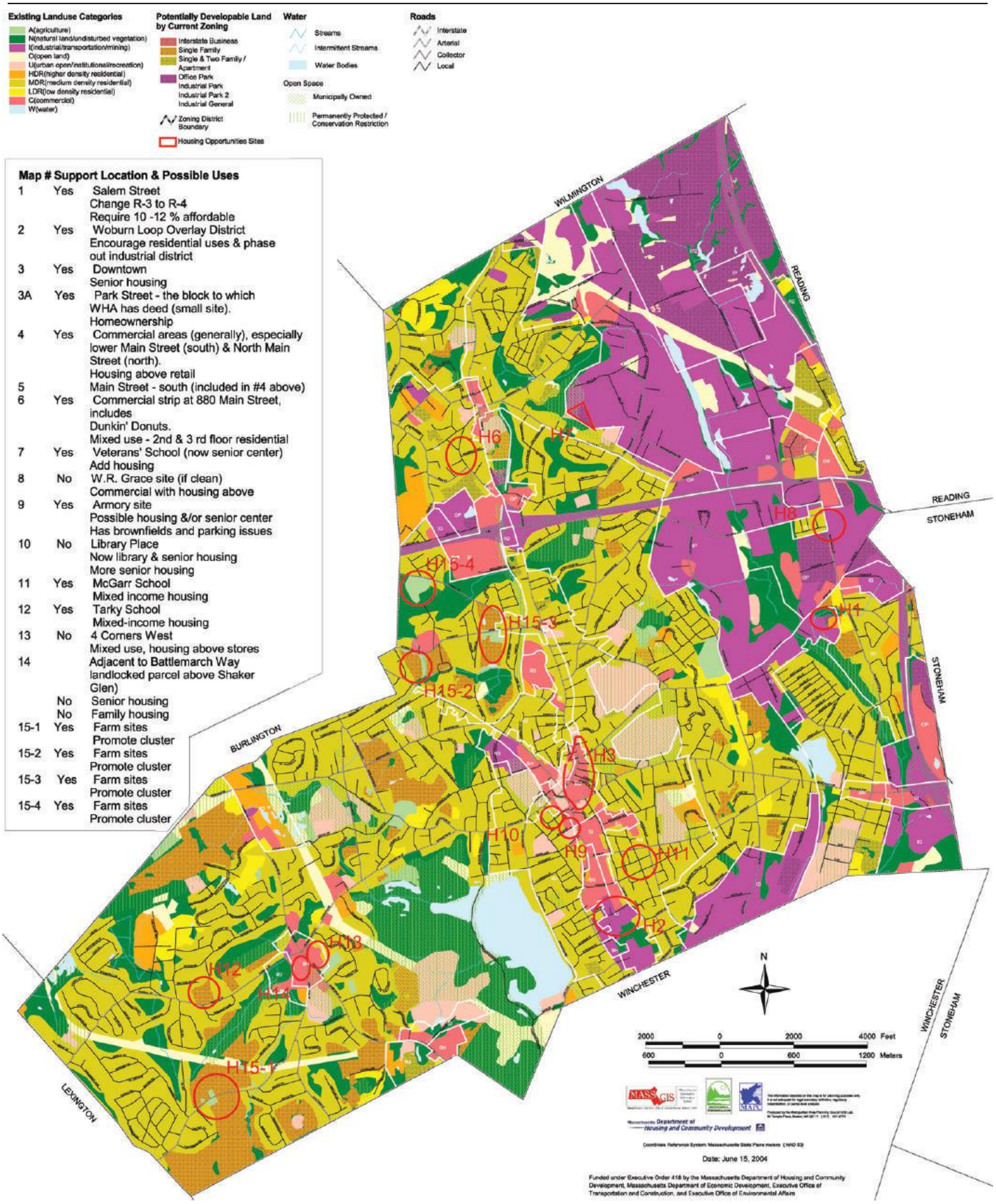
#	Property Name	Number of votes received
1	Mass. Rifle Association	5
2	Water Street	16
3	Winning Farm	0
4	Adjacent Battle Road	5
5	Adjacent to Shaker Glen	12
6	Adjacent Lavacchia Field	0
7	South of Forest Weafer	0
8	Winchester Elks	31
9	Shannon Farm	16
10	Spence Farm	14
11	Cummings	12
12	City of Boston - Willow and Locust	2
13	Ryan Field	1
14	Tributaries to Horn Pond	0
15	Landfill	5
16	Adjacent cons. land Philips Pond	0
17	Adjacent to landfill	6
18	Archdiocese - adjacent St. Anthony's	17
19	South End MBTA ROW	16
20	Adjacent to Walkers Pond	1

Areas suggested as potential locations of additional housing or economic development

#	Property Name
21	McGarr School site
22	Consolidated Freight
23	Inwood Office Park
24	Commerce Way access to Anderson Station
25	8-10 Green Street
26	Main Street downtown

Woburn Vision 2020

Figure 3
Natural Resources and
Open Space Priority Sites



Woburn Vision 2020

Figure 4
Housing Opportunities

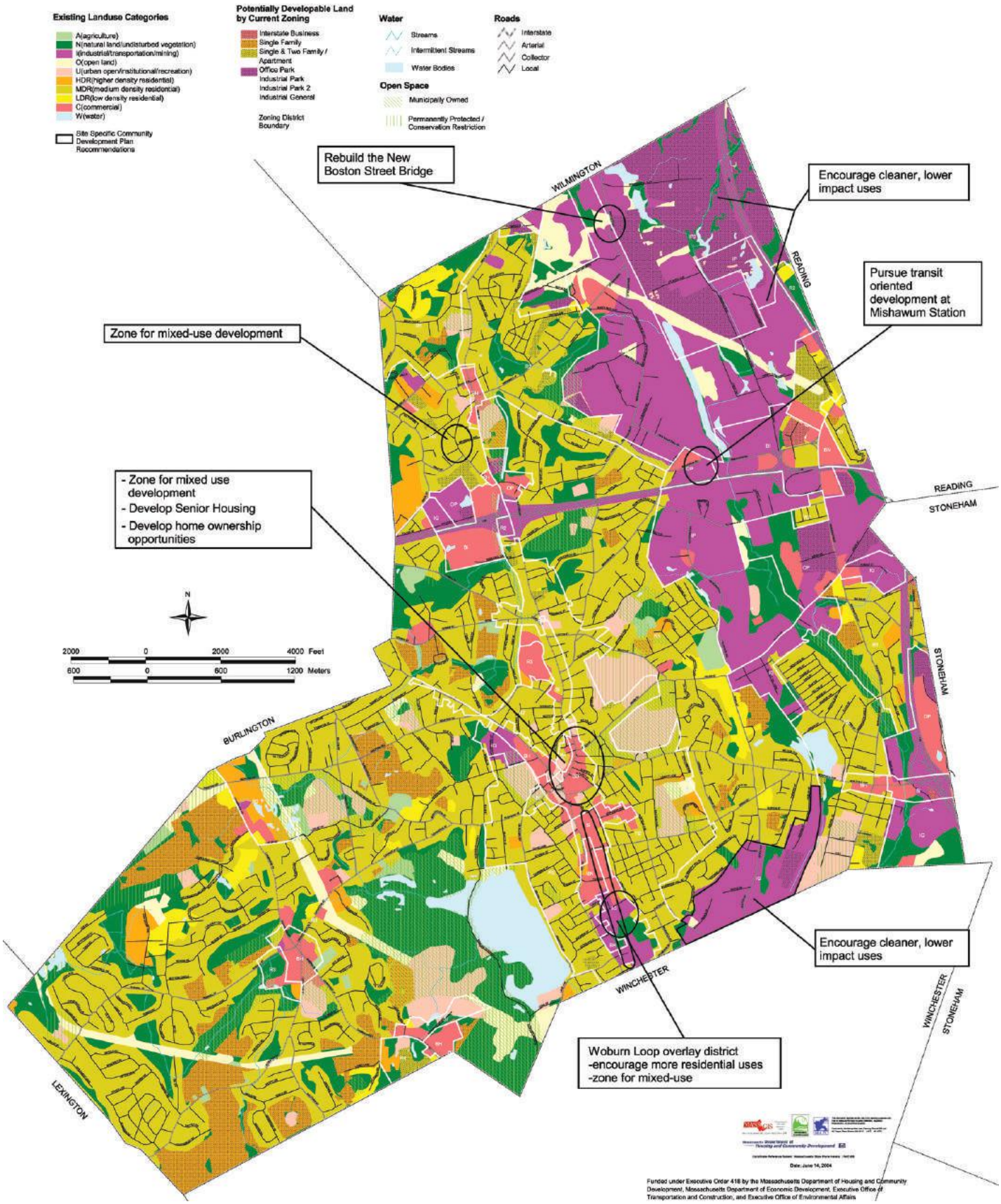


Figure 5
Economic Development Opportunities

Woburn Vision 2020

Figure 6
Final Community Development Plan

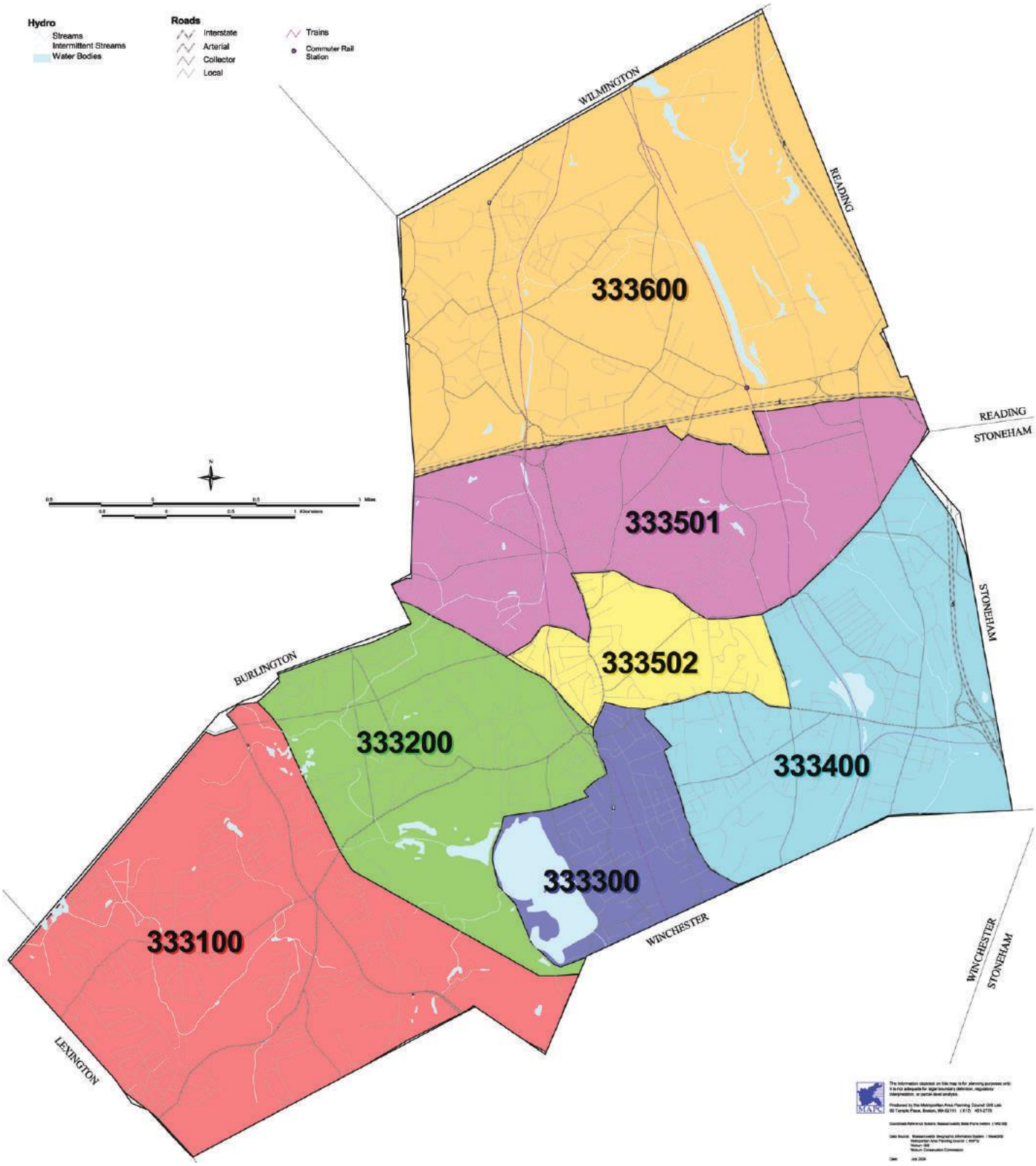
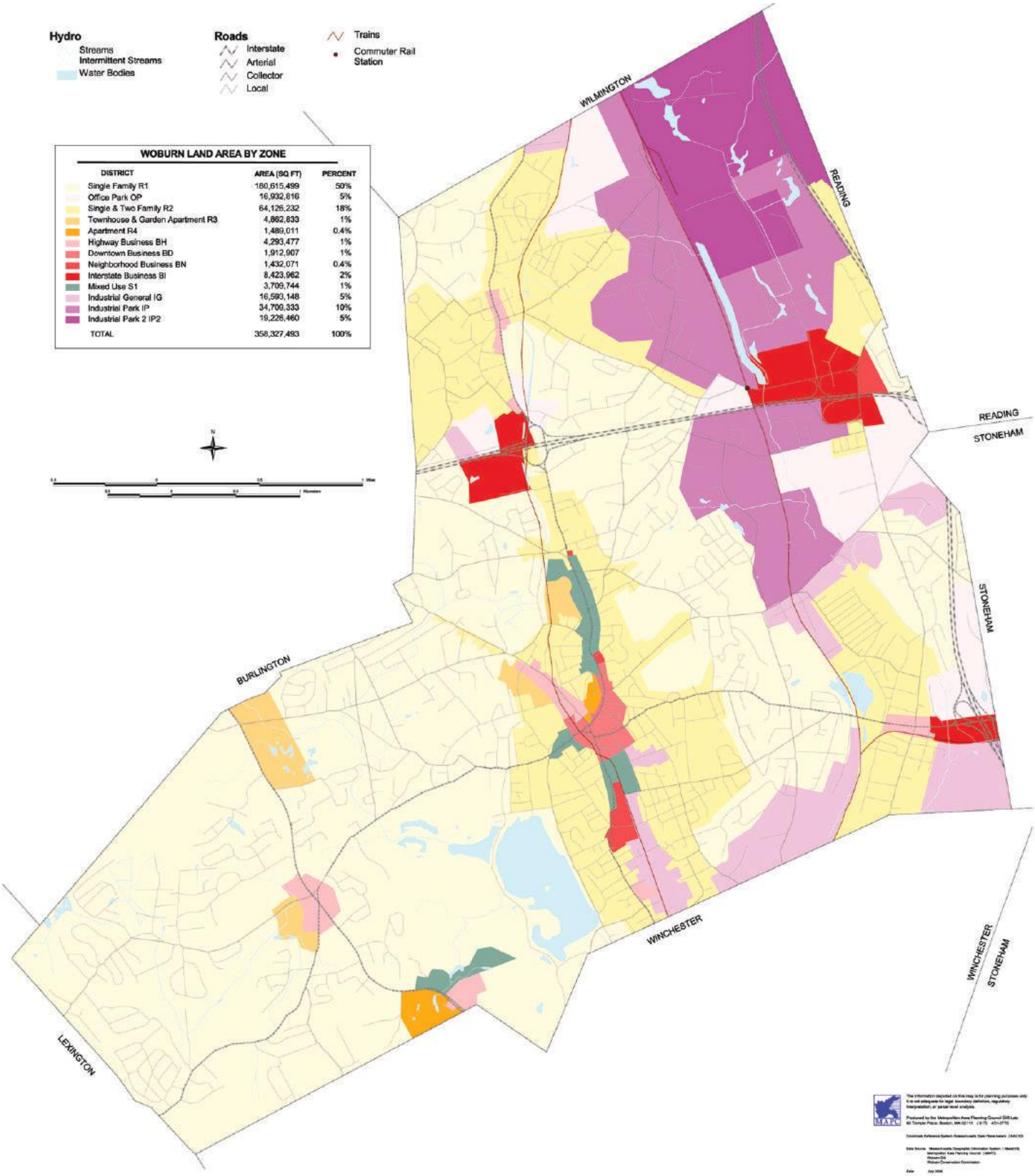


Figure 7
Census Tracts



WOBURN LAND AREA BY ZONE

DISTRICT	AREA (SQ FT)	PERCENT
Single Family R1	180,615,499	50%
Office Park OP	16,932,816	5%
Single & Two Family R2	64,126,232	18%
Townhouse & Garden Apartment R3	4,862,833	1%
Apartment R4	1,489,011	0.4%
Highway Business BH	4,293,477	1%
Downtown Business BD	1,912,907	1%
Neighborhood Business BN	1,432,071	0.4%
Interstate Business BI	8,423,962	2%
Mixed Use S1	3,709,744	1%
Industrial General IG	16,593,148	5%
Industrial Park IP	34,709,333	10%
Industrial Park 2 IP2	19,226,460	5%
TOTAL	358,327,493	100%

Figure 8
Zoning

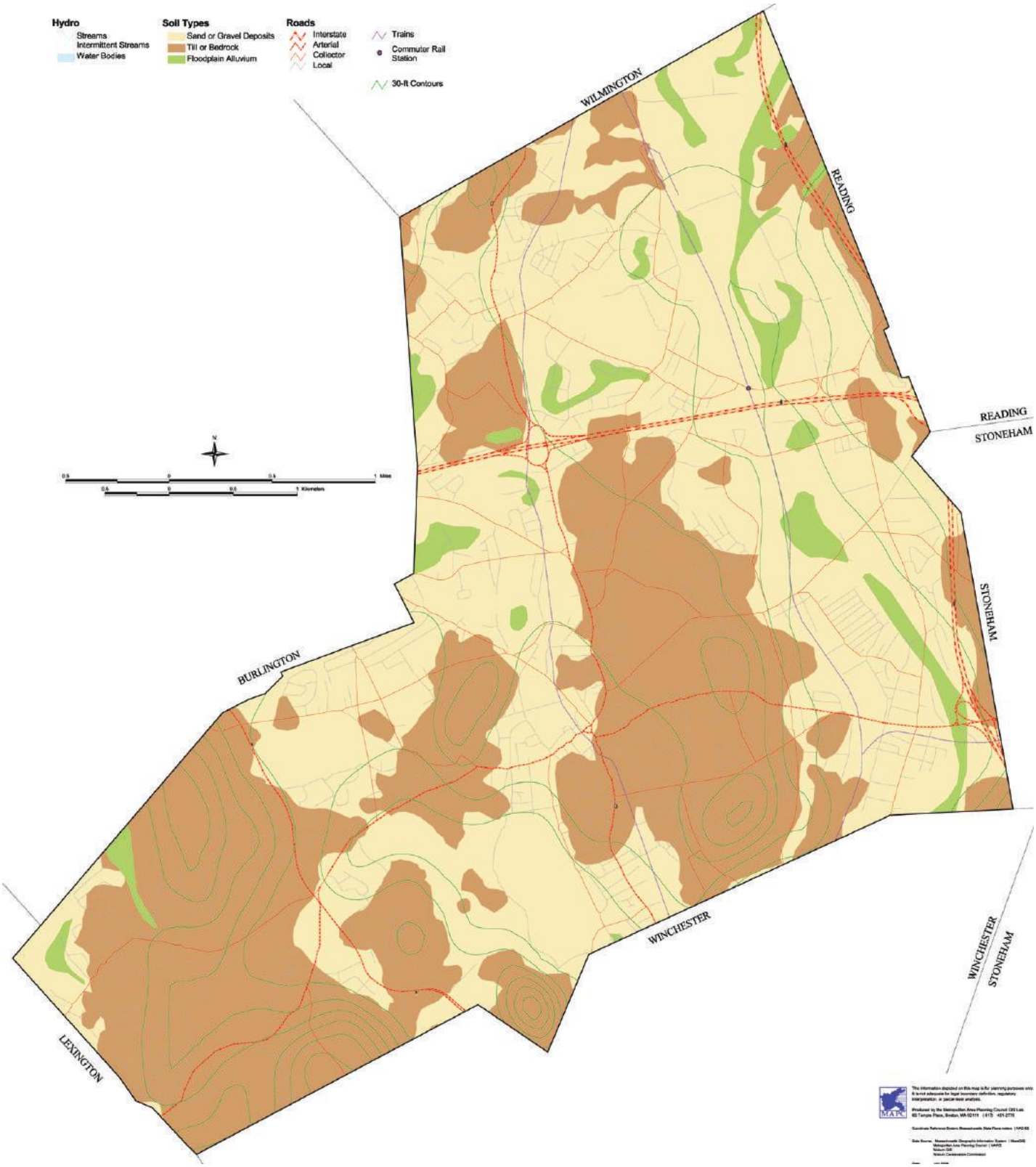


Figure 9
Soils and Geologic Features

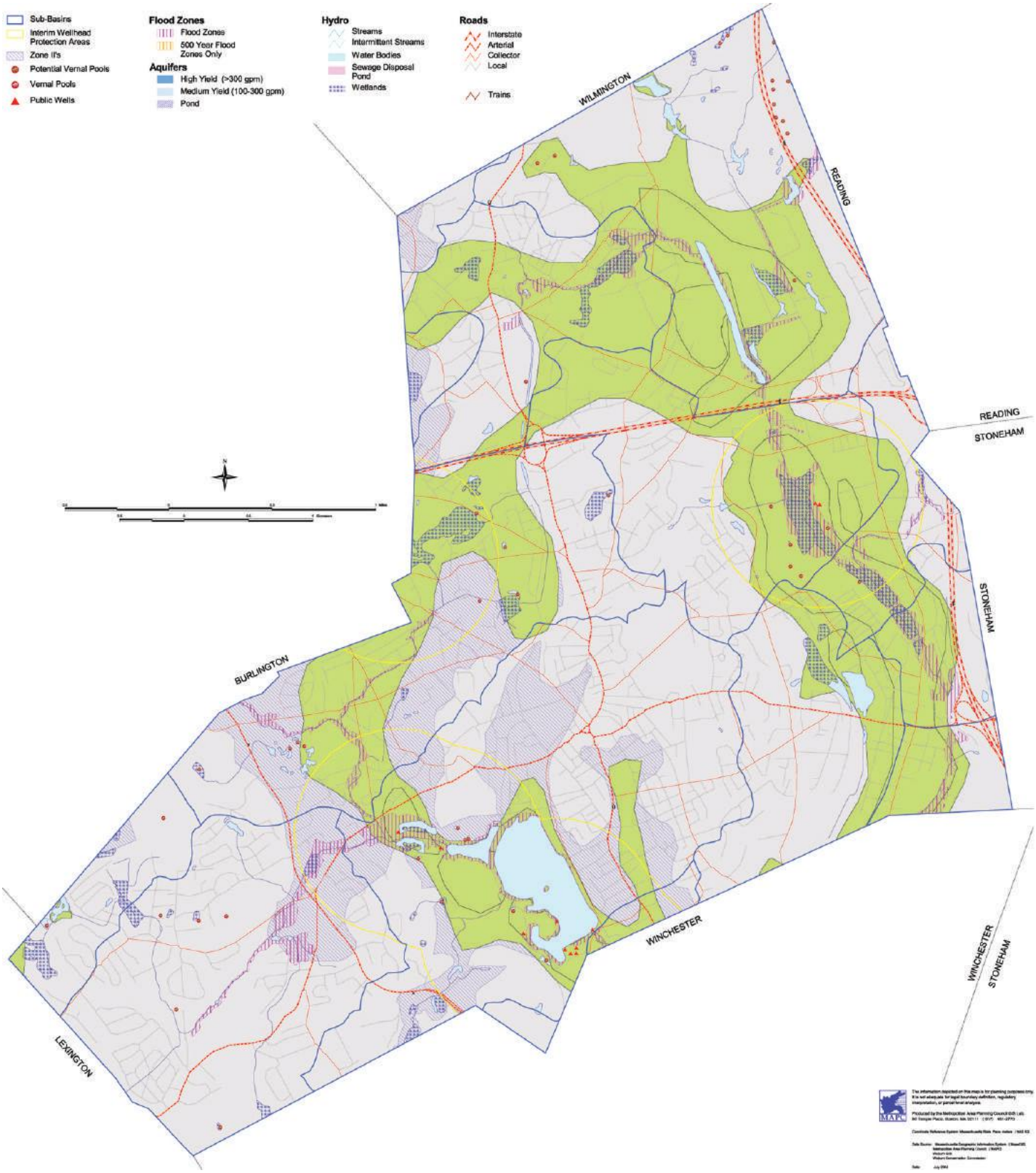


Figure 10
Water Resources

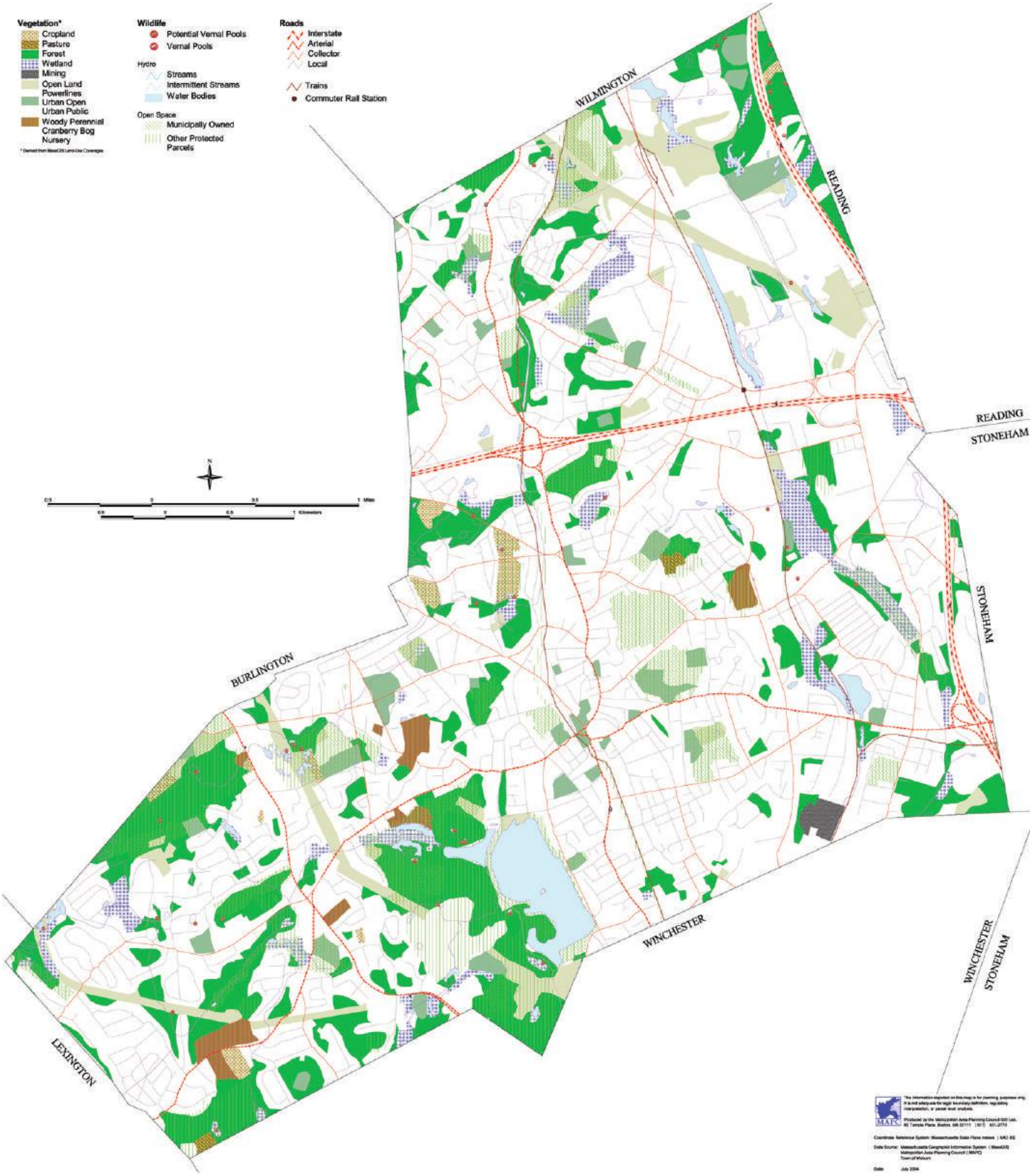


Figure 11
Vegetation, Fisheries and Wildlife

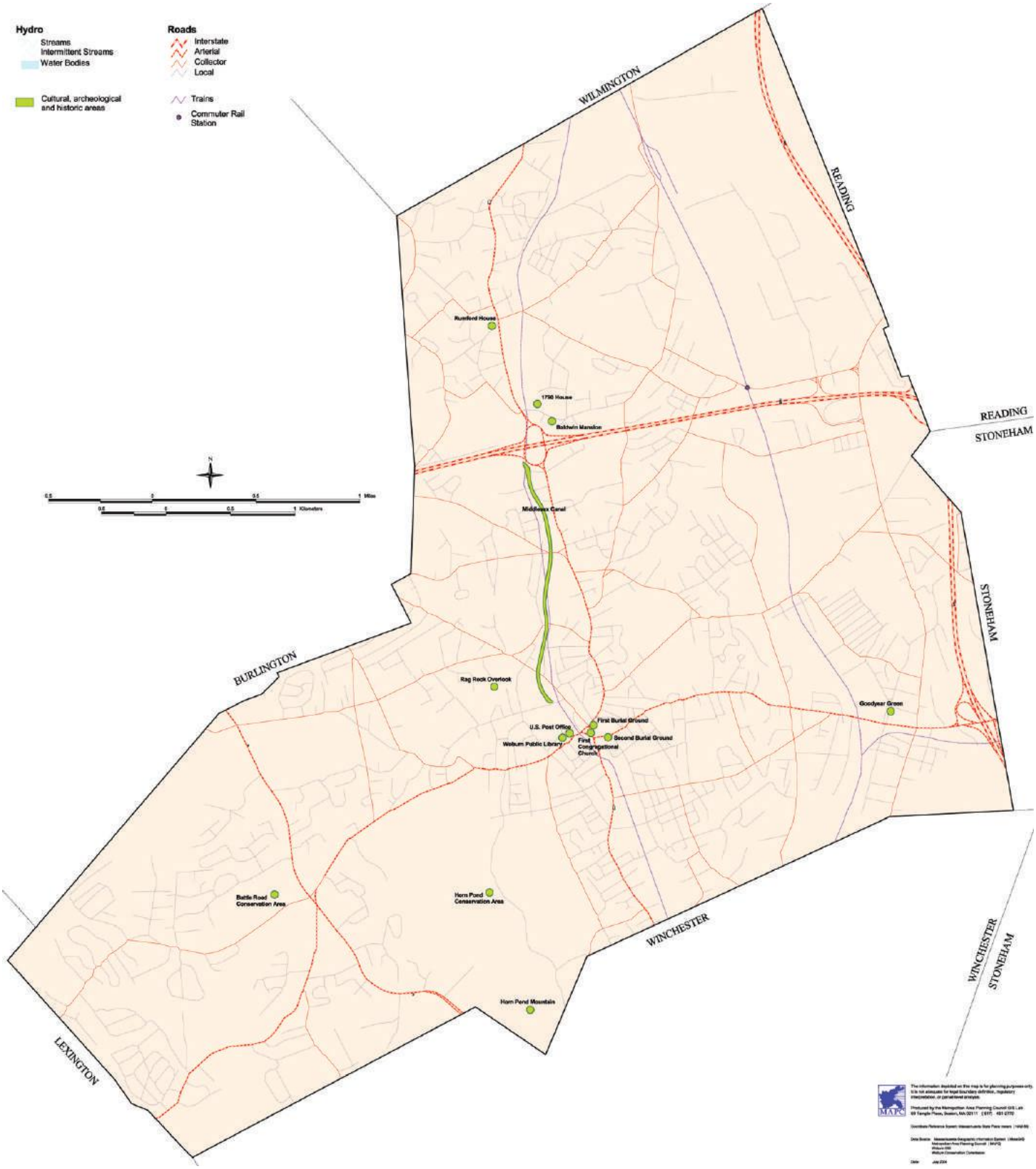


Figure 12
Scenic Resources and Unique Features

Woburn Vision 2020

Figure 13
Lands of Conservation and Recreation Interest

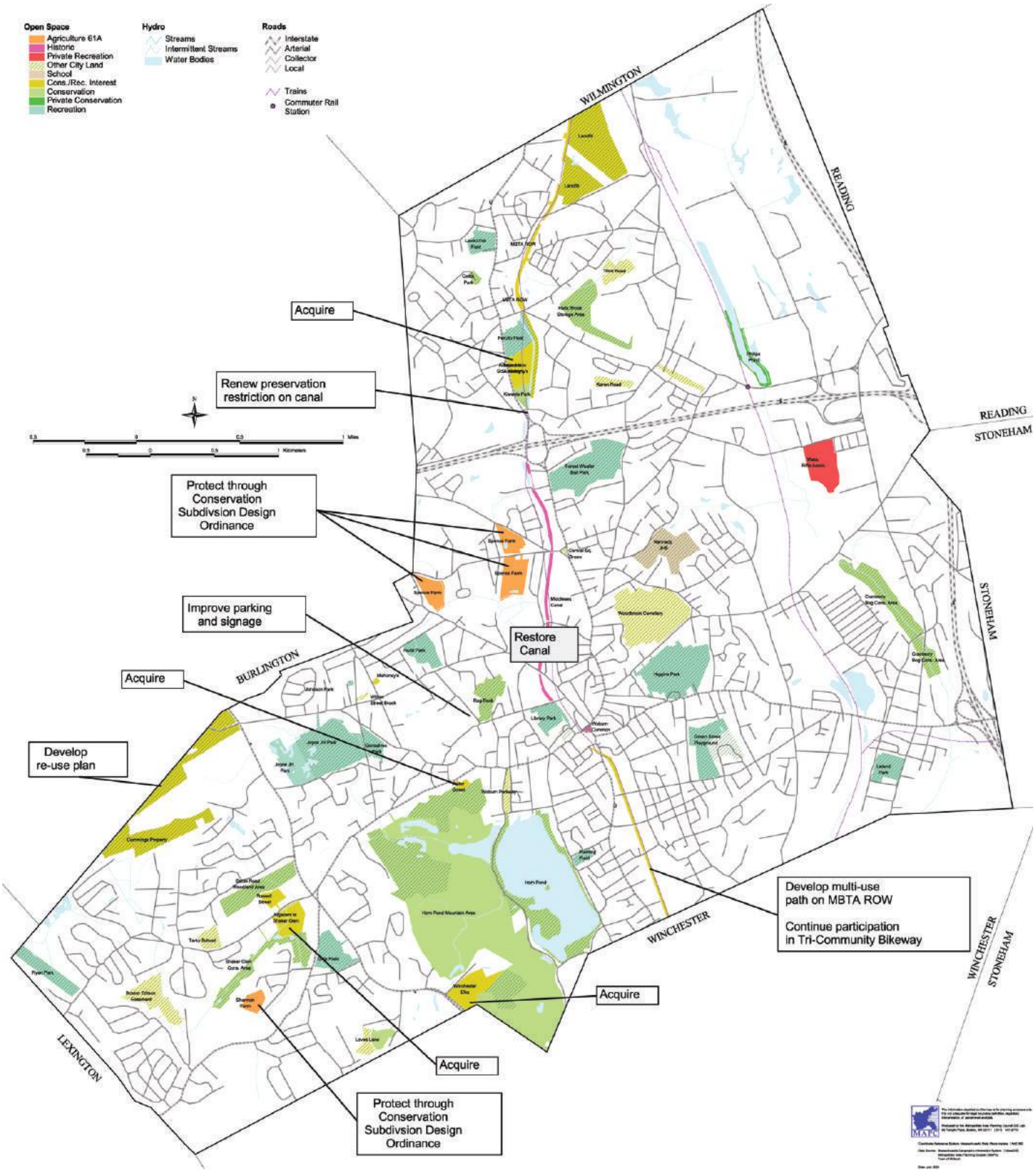


Figure 14
The Five Year Action Plan