

TOWN OF HUBBARDSTON



Growth Management Master Plan

FINAL REPORT

November, 1988

IEP
INC.

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INTRODUCTION

The Hubbardston Growth Management Master Plan was undertaken by the Hubbardston Planning Board and the Growth Management Plan Steering Committee. The enclosed report was prepared by IEP, Inc. of Northborough, Massachusetts under contract with the Planning Board and is the result of the meetings of both committees over the course of approximately 14 months. The project was broken into three phases: Phase One involved an analysis of the constraints and assets of Hubbardston, as well as an analysis of factors influencing and controlling growth in the town; Phase Two involved establishing a list of growth management issues, goals, and strategies; Phase Three involved the implementation of those strategies requiring regulatory amendment. Of particular note is the fact that the project has resulted in drafting of complete revisions to the Subdivision Rules and Regulations and the drafting of a proposed comprehensive Zoning By-Law, something the town does not currently have.

PHASE ONE

Phase 1

HUBBARDSTON'S ASSETS AND CONSTRAINTS

ISSUES AND CONCERNS AS LOCALLY PERCEIVED

RESIDENT SURVEY

Introduction

The term "Growth" as applied to development conditions in a particular municipality does not necessarily indicate a favorable or unfavorable situation. Whether growth, or the lack of growth, is a positive or negative occurrence for any particular community is largely determined by how well the town has anticipated and planned for growth, how uniformly the growth occurs, and the town's perceptions of how well the community can accommodate growth without compromising the values that the community's citizenry regard as important to the town's quality of life. In order to gain an understanding of those resident values and perceptions of what the community's goals and objectives are, an opinion survey has been utilized.

Methodology

An opinion survey questionnaire was developed by the consultant, IEP, Inc. in conjunction with the Growth Management Master Plan Steering Committee. The survey posed a wide range of questions dealing with growth, planning and town government in Hubbardston. The survey questionnaire was mailed, with return postage to all post office boxholders and rural route addresses in Hubbardston. Residents were given two weeks to return the questionnaires to the Town Hall. Approximately 750 to 800 questionnaires were mailed and another 50 were distributed at the Hubbardston Town Hall and at a public workshop held to further gain resident input on growth issues. A total of 270 questionnaires were returned giving a return rate of 32% to 34%. Questionnaire responses were tabulated by John Baird, a member of the Growth Management Master Plan Steering Committee.

Summary of Questionnaire Responses

Background Questions

A number of background questions (1,2,3,4,5) were asked of residents to establish that a satisfactory cross section of the community had been sampled. The sample of the Hubbardston population responding to the questionnaire had the following characteristics:

- Virtually all respondents were residents of Hubbardston.
- Almost all respondents were property owners in Hubbardston.
- A good cross-section of residency was exhibited with 48% of the respondents having lived in town less than 10 years and 52% having lived in Hubbardston 10 years or more. [Comment: If the sampling is a true representation of Hubbardston's population, almost 2/3rds of all residents have either moved to town since 1983 or lived in Hubbardston prior to 1967, a large number of "old-timers" and "newcomers".]
- An almost even split of respondents with school-age children and those without was recorded. Only one respondent had more than three school-age children.

Growth Management Issues

A number of questions (6,7,10,11,) were presented to determine what perceptions people had of Hubbardston, why they lived here and what town growth meant to the town's residents and how they want the town to react to the kind of growth that is occurring.

- We asked residents to identify the three most important reasons why they lived in Hubbardston to determine what intrinsic features of Hubbardston are of fundamental importance when charting future growth. From the responses received it is absolutely clear that Hubbardston residents consider the town's rural quality and its natural features as extremely important attributes of such fundamental importance as to be considered as the primary reason for living in Hubbardston. For planning purposes the responses to this question were so strong (84% of the questionnaires returned identified Rural Character and 71% identified the town's natural features among the three most important reasons for living in Hubbardston), that the retainment of these features must be considered as primary goals of the growth management master plan.
- Residents were asked to classify Hubbardston as either Urban, Suburban or Rural. This is an important question since this identification is a way to determine how residents view their town and in what context they are responding to town growth. In many communities, this characterization is not easily done, especially where the town's growth is rapidly transforming the community character from rural to suburban or suburban to urban. No such problem appears to exist in Hubbardston, as 93% of the respondents still consider Hubbardston to be "Rural".
- Question #10 asked residents to characterize the current level of Residential, Commercial and Industrial growth as either "too rapid", "about right", or "too slow". Over 2/3rds of the survey respondents felt that the residential growth rate is "too rapid". This opinion is not unexpected. The town and region have experienced a tremendous increase in residential development over the past three to four years, an increase which has been clearly observed and felt by most residents. On the other hand, about 60% of the respondents stated that the

Commercial and Industrial growth rates have been "about right". What this means is not clear, as the town has seen very little commercial and industrial activity in recent years. A literal analysis of this response would suggest that residents want Industrial and Commercial growth to continue at its current slow (near 0%) pace. Nevertheless, the responses do indicate that the majority of Hubbardston residents do not want the town to either encourage or discourage growth of these activities. A substantial minority (about 25%) are of the opinion that industrial and commercial development has been too slow.

- Finally, residents were asked if they felt the town needs to adopt "strict growth control measures". While this question was asked without identifying what those measures are, and some of the support can be expected to diminish when concept is transformed into action, this question answers the question: Do you think growth is out of control? 85% of those responding said yes, there is a need for strict growth control measures.

Land Use

Questions 8, 17 and 18 dealt with the types of land uses that Hubbardston residents desire, are willing to tolerate and do not want.

- Question 8 asked Hubbardston residents to state whether for each of 23 land use types listed they would like to see that use encouraged [they desired the use type], allowed [are willing to tolerate], or not allowed [they don't want it]. Of the 23 land use types listed, only Agriculture and Single-Family Residential uses were desired by more than half of the respondents, and are clearly uses that should continue to be allowed. On the other hand, Hotels/Motels/Inns, New and Used Car Sales, Mobile Homes, Bars, Heavy Industry, Multi-Family Development, Shopping Malls, and Junkyards were not wanted by more than half of the respondents. These are uses that, without some other overriding municipal benefit or objectives, should be either not allowed or seriously restricted by zoning. The table below provides an analysis of the responses to Question 8 for Zoning preparation purposes:

<i>Allow</i>	<i>No Clear Direction</i>	<i>Do Not Allow</i>
Agriculture	Small Shopping Centers	Automobile Salvage
Single-Family Res.	Manufacturing	Shopping Malls
Restaurants	Warehousing	Multi-Family Develop.
Professional Offices	Duplexes	Heavy Industry
Guest Houses/B & B	Gravel Removal	Bars
Retail Shops	Hotels/Motels/Inns	Mobile Homes
Light Industry		New & Used Car Sales
Affordable Housing		
Services (Dry Clean, Laundry)		
Package Stores		

- Asked if they thought multi-family housing is appropriate for Hubbardston, 85% responded that it is not.
- On the other hand, when residents were asked if they thought accessory or in-law apartments are appropriate, 76% responded that they are.

Open Space:

Four questions (12, 13, 14, 24) were presented regarding what purposes open space should be acquired, where further acquisition of Open Space should occur, and mechanisms for making such acquisitions.

- Hubbardston residents were asked to respond negatively or positively to six purposes for which open space may be acquired. All six received overwhelming support in the following order (from highest to least support): Preservation of groundwater resources, Preservation of historic sites, Preservation of the town's rural character, Preservation of unique scenic areas, Preservation of agricultural areas, and for passive recreation.
- While the vast majority of the respondents still responded positively, support for open space acquisition did decrease when acquisition financing was via the use of property tax dollars.
- A question primarily related to the use of clustering (the exchange reduced lot size and frontage requirements for open space) was soundly rejected by residents. This sound planning concept should not however be immediately dismissed as it may be that the question posed the concept in a far too simplistic manner for a sound analysis. Further probing of residents views on this manner at future public workshops and by committee members would be appropriate. In addition it would be useful to attempt to identify what specific objections residents have towards a cluster concept, as such objection might in fact be based upon misconceptions or on concerns that could be addressed in a cluster by-law drafted specifically for Hubbardston.
- Residents were asked to identify specific areas in town that should be protected or acquired. However, while there were many responses to the question, there were very few repeat locations and no single location received more than three responses. Nevertheless, the town may wish to use the list generated by the questionnaire as a draft inventory of lands worthy of protection.

Housing:

Two questions were posed concerning affordable and subsidized housing. The first attempted to clarify the issue of affordability in town by asking home owners if they could afford to purchase their home at today's value. The second asked whether the town should subsidize or encourage housing for various groups. From the responses given it is clear that residents are aware of the steep rise in housing costs that has occurred during the past four years and presumably they understand what the implications of this rise are for their children and that the rise in prices will eventually result in a far different economic makeup of the community. Nevertheless, the respondents were only in favor of subsidizing or encouraging housing for elderly and handicapped residents and were opposed to such support for low and moderate income families and first-time home buyers.

Municipal Services:

Residents were asked to rate the quality of 17 different town departments or services or departments provided by the town. For each service, residents were asked to rate the service from Very Poor to Excellent. Responses to this question were, on average, very positive in that residents were much more satisfied with the overall quality of the services they receive in Hubbardston, than the consultant has seen in other communities. On the other hand, fewer residents than we typically see rated any service as excellent. This incongruity is probably a recognition that while many of the services are not of a quality level that might be found in a much larger community, the services usually do meet or exceed residents' expectations of the type of services that are, or can be, provided in a small community.

On an individual basis, no service received a majority of "Poor" or "Very Poor" ratings, although the landfill escaped that distinction by only one response. Further, more than 75% of the responses to Youth Activities, Board of Health, and Planning Board/Land Use Management rated those services as Fair or worse. At the other of the spectrum, six services (fire protection, ambulance services, schools, elderly services, police protection and libraries) received a majority of "Excellent" or "Good" responses.

Hubbardston Municipal Services Quality of Service Ratings		
	Point Avg*	Rating**
FIRE PROTECTION	3.86	Excellent
SCHOOLS	3.79	Excellent
AMBULANCE SERVICES	3.76	Excellent
POLICE PROTECTION	3.68	Good
ELDERLY SERVICES	3.66	Good
LIBRARIES	3.61	Good
TOWN ROADS AND HIGHWAYS	3.30	Good
AVAILABILITY OF INFORMATION ABOUT TOWN SERVICES	3.17	Fair
BOARD OF ASSESSORS/PROPERTY TAX ASSESSMENT	3.16	Fair
CONSERVATION COMMISSION	3.15	Fair
SELECTMEN/TOWN MANAGEMENT	3.02	Fair
RECREATIONAL FACILITIES	2.96	Fair
BUILDING DEPARTMENT	2.94	Fair
PLANNING BOARD/LAND USE MANAGEMENT	2.82	Fair
BOARD OF HEALTH	2.77	Fair
YOUTH ACTIVITIES	2.70	Poor
LANDFILL	2.56	Poor

* Points were assigned for each response as follows: Excellent - 5 pts; Good - 4 pts; Fair - 3 pts; Poor - 2 pts; Very Poor - 1 pt

** Rating is based on following Point Average: 1.75 - 2.25 = Very Poor; 2.25 - 2.75 = Poor; 2.75 - 3.25 = Fair; 3.25 - 3.75 = Good; 3.75 - 4.25 = Excellent

Additional Comments

Many residents took advantage of the opportunity to provide narrative comment on additional issues needing to be addressed in Hubbardston's Zoning By-laws, what they like most about Hubbardston, what they like least, specific parcels/areas worthy of protection, and any other issues that they feel need to be addressed in the Growth Management Master Plan. The overwhelming majority of such comments were well thought out, valid concerns and comments. Many of the same kind of comments occurred over and over, indicating commonly held concerns that should be addressed in this plan.

ZONING BY-LAWS

The common theme of the many comments offered in response to the question regarding issues that need to be addressed in Hubbardston's By-Laws is that the by-law has not been effective at controlling growth and retaining the town's rural character. Many comments indicated that the by-laws have allowed too many conflicting land uses and that there is a need to provide zoning that while allowing commercial and industrial uses, separates such business and industrial type uses from residential uses.

FEATURES OF HUBBARDSTON LIKED MOST

Responses to what people liked most about Hubbardston were many and consistent. Almost all of the responses can be grouped under the category of "rural" values: peace and quiet; community spirit; open space; friendly people; wildlife; rural character. The rural themes expressed in response to this question so thoroughly characterize the entire survey that the retainment of this value, as stated previously, should be a dominant goal of the Growth Management Master Plan.

FEATURES OF HUBBARDSTON LIKED LEAST

The negative aspects expressed about Hubbardston are much less susceptible to being characterized as being of a uniform theme. However, many of the features identified address symptoms of a town perceived by many residents as growing and developing too rapidly. Repeated responses included complaints about the number of newcomers, concerns that developers have gained an inordinate amount of influence in town decisions and general comments that the town is growing too fast. Finally, a fair number of responses were critical of a wide variety of services, that were either performed poorly or not at all. Some of the services are town services, other not.

PUBLIC WORKSHOP

On October 29, 1987, the Growth Management Master Plan Steering Committee conducted a public workshop at the Hubbardston Elementary School. Announcement of the workshop was made through local newspapers and via the cover letter that accompanied the resident survey. Approximately 50-60 town residents came out to find out about the planning project and to discuss their concerns about the growth that is occurring in town. As part of this workshop, a list of major concerns was developed.

SERIOUS ISSUES FACING HUBBARDSTON

1. Solid Waste Disposal
 - a. Continued Use of Sanitary Landfill and its effects
2. Groundwater
 - a. Contamination
 - b. Availability in the face of continued development
3. Quality of Residential Growth
 - a. Size, Appearance, etc.
4. Should Hubbardston allow Cluster Developments?
5. Should Hubbardston allow Multi-Family Developments?
6. Will continued development cause traffic problems?
7. Future plans for MDC land
8. Affordable Single Family Housing
9. Does Hubbardston want Commercial or Industrial Development?
 - a. What are the tax consequences?
 - b. Where would such development be best suited?
10. Capital Expenditure Planning
11. Protection of Agricultural Lands

DEVELOPABLE-LOT STUDY

Hubbardston has "programmed" a certain level of residential development through its land use regulations. Massachusetts General Laws, Chapter 40A (Zoning Act) and Chapter 41, Sections 81K- 81GG (Subdivision Control Law), the two most important land use planning legislative initiatives in Massachusetts, very clearly establish that once a town programs itself for subdivision and development through its zoning bylaws, the town must adhere to its program by granting subdivision approval and, ultimately, building permits for residential and commercial construction.

Unfortunately, towns often do not understand the amount of development they have programmed for themselves and, from a planning perspective, have little sense of the impact this program will have.

The Town of Hubbardston has a vast amount of open, undeveloped land within its borders. Although almost 8,500 acres of this land area are "protected" through Town or State ownership, even a greater amount of property is unprotected and potentially subject to development.

By using the Town Assessor's maps, property owners' printout, State land use codes for each parcel, and Hubbardston's current zoning bylaws regarding dimensional requirements; potentially-developable land can be determined. The number of lots which can be built upon in Hubbardston is known as the residential "build-out". The assumption for town planning purposes is that the town will at some point in the future be "built-out" in accordance with the town's blueprint for growth - The Zoning By-Law. Therefore, it is very important for the town to understand what that Build-Out will be.

This study determines the total number of existing dwelling units in town, the total number of vacant but buildable lots, and the total number of new buildable lots that could be created if every eligible parcel were divided through the "Approval Not Required" process (MGL, Chapter 41, Section 81-P) or through the Definitive Subdivision process (MGL, Chapter 41, Section 81-L) as allowed by the Subdivision Control Law. The sum of these lots multiplied by the average person per household will estimate Hubbardston's maximum future population assuming current regulations remain unchanged.

The following is a quantitative analysis of the potential for land division and accompanying population growth within the Town of Hubbardston. The analysis is based upon current zoning regulations for Hubbardston and is predicated upon the following assumptions:

- 1) All divided parcels will be able to satisfy the dimensional requirements of Hubbardston's 1987 Zoning Bylaw, and will receive building permits.
- 2) All vacant lots in the Assessor's records, larger than 5,000 square feet with 50 feet or more of frontage, are "grandfathered", and will be developed.
- 3) Parcels eligible for Approval Not Required (ANR) endorsement (M.G.L. Chapter 41, Section 81P) will not subdivide by way of a Definitive Plan (M.G.L. Chapter 41, Section 81D) nor construct, or be required to construct, internal roads.
- 4) Roads comprise 15% of land within a definitive subdivision.
- 5) Fourteen percent of the total number of parcels is deducted to compensate for undevelopable wetlands.
- 6) Residential development will satisfy minimum lot requirements.
- 7) Large lots that currently have a single residence are considered "underdeveloped" and eligible for further subdivision only after setting aside the minimum lot size.

Large lots listed as "commercial" are eligible for further subdivision only after setting aside double the minimum lot size. Additional subdivision will meet the other assumptions described herein.

- 8) Household size for "buildout" population = three (3) persons per dwelling unit.

It is also important to note that this study does not include potential population increases from multi-family dwellings or conversions of pre-existing, non-conforming structures. The study thus represents only the potential new residential dwelling units and accompanying population given existing zoning and vacant acreage. It does not attempt to assess the potential population increases from multi-family development, variances, dwelling unit conversions, or changes in zoning regulations.

HUBBARDSTON ZONING (TOWNWIDE)

MINIMUM LOT SIZE: 80,000 square feet (1.84 acres)

MINIMUM FRONTAGE: 200 feet

MINIMUM SET BACK: 30 feet from any street, 30 feet from rear lot line, 30 feet from side lot lines.

MULTI-FAMILY UNITS: For each unit in excess of one, minimum lot size shall be increased by 20,000 square feet (0.46 acres) and minimum frontage increased by 50 feet. No more than four units allowed per dwelling

HUBBARDSTON DEVELOPABLE LOT STUDY					
Map #	#Vacant Lots	# ANR Lots	ANR Acreage	# Subdiv. Lots	Subdiv.Acres
1	7	221	427.79	857	1627.20
2	10	165	329.79	614	1195.03
3	13	113	228.11	734	1538.95
4	29	99	185.10	638	1243.64
5	7	80	157.82	508	1022.67
5C	4	21	47.85	151	290.93
6	50	77	156.38	572	1128.10
7	33	63	125.18	371	706.68
8	3	50	102.73	285	547.93
8A	3	17	31.28	158	312.18
8C	4	19	37.18	102	190.93
9	19	60	119.20	229	432.61
10	2	56	124.00	84	159.51
11	2	122	238.68	295	566.39
11A	0	19	34.96	121	237.90
11C	8	40	80.63	104	199.72
12	11	66	143.68	315	628.26
12W	53	0	0.00	0	0.00
TOTAL	258	1288	2570.36	6138	12031.62

Hubbardston Developable Lot Study

Developed Lots

Residential Lots	807	
Commercial Lots	30	
TOTAL DEVELOPED LOTS/ DWELLING UNITS		837

Vacant Lots

TOTAL VACANT LOTS/DWELLING UNITS		258
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Subdividable Land

Potentially Subdividable Acreage=	12031	
Potential New Lots=	6138	
Minus 20% (1228) for Environmental Constraints=	4910	
Minus 15% (735) for Roads=	4175	
POTENTIAL NEW LOTS/DWELLING UNITS		4175

"Approval Not Required" (ANR) Lots

Total Acreage	2570	
Total Lots	1200	
Minus 14% (168) for Wetlands=	1032	
TOTAL ANR LOTS/DWELLING UNITS		1032

Total Undeveloped Buildable Lots

Total Vacant Lots/Dwelling Units	258	
Total Subdivided Lots/Dwelling Units	4175	
Total ANR Lots/Dwelling Units	1032	
TOTAL		5465

TOTAL NEW LOTS/NEW DWELLING UNITS 5465

TOTAL LOTS ① IN HUBBARDSTON "BUILDOUT" 6302

TOTAL POTENTIAL POPULATION ① "BUILDOUT" 18,905¹

1. Single Family development Only. Hubbardston allows up to four dwelling units per lot with an increase in lot area of 20,000 square feet per unit and 50 feet additional frontage per unit. Therefore, actual maximum potential build-out (all new residential development being quadrplexes) would be approximately 79% higher or 33,840. Probable buildout population is most likely around 22,000 persons.

DISCUSSION

The town's current Zoning By-Laws and the existing inventory of vacant and under-utilized land determine Hubbardston's full buildout potential. This potential is significant, representing a more than eight fold increase in the town's residential units and population. For comparison purposes, this population will give Hubbardston a build-out residential density of approximately 497 person per square mile (present density is approximately 51 persons per square mile). Area communities which currently have a density comparable to that which Hubbardston will attain at build-out are listed below.

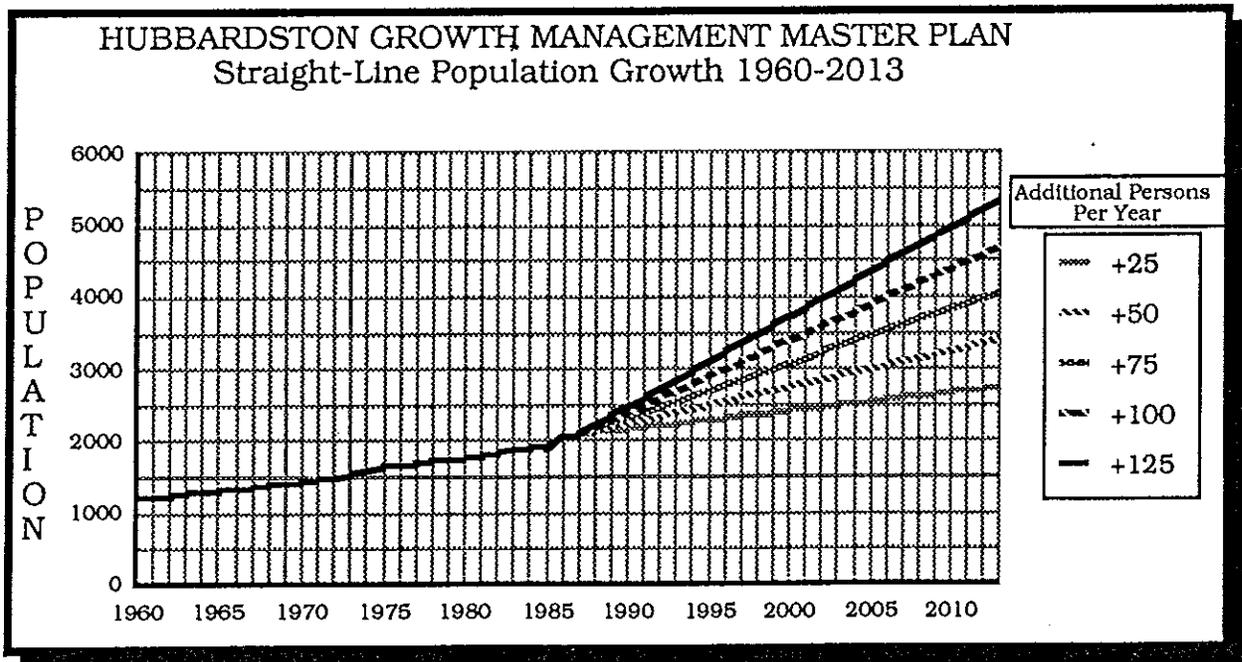
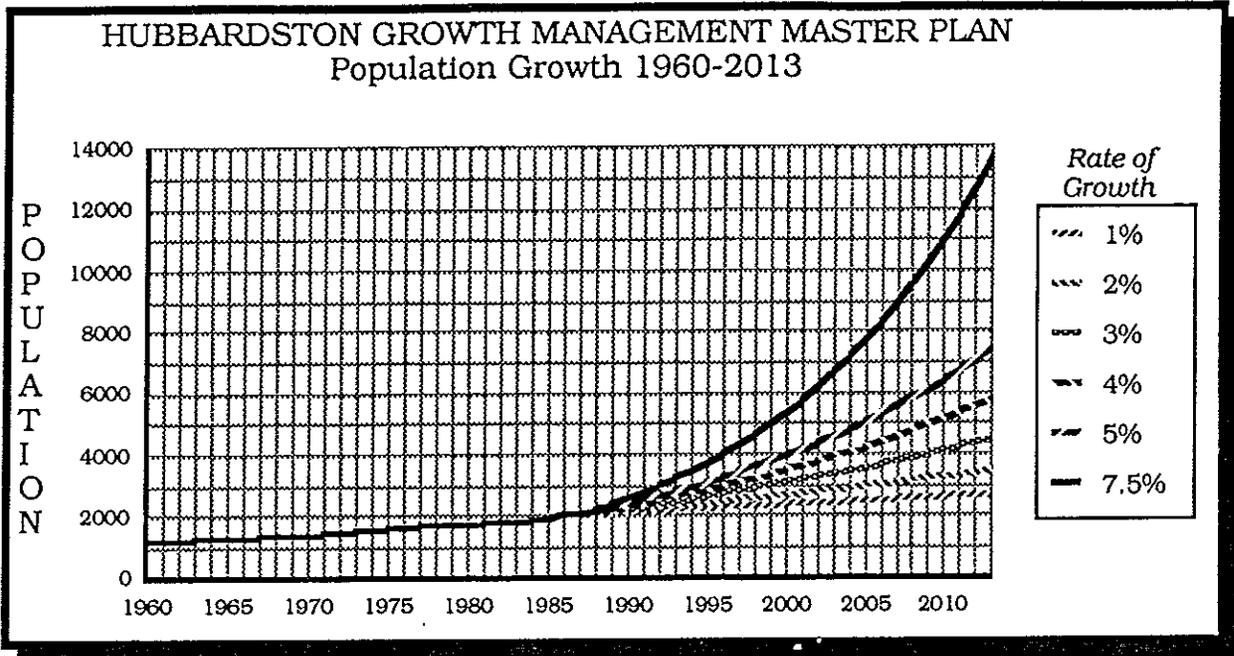
Communities with Densities around 500 persons/sq. mile

Town	Population	Area (mi ²)	Density
Blackstone	6,581	11.29	583
Gardner	17,900	22.84	784
Grafton	11,239	23.32	482
Holden	13,700	36.30	378
Northborough	11,594	18.72	619
Norton	12,931	29.40	440
Oxford	11,611	27.39	424
Southborough	6,530	15.42	423
West Boylston	6,204	13.78	452
Hubbardston (Build-Out)	22,000	41.21	534
Hubbardston (Current)	2,102	41.21	51

In order to plan for the orderly growth of the town and to retain the character of Hubbardston, the town can control, through available regulatory powers, both the growth rate and the ultimate saturation point.

It is important to qualify growth rate projections by noting that long-term population growth is probably not going to occur at a continual exponential rate. The number of people moving into Hubbardston is not necessarily a factor of current population. Immigration will be more of a factor of housing availability and will tend to grow on a relatively straight line basis. Also of note, a town's rate of growth will tend to slow down as the town approaches its saturation point, due to limited land and housing availability.

The following graphs illustrates population growth and saturation timing based upon various growth rates of 1% to 7.5% and of straight line growth of 25 to 125 additional persons per year.



Population Growth 1960-1987

Year	Population	Annual Growth Rate ¹	Additional Persons/Year ²	Year	Population	Annual Growth Rate ¹	Additional Persons/Year ²
1960	1217	--	--	1974	1597	2.95%	43
1961	1239	--	--	1975	1647	3.36%	50
1962	1261	--	--	1976	1674	2.76%	43
1963	1283	1.81%	--	1977	1701	2.17%	35
1964	1305	1.78%	--	1978	1727	1.62%	27
1965	1327	1.74%	--	1979	1754	1.59%	27
1966	1349	1.71%	--	1980	1781	1.57%	27
1967	1371	1.69%	--	1981	1798	1.37%	24
1968	1393	1.66%	--	1982	1833	1.50%	26
1969	1415	1.63%	--	1983	1869	1.65%	29
1970	1437	1.60%	22	1984	1904	1.97%	35
1971	1467	1.77%	25	1985	1876	0.78%	14
1972	1496	1.91%	27	1986	2081	3.78%	71
1973	1546	2.53%	36	1987	2102	3.47%	66

1. Average Annual Growth over the previous 3 years
2. Average Annual Additional Persons over the previous 3 years

BUILD-OUT IMPACTS

The addition of 5,465 new residential lots will have a number of implications for Hubbardston. The obvious impact is that of increased population. With an average of three persons per dwelling unit, additional population for Hubbardston is estimated at 20,000. With a current population of 2102 (in 807 existing dwelling units), Hubbardston will have a total population, at "build-out", of approximately 22,000.

Based upon the build-out population it is possible, by using standard impact projection ratios, to predict certain service impacts of such population. These impacts have been calculated for the Town of Hubbardston for School Enrollment, and Solid Waste Generation.

Projection Ratios:

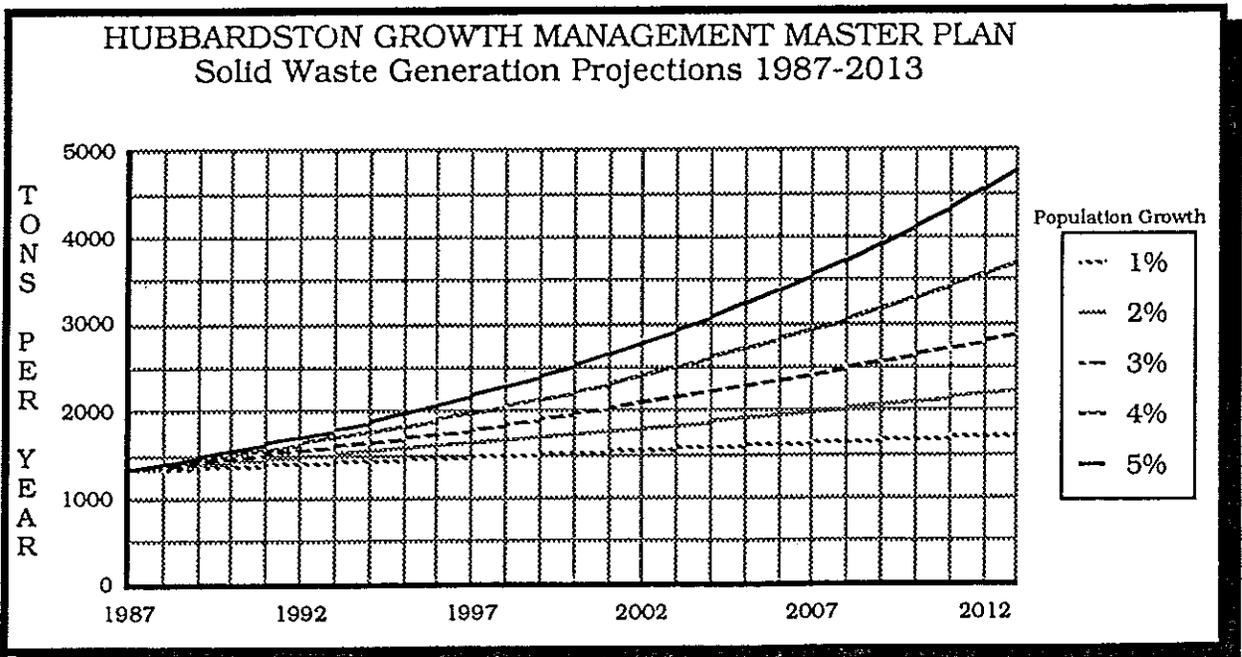
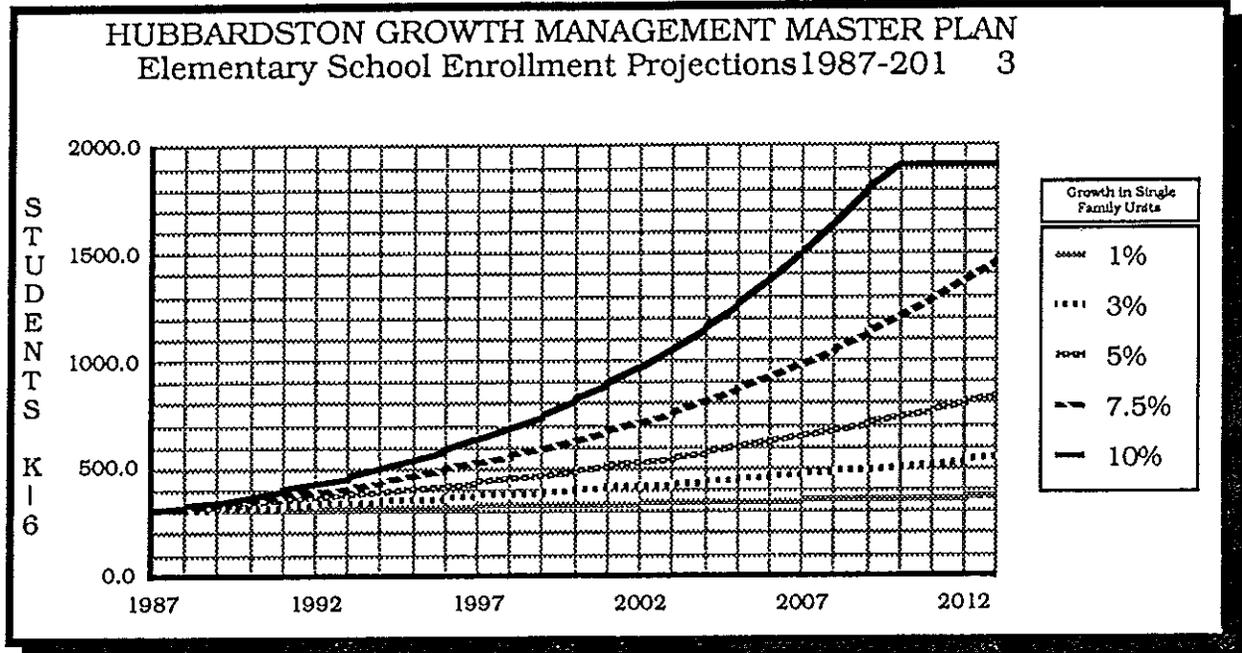
ELEMENTARY SCHOOL-AGE POPULATION = 0.259 children per single family dwelling with an average of 2.5 bedroom per dwelling (Source: The New Practitioner's Guide to Fiscal Impact Analysis)

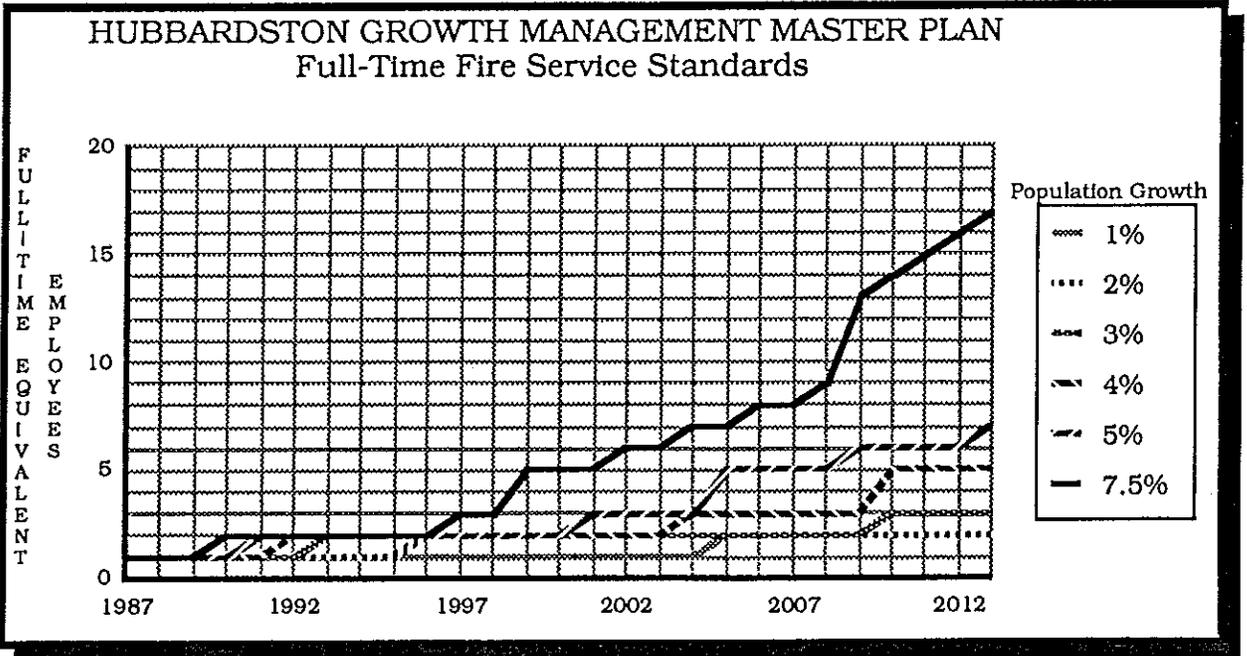
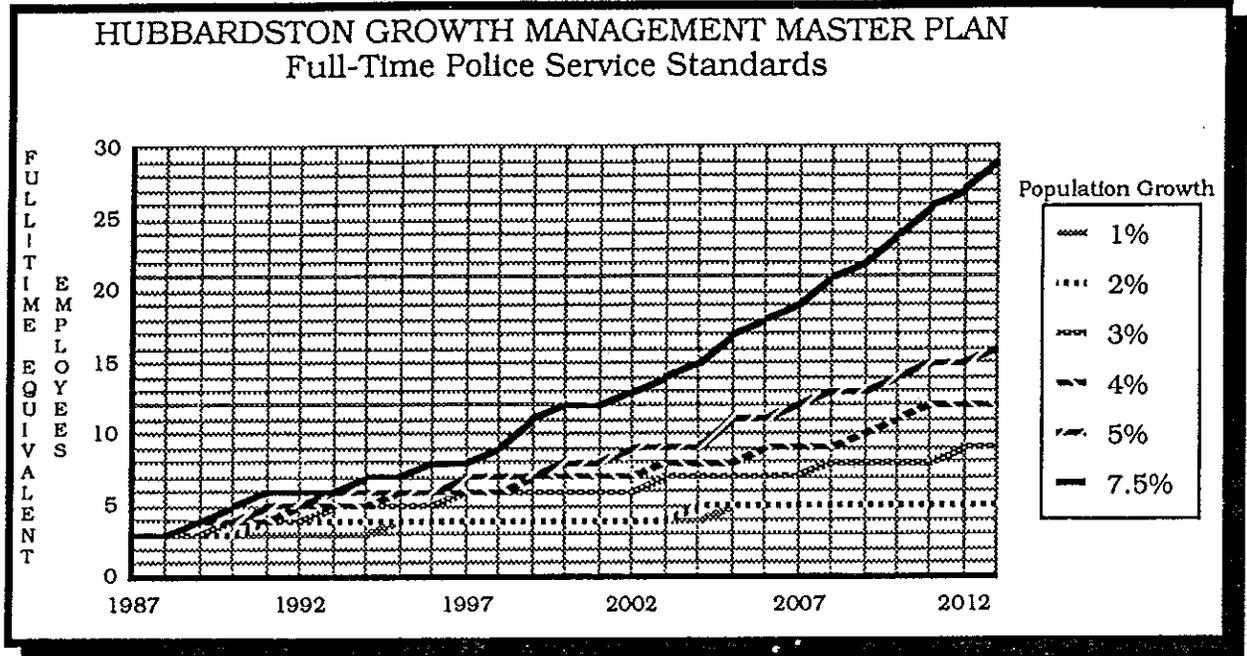
SOLID WASTE GENERATION = 3.5 lbs. per person per day (Source: U.S. Environmental Protection Agency)

Impacts:

Current Elementary School Enrollment=	308
Additional Elementary School Age Population =	1,632
Current Estimated Annual Solid Waste generation =	1,342 Tons
Additional Estimated Annual Solid Waste Generation=	12,775 Tons

The graphs below illustrate the Impacts of future growth on Elementary School enrollment, Solid waste generation, police and fire personnel requirements as projected by service standards.





Source: The New Practitioner's Guide to Fiscal Impact Analysis, 1985 Center for Urban Policy Research

HUBBARDSTON LAND USE PATTERNS

Hubbardston is a rural community of over 41 square miles. Although single-family residential construction is the prime development type in Town, most of Hubbardston remains undeveloped. The majority of residential dwelling units which do exist in Hubbardston are mostly located along Route 68, Williamsville Road and Brigham Street. There are also small 'clusters' of residential development on East Hubbardston Road, Hale Road and near Asnacomet and Williamsville Ponds.

Only a small percentage of land in Hubbardston is used for commercial purposes, these are interspersed with the residential buildings in the center of Town, along Route 68, with a few commercial locations in outlying areas of Town. Map - depicts locations of the easily identifiable commercial properties in Hubbardston, other businesses are on file at the Town Clerk's Office, but are not readily identified as such because many of these businesses are conducted in residential-type buildings (the table below lists the names and locations of businesses).

HUBBARDSTON REGISTERED BUSINESSES*

All Outdoors	247 Gardner Road	Quality Coin-Op	26 Mayo Road
The Anchor	2 Parsons Road	Piette Trucking Company	519 Gardner Road
Beauty Barn	13 Ragged Hill Road	Yankee Floor Coverings	33 High Street
Commonwealth Energy Group	435 Gardner Road	Greens and Things	32 Main Street
Benson's T.V.	45 Gardner Road	Hakala Brothers Trucking	22 Barre Road
Maria's Gift Shop	45 Gardner Road	Hubb Equipment Maintenance	Old Boston Turnpike
Bob's Engine Repair	20 Adam Road	Porcelin Works	195 Williamsville Road
Booth Brush	145 Twin Hill Road	Haye's Garage	41 Gardner Road
Sugar House Antiques	53 Mayo Road	Ray's Garage	47 Lombard Road
Brier Machining Service	56 Gardner Road	Husky Hill Farm	91 Lombard Road
Chris's Farm Stand	Worcester Road	Westfield Farm	28 Worcester Road
Coppola Contracting	24 Healdville Road	Labossiere Trucking	26 Old Westminster Road
Hubb Auto Sales	31 Bemis Road	M.K. Enterprises	Worcester Road
Cronco Manufacturing	63 Worcester Road	P and L Lumber	154 Williamsville road
Custom Dies	2 Parsons Road	Curtis Forest Products	Route 62
Jim's Auto Body	66 Healdville Road	Personal Computer Software	165 Gardner Road
Greenwood Herb Farm	8 High Street	M.A. Robinson	5 Brigham Road
Doane Small Engine Sales	Princeton Road	Rondeau Moving and Trucking	Old Princeton Road
Partners	16 Gardner Road	Ruptured Duck	51 Morgan Road
J.E.T. Marketing	14 New Templeton Road	Wedgewood Kennels	128 Williamsville Road
		Hubbardston Orchards	46 High Street

* Registered Businesses other than those denoted on Map 4.

The overall development of land, and land use, in Hubbardston is controlled by a number of factors, mainly the amount of protected land in Town and the environmental constraints to development. 'Protected Land', which is generally public property owned by either the Town or State, comprises almost 8,500 acres in Town. This land is essentially prohibited from being developed. Land classified under M.G.L. Chapters 61, 61A or 61B make up another 3,441 acres in Town. Although this property is not fully protected from development, it is currently kept as open land for forestry, agriculture or recreation, in exchange for tax benefits to the owner. The Town could possibly purchase a parcel once it is taken out of a Chapter 61, 61A or 61B program, thereby protecting it from development.

Environmental constraints to development also tend to guide land use. The presence of wetlands, steep slopes, flood hazard areas, aquifer zones and surface water bodies all play a part in determining where development is allowed and the type of land uses which occur in Town. These environmental constraints in Hubbardston are presented on Map 5

There are some areas in Town which lend themselves to potential commercial and/or industrial development. Good soils, environmentally sound locations, compatible surrounding land uses, and good roads are all factors in determining prime locations for commercial/industrial development. Potential areas suitable for commercial, and commercial/industrial development are shown on Map 4. These areas are along the major travel route in Hubbardston (Route 68) and would be compatible with surrounding land uses. The commercial and/or industrial areas delineated are seen as having the best potential for this type of development, although some of these locations may already be developed.

Future land use in Hubbardston will be determined by many factors. Population increases will determine the need for residential development, demands for jobs and the Town's possible desire to attract businesses will determine commercial/industrial development, the viability of agriculture will determine continued agricultural land uses and the Town's pending Open Space Plan may determine the locations of additional protected land. The extent to which these land uses will, or can, occur, depends upon many criteria, such as: the availability of land suitable for proposed uses, zoning requirements and the ability of Town services to accommodate new development.

HUBBARDSTON INFRASTRUCTURE AND MUNICIPAL SERVICES

Introduction

One of the most significant impacts that town growth has on a community is the additional loading placed upon the town's infrastructure. While Hubbardston's growth rate has been moderate, with minimal overload crises, knowledge of where Hubbardston is in terms of infrastructural capacity, or where it will be with further growth, is vital from both an infrastructural planning perspective and growth management perspective.

This section presents an overview of the various components of Hubbardston's infrastructure and, where possible, describes the excess capacity of each component. Finally, the impacts of growth on the Town's infrastructure is presented.

Sanitary Landfill

Hubbardston's 4.5 acre sanitary landfill, on New Templeton Road, has been the focus of a study by Almer Huntley, Jr. and Associates in a July, 1987 report - New Templeton Road Sanitary Landfill Operational Evaluation/Final Closure/Monitoring Report. Huntley uses an estimate of approximately 2,400 tons of refuse delivered to the landfill per year (based upon 5.5 pounds of refuse generated per person per day and an additional 15% allowance for commercial and industrial generation).

Refuse at the landfill is compacted at a volume of 750 pounds per cubic yard (lb/cy). Using Huntley's estimates this puts the annual fill rate at an 8200 cubic yards (this is a total of 6400 cy/year of refuse plus an additional 35% volume for daily cover material). Based upon this volume, Huntley estimates that the landfill has approximately 3.5 years of useful life remaining (as of July, 1987).

It should be noted that the Hubbardston Highway Department estimates that the landfill receives approximately six to ten tons of refuse per week. At this rate, the landfill would be accepting from 312 to 520 tons annually. This is quite a variance from Huntley's estimate of 2,400 tons per year. This discrepancy is noted by Huntley; the report points out that because accurate records of refuse disposal were not kept, and estimates from other sources differed widely (e.g. 1000 tons per year as reported by the Massachusetts Bureau of Solid Waste; and 940 tons per year according to C.T. Male in a 1985 report) the report made use of an industry average for estimating Landfill disposal. Based upon the U.S. Environmental Protection Agency standard of 3.5 pounds of refuse generated per person per day, Hubbardston would generate an annual amount of 1342.65 tons per year, based upon current population, this is the figure which IEP has used to generate solid waste generation projections for Hubbardston (see Page 13).

The Town does not require a resident sticker in order for individuals to dispose of refuse at the landfill. This has a bearing on the life-expectancy of the site; with the potential for "anyone" to dump trash at the Hubbardston landfill, due to the lack of established controls over non-residents' use, the site could reach capacity well before the projected date. This issue has been of concern in Town and has prompted officials to discuss the need for a resident permit to use the landfill.

The closure plan for the landfill is outlined in the Huntley report. Huntley estimates that the preliminary cost of closure would be \$270,000.00 for general contractor services, if the landfill were to be closed today. Obviously, this figure will be higher in another three years, when the site is expected to be capped. State funds may be available to aid the Town in paying for a portion of the closure costs.

Additional costs to the Town, in the interim, will be incurred from the proposed monitoring program at the site. This includes ground water and gas monitoring.

Huntley projects this program to cost between \$17,500.00 and \$18,000.00 for the first year of monitoring.

The Town has determined that the development of a new sanitary landfill site in Hubbardston may not be feasible due to: insufficient acreage of suitable Town-owned land; prohibitive development costs (estimated at over \$500,000.00 per acre); and a lack of State aid in developing new sites.

Hubbardston is facing an uncertain future regarding the landfill. This is a familiar problem throughout Massachusetts. Many towns are presently searching for alternatives to local landfills and are being overwhelmed by the costs involved in shipping refuse to other towns or states. Hubbardston may be one of the few towns with minimal operating costs for its landfill. The 1987 budget for the site was approximately \$2,500.00, this would result in operating expenses of about five to eight dollars per ton (based on MRPC figures for refuse disposal). The small budget may be reflected in the fact that the Town owns the equipment used at the site (i.e. has no loan payments for vehicles) and residents may bring their refuse to the landfill. Local operating costs typically range from \$40.00 to \$50.00 per ton, while out-of-town shipment can reach \$75.00 to \$90.00 per ton. The City of Boston, for instance, pays over \$100.00 per ton to transport its refuse out-of-town.

Solutions to the solid waste problem in Hubbardston have been suggested, such as: developing a new site in Town, providing for a transfer station in Town or on a regional basis, and negotiating for a regional landfill. The Montachusett Regional Planning Commission has worked with Hubbardston and surrounding communities to develop a regional solution, but discussions have not yielded results as yet. Although the current means to dispose of solid waste have consistently come into question (given the publicity of unsafe landfills and questionable incineration technology) the immediate answer to Hubbardston's situation rests on the agreement and cooperation of municipalities in the area. To date, it has been difficult for these communities to produce a mutually agreeable alternative.

Roads

The Town of Hubbardston currently has 79.75 miles of roadways. The majority of these (74.58 miles) are Town-maintained, an additional 4.75 miles are unaccepted, and the United States Army Corps of Engineers maintains 0.42 miles of roads in Town (at the Barre Falls Dam area). Information on roadways is compiled and updated by the Massachusetts Department of Public Works (MDPW) through the State Road Inventory Files.

Route 68 runs north/south through Hubbardston and is the major arterial road in Town. Route 68 provides the greatest level of service to Town, based upon traffic count information. The major east/west road is Route 62, which is a collector road that crosses Route 68 at the southern end of Hubbardston. Additional collector roads in Hubbardston are: Barre Road, New Templeton Road, New Westminster Road, Williamsville Road and Williamsville - Templeton Road.

Traffic counts in Hubbardston are scarce and have been performed only intermittently for portions of Routes 68 and 62. In general, the traffic volumes on these two roads have steadily increased. The major increase in traffic has been on Route 68, at the Gardner City line, with the 1969 average annual daily traffic (AADT) count of 2800 vehicles and the 1984 AADT count of 4797 vehicles. This represents a 71 percent increase at this location.

Surface conditions of roads in Hubbardston tabulated annually in the Road Inventory File in cooperation with the local Highway Department. Most of the accepted Town roads (approximately 45 miles) are in "deficient" condition, as classified by the Massachusetts Department of Public Works (MDPW). Of the remaining mileage, 10

miles are classified as "good"; 20 miles are "fair"; and one-half mile is considered "intolerable". While the MDPW rating system is descriptive of the condition of a road in comparison to today's standards, they do provide a hierarchical rating system. In general, while most of the roads labeled as "deficient" do not require immediate attention, they do indicate that such roads cannot support any significant traffic increases as can be expected from further development.

With over half the roads in Town labeled as "deficient" and increased loading being inevitable, Hubbardston should begin to consider which roads, if any, are to receive priority attention for future upgrading. This can be done partially through numerous programs which are available to fund work on roadways. The construction, maintenance and improvement of roads generally require local matching funds for the federal or state dollars which are allocated to the Town. The Federal-aid mileage in Town is 21.77 miles. In order to be eligible for Federal-aid, the Town must submit the proposed project to the regional planning agency (in this case Montachusett Regional Planning Commission) to be included in the Transportation Improvement Program (TIP). The MDPW chief engineer should receive notice of the proposed project in order for action to be taken.

In Hubbardston, there are currently two projects included in the Fiscal Year 1988 TIP. One project is the reconstruction of 1.79 miles of Williamsville - Templeton Road, at an estimated cost of \$1,200,000.00. Seventy-five percent of the cost will be funded by Federal-aid, with the remainder paid through State-aid. The other project is a \$12,000.00, State-funded deck repair on the Hale Road Bridge, which crosses Natty Pond. Obviously, the reconditioning of roads is an expensive venture, even though federal and state monies are available on a limited basis, the Town still must, in some cases, provide partial funds. This can be difficult in a relatively small community such as Hubbardston, but good quality roads are necessary for safe travel and, with the potential growth of the Town, traffic increases will add to the burden and deterioration of the roads if they are not improved in time.

The Town of Hubbardston has designated a number of "scenic roads" (see Map 3 for locations):

- | | |
|---------------------|--------------------------|
| 1. Barre Road | 13. Mount Jefferson Road |
| 2. Brigham Street | 14. Morgan Road |
| 3. Flagg Road | 15. New Templeton Road |
| 4. Grimes Road | 16. Old Princeton Road |
| 5. Hale Road | 17. Old Westminster Road |
| 6. Halfrey Road | 17. Pitcherville Road |
| 7. Healdville Road | 18. Ragged Hill Road |
| 8. High Street | 19. Thompson Road |
| 9. High Bridge Road | 20. Twin Hill Road |
| 10. Kruse Road | 21. Underwood Road |
| 11. Lombard Road | 22. Upper Intervale Road |
| 12. Mile Road | 23. Williamsville Road |

Under MGL, Chapter 40, Section 15C, the Conservation Commission can nominate roads in Town to be protected for environmental, aesthetic and historic value. The nominated roads must then be voted on, and approved, at Town Meeting. Once such a road is designated (as those listed above), it is subject to certain constraints as to the cutting of trees or removal of stone walls nearby. Any activities taking place adjacent to a designated scenic road should be brought to the attention of the Conservation Commission for review of applicability to the Scenic Roads Act.

ABANDONED ROADS

Throughout Massachusetts there are hundreds, if not thousands, of unused, overgrown, abandoned Public Ways which have never been formally discontinued. Hubbardston, like most towns, has a number of these old roads. The roads shown on the Map entitled "ROADS" and listed below are either not shown or are shown as primitive roads on the current U.S.G.S topographic maps, but are shown on the 1870 Worcester County Atlas and/or the 1887 Massachusetts Topographic Survey and/or the 1898 Worcester County Atlas. These roads have apparently fallen into substantial disuse and should be investigated further to ascertain whether each road listed was ever officially accepted by the town and if so, whether the each road has been properly discontinued. While the fact that a road is shown on one of the above listed old map sources establishes that the road was in fact in use at the time of map publication, it is by no means an indication that the road was ever accepted by the town or county as a public way. To establish that a road was in fact accepted or discontinued by the town or county, substantial research needs to be done of Town Meeting records and records of the Worcester County Commissioners. Once a road has become accepted as a Public Way, either by town meeting vote or County Commissioner's action, no amount of disuse or impassibility will serve to change the road's status. Unused, abandoned Public Ways can be used as frontage for "Approval Not Required" Subdivisions. In addition, until the town or county formally takes action to discontinue an old road or takes action under Massachusetts General Laws chapter 82, section 32A, the town remains legally responsible for the maintenance of the road and landowners abutting the public way can demand that the town make sufficient repairs so that the road is "Reasonably safe and convenient for travel".

PLEASE NOTE: The list of roads below and shown on the Roads Map is not meant to indicate that these roads should be discontinued or have no further usefulness. It is meant to provide a list of roads whose current use and status should be looked into further by town officials.

ABANDONED¹ ROADS

1. A short road at the end of Flagg Road before the Hubbardston State Forest
2. A short road running Northwesterly from Old Templeton Road shown on the 1870 County Atlas as going to the home of a P. Malone.
3. Cross Road between Old Templeton Rd and New Templeton Rd.
4. Birches Road between New Templeton Road and Ragged Hill Rd.
5. High Bridge Road between Gardner Road and the Railroad Right of Way
6. A road running between New Westminster Rd and Grimes Rd. in the vicinity of Prentiss Hill.
7. A portion of Clark Rd.
8. A short road off of Hale Road shown on the 1870 County atlas as going to the home of a F.N. Clark.

¹ A word having no legal significance, but used here to mean roads that are no longer in general use by the public for travel.

Transportation

Private automobiles are the primary means of transportation in Hubbardston, which has no public transportation. The use of private vehicles is the principal method by which residents travel to work, with the major thoroughfares being Routes 68 and 62. Hubbardston residents can commute quite readily in any direction, though Gardner and Worcester are the destinations for most workers from Hubbardston.

There is a region-wide appropriation of \$240,000.00 for the purchase of ten new vehicles under the Mobility Assistance Program (MAP). These vehicles are to be delivered in early 1988. The MAP funding is administered by the Executive Office of Transportation and Construction through the State Transportation Bond authorization program. The program provides capital grants which are made available to public agencies for the purchase of vehicles and related equipment to transport elderly and disabled persons.

The Montachusett Regional Transportation Authority (MART) is targeted to receive \$80,000.00 through Federal funding, and \$184,300.00 in State reimbursements. This money is to be used region-wide for the operation of vehicles by local Councils on the Aging - which are under contract to MART. This funding is enhanced by a \$100,000.00 contribution from eight communities. Hubbardston currently has one MART van, housed at the Highway Department garage, which is used by elderly and disabled residents in Town for transportation to shopping areas, medical facilities and various events in the region.

Community Facilities

An important element of the Town of Hubbardston is the community facilities established to serve the needs of Town residents. With the potential for a significant rise in population, the Town must investigate the needs for more, or expanded, facilities to accommodate these residents. The following is a summary of the facilities in Hubbardston and an analysis of possible needs by the Town for the future.

• Town Offices

The municipal offices of Hubbardston are located in the basement level of the Town Library building, which was built in 1874, on Main Street, in the middle of Town. The following offices, and committees, make use of this location:

- Assessor
- Cemetery Commission
- Conservation Commission
- Fire/Police Department Dispatcher
- Growth Policy Committee
- Highway Department
- Planning Board
- Police Association
- Selectmen
- Tax Collector/Treasurer

With only a limited amount of space available for all of these functions, the need for additional room is apparent - especially if the Town's growth warrants more, full-time municipal employees, rather than the part-time positions which presently exist for the above mentioned functions.

Some of the other municipal officers work directly from their own residences and the Town is considering the possibility of providing office space for these individuals, this would create an even greater need for additional space. Some committees utilize different rooms of the library to conduct business.

One suggestion which has been made regarding the potential for new municipal office space, is the possibility of using the Center School for Town offices, should the Town decide to build a new school for the expanding student population in Hubbardston. This would allow space for full-time employees, while still retaining the current office building for use as a file and document storage area, or other necessary office functions.

The library building currently has problems with the septic system and roof damage. The septic system is connected with that of the Center School and is prone to overflowing, this creates an odor problem as well as a potential health risk from untreated sewage effluent surfacing in the field next to the school. The roof is in disrepair and should be attended to immediately. The condition of the roof could lead to further deterioration of the building itself and may also jeopardize some of the historical files which are stored on the third floor of the library building.

• *Police Department*

The Police Department is in the library basement, the same location as the municipal offices. There is also a Dispatching Center used for both Police and Fire Department calls. There is no detention facility here, therefore, any individual who must be held for a period of time is transferred to the jail in Gardner. Present state statutes require all communities with a population greater than 5000 must provide a lock-up facility, this is an issue the Town may need to concern itself with as growth continues. The Board of Selectmen have indicated that the space currently provided for the Police Department is inadequate and that there is no readily available area for expansion.

The Town owns two police cruisers. There is no shelter facility for these vehicles, therefore when one is being use, the other remains in the parking lot next to the station.

Three full-time officers are currently employed in Hubbardston. Some of the department's work is also handled by a 18-person, part-time staff of officers. The Police Department is working on developing a Mutual Aid Program with the surrounding communities' police departments.

• *Fire Department*

Hubbardston's Fire Station was constructed in 1963 and is in deteriorating condition. The station was built upon an existing foundation, which remained from a structure which burned in the 1920's. The department has seven vehicles, but only a four-bay station, which can accommodate six of the vehicles. The small forest vehicle is kept outside, except in the winter when it is garaged at the Highway Department building. Two of the present fire vehicles are over twenty-five years-old, which, according to the Fire Chief, causes problems due to frequent breakdowns. The department has requested a new vehicle for 1988, to replace the existing forestry truck, which is over 33 years old. Another department concern, is that if increased community growth results in the construction of condominiums and other such large structures, the need will arise for additional equipment, and possibly a ladder-truck - which will not fit in the existing building.

The water supplied to the station for consumptive use is undrinkable due to contaminants from prior salt storage at the former Highway Department location next to the Fire Department. This is another problem to be considered when discussing the possible expansion or relocation of the station.

The Fire Department is strictly an on-call service. Fires are reported to the central dispatcher who then relays information to any of the 22 firemen on-call. The Fire Department is a member of a 33-community Mutual Aid Program. This greatly aides in providing additional coverage of the Town and reduces response time to outlying areas. Hubbardston also has a 14-member Emergency Medical Technician staff - comprised of Town residents.

The Town has no municipal water supply, therefore no fire hydrants. There is a 22,000 gallon water tank located off the Barre Road Cutoff which is used to refill the fire tanker. The town is in the process of installing many "dry hydrants" throughout the town. Negotiations with landowners are currently underway. The availability of water for fire protection in some of the outlying areas of Town should continue to be a concern as Hubbardston grows.

• *Highway Department*

Hubbardston has a relatively new Highway Department garage, built in 1980 and located off Route 68 to the south of Town center. The building contains the Department office and a variety of equipment used for plowing and general maintenance of the almost 80 miles of roads in Town. Major equipment owned by the Department includes: four dump trucks, two loaders, a grader, a tractor with mower, and snow plows.

The garage was built to allow for expansion, but there are no current plans to enlarge the space. However, the facility is at capacity, with all the bays being used to store Department equipment and one MART bus.

The Highway Department has no official plans for the immediate future for purchasing any new major equipment, although the Department Superintendent is making preliminary decisions as to what the next significant purchase should be. Also, the need for an additional employee has been discussed, this would add to the existing four employees who are supervised by the Superintendent.

The Department has a temporary salt storage facility next to the garage. This "make-shift" shed provides shelter for the road salt, but is not a permanent solution. The State had planned to provide funds for a new shed in 1987, but the money was not appropriated. The funds have been promised for 1988. A salt storage shelter is necessary to keep salt runoff from entering and contaminating ground and surface waters.

• *Schools*

Hubbardston Center School is located behind the Library/Town Office building on Main Street. This facility was constructed in 1939, with additions made in 1955. The school added a separate, modular, structure in 1977 to meet the needs of expanding enrollment. In total, there are two rooms per grade (K - 6), a gym and a cafeteria at the school.

The Center School was annexed as part of the Quabbin Regional School District in 1985. This regionalization may be beneficial in allowing for potential sharing of funds and providing programs for special needs groups, but the lack of adequate space has limited the availability of such programs.

With the issue of adequate space for the growing student population in Hubbardston being of prime concern to Town residents, Hubbardston approved a \$12,500 fund to study the current situation and make recommendations as to whether additions to the existing school would be appropriate or if the Town should consider building a new facility. The report of this School Building Committee, which is studying these needs, will be issued in early 1988.

Preliminary findings of the School Building Committee are that the Center School does not have sufficient space to provide for regular classroom meetings. Because of the present 54 kindergarten students, the school system has resorted to separating kindergarten students into three groups which meet at different sessions throughout the day. This has resulted in the disruption of many other established rooms in the building such as the clinic and teachers' room.

Additional, preliminary findings are that the cafeteria is in need of upgrading, and possible expansion; general maintenance of the School should be increased and a solution to the frequently overflowing septic system needs to be formulated. The school itself is in relatively good condition, with recent painting and maintenance efforts conducted by a volunteer group of Hubbardston residents.

Enrollment has been increasing for the past few years and the potential exists for the number of students to rise significantly over the next ten years. The Center School is already at its design capacity and measures need to be taken to alleviate the problem. The school principal notes that the average student/teacher ratio has been 20:1 in recent years and would like to see this ratio maintained. A teachers' aide is required once a certain class size is reached (approximately 25 students).

Hubbardston Center School Enrollments 1984 - 1987

Year	Number of Students
1984	235
1985	249
1986	273
1987	308

The results of the School Building Committee Report will give the residents of Hubbardston an overview of the problems which exist and suggestions for means to correct these.

• *Library*

Hubbardston Library is located on Main Street, in the Town center. The library is staffed by one librarian and has a circulation of over 8,000 books and magazines. The library is also a member of the Central Massachusetts Library System, which allows for inter-library services throughout Central Massachusetts and expands the library's circulation potential. This facility is well used by area residents as well as by certain Town committees which make use of rooms for meetings. An annual incentive aid grant is received, in the sum of \$2,500.00, which is provided by the State for library materials and programs.

NATURAL RESOURCES

Climate

The average annual temperature in the Central Massachusetts Region, in which Hubbardston is located, is approximately 49 degrees Fahrenheit, although temperatures vary with elevation, slope orientation and many other factors. Mean annual precipitation is between 42 and 46 inches, with snowfall averaging about 60 inches per year. These figures are also influenced by elevation and other environmental factors. The growing season is about 140 days.

Soils

A Town-wide soil survey for Hubbardston has not been completed by the U.S. Department of Agriculture, Soil Conservation Service (USDA-SCS), although the mapping is expected to be finished, and a report filed by December, 1988. However, on a regional scale, Hubbardston is generally comprised of the Paxton-Hollis-Canton soil association. The soils of this association are comprised mainly of fine, sandy loam, with forested areas being frequently dominated by scattered stones and boulders. Areas of bedrock outcrops are also common. Paxton soils make up approximately 50 percent of the association, while Hollis comprises 15 percent and 10 percent is Canton. The remaining 25 percent of the soil association is composed of a number of minor soil types.

Once the SCS soil survey is completed, general information will be available regarding the soil suitability for many purposes. The soils will be rated for use and management in a variety of areas, such as: crop production, community development, engineering capabilities, woodland management and wildlife habitat management. Although the survey will cover the entire Town, it is advisable for any site-specific work that a detailed, local survey be completed. An important aspect of the community development ratings is that of septic tank systems suitability. Hubbardston has no municipal sewage system, therefore, residents must rely upon individual septic systems for disposal. The capacity of the soils to accommodate a septic tank and leach field can have a substantial impact on development. The nature and properties of the soils can determine if and when leachate contamination may reach surface or groundwater resources.

Topography

Hubbardston has a varying topography, marked by many hills, river valleys and expansive wetlands. Elevations in Town range from about 780 feet above sea level, along the West Branch of the Ware River, to 1313 feet at the peak of Canesto Hill, at the Templeton border.

Steep slopes are present throughout Hubbardston, these can restrict development by presenting grades too steep for vehicular traffic and creating areas with high erosion potential should the slopes be unstable or lack adequate vegetative cover. Map 5 presents slopes in Hubbardston which are greater than 15 percent. A 15 percent grade or more would severely inhibit development or require special consideration/review of soil impacting activities.

Bedrock Geology

The bedrock in the Town of Hubbardston is composed of metasedimentary rocks (Zen, 1980) ranging in age from approximately 375 million years ago to 450 million years ago. Three formations outcrop in the Town of Hubbardston; the Littleton Formation, the Paxton Formation, and the Partridge formation. The Littleton Formation is found in the central part of the Town. This formation is composed of black to gray aluminous mica

schist, quartzose schist, and aluminous phyllite. The Paxton Formation which is found in the eastern part of the Town of Hubbardston is composed of undifferentiated biotite granofels, calc-silicate granofels, and sulfidic schist with some sulfidic mica schist. The bedrock in the western part of the Town of Hubbardston is composed of sulfidic mica schist, and subordinate amphibolite with thin linear outcrops of sulfidic magnesian biotite and magnesian cordierite schist and sillimanite quartzite, all of the Paxton Formation.

Metasedimentary rocks are sedimentary rocks like sandstone and shale which have been changed or metamorphosed by great pressures and temperatures. These changes can include changes in the types of minerals which compose the rock and/or changes in the layering of the rock.

The surface expression of the bedrock in the Town of Hubbardston has a north-south trend. This trend generally control present day drainage.

Surficial Geology

Although New England was glaciated numerous times during the Pleistocene Epoch only deposits of the last two glaciations are recognized and the majority were formed during the last glaciation, beginning 26,000 years ago and ending about 13,000 years ago. Glacial processes occurring in the Town of Hubbardston affected the surficial geology in two ways. The bedrock was scoured and pre-existing valleys were deepened. The material eroded from the land surface by glacial erosion, became incorporated into the ice deposited elsewhere as till or stratified drift. Most areas of the Town were covered with a veneer of unconsolidated deposits (till or stratified drift) of varying thicknesses.

Glacial deposits consist of unconsolidated material either deposited directly from the ice with relatively no influence by melt-water (till) or deposited by melt-water streams carrying material from the glacier (stratified drift).

Till deposits are composed of a wide range of grain sizes without stratification (layering). Till is most commonly found in upland areas. Till is also found underlying the stratified drift deposits in the valleys.

Stratified drift deposits are better sorted than till and are stratified. The better sorting (i.e. the range of grain sizes found within the deposit is much narrower) is due to the processes acting on the material during transport by melt-water. The fines are carried further down-stream leaving the sand and gravel to be deposited closer to the ice margin.

The surficial deposits in the Town of Hubbardston can be broken into two basic categories: till and/or bedrock and stratified drift deposits. Till and/or bedrock is found in the higher elevations which comprise a majority of the Town. Deposits of stratified drift are confined to the valleys in between the uplands. These valleys follow a north-south trend controlled by the bedrock geology.

Agriculture, Forestry and Private Recreational Properties

Massachusetts General Law (MGL) Chapter 61 allows for the valuation of forest land at five percent of full value. The property must contain at least ten contiguous acres of forest which has been harvested for the previous two years. A ten-year management plan for the land must be provided and approved by a State forester. Land withdrawn from the program prior to fulfillment of the ten-year plan is subject to certain penalty taxes. Hubbardston currently has 776.10 acres assessed under Chapter 61.

MGL Chapter 61A provides for the use-value assessment of at least five contiguous acres of agricultural and horticultural land which has grossed a minimum of \$500.00

annually for the last two years. If the owner who has joined the program sells his land to a developer, while still in the program, the law provides for partial recapture of lost taxes. In general, the program allows the owner to be taxed on the use of his land rather than its market value, while the farm is operable. There are 2278.22 acres of Chapter 61A property in Hubbardston.

Five or more acres of recreational land which is kept in a natural or landscaped condition may be assessed under MGL Chapter 61B. This property is taxed at no greater than 25 percent of its full value. The land does not have to be open to the public. If the property is sold within ten years of the date of transfer to Chapter 61B classification, a penalty tax is assessed. Chapter 61B lands comprise 386.82 acres of Hubbardston.

The total of 3441.05 acres in Hubbardston, currently assessed under MGL Chapters 61, 61A and 61B (Map 1), is substantial and, under state statute, the Town has the right of first refusal on any land in these programs, when the property is listed for sale. This gives the Town an opportunity to protect the property for open space. However, since the Town is given only 120 days to act on the option, it is useful for the Town to have an adequate and readily available fund, such as a Conservation Land Acquisition Fund, for land purchases and a system for prioritizing lands which the Town may want to buy.

Another land protection method is the Massachusetts Agriculture Preservation Restriction Program (APR). The Program, administered by the Department of Food and Agriculture, was established under Chapter 780 of the Acts of 1977 and devised to reduce the development pressures on Massachusetts' farmlands by establishing a process by which the State purchases development rights to the land. Hubbardston has two properties, one on Brigham Street and one on High Street, totalling 145 acres, which are involved in the APR Program. Of the 145 acres, 45 acres is orchard, 85 acres is woodland, ten acres is pasture and the remaining five acres is cropland used for raising strawberries, blueberries and hay. Beef cattle are also raised on the farm.

Wetlands

Wetlands are valued for their scenic beauty but must also be considered for the integral role they play in water supply recharge and filtration, flood control, storm damage prevention, pollution prevention and wildlife habitat. The wetlands of Hubbardston are shown on Map 5, as classified by the United States Fish and Wildlife Service Wetlands Mapping Inventory. Residents should be aware that this inventory is not designed to be definitive. For site-specific work, an in-field delineation of the wetlands resource area boundaries and analysis of their functions should be conducted.

Wetlands commonly overlie sand and gravel aquifers, which are important ground water supply areas. These wetlands may recharge the aquifer, especially during droughts or if the aquifer is being pumped. Wetland destruction may result in the lowering or alteration of ground water, thereby decreasing the quantity of water adjacent to, or underlying hydrologically connected aquifers.

Flood control and storm damage prevention is achieved through a wetland's ability to act in an absorptive capacity. This allows water to be stored or retained in wetland basins and released slowly. A wetland's size, gradient, vegetative density and classification are all taken into consideration when determining its value for flood control and storm damage prevention.

Pollution prevention is carried out in wetlands by vegetation which traps and filters siltation, thereby aiding in lowering sediment levels downstream. Reduction of nitrate, phosphorus and biological oxygen demand (BOD) levels can also occur in wetlands to varying degrees.

Wetlands provide important habitat areas for a variety of wildlife species. Many factors contribute to its value as wildlife habitat, such as: vegetative composition and structure, size and hydrologic factors. The state Wetlands Protection Act was recently amended, effective November 1, 1987, to provide for protection of wildlife habitat associated with wetlands.

There is very little definitive mapping of Hubbardston's wetlands. Although, it can be stated that wetlands comprise a significant area in Town (approximately 3,713 acres, not including surface waters, according to the Massachusetts Water Resources Study of 1977). Most of these resources are forested or shrub/scrub wetlands which coincide with many of the streams and ponds in Town. Natty Pond Brook; Moosehorn Pond; and the East and West Branches of the Ware River are locations with the most extensive wetlands in Hubbardston. In general, the southern half of Town contains much of Hubbardston's total wetland acreage.

Wetlands, including rivers and ponds, are sensitive to development and other types of land use. Therefore, when planning for future development, wetlands should be considered as critical resource areas. With the vast amount of wetlands in Hubbardston, guiding development away from these areas must be a priority; this will protect the wetlands and allow them to perform the important functions as previously mentioned. The quality of water may be jeopardized by road runoff, lawn fertilizers, pesticides and general dumping of refuse, while the quantity of runoff may change or be redirected by developments which increase the amount of impervious surface of the land. The issue of fertilizers, pesticides and agricultural runoff is an important one in Hubbardston, which has much land devoted to farming practices, this may be one factor in the contamination of present and potential surface and ground water supplies.

Hubbardston has taken steps to begin protection of the Town's wetlands by instituting a wetlands by-law which is generally based upon the State Wetlands Protection Act, MGL Chapter 131, section 40, and its regulations - 310 CMR 10.00. The local by-law creates a 100-foot restricted area around delineated wetlands, this precludes development in that zone (which coincides with the "buffer-zone" as provided for in the state regulations). For any activity, not only development, in or within 100 feet of a wetland, the Town's Conservation Commission would need to be contacted regarding special procedures, studies and permits which may be required. It should be realized that the Conservation Commission is empowered to enforce the Wetlands Protection Act, therefore they work as a regulatory body as well as an advisory group.

Vegetation and Wildlife

Most of the Town of Hubbardston is forested. The majority of these forest areas are composed of mixed hard and soft wood species, with a few isolated stands of hardwoods. With over 1200 acres of State Forest land and over 6500 acres of MDC property, most of which is forested, Hubbardston has an extensive area of wooded land which is somewhat protected from harmful harvesting practices. The remainder of Hubbardston, in undeveloped areas, consists of wetlands, which contain an abundance of plant species, and open agricultural properties, used primarily for cultivation of hay and corn.

Wildlife species are also abundant in Hubbardston. With much natural cover and forage in the non-developed areas of Town, a number of birds and animals can and do exist, especially in the Town's wetlands which provide important habitat for numerous species. The Hubbardston Wildlife Management Area, in the western part of Town, provides a large area of protected land for the purpose of managing wildlife habitat. In addition to the land areas, water bodies are home to wildlife as well. The many ponds and streams provide habitat for a variety of warm and cold water fish species.

The Massachusetts Natural Heritage Program (MNHP) retains records of rare and vulnerable natural features throughout the State. There are currently no rare or endangered plant or animal species on record for the Town of Hubbardston, although historical records of the late 1800's show the existence of a rare plant species in one of the State Forest areas, but this has not been sighted for about 100 years. Should a rare species be found in Town, the MNHP should be notified and possible protection measures could be instituted.

Surface Waters

Hubbardston has a number of lakes, ponds, rivers and streams within its borders. There are sixteen ponds in Town which range in size from two to 127 acres (see Table -, and Map 5) and a few other small ponds which are less than two acres. In addition to these ponds, Hubbardston contains a portion of the Mare Meadow Reservoir, which is the water supply for the City of Fitchburg.

HUBBARDSTON - LAKES AND PONDS*

NAME	ACREAGE
Asnacomet Pond	127
Bemis Pond	14
Bennett Pond	2
Bents Pond	13
Bickford Pond	54
Brigham Pond	45
Burntshirt Hills Pond	5
Cunningham Pond	28
Lovewell Pond	82
Mareau Pond	2
Moosehorn Pond	62
Natty Pond	3
Pinecrest Pond	23
Tannery Pond	5
Waite Pond	35
Williamsville Pond	44
TOTAL	562

(**Bold** lettering signifies MDC control)

*Source: Hubbardston Base Data and Inventory, 1981

Brigham and Williamsville Ponds are tested monthly for water quality. Asnacomet Pond is tested only during the months which the public beach is open. The water sampling is performed by the MDC, located at the Quabbin Reservoir laboratory. There have been no water quality problems reported for these ponds. Although one quality parameter, relative water color, has been high during many of the samplings, color does improve by the time the water reaches the Quabbin Reservoir, via the Ware River intake.

With a large portion of the water and land area in Hubbardston controlled by the MDC it is important to note that certain construction activities occurring within the watershed of any MDC waters are regulated by the Massachusetts Department of Environmental Quality Engineering (DEQE) under the regulations 310 CMR 23.00. The direct or ultimate discharge of any pollutants (including sewage leachate and surface runoff) into MDC waters is strictly prohibited.

Asnacomet Pond is the site of Hubbardston's Town Beach. The pond was transferred from Town to MDC management in 1986. Residents of Hubbardston still retain the right to use the beach area and have access to the pond for fishing and boating, but the MDC provides maintenance and lifeguard services for beach area. There has been discussions of transferring ownership back to the Town; many residents feel the Town should have control over use of the beach and pond by non-residents. The number of beach permits issued is limited daily, this is done in an attempt to lessen the adverse impacts to the pond. The water quality at this site is good (i.e. has had no abnormal bacteria counts), as mentioned previously, and must remain so because it is an MDC water supply.

About 90 percent of the Town of Hubbardston is within the Chicopee River Basin, with the remainder of Town in the Millers River Basin. These basins are part of the Connecticut River Drainage System which covers central Massachusetts. Various rivers and streams in this drainage system make their way through the Town of Hubbardston. Burntshirt River enters Hubbardston from the Town of Templeton, to the northwest. The River then travels for almost six miles through Hubbardston before continuing its flow into Barre. The East and West Branches of the Ware River are also significant water courses through Hubbardston. The West Branch originates in Town and flows for five miles before entering Rutland. The East Branch begins in Westminster, flowing for almost three miles in Hubbardston and continues southward to Princeton. There are numerous streams and brooks which are tributary to these rivers. Some of the tributaries are small, and join to form the larger streams which are listed below:

- Canesto Brook
- Hubbardston Brook
- Joslin Brook
- Mason Brook
- Natty Pond Brook
- Templeton Brook

The Chicopee River Basin is classified as a Class A system under the Massachusetts Surface Water Quality Standards (314 CMR 4.00). Surface waters assigned to this class are designated for use as public water supplies and must be fully protected from pollutants which may degrade the water quality. The Millers River Basin is Class B in Hubbardston. This standard designates waters for uses of protection and propagation of fish, other aquatic life and wildlife; and for primary and secondary contact recreation. The quality of these waters should also not be allowed to deteriorate. Sampling stations for water in the streams and rivers of Hubbardston do not exist but, water is routinely sampled at the Ware River intake in Barre, which supplies water to Quabbin Reservoir.

Potential water contamination sources include the sanitary landfill, which is located over an aquifer area, and is adjacent to Natty Pond Brook. Monitoring wells are in place to detect contamination problems. Another possible contamination source is the temporary salt storage facility at the Highway Department garage. This shed is in poor condition and has no door. The shed is only fifty feet from a small pond and may pose the threat of salt contamination to the pond and the Ware River into which its waters eventually enter.

The Federal Water Pollution Control Act Amendments of 1972 ("The Clean Water Act") provides for the overall maintenance and improvement of water quality in the United States, the Act generally focuses on the issues of municipal sewage problems and industrial wastewater. In 1987, however, new programs (under the newly enacted Water Quality Act of 1987) have provided funding for the control of "non-point source" pollutants, such as: street runoff, agricultural runoff and construction site runoff. These issues should be considered when water quality is endangered by existing or anticipated pollution problems resulting from development or harmful land uses.

Potential Reservoir Sites

In 1973 and 1974 the U. S. Department of Agriculture and the Massachusetts Water Resources Commission identified potential reservoir sites in Hubbardston (Map 5). Natural basins, or topography favorable for storage of water, and an undeveloped pool area were the primary considerations in the initial site selection. Watershed boundaries and drainage areas were determined for each site and storage areas and volumes upstream of the site were calculated. Information regarding the volume of earthfill required for damming the area was gathered. This information was followed by a field inventory of the land and facilities that would be affected if a dam were constructed. If extensive flooding of man-made facilities would result, the site was no longer considered. A surficial geologic investigation of each potential site was conducted to determine geologic conditions that might affect the water holding capabilities of the area. No test boring were conducted during this phase of the investigation, however.

In Hubbardston there are eleven identified potential reservoir sites, however only three of these are deemed "prime potential reservoir sites", these prime sites were determined as the most likely to warrant further investigation should the Town decide to pursue the development of a new reservoir; these are located on Map 5 and described below:

Site Number CP-2905 • Canesto Brook

This site is 4,700 feet downstream from South Street on Canesto Brook. The impoundment would drain 1.4 square miles, and contain a volume of 312 million gallons. The yield of the reservoir would be 1.9 million gallons per day and have a maximum depth of 42 feet.

Site Number CP-2907 • Canesto Brook

This area is approximately 6500 feet upstream of Williamsville Road, on Canesto Brook. The potential drainage area is 2.9 square miles and a volume of 660 million gallons is projected. The reservoir would be a maximum of 45 feet deep and yield about 2.1 million gallons per day.

Site Number CP-2909 • Mason Brook

This site is located about 1500 feet downstream of East Simonds Hill Road, on Mason Brook. The reservoir would have a drainage area of 6.9 square miles, and a volume of 655 million gallons. With a maximum depth of 62 feet, the reservoir would yield 3.0 million gallons per day.

Other potential reservoir sites, which are listed by the Water Resources Commission, but not deemed as prime site due to limited drainage areas, excessive diking requirements or other drawbacks are as follows:

- Site MI-0127 - Expansion of Bents Pond
- Site CP-2906 - Expansion of Lovewell Pond
- Site CP-2908 - On brook, downstream of Marcan Pond
- Site CP-2911 - Canesto Brook, at Williamsville Road
- Site CP-2943 - Expansion of Waite Pond
- Site CP-2947 - Expansion of Williamsville Pond
- Site CP-2948 - Expansion of Brigham Pond
- Site CP-2949 - Expansion of Asnacomet Pond

If a new reservoir is desired further investigation should be carried out; the water holding capacity of a proposed reservoir would have to be more carefully defined and analyzed; and the associated infrastructural costs would have to be reviewed, such as the construction of service lines (none of which exist in Hubbardston presently), dam maintenance, pumping stations, water purification plants, etc. It is equally important to

develop a watershed management plan which would include: an inventory of the existing land uses in the watershed; identification of the development potential and critical areas in need of protection; and identification of existing and potential source of contamination. Pending U. S. Environmental Protection Agency (EPA) regulations may require that all municipal water supplies be filtered if a sufficient amount of watershed protection has not been provided.

With an aquifer study being completed as a component of this Growth Management Master Plan (see section -), the Town is concerned about the supply of water for its residents. Should Hubbardston need to provide additional water for the Town in the future, construction or expansion of a surface water supply source may need to be considered.

Floodplains

Flooding frequently occurs in the spring from rapid runoff caused by heavy rains and snowmelt. When a water body can no longer accommodate increased discharge, water is carried on the flat valley floors or "floodplains" adjacent to the river, stream or other surface water area.

With numerous streams, rivers, ponds and wetlands in Hubbardston, the chance for frequent flooding is high. Mapping of flood hazard areas in Hubbardston was updated by the Federal Emergency Management Agency (FEMA) in 1984 (Map 5). For a community to be involved in the National Flood Insurance Program (NFIP), they must adopt strict land use controls to make sure that new residential development is constructed higher than the 100-year floodplain and non-residential buildings are adequately floodproofed. Although Hubbardston was involved in the mapping of flood-prone areas, in 1984 the Town was sanctioned by FEMA for not adopting a floodplain overlay district by-law and was subsequently removed from the NFIP. With no involvement in the program, residents cannot qualify for federal flood insurance, or receive federal funds for new construction in flood hazard areas.

The 100-year floodplain areas (those designated as Zone A by FEMA Flood Insurance Rate Maps) in Hubbardston occur along all the brooks and ponds in Town, although the width of the floodplains varies with the topography. The most extensive flood plain areas occur along the East and West Branches of the Ware River, and adjacent to Moosehorn Pond - all in the southern portion of Hubbardston.

The presence of flood hazard areas must be accounted for when development is proposed near surface waters. Structures should not be placed within these zones because flood damage could occur. If Hubbardston does become involved in the NFIP, they must designate a "regulatory floodway" which is a corridor through which the 100-year flood can pass without raising the surface elevation more than one foot at any point. This restriction will allow the Town to prohibit filling or development of the floodway which would cause an increase in flood elevations. Flood zones can be used for some types of activities; recreation areas, agricultural practices and parking areas can all be accommodated on floodplains, although activities occurring within the 10-year or 100-year floodplain are likely to be subject to regulation under the state Wetlands Protection Act and local wetlands by-law. The Hubbardston Conservation Commission should be contacted if there is any work proposed within the floodplain zone.

Public Lands, Open Space and Recreation

The Town of Hubbardston has 8416.79 acres of publicly-owned land, according to information gathered through Assessor's records (see Table -). The majority of the land is controlled by the MDC. The MDC land is currently held as open space with most of the land being utilized for watershed protection. The MDC has no plans to develop or

divest itself of these property holdings, in fact, the MDC is continually seeking additional land which may be appropriated as open space for watershed protection. The second greatest public-property owner is the Massachusetts Department of Environmental Management (DEM), Division of Forests and Parks, they currently possess eight State Forest parcels in Town.

PUBLIC LANDS IN HUBBARDSTON*

Ownership	Acreage
Metropolitan District Commission	6522.20
Department of Environmental Management	
• Baker Box Forest.....	40.0 acres
• Bent Forest.....	108.0 acres
• Derby Forest.....	13.8 acres
• French Forest.....	74.1 acres
• Hadley Forest.....	788.5 acres
• William Forest.....	140.4 acres
• Wright Forest.....	41.4 acres
Towns of Fitchburg and Gardner	1206.20
Town of Hubbardston	428.26
Other State Land	228.16
	31.97
TOTAL	8416.79

* Source: Hubbardston Assessors Records

There are a number of recreational sites in Hubbardston. Much of the recreational acreage is in public ownership, although there are privately owned recreational areas in Town which can be used by the public. Table - provides a list of the recreational areas within the Town of Hubbardston, along with a description of the uses of the properties:

Hubbardston Recreational Facilities*

Facility	Activities	Ownership
Asnacomet Pond	Swimming, Boating, Fishing.	Public
Leonard Field	Baseball, Basketball, Tennis, Playground.	Public
Hakala Field	Softball.	Private
Brigham Pond	Ice Skating.	Public
MDC Property	Hunting, Fishing.	Public
State Forests	Hunting, Fishing, Camping.	Public
Mare Meadow Res.	Fishing.	Public
Pinecrest Ski Area	Skating, Skating, Archery, Hiking.	Private
Pinecrest Rec. Area	Camping, Swimming, Basketball, Playground.	Private
Rod & Gun Club	Shooting, Fishing, Softball.	Private
Peaceful Acres Camp	Camping, Swimming, Hiking, Fishing, Skiing.	Private
Moosehorn Pond	Fishing, Boating.	Public
Tall Timbers	Camping.	Private

* Hubbardston Data Inventory and Analysis, 1981.

Hubbardston is in the preliminary stages of developing the Town's Open Space Plan, this plan will address the issues of inventorying, maintaining and providing goals for open space and recreation needs and desires in Hubbardston, and the implications of type of planning to the Town and residents as a whole. For existing and future Town-owned properties, Hubbardston should consider developing a Land Management Plan which could be implemented so these land resources are studied and utilized to their fullest potential, either by developing them as recreation sites or keeping them as conservation areas.

HUBBARDSTON HOUSING ANALYSIS

Introduction

The Town of Hubbardston, like many other towns in the Commonwealth, faces the problem of limited affordable housing opportunities for its residents. In Hubbardston, the median selling price of a home in the second quarter (April through June) of 1987 was \$141,900, a price affordable only to those with family or household incomes of approximately \$50,000 or greater. It is safe to say that many current Hubbardston homeowners would be unable to buy the house they now live in if they were entering the housing market for the first time.

The following sections provide an analysis of Hubbardston's housing supply and housing demand in Hubbardston. This will be followed by an examination of the "affordability gap" - the extent of the mismatch between what current or prospective Hubbardston residents can afford and what they may have to pay to own or rent a home in Hubbardston. The intent of these efforts is to identify those groups with the greatest housing need and to quantify the magnitude of this housing gap. Concluding this section is an analysis of the current housing policies in Hubbardston and the impact those policies have on housing. The findings of these sections will provide the direction for actions to be taken later in the master planning process.

HOUSING SUPPLY

A description of the housing supply in Hubbardston is comprised of three factors: the number and type of units, the owner vs. renter occupancy of the units, and the cost to purchase or rent the units.

In 1980, Hubbardston had a total of 623 housing units. Of these units, 534 (91.9%) were single-family detached dwellings, 35 (5.9%) were duplex, 4 (.7%) were 3-4 unit dwellings and 9 (1.6%) were in structures of five units or more.

By 1986, the total number of housing units had increased by 184 units to 807 (a 30% increase from 1980). This significant increase in the number of housing units is reflected in the substantial increase in building permits from 1980 to 1986. Only 11 building permits were issued in 1980, while in 1986 this number had increased to 88. Most of this new construction was in the form of single-family units with a small amount of duplex dwellings. Only one building permit was for a multi-family unit.

As is the case with other regions of the Commonwealth, there is a regional aspect to Hubbardston's housing issues. Neighboring communities have also experienced a great increase in building permits since 1980, as shown in Table 2.1. However, Hubbardston has had a substantially greater increase than its neighboring communities.

Building Permits for New Housing Units 1980 - 1986

Town	1980	1981	1982	1983	1984	1985	1986	Total
Barre	5	20	12	18	12	15	36	118
Rutland	11	12	7	5	30	39	37	141
Princeton	15	16	16	32	37	44	46	206
Hubbardston	11	15	14	15	19	56	88	218

Source: Building Inspector's Offices

Occupancy

In 1980, 499 (80%) of the town's 623 housing units were owner-occupied, and approximately 11% were renter-occupied. In 1987, it is estimated that owner-occupied units represent 85% of the total occupied households in Hubbardston, and rentals approximately 14% of the occupied households.

It should be noted that in 1980, a large number of units were vacant for various reasons, e.g. the units were for sale, for rent, or were seasonal homes. These vacant units represented 9% of the total housing stock. Of this 9%, approximately 26 or 4% were seasonal dwellings. If 4% of the 1987 dwellings were seasonal, this would amount to 32 units.

Housing Costs

Housing costs have been examined for both ownership and rental units, and are discussed below.

Homeownership

The median price of a home in Hubbardston has escalated dramatically over the past few years. In the fourth quarter of 1985, the median house price was \$73,500, by the second quarter of 1987, this cost had increased to \$141,900, a 93% increase from mid-1985. Although the 1987 average house price places Hubbardston in the "middle" of its neighboring communities, (as noted below) the increase in home prices from 1985 - 1987 is significant. Table 2.2 compares the median home prices to a few neighboring communities.

Table 2.2 illustrates the median home sales price for Hubbardston, Princeton, Barre and Rutland for 1987.

Median Home Prices (January 1987 - June 1987)

<u>Community</u>	<u>1987 Median Price</u>	<u># of Sales</u>
Princeton	159,067	10
Rutland	131,629	11
Barre	112,500	3
Hubbardston*	141,900	9

* April to June, 1987

Sources: Hubbardston Assessors Office, Worcester MLS Comparable Book, County Home Data Services, Inc.

According to Realtors handling properties in the area, the median price of housing in Hubbardston has increased substantially since 1980. Realtors made "off the top of their heads" estimates for housing price increases ranging from prices of houses doubling in the last three years to an increase of 50% of the price over the last year. County Home Data Services, Inc. reports that for the past two years, the average house price has increased by \$7,143 per quarter. However, the market has slowed the past few months. Opinions differ as to the condition of the housing market in Hubbardston. One Realtor stated that Hubbardston is a "very hot town" at the moment, while another Realtor stated that he had difficulty selling in Hubbardston because it was just too far away from metropolitan areas. One Realtor stated that much of the new housing in Hubbardston comes from young people buying a parcel of land and then 3 - 5 years later building a house on it .

Rental Units

Very few rental units are available in Hubbardston. According to local Realtors contacted, rents range from \$850 for a three bedroom house to \$375 for a one bedroom apartment. There is only one apartment complex in town in which rents range from \$375 to \$450 a month. Although these rents may seem very reasonable, the apartments are not of the best quality.

Subsidized Affordable Units

The Commonwealth of Massachusetts has mandated that local governments work towards creating a significant affordable housing stock. One such mandate is Chapter 774 of the Acts of 1969, codified in Massachusetts General Laws as Chapter 40B. This law seeks to encourage the construction of federal or state subsidized affordable housing units in communities whose housing stock contains less than 10% subsidized units. As a result of Chapter 40B, a benchmark for affordable housing has become the proportion of subsidized units (refers to units which are developed or aided through an array of state and federal programs) that exist within a community. As of 1987, Hubbardston had 36 units of assisted elderly, handicapped and disabled units, leaving 5.5% or 44 units shy of the Commonwealth's 10% benchmark. This is however within the usual percentage range of most Massachusetts communities. At the present time only 23 of the 351 Cities and Town in the Commonwealth meet the 10% desired number. For comparison several nearby communities have been listed with the percentage of "subsidized" housing in each community.

Town	Percentage
Barre	4.5%
Holden	2.8%
Hubbardston	4.5%
Princeton	0.0%
Rutland	0.0%
West Boylston	1.6%

These subsidized units were in buildings owned by the Hubbardston Elderly Housing and managed by the Rural Housing Improvement Inc.. There are only two names on the waiting list for these units, which at first would indicate little demand for subsidized units. However, according to the Rural Housing Improvement Inc., there is a great demand for subsidized housing in Hubbardston. Many elderly homeowners who would like to participate in housing subsidy programs "fall through the cracks", since their homeownership pushes them over the income limit guidelines, despite their low monthly incomes.

Summary

Hubbardston's housing stock is primarily composed of single-family detached dwellings. Housing prices have risen dramatically through the 1980's. In addition to the rising costs of homeownership, the unavailability of rental units in Hubbardston presents problems as well. The high number of owner-occupied homes and few available rentals in Hubbardston contributes to rising rental costs. It also appears from available data that the number of residents seeking rental units is increasing, suggesting an increased demand for rental units and, thus, even higher rental costs in the future.

HOUSING DEMAND

Population

Population changes play an obvious role in the demand for housing, with an increase in population implying a stronger demand for both owner-occupied and rental units. Population in Hubbardston had increased at a relatively slow pace during the period 1980 - 1986. In 1980, Hubbardston had a population of 1,781. By 1986, population had reached 2,102; an increase of 18%. This was much greater than other towns in the region: Princeton grew by 10% while the Towns of Rutland and Barre actually decreased in population. Statistical projections estimated Hubbardston would reach a population of 2,176 by 1990. Hubbardston will be close to that projection if growth continues at the present rate.

Household Characteristics

Over the past decade, the characteristics of the traditional household have been changing, not only on a state-wide level, but nationally as well. The most important aspect of this change is the decline in size of the average household. In 1980, the average household size in Hubbardston was 3.16 persons. It was estimated to be 2.97 in 1987 and will be 2.88 by 1992. One factor contributing to this decline is an increase in single person households. The number of single-person households in Hubbardston rose from 13.7% in 1980 to an estimated 16% in 1987. This trend is also projected to continue through 1991.

The decrease in household size and the increase in single-person households may indicate that at least some households are living in units which have "surplus" bedrooms. The increase in households (from 569 in 1980 to 682 in 1987), combined with declining household size, points to increased demand for homes which fit the characteristics of the new "average" household.

Age Composition

The numerical "strength" of various age groups in town may also have a significant impact on housing demand in an area. Table 3.1 illustrates the various age groups in town and their growth or decline.

Age Composition				
Age	1980		1987 (Est.)	
	No.	%	No.	%
0 - 5	173	9.6	205	10.1
6 - 13	268	14.9	266	13.1
14 - 17	167	9.3	176	8.7
18 - 20	77	4.3	63	3.1
21 - 24	89	5.0	86	4.2
25 - 34	354	19.7	440	21.6
35 - 44	234	13.0	374	18.4
45 - 54	146	8.1	133	6.6
55 - 64	142	7.9	121	6.0
65+	147	8.2	166	8.2
Median Age	28.5		30.0	

Source: Urban Decision Systems, 1987

This table shows not only an increase in the median age of Hubbardston residents, but a marked change in specific age groups. An interesting aspect of the population is the decline in percent of total population for residents age 0-20 (3.1% decline) and the strong increase in ages 21-44 (a 6.5% rise). The 21-44-year age group is generally considered as the first-time home buyers age bracket.

Income

The income of a town's population is perhaps the most critical factor when examining housing need. The following Table 3.2 examines the various income levels found within Hubbardston.

Income Distribution

Household Income	1980		1987(Est.)	
	Count	Percentage	Count	Percentage
Less than \$ 5,000	43	7.6	34	5.0
\$ 5,000 - \$ 9,999	67	11.8	59	8.7
\$10,000 - \$14,999	79	13.9	64	9.4
\$15,000 - \$19,999	105	18.5	63	9.3
\$20,000 - \$24,999	112	19.7	66	9.7
\$25,000 - \$29,999	56	9.8	81	11.9
\$30,000 - \$34,999	49	8.6	65	9.6
\$35,000 - \$39,999	24	4.2	66	9.7
\$40,000 - \$49,999	24	4.2	94	13.8
\$50,000 - \$74,999	7	1.2	67	9.9
\$75,000+	0	0.0	20	2.9
TOTAL	569	100.0%	682	100.0%

	1980	1987 (Est.)
Median Household Income	\$19,623	\$28,302
Average Household Income	\$20,091	\$35,225
Per Capita Income	\$ 6,358	\$11,828

Source: Urban Decision Systems, 1987

Housing affordability is especially an issue for so-called low- and moderate-income households. Low-income households have been defined by the federal and state government as those with incomes between 50% and 80% of the median income for the town or region. Moderate income is defined as between 80% to 120% of the median income. Both of these income groups may be eligible for certain housing assistance programs.

A low income household in Hubbardston would have a yearly median income of \$14,161 to \$22,641. Approximately 160 households would fall into this category, representing about 23% of the total households in town. A moderate income household would have an income between \$22,642 and \$33,962, representing approximately 179 or 26% of the households in town.

While the groups described above may have difficulty locating affordable housing in Hubbardston, it is even more difficult for those at poverty-level incomes. The U.S. Department of Commerce's 1986 federal poverty-level guidelines are defined as below:

Poverty Income Levels

Household Size	Annual Income Levels
Single person	\$ 5,572
Two-person	\$ 7,138
Three-person	\$ 8,727
Four-person	\$ 11,203

Since the average-size household in Hubbardston is 3.16 persons, the poverty-income level is approximately \$8,727. A minimum of 34 households (as seen in Table 3.2) are below this level with incomes less than \$5,000. Another 59 households are within the income range of \$5,000 - \$9,999. Without more specific income information, it can be assumed that up to 40 to 50 of these households are below the poverty level of \$8,727. Thus, a total of approximately 64 to 75 households in Hubbardston may be below the federal poverty level.

Summary

Housing demand in Hubbardston is increasing as a result of several trends. Population and the number of households is rising while household sizes are decreasing. Demand is also increased by a larger number of single-person households and an increased number of residents in the age group of the traditional first-time homebuyer (25 - 44 years). Additionally, 339 or 48% of the population are termed "low and moderate" income by the state and federal government. More critical is the large number of families (approximately 64 to 75) that are below the federally-defined poverty level. These numbers indicate a need for increased affordable housing in Hubbardston.

HOUSING NEED

The following section examines the housing need in Hubbardston through three methods; the "affordability gap", subsidized unit waiting lists and an examination of Hubbardston's status in relation to state housing initiatives.

Median Income and Affordability

One test for the affordability of Hubbardston's housing is to compare the purchasing/renting "power" of the median household income in town with the median selling price for a home or the median price of a housing rental. Housing experts as well as human service professionals agree that a housing affordability problem exists when an individual or family has to pay more than 30% of his or her gross income toward rent or mortgage payments.

With this 30% limit in mind and assuming a 20% downpayment and a 10% mortgage rate over a 30-year period, a median income household in Hubbardston (\$28,302) could afford a home that costs approximately \$79,585.

Looking at the affordability issue from another perspective, a Hubbardston household would need to earn approximately \$50,000 per year to purchase the median value home (\$141,900) in Hubbardston. Table 4.1 illustrates, for various income levels, what the maximum affordable purchase price would be for that household. In Scenario Three

(20% down, 11%, 30-year mortgage), only 12.8% of Hubbardston's total households could currently afford the median value home.

The limited availability of rentals in Hubbardston poses a problem for some Hubbardston residents. Typically, though, the income of someone who rents is lower than the overall median income. Though one apartment building contains rentals at an affordable price, most other rentals are houses with rents about \$850 a month.

Housing Need

Housing need can be defined in various ways; 1) a lack of housing that is affordable to a significant segment of the population; 2) a presence of households with insufficient income to be able to remain in the community because of escalating housing costs; or 3) a lack of housing with appropriate characteristics (size, type, special facilities, etc.) to match the composition of the community's households. In the simplest terms, housing need exists if there is a mismatch between the ability to pay for housing and the cost of housing available in Hubbardston.

While discussions of state standards and comparison of median incomes to housing costs helps to substantiate the housing needs in Hubbardston, they lack specificity in terms of target groups and the actual number of additional affordable units needed by the population of Hubbardston. Determination of the number of units needed is difficult in large part due to the lack of updated data relating to the various income levels of residents and age groups, e.g. those who do not own their own homes. This group, composed of approximately 14% of the town's households, or 96 households, is one where specific programs could be targeted.

Some generalizations, based on available data and existing reports, help to identify specific groups. The waiting list for the Hubbardston Elderly Housing has only two names. However, many other elderly homeowners have applied to the program, but are ineligible under current guidelines. This indicates that there is a greater need for subsidized housing than the numbers on the waiting list implies.

For another growing age group, age 21 - 44, the problem of housing affordability is mostly one of ability to purchase. This group comprises the majority of potential first-time homebuyers. In Hubbardston, however, an annual income of over \$50,000 would be required to purchase the median value home. IEP estimates approximately 595, or 87.2 percent of Hubbardston's households would be unable to purchase an affordable home in Hubbardston. The primary local effect of this disparity will be a continued exodus of young adults who grew up in Hubbardston.

Another method to quantify housing need is to use the poverty guidelines discussed previously. According to IEP estimates, there were approximately 64 to 75 households below the poverty level in Hubbardston. Assuming that current assisted units are occupied by households with incomes below the poverty level, there are still 39-28 households still in need of housing assistance. These figures represent the minimum number of assisted units that Hubbardston needs to develop for its most needy residents.

Town of Hubbardston: Housing Affordability By Annual Income Level

Annual Income	Scenario One (5% Downpayment)		Scenario Two (10% Downpayment)		Scenario Three (20 % downpayment)	
	Max. Affordable Purchase Price	Monthly Payment	Max. Affordable Purchase Price	Monthly Payment	Max. Affordable Purchase Price	Monthly Payment
\$ 15,000.00	\$ 35,983.00	\$ 375.00	\$ 37,982.00	\$ 375.00	\$ 42,730.00	\$ 375.00
\$ 20,000.00	\$ 47,978.00	\$ 500.00	\$ 50,634.00	\$ 500.00	\$ 56,974.00	\$ 500.00
\$ 25,000.00	\$ 59,972.00	\$ 625.00	\$ 63,304.00	\$ 625.00	\$ 71,217.00	\$ 625.00
\$ 25,875.00	\$ 62,071.00	\$ 647.00	\$ 65,520.00	\$ 647.00	\$ 73,710.00	\$ 647.00
\$ 30,000.00	\$ 71,967.00	\$ 750.00	\$ 75,965.00	\$ 750.00	\$ 85,460.00	\$ 750.00
\$ 35,000.00	\$ 83,961.00	\$ 875.00	\$ 88,626.00	\$ 875.00	\$ 99,704.00	\$ 875.00
\$ 40,000.00	\$ 95,955.00	\$ 1,000.00	\$ 101,286.00	\$ 1,000.00	\$ 113,947.00	\$ 1,000.00
\$ 45,000.00	\$ 107,950.00	\$ 1,125.00	\$ 113,947.00	\$ 1,125.00	\$ 128,191.00	\$ 1,125.00
\$ 50,000.00	\$ 119,944.00	\$ 1,250.00	\$ 126,608.00	\$ 1,250.00	\$ 142,434.00	\$ 1,250.00
\$ 55,000.00	\$ 131,939.00	\$ 1,375.00	\$ 139,269.00	\$ 1,375.00	\$ 156,677.00	\$ 1,375.00
\$ 60,000.00	\$ 143,933.00	\$ 1,500.00	\$ 151,930.00	\$ 1,500.00	\$ 170,921.00	\$ 1,500.00
\$ 65,000.00	\$ 155,928.00	\$ 1,625.00	\$ 164,590.00	\$ 1,625.00	\$ 185,164.00	\$ 1,625.00
\$ 70,000.00	\$ 167,922.00	\$ 1,750.00	\$ 177,251.00	\$ 1,750.00	\$ 199,407.00	\$ 1,750.00
\$ 75,000.00	\$ 179,917.00	\$ 1,875.00	\$ 189,912.00	\$ 1,875.00	\$ 213,651.00	\$ 1,875.00

ASSUMPTIONS;

All scenarios assume a 10%, 30-year mortgage, with monthly payments equal to 30 % of gross income and composed of mortgage payments plus property taxes. (property tax = 20 % of monthly payment).

Scenario One assumes a five percent downpayment.

Scenario Two assumes a ten percent downpayment.

Scenario Three assumes a twenty percent downpayment.

State Initiatives

There are two state initiatives that reflect Massachusetts' goal of encouraging the production of affordable housing with which Hubbardston should be concerned: Executive Order 215 and Chapter 774. Executive Order 215 directs any state agency disbursing development-related financial assistance to withhold discretionary funds to cities or towns which have been determined to be unreasonably restrictive of new affordable housing growth. Under Executive Order 215, the Secretary of EOCD determines whether a town's local land use practices are exclusionary. Exclusionary practices might include: building moratoria; unwarranted large-lot zoning (environmental constraints do not necessitate such requirement); exclusion of multi-family (two-, three- or four-unit housing); unnecessarily stringent subdivision standards (ie. excessively wide Right-of-Way requirements); and zoning which does not permit "accessory" apartments.

If a town is determined to be exclusionary in its housing practices, the denial of state funds is a possibility. Towns may enter into Memorandums of Agreement with EOCD, which commits the town to a strategy for meeting their fair share of housing need, and thereby re-establish eligibility for receipt of state funds. For example, one South Shore town recently signed an agreement with EOCD outlining the steps and proposed timetable for the provision of affordable housing. The strategy includes, among other objectives, a developable site inventory and an examination of the town's local regulatory structure as it pertains to affordable housing.

The second state initiative, Massachusetts General Laws Chapter 40B, Section 20-23 (also known as Chapter 774 of the Acts of 1969), addresses subsidized units, and is particularly important for a town. Under Chapter 774, a public agency, a non-profit organization, or a limited dividend corporation planning to build low and moderate-income housing may apply to Hubbardston's Zoning Board of Appeals (ZBA) for a "Comprehensive Permit" which must, in turn, notify other local boards, hold a public hearing and issue a decision. The ZBA's decision is to be based primarily on whether the project is "consistent with local needs", which is defined by the statute as follows:

Requirements and regulations shall be considered consistent with local needs if they are reasonable in view of the regional need for low and moderate income housing considered with the number of low income persons in the city or town affected and the need to protect the health and safety of the occupants of the proposed housing or of the residents of the city or town, to promote better site and building design in relation to the surroundings, or to preserve open spaces, and if such requirements and regulations are applied as equally as possible to both subsidized and unsubsidized housing. Requirements or regulations shall be consistent with local need when imposed by a board of zoning appeals after comprehensive hearing in a city or town where (1) low or moderate income housing exists which is in excess of ten per cent of the housing units reported in the latest decennial census of the city or town or on sites comprising one and one half per cent or more of the total land area zoned for residential, commercial or industrial use or (2) the application before the board would result in the commencement of construction of such housing on sites comprising more than three tenths of one per cent of such land area or ten acres, whichever is larger, in any one calendar year; provided, however, that land area owned by the United States, the commonwealth or any political subdivision thereof, the metropolitan district commission or any public authority shall be excluded from the total land area referred to above when making such determination of consistency with local needs.

The ZBA can deny or apply conditions of approval to an application in order to promote the public health and safety, preserve open space and promote more efficient site design, but only when these issues outweigh the regional need for affordable housing.

If the ZBA issues a denial, a developer may appeal to a five-person Housing Appeals Committee (HAC) at the state level. Evidence indicates that such local denials are usually overturned by the HAC. As of March 1987, 81 decisions had reached the HAC. Of these 81 denials, 74 were overturned and 7 were upheld. A number of local denials focused on health, safety and planning issues as the reasons for denial. It appears from the available data that unless these health and safety issues are particularly acute (for instance, the HAC upheld a permit denial which found that water volume and pressure

was inadequate and to remedy the situation would be a tremendous financial burden on the town), the HAC will rule on the side of the developer of affordable housing.

If the town wishes to avoid the possible operation of chapter 774, a number of different development scenarios could result in achieving the 10% threshold. The town may attempt to reach this goal quickly by preceding with large affordable housing projects. Two or three large developments, perhaps on the scale of the existing affordable housing project in town, could enable Hubbardston to add the additional 45 units required to meet the 10% level.

An alternative approach would be to stretch out the development of these subsidized units over a 10 to 15 year span. This would entail developing 5 to 8 units of affordable housing a year. The benefits of this approach would be the ability to assess infrastructural needs ahead of time and the ability to integrate affordable with market-rate units thereby lessening the public perception of a large "housing project". Regardless of the scenario, it should be noted that the number of affordable units required will increase as the total housing stock increases in number.

In addition to the 10% figure, two other thresholds are set by Chapter 774. First, a community that has devoted over one and one half percent of all its residential, commercial and industrially zoned land for subsidized housing is considered to be in compliance with minimal affordable housing standards. In Hubbardston this would mean approximately 253 acres of the town would be used for publicly-subsidized housing.

The final threshold set by Chapter 774 concerns specific applications for affordable housing. If the application results in the construction of low and moderate income housing or more than .3% of the total land, or ten acres in any calendar year, the town is considered to have attained this threshold. In Hubbardston, this would mean approximately 51 acres of the town would need to be developed for subsidized housing each year.

HUBBARDSTON HOUSING POLICIES

The purpose of analyzing Hubbardston's housing policies is to reveal what the town has established for housing goals. The zoning bylaws, amount of assisted housing and the success of a Housing Authority are all indicators of a town's housing policies.

The Zoning bylaw of the Town of Hubbardston presently calls for the construction of approximately 6934 dwelling units, of which almost 807 have now been constructed. However, until very recently, the Town had not addressed for whom these homes should be built. Housing units are no longer necessarily constructed to serve defined community needs, but rather are directed to an "out-of-town" housing market. As a result, they are designed, constructed and priced for needs which are increasingly different from those of local residents.

Zoning bylaws also reveal what type of housing a town has "blueprinted" itself for by limiting or allowing certain types of housing. The present zoning bylaws are rather "open-ended" since they allow residential, as well as other uses everywhere in town. The only requirement is the limit of minimum lot sizes to 80,000 square feet with 200 feet of frontage. Multifamily housing units are allowed under the zoning bylaws. However, the minimum lot sizes are increased by 20,000 square feet for each additional dwelling unit with not more than four units per dwelling allowed. Restricting housing to large lots does to a certain degree restrict the development of affordable housing. Land prices have increased substantially in the past few years. When land is expensive, it contributes to the increase in housing costs. Nevertheless, a lot size requirement of 20,000 square feet per dwelling unit in a town without municipal sewerage, is not, by itself, excessively restrictive.

Allowing accessory units, such as in-law apartments, and the conversion of single units into multiple units can create other types of affordable housing. Though the present zoning bylaws do not specifically state whether these types of units are allowed, a liberal interpretation of the by-law would say that they are.

The amount of subsidized housing and the success of a local Housing Authority also reveals a town's housing policies. Only one subsidized housing facility exists in Hubbardston, although it does contain a relatively high percentage (4.5) of the town's housing stock. Additionally, Hubbardston does not have a Housing Authority. These indicators demonstrate an inconsistent commitment to develop affordable housing in Hubbardston. As demonstrated in the previous section, Hubbardston needs to develop 45 more affordable housing units to meet the standards suggested in Chapter 774. The development of a housing policy to create more affordable housing would assist Hubbardston in meeting that goal.

SUMMARY

Although Hubbardston is generally within the guidelines of Executive Order 215, it is still susceptible to Chapter 40B projects. The median income household can only afford a home that costs about \$78,782, about one-half the price of the median value home in town. Thus, a large affordability gap exists between the median income of a Hubbardston household and the median income home price.

The lack of available rental units is also a problem. The median income of households which rent tend to be much lower than the overall median income in a town. Yet for a growing segment of the work force, this is the only type of "affordable housing."

The number of potential first-time homebuyers in the age group 21-44 is increasing. It is unlikely they would be able to afford a median priced home in Hubbardston based on the median income of town residents. Therefore, many young people who grew up in Hubbardston are unable to buy a house in their hometown.

Finally there exists considerable pressure from various groups within the Commonwealth to allow significant amounts of multi-family housing as a solution to the "affordability" problem. Yet, detached single family housing is not only the traditional housing form in Hubbardston, it has in fact shaped the scale and character of the community. One of the assertions by those advocating multi-family housing is that it is the only means by which housing can be made affordable. Hubbardston might consider allowing variations in its traditional housing stock only if it is affordable through a variety of rent control and subsidy programs. Another possibility is the allowance of multi-family units conditioned upon meeting an architectural review process that requires that multi-family structures retain the traditional character and scale of Hubbardston.

AQUIFER DELINEATION STUDY REPORT

REVIEW AND COMPILATION OF EXISTING DATA

The Massachusetts Hydrogeologic Information Matrix, published by the Massachusetts Department of Environmental Quality Engineering, September 1986, provided a list of United States Geological Survey (USGS) publications pertinent to this study. These publications (open file reports, hydrologic atlases, and hydrologic data reports) are discussed below. The Town of Hubbardston is located on the following USGS Quadrangles: Templeton, Wachusett Mountain, Barre, and Gardner.

Open File Report 78-379

There is no published final surficial geologic map which includes the Town of Hubbardston. There is a preliminary surficial geologic map (Open File Report 78-379, Preliminary Map of Surficial Deposits of the Gardner Quadrangle, Worcester County, Massachusetts, by B.D. Stone) which contains surficial geologic information for the northeast corner of the Town of Hubbardston. This map was unavailable at the time this report was written. However, a surficial geologic map of the Town of Hubbardston delineating the till/stratified drift boundary was completed as a part of this study (See Aquifer Delineation section below).

USGS Hydrologic Atlases

Hydrologic Atlas-249, Ground-Water Favorability of the Connecticut River Basin New England States by Cederstrom & Hodges (HA-249) contains a map (scale 1:250,000) showing areas generally favorable for development of groundwater supplies. According to this map Natty Pond Brook, Conesto Brook, and West Branch of the Ware River are areas of groundwater favorability. The other hydrologic atlases listed in the Hydrogeologic Matrix (HA-276 and HA-293) cover portions of the quadrangles other than the Town of Hubbardston.

USGS Hydrologic Data Report

Hydrologic data reports contain data for selected borings completed within a given area. This data includes a soil log, date the well was drilled, and other information about the boring. Hydrologic Data Report-11 (Millers River Basin, by Wiesnet and Fleck) covers the northernmost portion of the Town of Hubbardston. Only one well was included from the Town of Hubbardston. Information from the well log was incorporated in the Subsurface Data Points Table (Appendix A).

Other data sources including Soil Conservation Survey Maps, boring logs from drilling companies, Commonwealth of Massachusetts reports, and the Town of Hubbardston well registry and percolation test records were reviewed and are discussed below.

Soil Conservation Survey Maps

The Soil Conservation Survey Map for the Town of Hubbardston is not completed. There was no preliminary map available.

Drilling Companies

A total of nine well drilling companies in the Hubbardston area were contacted in regard to obtaining boring logs from borings completed in the Town of Hubbardston. Two companies (R.E. Chapman and F. & R. Scales both of Oakdale, MA) provided boring logs to IEP, Inc. The others either had no records or were unwilling to provide the data. The boring logs that were collected were compiled the Subsurface Data Points Table (Discussed below).

Commonwealth of Massachusetts Reports

The Department of Environmental Quality Engineering (DEQE) (Central Region-Worcester office) has a copy of the Water Supply Protection Atlas. This atlas contains overlays showing water sources, waste sources, drainage basin divides, and aquifer information by United States Geological Survey (USGS) Quadrangle Maps. Drainage divide and aquifer information overlays for the quadrangles which encompass the Town of Hubbardston were reviewed and incorporated on the Aquifer Protection Overlay Map, Plate. This information along with Hydrologic Atlas-249 served as a preliminary map of the till/stratified drift boundary. The till/stratified drift boundary was then field checked by IEP, Inc. personnel.

The DEQE office also has files concerning hazardous materials which are available for review. These files include Incidence-Response (spill reports of hazardous materials) File, a list of sites to be investigated, and the Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA) List of Hazardous Generators. The Incidence-Response File for the Town of Hubbardston listed five incidences of release of potentially hazardous materials. All incidences were reported as closed. The Community Pallet Co. on Brigham Street was reported (May 5, 1987) as improperly storing waste oil. A fire at Caseys Woodworking on Rte 68 was reported January 15, 1987 as threatening combustion of lacquer, paint thinner, paints, and solvents. No further response was indicated. The Rousseau Building was reported (January 12, 1986) to have water contaminated with solvents used in the woodworking process. Ken's Grocery on Main Street was reported (March 6, 1987) as having underground storage tanks which failed and released benzene and toluene. Wain-Roy Inc. on Rte. 62 was reported (May 5, 1987) as improperly storing paint sludge and waste and spent paint solvents. The case was closed and no new evidence of dumping was reported. The only RCRA Generator listed was Wain-Roy Inc. (MAD043469923). This company was listed as a small generator indicating less than 100 kilograms of hazardous materials generated per month. The Sites to be Investigated List contained one site, Ken's Grocery on Main Street, for the Town of Hubbardston dated October 15, 1987. This site was not listed as requiring remedial action.

The Montachusett Regional Planning Commission was contacted regarding information about the surficial geology, soils, and/or the aquifer for the Town of Hubbardston. No information was available from this source.

SUBSURFACE DATA POINTS TABLE AND MAP

Subsurface Data Points Table

All information from available well logs was compiled and placed in a table called the Subsurface Data Points Table (Appendix A). This table was used as a basic data reference for calculating transmissivity and saturated thickness for the aquifers in the Town of Hubbardston. The location of the wells are shown on the Subsurface Data Points Map (Plate 1).

The Data Points Table contains several columns. The first, "Well No." is a two part number assigned to each well log by IEP, Inc. The first number is the well number and the second indicates the year the well was installed. This is also used on the Data Points Map to designate the location of each well. The "Date Drilled" column is self-explanatory. The third column "Driller" contains the name of the drilling company that drilled the boring. The fourth column "Type Well" indicates whether the well is a test boring (T), observation well (O), or private well (P). The fifth column contains the "Diameter" of the well in inches. Well diameters generally range from 2.0 to 6.0 inches. The "Depth" (feet) column indicates the total depth of the finished boring. The seventh column "Soil Logs" contains the drillers descriptions of the material encountered during drilling. The eighth column "(b)" is the saturated thickness of the aquifer. This is the total thickness of stratified drift below watertable. If refusal in till or bedrock was not

reached, saturated thickness is shown on the table with a greater than symbol prior to the number because the exact thickness of the aquifer was not determined at that location. The next column "(T)" contains the estimated values of transmissivity of the aquifer at the well location. The method of estimating transmissivity, which is a term used to indicate the ability of an aquifer to "transmit" water, will be discussed below. The values in the next column "Well Yield" were taken from the well logs where pumping was recorded. These values represent the rate water was removed from the well in gallons per minute (gpm). The eleventh column "Water Level" was also recorded from the logs when available. This value represents the depth below ground surface where groundwater was observed.

Subsurface Data Points Map

The Subsurface Data Points Map shows the location of each boring noted on the Subsurface Data Points Table.

The boring logs were categorized as either containing mainly stratified drift or till. Borings mainly penetrating stratified drift were designated with a circle. Borings penetrating mainly till were designated with a square. If either category met refusal in either bedrock or till the symbol was half blackened. Each boring symbol is marked with the corresponding well number from the Subsurface Data Points Table.

Transmissivity

The surficial deposits that have the most potential as aquifers are stratified drift deposits which include kame delta, kame plain, and kame sediments. These deposits are composed of clean sand and gravel and are capable of yielding large volumes of groundwater. Glacial tills are composed of material ranging in grain size from clay size to boulders. Glacial tills are often compact with few void spaces between the grains that are capable of holding water. As a result, this material has very little potential as a groundwater source.

Values of transmissivity were calculated for each well log in the Subsurface Data Points Table and placed in the Transmissivity "(T)" column. Where no water level value was included on the log an estimate of water level was made. The USGS method of calculating transmissivity was used in this study. This method entailed estimating transmissivity at a particular boring location by multiplying the saturated thickness of each lithologic unit by the estimated hydraulic conductivity and then summing the products. An example of the calculations completed for a test well located on the Pitcherville Road follows:

Lithologic Unit	Saturated Thickness	Estimated Hydraulic Conductivity	Transmissivity
Sand and gravel	6 feet	10^3	10^3
Hardpacked sand and gravel and clay	15 feet	0	0
Total Transmissivity	10^3		

AQUIFER DELINEATION FOR THE TOWN OF HUBBARDSTON

Methods of Investigation

First an effort was made to compile all existing information available regarding the surficial geology of the Town of Hubbardston. This information serves as a data base for delineating the aquifers in the Town of Hubbardston. As noted above, there is no surficial geological map or Soil Conservation Survey Map for the Town. USGS Hydrologic Atlas-249 served as a base map which was field checked and compared to available subsurface data. Field checking the hydrologic atlas involved examining exposures of the surficial material found in road cuts, gravel pits, and construction excavations. The characteristics of the deposits between the specific data points were inferred from each deposits morphology (shape), topographic expression, and elevation. The till/stratified drift boundary is found on the Aquifer Protection Map (Plate 2).

Unconsolidated Deposit Aquifers

Hydrogeologically, unconsolidated deposits in Hubbardston are divided into two broad classes, till and stratified drift. Till is material deposited directly by ice which does not act to sort the material. Consequently, till is a diamicton, that is, a poorly sorted heterogeneous mixture of unstratified gravel, sand, silt, and clay. Because this material is so poorly sorted, it has a very low transmissivity and is not considered an aquifer in this study.

Stratified drift (sand and gravel) consists of both ice-contact and proglacial deposits. This material is deposited by glacial meltwater which sorts the sediments to varying degrees. This sorting generally allows better "transmission" of groundwater. Ice-contact stratified drift tends to be coarser grained and less well sorted than proglacial drift. Because the finer-grained material is winnowed away by the flowing water, ice-contact materials usually have moderate to moderately high transmissivities. Proglacial drift is material deposited by glacial meltwater but has been carried away from ice edge. Thus this material is finer grained, better sorted, and generally has higher transmissivity values.

Aquifer Protection Map (Plate 2)

The till/stratified drift boundary is the surface expression of the extent of the sand and gravel deposits within the Town. The majority of stratified drift deposits in the Town are found in the valleys. The upland areas are typically composed of till and/or bedrock. The sand and gravel deposits fall within two major drainage basins: Millers Drainage Basin and Chicopee Drainage Basin. The Millers Drainage Basin in the Town of Hubbardston includes only the Hubbardston Brook Sub-basin. The Natty Pond Brook, West Branch of the Ware River, Canesto Brook, Burnshirt River, and Joslin Brook Sub-basins are located within the Chicopee Drainage Basin. The three watersheds which show potential for water supply development include the Natty Pond Brook Sub-basin, the West Branch of the Ware River Sub-basin, and the Burnshirt River Sub-basin.

AQUIFER PROTECTION AREAS

Introduction

Aquifer Protection Areas include sand and gravel deposits of sufficient saturated thickness so that adequate yield can be maintained as well as adjacent sand and gravel deposits which could provide recharge to a groundwater supply well. Due to the relatively porous nature of these materials, contaminants often can reach the groundwater relatively rapidly. Thus all current and future land uses must be scrutinized. Particularly adverse uses such as landfills, salt storage piles, auto junkyards, and underground petroleum storage tanks, for example, should be prohibited.

Natty Pond Brook Sub-basin

The Natty Pond Brook Sub-basin is located in the western part of the Town of Hubbardston on the Barre and Templeton USGS quadrangle maps. Several borings have been completed in the sand and gravel deposits within this sub-basin (see Subsurface Data Points Map and Table). The well logs from these borings indicate sand and gravel aquifer up to sixty feet thick near the Town of Hubbardston Landfill. Estimated transmissivity values range from 10,000 to 100,000 gallons per day per foot (gpd/ft). Possible contamination from the Hubbardston Landfill located near these borings should be considered if this area is to be explored for groundwater supply.

West Branch of the Ware River Sub-basin

The West Branch of the Ware River Sub-basin is located in the south-central part of the Town of Hubbardston on the Barre and Wachusett Mountain USGS quadrangle maps. Logs from borings completed in the sand and gravel deposits were reviewed. The logs record up to ten feet of sand and gravel aquifer. Two of the logs record refusal at relatively shallow depths. This shallow refusal maybe due to the presence of boulders and not necessarily refusal in till or bedrock, thus the sand and gravel deposits may be thicker than indicated by these logs. In addition to this, Hydrologic Atlas-249 shows this area to be favorable to the development of large groundwater supplies. Further investigation into the characteristics of the sand and gravel deposits is required to verify this areas suitability for development of groundwater supplies.

Canesto Brook Sub-basin

The Canesto Brook Sub-basin is located in the western part of the Town on the Barre and Templeton USGS quadrangle maps. No boring logs were collected from this area. However, Hydrologic Atlas-249 depicts this area as largely composed of fine-grained ice-contact and valley-train deposits and lake beds. This material is generally considered unfavorable for development of large groundwater supplies.

Burnshirt Brook Sub-basin

The Burnshirt Brook Sub-basin is located in the western part of the Town on the Barre and Templeton USGS quadrangle maps. No boring logs were collected from this area. However, Hydrologic Atlas-249 depicts the stratified deposits in this area as largely composed of ice-contact and valley-train deposits. These stratified deposit are generally considered favorable for development of large groundwater supplies. More information concerning the sand and gravel deposits is required to adequately assess the potential for the development of groundwater supplies.

Joslin Brook Sub-basin

The Joslin Brook Sub-basin is located in the eastern part of the Town on the Gardner and Wachusett Mountain USGS quadrangle maps. No boring logs which penetrated the stratified drift deposits were collected for this area. However, Hydrologic Atlas-249 depicts this area as largely composed of fine-grained ice-contact and valley-train deposits generally unfavorable to the development of large groundwater supplies.

East Branch of the Ware River Sub-basin

The East Branch of the Ware River Sub-basin is located in the southeast part of the Town. One boring log located off Lombard Road southwest of Perry Hill was collected for this area. It records twenty feet of gravel. The estimated transmissivity of the unconsolidated material recorded in this boring is 1,000 gpd/ft. However, Hydrologic Atlas-249 indicates the majority of the stratified drift deposits in the sub-basin are fine-grained and are generally unfavorable for development of large groundwater supplies.

Hubbardston Brook Sub-basin (Millers Drainage Basin)

The Hubbardston Brook Sub-basin is located in the north-central part of the Town of Hubbardston on the Templeton USGS quadrangle map and is the only sub-basin in the Town which is part of the Millers Drainage Basin. Thus the surface waterflow is to the north unlike the rest of the Town where surface water flows generally southwards. The available boring logs which penetrated the stratified drift deposits in this sub-basin indicated up to ten feet of sand and gravel. Field exposures of the stratified drift contained primarily fine-grained sand. The limited saturated thickness of coarse-grained material indicates this area would not be favorable for development of large groundwater supplies.

CONCLUSIONS

The majority of the surficial deposits in the Town of Hubbardston are till and till and/or bedrock. However, the Town does contain several areas of stratified drift deposits. It is these stratified drift deposits which may yield groundwater supplies.

Three drainage sub-basins in the Town contain stratified drift deposits which appear from the limited data available to be the most favorable areas for development of large groundwater supplies. These are the Natty Pond Brook Sub-basin, the Burnshirt River Sub-basin, and the West Branch of the Ware River Sub-basin. A more accurate assessment of the potential of each of these areas for groundwater supply development would require more data regarding the material in these stratified drift deposits including grain size, saturated thickness, and pumping rates. Gathering this data would involve an exploratory drilling program.

Once a suitable location for a production well is found, an eight inch test well should be installed to determine the safe yield of the well. The long-term yield of this well is estimated by running a prolonged pumping test on the well. The pumping test involves pumping the well at a specified rate for a specific amount of time while monitoring the water level. The return of the water level to static (the water level prior to the start of the test) once pumping has ceased is also monitored. Based on the yield of each well the population which could be supported by the volume of water produced could be estimated.

The safe yield of each aquifer (the amount of water that could safely be removed from the aquifer without adverse impact to that aquifer) could also be estimated. This would require calculating a hydrologic budget for the watershed area. A hydrologic budget is

completed by estimating all inflow and outflow of water to the aquifer system. Inflows include recharge due to precipitation. Outflows include withdrawal by pumping and discharge to surface water bodies.

Based on the data available the potential for these three areas to provide significant groundwater supplies warrants consideration for protection by the Town of Hubbardston.

PHASE TWO

Phase 2

GROWTH MANAGEMENT ISSUES, GOALS & STRATEGIES

Introduction

The Town of Hubbardston wishes to, foremost, retain its small-town character. This means that, among other things, the preservation of the town's environmental resources and the retention of low-density residential land-uses are extremely important, almost over-riding concerns, for future development planning. Within the context of this fundamental growth management statement, the following specific issues, goals and growth management strategy recommendations are made.

Land Use Regulations

ISSUE: Land Use By-Laws and Regulations are not comprehensive and do not provide sufficient environmental protections for the town. Of particular importance is the prevention of contamination of aquifers providing water to the hundreds of individual well in the town.

- Zoning
- Subdivision Rules and Regulations
- Board of Health and Conservation Commission Regulations
- Earth Removal

GOAL: Provide a regulatory framework which, as an overriding objective, protects the natural resources and environmental amenities of Hubbardston. In particular, the town's Great Ponds and the aquifer areas running North to South through the Central portion of town need specific protection.

STRATEGY: ZONING:

Because the present zoning by-laws were designed to provide specific regulatory functions and cannot be considered as a "Zoning By-Law package, it is necessary to completely amend and revise the Hubbardston Zoning By-Laws to be a comprehensive Zoning package.

The following is an outline of provisions which we recommend be included in a comprehensive zoning package.

GENERAL PROVISIONS:

Title
Purpose
Authority
Construction
Repealer

DEFINITIONS:

Accessory Use, Building or Structure
Alteration of Building or Structure
Appeal
Building
Building Lot
Community and Environmental Assessment
Corner Lot
Dwelling Unit
Home Occupation
Industry
Lot
Lot Line
Non-Conforming Use, Structure or Lot
Permitted Use
Signs
Single-Family Residence
Street
Street Frontage
Structure
Use
Variance
Yard

ZONING DISTRICTS:

Types of Districts.
Zoning Map
District Boundaries
Existing Uses Continued
Abandonment of a Non-conforming Use
Previously Recorded Lots

USE REGULATION:

Uses Permitted by Right in Residential District
Uses Permitted by Special Permit in Residential District
Uses Permitted by Right in the Village-Commercial District
Uses Permitted by Special Permit in the Village-Commercial District
Uses Permitted by Special Permit in Light Industrial District
Home Occupation
Prohibited Uses
Enforcement
Penalty

DEVELOPMENT REGULATIONS:

Table of Dimensional Regulations
Yard Requirements
On-Site Parking Requirements
Loading Areas and Outside Storage Requirements
Exterior Signs
Private Dumps
Land Clearing in Anticipation of Use
Building and Occupancy Permits
Accessory Building

OPEN SPACE RESIDENTIAL DEVELOPMENT

Purpose.
Applicability.
General Requirements.
Permitted Uses.
Minimum Requirements.
Open Space Use and Design Standard.
Common Open Space Ownership and Management.
Review Procedures.
Duration of Approval.

COMMUNITY AND ENVIRONMENTAL ASSESSMENT

Purpose
Assessment
Mitigation of Adverse Impact

SITE PLAN APPROVAL

Application and Purpose
Site Plan Submission
Site Plan Form
Site Plan Content
Review by Other Agencies
Public Hearing
Decision and Enforcement
Revocation

SPECIAL PERMITS:

Purpose
Application for Special Permit
Review by Other Agencies
Public Hearing
Decision and Enforcement
Revocation

VARIANCES:

Purpose
Application to Board of Appeals
Public Hearing
Decision and Enforcement
Revocation

APPEALS:

Purpose
Application to Board of Appeals
Public Hearing
Decision

BOARD OF APPEALS:

Appointment
Powers

FLOODPLAIN OVERLAY DISTRICT

Purposes
District Delineation
Use Regulations
Board of Appeals

AQUIFER PROTECTION OVERLAY DISTRICT

In addition to the provisions listed above, Hubbardston should adopt the following provisions designed to provide greater environmental review, control and protection:

COMMUNITY AND ENVIRONMENTAL IMPACT ASSESSMENT

A Community and Environmental Assessment provision in the Hubbardston Zoning By-Law would require developments of significant size (established by threshold provisions) to prepare and submit, as part of a site plan review or special permit process, an impact analysis of the proposed project.

Advantage: Provides the town with a mechanism to evaluate the impacts, to both the environment and the community/town, of major development projects within Hubbardston.

Weakness: Adds a significant cost to the permitting process, although this can be greatly limited by including initial scoping provisions, so that the type of impact analysis coincides with the size and type of development project.

May Often require expert technical review of the analysis, adding an additional municipal cost.

SITE PLAN REVIEW:

Site Plan review is either an administrative or special permit process, usually through the Planning Board, used to ensure compliance with design requirements for drainage, access, building coverage and location, landscaping and parking.

Advantages: Allows a town to review site design plans prior to construction.

Weakness: Another permitting process can add a significant administrative burden to the Planning Board.

Unless review is a special permit process, it is limited to review of requirement specified in the Zoning By-law.

OPEN SPACE RESIDENTIAL COMMUNITY (No Density-Bonus Cluster Development)

Cluster development reduces zoning requirements for minimum lot sizes, frontage, set-backs, etc., by special permit, in exchange for the developer setting aside open space and providing other specified amenities within a new subdivision. By being able to reduce lot frontage requirements, the developer is provided with an economic incentive, namely lower road construction costs, to provide open space and amenities that could not be required.

Advantages: Although cluster development received a very negative reaction on the resident survey, it is recognized as an extremely valuable planning tool when used appropriately. Cluster development can be used to: encourage more flexible site design; preserve open space at very low cost to the town; provide an incentive for developers to include amenities and other benefits in larger subdivisions which the town could not otherwise require (ie. Affordable Housing, extensive set backs from town roads, architectural review). In addition, cluster development can be used to guide development away from resource areas, such as wetlands.

Weakness: Unless a cluster by-law is written very carefully it can bestow unwarranted benefits on a developer. The by-law must specifically define what benefits must be given in exchange for zoning concessions. What kind of land can be included as "open Space" must be tightly defined and only areas that can support clustering should be allowed to use it.

RESOURCE OVERLAY DISTRICTS:

Resource Overlay districts provide additional use and development restrictions on important sensitive natural resources within the town. In Hubbardston's case, areas of potentially high yielding aquifers and related primary recharge areas, areas within the watersheds of great ponds and floodplains, are all candidates for overlay protection.

Advantages: Provides comprehensive, resource-specific, review and protection for important town assets.

Weakness: Significantly limits, restricts or adds substantial costs to development projects within overlay districts.

Usually requires an additional set of special permitted uses, placing additional permitting burdens on the town

SUBDIVISION RULES AND REGULATIONS:

Completely Revise Subdivision Rules and Regulations to require more comprehensive submission, design and construction standards for new development requiring new roads within Hubbardston.

BOARD OF HEALTH REGULATIONS

- Add well installation regulations
- Supplemental Title V Regulations

CONSERVATION COMMISSION

The present Wetlands By-Law allows the Conservation Commission to adopt regulations to supplement and strengthen Wetlands protection in Hubbardston. Without the regulations the by-law merely provides a Wetlands protection mechanism outside of DEQE appellate jurisdiction.

- Adopt supplemental regulations to the Hubbardston Wetlands By-Law, including a fee schedule to assure the ability to hire outside technical assistance for the Conservation Commission.

EARTH REMOVAL BY-LAW

- Strengthen and Update Regulation

Loss of Rural Character

ISSUE: Hubbardston desires to remain a rural, low density residential community with some compatible light commercial activities in certain areas of town. Current regulations blueprint an ultimate town development density substantially higher than is desired by most Hubbardston residents.

GOAL: While it is recognized that significant further across-the-board increases in the town's primary density restriction (minimum lot size) may not be possible, the town should adopt regulations which limit the development potential of marginal lands. Further, regulations should be written to encourage development, that is going to occur, to take place in a manner which minimizes the impacts, including visual, of such development.

- STRATEGY:**
- Restrict use of Wetland and Floodplain areas in calculation of minimum lot area requirement.
 - Because of the extremely high resource values of wetlands and floodplains, development within and near these areas should be reduced. Inclusion of these areas in minimum size building lots often results in incremental encroachment. Require that at least 75% upland be included in minimum lot size requirement.
 - Require substantial building set-backs from existing public and scenic ways and encourage subdivision developments to be constructed out of sight of such ways.
 - One of the most objectionable aspects of development in a rural community is the sense of becoming completely a bedroom community. The recent residential building boom in Hubbardston has been largely on, and close to, existing public ways. While large amounts of "backland" remain undeveloped, road frontage development gives a sense of suburbanization.
 - Continue to require a smaller additional lot area for additional dwelling units after the first unit and first 2 acres. However, require special permit approval for all three and four unit multi-family dwellings.
 - Cluster Development
 - Allow decreased lot size and lot frontage for subdivisions:
 - meeting design objectives in subdivision regulations
 - providing affordable housing
 - that are visually unobtrusive
 - where building are architecturally appropriate
 - When new utility service is to be installed on a Scenic Road, require such service to be placed Underground.
 - Sign By-Law

Adopt strict sign by-law that limits size, height and type of signs to those that are appropriate for a rural-residential community.

Industrial and Commercial Development

ISSUE: Tax generation from single-family development often does not equal the costs (primarily schooling) generated by such development. On the other hand, Commercial and Industrial Development can significantly improve the town's financial base, but also can present the greatest threat of environmental degradation and land use conflict. Such uses are also often considered contrary to the type of uses residents associate with "rural character".

GOAL: Areas that can support limited commercial or light industrial development without endangering the environment and which can be carried on with minimal land-use conflict should be encouraged. If no such location exists, then any uses which present a danger of negative environmental or community impact should not be allowed.

- STRATEGY:**
- There is only a very small area of town (approximately 100 acres off of Route 68) which has the necessary characteristics for almost any type of Industrial Use: A roadway capable of handling heavy truck traffic and no sensitive resource areas. However, there is a much larger area that is only constrained by its location over secondary aquifer recharge area. This secondary recharge area will provide recharge to the aquifer that is likely to service any future municipal water supply near Hubbardston Center. The secondary aquifer recharge area in town is composed of till or bedrock and only provides limited recharge to the aquifer. A portion of this area can be zoned for Light Industrial uses with certain restrictions designed to protect the aquifer put in place.
 - The by-laws should require that any industrial uses are to maintain large set-back and side/rear yard requirements as a buffer from abutting properties.
 - An area, immediately north of Hubbardston Center, is suitable for appropriate commercial development. As such this area can be Zoned for Mixed Residential/Commercial. Commercial uses should be of type and scale that are traditionally found in a New England Village Center. Traditional Commercial Uses that received favorable responses on survey include: Small Retail Shops, Professional Offices, Restaurants.

Solid Waste Disposal

ISSUE: Hubbardston's landfill is rapidly nearing capacity, yet no plan has yet been developed for future solid waste disposal.

GOAL: Develop an alternative solid waste disposal plan. This should be made an immediate priority of the highest importance of all appropriate Town officials.

STRATEGY: Appoint special committee, including members of Board of Health, Selectmen, Planning Board and Conservation Commission to investigate town options. Selectmen should contact neighboring communities to form solid waste disposal coalition to explore regional options.

Affordable Housing

ISSUE: The cost of Housing in Hubbardston has moved past the point where it is affordable for the "average household". The result of this is likely to mean that most "sons and daughters of Hubbardston" are unlikely to be able to afford to live here.

GOAL: Prepare a plan to provide for, and ultimately develop, "affordable" housing units, including rental, which "fit" Hubbardston's rural character.

STRATEGY:

- Establish Housing Partnership Committee to work with prospective developers of small-scale "affordable" housing.
- Housing Committee may develop "affordable" units on their own.

Rate of Population Growth

ISSUE: Hubbardston is growing at a rate substantially in excess of its infrastructural ability to absorb growth.

- Schools
- Town Administration
- Town Offices
- Police and Fire

GOAL: Growth management and Infrastructural planning should be recognized as interconnected. Growth management tools should be implemented which limit growth on an annual or longer term basis to a rate at which the town can maintain a high quality of municipal and infrastructural services.

STRATEGY: Adopt a Subdivision Phasing By-Law to prevent overwhelming new residential development from occurring in a short period of time

Planning Board should dedicate part of their time to long-range planning for the town. Since most of their meeting are spent with development reviews, it is necessary to dedicate specific meeting to address long-range planning issues. This should include infrastructural planning and, in conjunction with the Finance Committee, capital needs and budget planning.

Long Range Financial Planning

ISSUE: The Town has done little long-range financial planning. This type of planning, coordinated with expected town growth, can greatly increase the town's ability to absorb expected growth.

GOAL: Undertake long-range financial planning, which should include formal infrastructural planning, as part of the towns budgetary planning process.

STRATEGY: Develop and maintain a capital improvements planning process.

Establish Capital Improvements and Budget Committee composed of members from Planning Board, Finance Committee, Selectmen, and School Committee.

Open Space Planning

ISSUE: The town does not currently have a valid Open Space Plan. Although Hubbardston has extensive acreage protected from development and is not short of Open Space, the town may be unable to utilize Self-Help funding for the purchase of an important parcel of property. The few remaining active agricultural properties within the town may be such land.

GOAL: Become eligible for Division of Conservation Service's Self-Help fund and have a plan for Open Space Acquisition.

- STRATEGY:**
- Prepare and keep updated an Open Space Plan which meets Division of Conservation Services requirements.

 - Establish a Conservation Commission Land Acquisition Fund to contribute towards the purchase of critical open space parcels and Agricultural Preservation Restrictions.

PHASE THREE

Phase 3

IMPLEMENTATION

During Phase 3 of the Growth Management Plan process, regulations recommended for implementation were drafted and refined by the Steering Committee. Specifically, a completely revised Zoning By-Law and Subdivision Regulations were prepared. In addition, several recommended Board of Health regulations have been drafted and Regulations to implement the town's Wetland by-law were reviewed.

APPENDICES



Town of Hubbardston
Growth Management Master Plan
Resident Survey Results
October, 1987

- | | | | |
|---|-------------------------------------|-----|---------------|
| 1. Are you a resident of Hubbardston? | YES | 269 | |
| | NO | | 1 |
| 2. Are you a property owner in Hubbardston? | YES | 258 | |
| | NO | 11 | |
| 3. How long have you lived in Hubbardston? | 0-4 yrs. | 87 | |
| | 5-9 yrs. | 41 | |
| | 10-19 yrs | 61 | |
| | 20+ yrs. | 79 | |
| 4. Where are you currently employed? | OTHER: | 84 | OTHER: |
| | WORCESTER | 54 | LEOMINSTER |
| | RETIRED | 52 | WESTMINSTER |
| | HUBBARDSTON | 44 | WEST BOYLSTON |
| | GARDNER | 37 | CLINTON |
| | FITCHBURG | 13 | HOLDEN |
| | BOSTON | 11 | MARLBOROUGH |
| 5. Do you have school age (K-12) children? | YES | NO | |
| | 120 | 148 | |
| 5A. How Many? | 1- | 50 | |
| | 2- | 54 | |
| | 3- | 14 | |
| | 4- | 0 | |
| | 5- | 0 | |
| | 6- | 1 | |
| | 7- | 0 | |
| 6. What do you consider as the three most important reasons for living in Hubbardston? (circle three) | | | |
| | RURAL CHARACTER OF TOWN | 228 | |
| | LIKE HUBBARDSTON'S NATURAL FEATURES | 193 | |
| | GOOD SCHOOLS | 55 | |
| | CONVENIENT TO JOB | 48 | |
| | PROXIMITY TO WORCESTER | 45 | |
| | I WAS RAISED HERE | 43 | |
| | LOW LAND PRICES | 37 | |
| | RECREATIONAL OPPORTUNITIES | 36 | |
| | LOW TAXES | 28 | |
| | OTHER: | 23 | |
| 7. Do you consider Hubbardston to be: | 1. URBAN | 4 | |
| | 2. SUBURBAN | 14 | |
| | 3. RURAL | 243 | |

8. In future planning, which of the following land-uses should be encouraged, which uses should be allowed but not necessarily encouraged, and which uses should not be allowed?

	ENCOURAGE	ALLOW	NOT ALLOW
AGRICULTURE	210	44	5
SINGLE FAMILY RESIDENTIAL	137	122	1
GUEST HOUSES/BED & BREAKFAST	101	144	23
RETAIL SHOPS	95	138	28
PROFESSIONAL OFFICES	93	144	21
LIGHT INDUSTRY	85	144	35
RESTAURANTS	83	162	17
AFFORDABLE HOUSING	66	130	57
SERVICES (DRY CLEANING, LAUNDRY, ETC.)	58	135	69
SMALL SHOPPING CENTERS	54	108	100
MANUFACTURING	36	111	108
HOTELS/MOTELS/INNS	26	99	133
WAREHOUSING	23	118	112
HEAVY INDUSTRY	20	46	192
SHOPPING MALLS	17	27	217
PACKAGE STORES	14	167	82
MOBILE HOMES	13	77	172
DUPLEXES	11	138	113
BARs	8	80	174
GRAVEL REMOVAL OPERATIONS	7	132	114
NEW AND USED CAR SALES	5	95	165
MULTI-FAMILY DEVELOPMENT (Apartments, Condominiums)	4	58	202
AUTOMOBILE SALVAGE (JUNKYARDS)	4	34	228

9. What, in your opinion, are the three most serious problems facing Hubbardston in the next five years: (circle three)

LOSS OF RURAL CHARACTER	107
SOLID WASTE DISPOSAL	104
OVERCROWDED SCHOOLS	89
PROTECTION OF GROUNDWATER SUPPLIES	89
ABILITY TO PROVIDE QUALITY TOWN SERVICES AS OUR POPULATION GROWS	82
LOSS OF OPEN SPACE	60
LOSS OF AGRICULTURAL LANDS	55
TAX INCREASES	54
TOWN MANAGEMENT	41
TOO MANY PEOPLE	35
CONFLICTING LAND USES	34
TRAFFIC/POOR ROADS	20
LACK OF AFFORDABLE HOUSING	19
TOWN CAPITAL EXPENDITURE PLANNING	13
OTHER	7

10. What is your opinion of Hubbardston's present growth rate?

	TOO RAPID	ABOUT RIGHT	TOO SLOW
A. REESIDENTIAL	167	75	3
B. COMMERCIAL	32	135	60
C. INDUSTRIAL	34	134	53

11. Do you believe that there is a need for the town to adopt strict growth control measures?

YES	NO
201	36

12. Should Hubbardston be acquiring open space areas for:

	YES	NO
B. TO PRESERVE THE TOWN'S GROUNDWATER RESOURCES	209	17
F. TO PRESERVE HISTORIC SITES	199	32
A. TO HELP PRESERVE THE TOWN'S RURAL CHARACTER	190	42
D. FOR PASSIVE RECREATIONAL PURPOSES (HIKING, SNOWSHOEING, HUNTING, ETC.)	174	43
E. TO PRESERVE UNIQUE SCENIC AREAS	185	38
C. TO PRESERVE AGRICULTURAL AREAS	175	47

13. Would you be in favor of allowing reduced lot size and frontage requirements (but not more lots) in Subdivisions in exchange for a set aside of open space land?

YES	NO
69	172

14. Would you support the use of your property tax dollars for the acquisition of open space?

YES	NO
168	68

15. If you are a homeowner, would you be able to afford the home you currently own if you had to purchase it today, at its present value?

YES	NO
81	159

16. Do you feel the town should subsidize or encourage housing for any of the following groups:

	YES	NO
A. ELDERLY	199	42
B. LOW AND MODERATE INCOME FAMILIES	76	151
C. FIRST-TIME HOME BUYERS	93	135
D. HANDICAPPED RESIDENTS	143	83

17. Do you think multi-family housing or condominiums are appropriate for Hubbardston?

YES	NO
39	227

18. Do you think that "accessory apartments" or "in-law apartments" are appropriate for Hubbardston?

YES	NO
198	61

19. How do you feel about the quality of current service provided by various departments and boards in Hubbardston? Please circle a number for each service:

	Excellent	Good	Fair	Poor	Very Poor	Rating*
FIRE PROTECTION	45	129	51	7	4	3.86
SCHOOLS	38	120	62	6	4	3.79
AMBULANCE SERVICES	39	95	55	10	4	3.76
POLICE PROTECTION	30	133	62	18	4	3.68
ELDERLY SERVICES	26	104	66	14	1	3.66
LIBRARIES	34	108	69	18	7	3.61
TOWN ROADS AND HIGHWAYS	18	88	95	34	9	3.30
AVAILABILITY OF INFORMATION ABOUT TOWN SERVICES	17	80	84	44	14	3.17
BOARD OF ASSESSORS/PROPERTY TAX ASSESSMENT	10	68	110	23	14	3.16
CONSERVATION COMMISSION	7	64	99	29	9	3.15
SELECTMEN/TOWN MANAGEMENT	12	61	95	41	20	3.02
RECREATIONAL FACILITIES	15	53	94	55	19	2.96
BUILDING DEPARTMENT	8	47	91	40	18	2.94
PLANNING BOARD/LAND USE MANAGEMENT	7	45	89	59	20	2.82
BOARD OF HEALTH	7	47	91	43	35	2.77
YOUTH ACTIVITIES	3	46	79	64	27	2.70
LANDFILL	9	45	66	69	50	2.56

* Rating System: Excellent-5 Good-4 Fair-3 Poor-2 Very Poor-1

20. Do you feel that Hubbardston's present zoning By-Laws are:

1	TOO RESTRICTIVE	13
2	ABOUT RIGHT	55
3	IN NEED OF STRENGTHENING	149
4	DON'T KNOW	48

21. What issues do you feel need to be addressed in Hubbardston's Zoning By-Laws?

22. What do you like most about Hubbardston?

23. What do you like least about Hubbardston?

24. Are there any specific parcels of land in your part of town that you consider special and worth protecting, or acquiring, for conservation, recreation, scenic views, or wildlife protection? If so, please list:

25. Are there any other issues, questions or concerns that you would like to be addressed by the Growth Management Master Plan?

Hubbardston Growth Management Master Plan

Infrastructure Information Sources:

Montachusett Regional Planning Commission
Hubbardston Assessor's Office
Hubbardston Selectmen's Office
Hubbardston Town Clerk
1986 Hubbardston Town Report.
Geoffery Rogers, Circuit Rider
Roger Knipe, Hubbardston Fire Chief
Charles Richardson, Town Highway Department Superintendent
Joan Paula, School Principal.
Jerry Salvey, Metropolitan District Commission, Boston, Massachusetts

New Templeton Road Sanitary Landfill Operational Evaluation/Final Closure/ Monitoring Report, Almer Huntley Jr. and Associates, July 1987.

Transportation Improvement Program, FY 1988, Montachusett Regional Planning Organization.

Natural Resources Information Sources:

Bob O'Connor, Water Quality Lab., Quabbin Reservoir
USDA, Soil Conservation Service
Hubbardston Assessor's Office
Massachusetts Natural Heritage Program
Hubbardston Base Data Inventory, 1981
Flood Insurance Rate Maps, Federal Emergency Management Agency
Massachusetts Surface Water Quality Standards, 314 CMR 4.00
Metropolitan District Commission, Boston, Massachusetts
Wetlands Inventory Mapping, U.S. Fish and Wildlife Service, 1975.

Environmental Handbook for Conservation Commissioners, MACC Lincoln Filene Center, Tufts Univ., 1985 Ed.

Water and Land Related Resources of Central Region, Massachusetts, USDA, SCS August 1978.

Inventory of Potential and Existing Upstream Reservoir Sites, Chicopee Study Area, Massachusetts. USDA, SCS May 1973.

Inventory of Potential and Existing Upstream Reservoir Sites, Millers Study Area. USDA, SCS July 1974.

Hubbardston Housing Information Sources:

Hubbardston Assessors Office
Hubbardston Town Clerk's Office
Wachusett Area Building Commission
Ken Hanson, Nonesuch Realty
Lloyd Van Ness, Van Ness Real Estate
Cynthia Lacoste, MIT, 1987
Metropolitan Area Planning Council, 1985
Urban Decisions Systems, 1987
Worcester MLS Comparable Book
County Home Data Services, Inc.
U.S. Census, 1980

ABT Associates and On-Site Insight, Housing in Marshfield: Affordability Study and Development Control Options, 1985

TOWN OF HERRINGTON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)* (T)**	Well Yield (gpm)	Water Level (feet)	Remarks
1	N	Sullivan	P	N	405.0	No record.....0-7 Bedrock.....7-405	0 0	1	14	Bedrock Well
2	N	Sullivan	P	N	630.0	No record.....0-6 Bedrock.....6-630	N N	5	N	Bedrock Well
3	N	Sterling	P	N	40.0	Hardpan and sand.....0-20 Bedrock.....20-40	0 0	15	N	Bedrock Well
4	N	Build DeVault Construction	P	N	325.0	No record.....0-305 Bedrock.....305-325	N N	30+	N	Bedrock Well
5	N	Mark Manzo	P	N	100.0	Clay and sand.....0-80 Bedrock.....80-100	0 0	5	N	Bedrock Well

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HERRINGTON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)* (T)**	Well Yield (gpm)	Water Level (feet)	Remarks
1-67	8/67	Chapman	T	2.5	34.0	Loam and sand.....0-2 Hardpacked sand and gravel and clay...2-13 Fine sand and clay and sharp gravel...13-27 Hardpacked sand and gravel.....27-34 Refusal.....34	28 0	8	6	
2-67	8/13/87	Chapman	T	2.5	26.0	Sand and gravel.....0-8 Sand, gravel, clay and boulders.....8-15 Hardpan.....15-26 Refusal.....26	6 0	0	2	
3-67	8/13/67	Chapman	T	2.5	19.0	Hardpacked sand and boulders and clay 0-19 Refusal.....19	0 0	0	2	

* (b) Saturated Thickness (in feet)
** (T) Estimated Transmissivity (gpd/ft)
N - Not available

TOWN OF HIBBARDISTON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)* (T)**	Well Yield (gpm)	Water Level (feet)	Remarks
4-67	10/16/67	Chapman	T.	2.5	24.0	Loam and gravel.....0-1 Sand and clay.....1-22 Fine sand, sharp gravel and clay.....22-24 Refusal.....24	18 10 ²	0	N	
5-67	10/16/67	Chapman	T	2.5	38.0	Loam and gravel.....0-1 Sand, fine gravel and clay.....1-19 Hard clay and sharp gravel.....19-38 Refusal.....38	16 10 ²	3	3	

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HERRINGTON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)* (T)**	Well Yield (gpm)	Water Level (feet)	Remarks
6-67	10/16/67	Chapman	T	2.5	43.0	Sand and gravel.....0-4 Hardpacked sand and gravel and clay...4-13 Fine sand and sharp gravel.....13-29 Sand and gravel and clay.....29-38 Hardpan.....38-43 Refusal.....43	19 10 ³	0	24	
7-67	10/16/67	Chapman	T	2.5	26.0	Sand and gravel.....0-11 Hardpacked sand and gravel and clay...11-26 Refusal.....26	6 10 ³	0	N	
8-67	10/17/67	Chapman	T	2.5	19.0	Sand.....0-6 Hardpacked sand and gravel.....6-19 Refusal.....19	0 0	0	N	

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HEBBARDSON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)* (T)**	Well Yield (gpm)	Water Level (feet)	Remarks
9-67	10/18/67	Chapman	T	2.5	5.0	Sand and gravel and boulders.....0-5 Refusal.....5	0 0	0	N	
10-67	10/18/67	Chapman	T	2.5	9.0	Sand and gravel and boulders.....0-9 Refusal.....9	4 10 ³	0	N	
11/67	10/18/67	Chapman	T	2.5	28.0	Sand and gravel.....0-13 Hardpacked sand and gravel and clay...13-28 Refusal.....28	8 10 ³	0	N	
12-67	10/18/67	Chapman	T	2.5	18.0	Loam and wood.....0-1 Sand and gravel and clay.....1-13 Hardpan.....13-18 Refusal.....18	8 10	0	N	

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HUBBARDSTON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)*	(T)**	Well Yield (gpm)	Water Level (feet)	Remarks
13-67	8/13/67	Chapman	T	2.5	19.0	Hardpacked sand and gravel and clay...0-19 Refusal.....19	0	0	0	2	
14-67	10/13/67	Chapman	T	2.5	14.0	Sand and gravel and boulders.....0-5 Grey clay.....5-7 Hardpan and boulders 7-14 Refusal.....14	2	10	0	N	
15-67	10/13/67	Chapman	T	2.5	21.0	Sand and gravel and boulders.....0-12 Sand and clay.....12-19 Hardpan.....19-21 Refusal.....21	13	10 ³	0	N	

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HEBARDSON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)* (T)**	Well Yield (gpm)	Water Level (feet)	Remarks
1-68	10/68	Chapman	P	8.75	19	Unrecorded.....0-11 Bedrock.....11-19	N N	7	30	Bedrock Well

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HUBBARDSTON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)*	(T)**	Well Yield (gpm)	Water Level (feet)	Remarks
1-70	12/28/70	Chapman	T	2.5	45.0	Brown sand.....0-11 Sand and boulders....11-14 Fine sand.....14-17 Firm grey clay.....17-37 Grey sand and sharp gravel.....37-45 Refusal.....45	41	10 ³	42-30	4	
2-70	12/31/70	Chapman	T	2.5	44.0	Sand and fine gravel 0-23 Fine sand.....23-30B Silt, grey clay, sand and sharp gravel..30-34 No record.....34-44 Refusal.....44	25	10 ⁴	10	5	
3-70	12/31/70	Chapman	T	2.5	29.0	Sand and fine gravel 0-21 Hardpacked sand and gravel.....21-29 Refusal(?).....29	16	10 ⁴	0	N	

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HUBBARDSTON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)* (T)**	Well Yield (gpm)	Water Level (feet)	Remarks
4-70	7/70	Russell Drilling	P	N	40.0	Sand and clay.....0-15 Bedrock.....15-40 Refusal.....40	10 10 ²	10+	N	Bedrock Well
5-70	7/70	Russell Drilling	P	N	50.0	Clay and sand.....0-20 Bedrock.....20-50 Refusal.....50	15 10 ²	50	N	Bedrock Well

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HEBAROSION
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)*	(T)**	Well Yield (gpm)	Water Level (feet)	Remarks
1-71	1/4/71	Chapman	T	2.5	31.0	No record.....0-24 Hardpan.....24-31 Refusal.....31	N	N	0	N	Bedrock Well

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HUBBARDSTON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)*	(T)**	Well Yield (gpm)	Water Level (feet)	Remarks
1-75	5/75	Scales	P	N	175.0	Unrecorded.....0-30 Bedrock.....30-175	N	N	3	N	Bedrock Well
2-75	5/75	Scales	P	N	250.0	Unrecorded.....0-11 Bedrock.....11-250	N	N	6	N	Bedrock Well

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HEBARDSON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)*	(T)**	Well Yield (gpm)	Water Level (feet)	Remarks
4-84	1984	USCS	T	2.5	88.0	Sand; cobbles.....1-5 Pea gravel, sand, cobbles.....5-10 Fine gravel, sand.....10-12 Gravel; some cobbles..12-15 Pea gravel, cobbles..16 Pea gravel.....20 Gravel; some cobbles 25 Gravel; some cobbles 30-35 Pea gravel (wet).....36-55 Coarse sand, pea gravel.....55 Coarse sand, very little gravel.....60 Coarse sand.....62-65 Till.....74-78 Lodgement till.....79 Refusal.....88	40	10 ⁵	N	29	Same as above

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HUBBARDSTON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)* (T)**	Well Yield (gpm)	Water Level (feet)	Remarks
5-84	1984	USGS	T	2.5	62.5	Sand; cobbles.....1-2 Cobbles; gravel.....2-20 Pea gravel.....20 Gravel.....30-45 Gravel; some cobbles 45-52 Gravel, sand.....52-62.5 No refusal	>33 10 ⁴	N	30	Same as above
6-84	1984	USGS	T	2.5	35.0	Sand; cobbles.....1-4 Gravel; cobbles.....5-10 Gravel; some cobbles 10-15 Pea gravel; sand; cobbles.....17-25 Pea gravel.....26-35 No refusal	>5 10 ³	N	30	Same as above

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HUBBARDSTON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)* (T)**	Well Yield (gpm)	Water Level (feet)	Remarks
10-84	1984	USGS	T	2.5	32.0	Sand; gravel; cobbles.....1-12 Sand; gravel.....12-15 Sand; gravel, some cobble.....15-18 Gravel.....19-22 Pea gravel; sand.....23-25 Unrecorded.....25-26 Till.....28-32 Refusal.....32	12 10 ⁴	N	16	Same as above
11-84	1984	USGS	T	2.5	12.0	Organic material.....1-10 Some cobbles.....10-12 No refusal	>1 10 ³	N	1	Same as above
12-84	1984	USGS	T	2.5	25.0	Organic material.....1-5 Oozing till.....6 Cobbles; gravel, till.....10-25 No refusal	0 0	N	1	Same as above

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HEBARDSTON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)* (T)**	Well Yield (gpm)	Water Level (feet)	Remarks
13-84	1984	USGS	T	2.5	35.5	Organic bog material 1-2 Cobbles; gravel.....5-10 Till.....30-35.5 Refusal.....35.5	>9 10 ³	N	1	Same as above
14-84	1984	USGS	T	2.5	13.0	Gravel; sand; cobbles.....1-2 Cobbles; gravel.....2-5 No record.....7-10 Cobbles; gravel.....10-13 No refusal	>11 10 ⁴	N	2	Same as above
15-84	1984	USGS	T	2.5	36.0	Sand; cobbles.....1-2 Sand; cobbles.....4 Sand; gravel.....5-7 Cobbles; gravel.....10-20 Cobbles; gravel; till.....20-26 No record.....27-30 Refusal.....36	17 10 ⁴	N	3	Same as above

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HIBBARDSVON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)* (T)**	Well Yield (gpm)	Water Level (feet)	Remarks
16-84	1984	USGS	T	2.5	12.0	Sand; cobbles.....1-2 Wet till or sand with cobbles.....12 No refusal	>8 10 ⁴	N	4	Same as above
17-84	1984	USGS	T	2.5	28.0	Cobbles; sand.....1-2 Gravel; cobbles.....5 Gravel; cobbles; coarse sand.....10-15 Wet till.....15 Till.....15-28 Refusal.....28	9 10 ⁴	N	4	Same as above
18-84	1984	USGS	T	2.5	44.0	Cobbles; sand.....1-5 No record.....5-32 Wet till.....32 No record.....32-35 Till.....37-38 Refusal.....44	30 10 ⁴	N	2	Same as above

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HEBARDSON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)*	(T)**	Well Yield (gpm)	Water Level (feet)	Remarks
19-84	1984	USGS	T	2.5	13.0	Organic material.....1-5 No record.....10-13 No refusal	>10	N	N	3	Same as above
20-84	1984	USGS	T	2.5	32.0	Black organic material.....1-3 No record.....3-32 Refusal.....32	>29	N	N	3	Same as above

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HIBAROSTON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)* (T)**	Well Yield (gpm)	Water Level (feet)	Remarks
1-85	6/85	Scales	P	N	165.0	Unrecorded.....0-45 Bedrock.....45-165	N N	10	25	Bedrock Well
2-85	5/85	Well Tech	P	N	100.0	Gravel, sandy clay...0-80 Bedrock.....80-100	0 0	1	N	Bedrock Well
3-85	5/85	Well Tech	P	N	80.0	Gravel and sandy clay.....0-60 Bedrock.....60-80	0 0	4	N	Bedrock Well
4-85	11/85	RD&R Builders?	P	N	14.0	Unrecorded.....0-5 Bedrock.....5-14	N N	5	N	Bedrock Well

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HEBARDSTON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)* (T)**	Well Yield (gpm)	Water Level (feet)	Remarks
5-85	1985	L.E. Whipple Pump Co.	P	N	43.0	Clay.....0-33 Bedrock.....33-43	10 ²	60	N	Bedrock Well
6-85	9/85	Sterling Artesian Well	P	N	20.0	No record.....0-2 Bedrock.....2-18	N	3	N	Bedrock Well

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HEBBARDSON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)* (T)**	Well Yield (gpm)	Water Level (feet)	Remarks
1-86	9/86	Russell Drilling	P	N	30.0	Sand and clay.....0-8 Bedrock.....8-30	3 10	1.5	N	Bedrock Well
2-86	9/86	Brower Pump & Supply	P	N	60.0	Sand/gravel.....0-40 Bedrock.....40-60	35 10 ⁴	1.5	N	Bedrock Well
3-86	6/86	Dana Blais Bldr.	P	N	13.0	Sandy gravel.....0-13 Bedrock.....13	8 10 ³	N	N	Bedrock Well
4-86	1986	Sullivan	P	N	35.0	Clay.....0-15 Bedrock.....15-35	10 10	25	N	Bedrock Well
5-86	1986	Well Tech	P	N	20.0	Unrecorded.....0-20 Bedrock.....20-40	N N	5	N	Bedrock Well

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HERRARDSON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)* (T)**	Well Yield (gpm)	Water Level (feet)	Remarks
6-86	1/86	Russell Drilling	P	N	26.0	No record.....0-6 Bedrock.....6-26	N N	6	N	Bedrock Well
7-86	2/86	Sterling Artesian Well	P	N	40.0	No record.....0-25 Bedrock.....25-40	N N	100	N	Bedrock Well
8-86	8/86	LeClair	P	N	750.0	Gravel and fines.....0-50 Bedrock.....50	0 0	25+	N	Bedrock Well
9-86	1986	Well Tech	P	N	40.0	No record.....0-25 Bedrock.....25-40	N N	5	N	Bedrock Well
10-86	12/86	Scales	P	N	132.0	No record.....0-121 Bedrock.....121-132	N N	4	N	Bedrock Well

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HIBBARSTON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)*	(T)**	Well Yield (gpm)	Water Level (feet)	Remarks
11-86	9/86	Well Tech	P	N	510.0	Gravel.....0-20 Bedrock.....20-510	15	10 ⁴	20	N	Bedrock Well
12-86	9/86	Well Tech	P	N	555.0	Sandy clay-till.....0-119 Bedrock.....119-510	0	0	7	N	Bedrock Well

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HIBBARDSVILLE
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)*	(T)**	Well Yield (gpm)	Water Level (feet)	Remarks
1-87	5/87	Sterling Artesian Well	P	N	75.0	Hardpan.....0-60 Bedrock.....60-75	0	0	5	N	Bedrock Well
2-87	8/87	Sterling Artesian Well	P	N	100.0	Clay and sand, hardpan.....0-80 Bedrock.....80-100	0	0	100	N	Bedrock Well
3-87	10/87	Sterling Artesian Well	P	N	20.0	Hardpan.....0-3 Bedrock.....3-20	0	0	15	N	Bedrock Well
4-87	9/87	Sterling Artesian Well	P	N	20.0	Hardpan.....0-2 Bedrock.....2-20	0	0	25	N	Bedrock Well
5-87	9/87	Sterling Artesian Well	P	N	20.0	Hardpan.....0-4 Bedrock.....4-20	0	0	15	N	Bedrock Well

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HEBARDSON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)* (T)**	Well Yield (gpm)	Water Level (feet)	Remarks
6-87	10/87	Brook-side Drilling	P	N	155.0	Gravel-clay.....0-135 Bedrock.....135-155	130 10 ⁴	5	N	Bedrock Well
7-87	3/87	Russell Drilling	P	N	60.0	Bony gravel.....0-48 Bedrock.....48-60	43 10 ⁵	18	N	Bedrock Well
8-87	5/87	Sterling Artesian Well	P	N	40.0	Sand and hardpan.....0-20 Bedrock.....20-40	15 10 ³	25	N	Bedrock Well
9-87	3/87	Sterling Artesian Well	P	N	40.0	Gravel.....0-20 Bedrock.....20-40	15 10 ⁵	20	N	Bedrock Well
10-87	5/87	Sterling Artesian Well	P	N	40.0	Sand, gravel, hardpan.....0-20 Bedrock.....20-40	0 0	15	N	Bedrock Well

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HUBBARDSON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)*	(T)**	Well Yield (gpm)	Water Level (feet)	Remarks
11-87	7/87	Sterling Artesian Well	P	N	40.0	Gravel.....0-20 Bedrock.....20-40	15	10 ⁵	4	N	Bedrock Well
12-87	11/87	Sterling Artesian Well	P	N	20.0	Gravel.....0-6 Bedrock.....6-20	0	0	4	N	Bedrock Well
13-87	9/87	Sullivan	P	N	21.0	Gravel.....0-4 Bedrock.....4-21	0	0	50	N	Bedrock Well
14-87	11/87	Russell Drilling	P	N	40.0	Sand and clay.....0-20 Bedrock.....20-40	15	10 ²	30	N	Bedrock Well

* (b) Saturated Thickness (in feet)

** (T) Estimated Transmissivity (gpd/ft)

N - Not available

TOWN OF HERRARDSON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)* (T)**	Well Yield (gpm)	Water Level (feet)	Remarks
15-87	11/87	Well Tech	P	N	60.0	No record.....0-40 Bedrock.....40-60	N N	10	N	Bedrock Well
16-87	10/1/87	Scales	P	N	61.0	Hardpan.....0-30 Bedrock.....30-61	0 0	7	N	Bedrock Well
17-87	3/87	Marder	P	N	20.0	Hardpan.....0-5 Bedrock.....5-15	0 0	3	N	Bedrock Well
18-87	7/87	Russell Drilling	P	N	40.0	Sand and clay.....0-12 Bedrock.....12-40	7 10 ²	10	N	Bedrock Well
19-87	7/87	Russell Drilling	P	N	30.0	Clay and sand.....0-8 Bedrock.....8-30	3 10	5	N	Bedrock Well

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HERRINGTON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)* (T)**	Well Yield (gpm)	Water Level (feet)	Remarks
20-87	6/87	Russell Drilling	P	N	40.0	Sand and clay.....0-12 Bedrock.....12-40	7 10	15	N	Bedrock Well
21-87	5/87	Sullivan	P	N	20.0	Hardpan.....0-7 Bedrock.....7-20	0 0	2	N	Bedrock Well
22-87	10/87	Russell Drilling	P	N	40.0	Sand and clay.....0-15 Bedrock.....15-40	10 10 ²	10	N	Bedrock Well
23-87	8/87	Well Tech	P	N	35.0	Boulders and hardpan.....0-18 Bedrock.....18-35	0 0	5	N	Bedrock Well
24-87	10/87	Russell Drilling	P	N	43.0	Gravel.....0-22 Bedrock.....22-43	17 10 ⁵	5	N	Bedrock Well

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available

TOWN OF HERRARDSON
Subsurface Data Points Table

Well #	Date Drilled	Driller	Type Well	Diam. (inches)	Depth (feet)	Soil Logs (measured feet)	(b)* (T)**	Well Yield (gpm)	Water Level (feet)	Remarks
25-87	3/87	Sterling Artesian Well	P	N	40.0	Gravel and hardpan...0-20 Bedrock.....20-40	0 0	100	N	Bedrock Well
26-87	1/87	Sterling Artesian Well	P	N	40.0	Gravel.....0-20 Bedrock.....20-40	15 10 ⁵	25	N	Bedrock Well

* (b) Saturated Thickness (in feet)
 **(T) Estimated Transmissivity (gpd/ft)
 N - Not available