groton master plan

town of groton, massachusetts

Prepared for:
Groton Planning Board
Land Use Department

Prepared by:
Community Opportunities Group, Inc.
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introduction

Purposes and scope

The Groton Master Plan is a plan to guide Groton's future by balancing economic opportunity and social equity with protecting the natural resources on which the town and its region depend. Designed to comply with G.L. c. 41, § 81D, this plan establishes goals for eight core elements of community development and calls for a coordinated approach to addressing Groton's present and future needs. The elements include:

- **Natural Resources, Water, and Energy:** an assessment of ecological and water resource systems that influence the health and well-being of Groton and its neighbors, a review of local energy conservation measures, an analysis of policy, regulatory, and programmatic approaches available to Groton; and recommendations for future action, tailored to the community's goals and capacity.

- **Cultural and Historic Resources:** an overview of local historic resources, including areas, buildings, structures, objects, and landscapes; an assessment of local preservation capacity and policies; an analysis of needs; and recommendations for stewardship of the historic resources that make an irreplaceable contribution to the quality of Groton's built environment.

- **Open Space and Recreation:** an inventory of Groton's open space and recreation lands; a review of the town's past and present measures to protect critical open spaces and provide recreation amenities for residents; an analysis of local capacity and needs; and recommendations to address additional land protection, open space land management, and recreation facilities and programs.

- **Transportation:** an inventory of Groton's existing transportation infrastructure; a review of the condition and adequacy of local transportation components to support safe, efficient mobility for pedestrian, bicycle, and automobile traffic; an analysis of needs; and recommendations to enhance mobility and safety as the town continues to grow.

- **Land Use:** an analysis of growth trends and land use change in Groton; a statistical compilation of land uses by type, including the town's remaining vacant land; an estimate of future residential and commercial growth potential under existing zoning; a detailed review of the Groton Zoning Bylaw and the relationship between existing regulations and sustainability; and recommendations to align Groton's land use regulations with more sustainable development patterns.

- **Housing and Residential Development:** an inventory of housing in Groton, including housing types, tenure, and costs; a demographic profile of the town and a look at the relationship between Groton's population and housing characteristics; an analysis of the town's residential development patterns and their relationship to sustainability; and recommendations to provide for housing diversity and affordability.

- **Economic Development:** a detailed economic profile of the town, considering its labor force characteristics, its employment base, the types of businesses operating in Groton today, and the role of agriculture

and agricultural businesses in the local economy; a review of the zoning requirements that encourage or constrain commercial and industrial development; an analysis of local capacity, needs, potential opportunities, incentives, and barriers to economic growth; and recommendations to build a vital local economy.

- **Community Facilities:** an inventory of Groton's municipal and school facilities, focusing on buildings, public grounds, and non-transportation infrastructure; a review of the size and organization of Groton's local government and inter-local or regional affiliations; an assessment of existing and near-term needs; and recommendations to address facility and service demands as the town grows and its population continues to change.

Groton opted to divide its master plan project into a two-phase endeavor. This portion of the plan is the culmination of Phase I. Under continued direction from the Planning Board, the Phase II process will extend the recommendations of Phase I to a detailed implementation plan that identifies priorities, roles, responsibilities, "guidance" timelines, and interim measures (where applicable) for each major action.

Previous plans and studies

The present Master Plan builds upon Groton's previous planning work, beginning with the first master plan prepared in 1963 and extending through several community-wide, area-specific, and subject-specific plans. Below is a summary of each plan's key themes and recommendations and the steps taken to implement them.

Planning For Groton (Charles Eliot, 1963)

HIGHLIGHTS:

- Focused on protecting Groton's "rural character" through open space preservation, maintaining roadway character, and preserving Groton Center.
- Identified four areas for concentrating development.
- Emphasized creating a roadway hierarchy for Groton to provide access while maintaining the character of existing scenic roadways and protecting Groton Center.

MAJOR RECOMMENDATIONS AND ACCOMPLISHMENTS:

- Establish zoning districts.
- Create a Historic District for Groton Center.
- Plan for Groton Center bypass (not constructed).
- Zone substantial business expansion with off-street parking at ends of proposed bypass.
- Plan for "balanced" development in Groton Ridges (now known as Four Corners), including businesses, open space, residential growth, and community facilities.

The Character of Groton (1979)

HIGHLIGHTS:

- Characterized Groton's "rural character" as composed of the following three elements:
  - The diversity of Groton's landscapes, buildings, and people.
  - The relationships between buildings, roads, and productive land to the natural landscape.
  - The town's sense of community.

MAJOR RECOMMENDATIONS AND ACCOMPLISHMENTS:

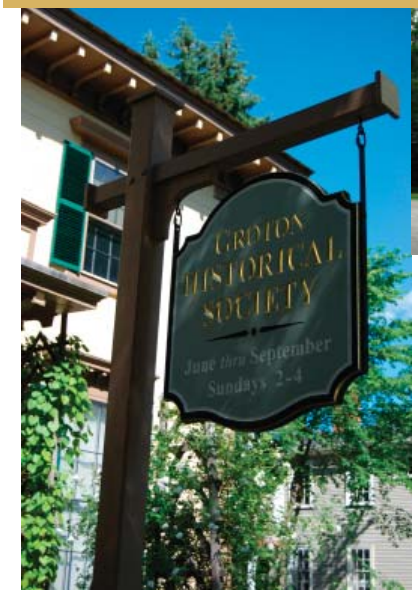
- Provide greater protections for views and landscapes through more flexible but also lower-density zoning.
- Provide housing for all income levels.
- Consider measures such as transfer of development rights, limiting driveways cuts, and reduced assessments on agricultural lands.
- Resulted in adoption of flexible development bylaw and development rate limitation bylaw.

The Strategic Planning Project (1988)

HIGHLIGHTS:

- Village Centers plan focused on preserving special landscapes, concentrating growth in Groton's three villages, and preserving the relationship between Groton's village centers and open space.
- Affordable Housing plan - created during a time of increasing Comprehensive Permit requests - included provisions to increase the town's supply of affordable housing.

The Character of Groton



According to The Character of Groton *(1979), Groton's rural character consists of three signature qualities: the diversity of landscapes, buildings, and people; the relationships between buildings, roads, and productive land to the natural landscape; and the town's sense of community.*

MAJOR RECOMMENDATIONS AND ACCOMPLISHMENTS:

- Employ zoning tools such as cluster development and transfer of development rights to preserve open space and concentrate development in villages.
- Construct a bypass road around Groton Center to divert non-local traffic.
- Use inclusionary zoning for affordable housing production.
- Focused on ways to increase the number of uses in existing structures, such as accessory apartments, congregate housing, and transitional housing.

The Groton 2020 Plan (1990)

HIGHLIGHTS:

- Contained a separate chapter and detailed recommendations for Groton's three villages – Lost Lake, West Groton, and Groton Center.
- Included elements for Business and Agriculture.
- Land Use Administration element emphasized the need for increased communication between land use-related boards and departments.

MAJOR RECOMMENDATIONS AND ACCOMPLISHMENTS:

- Did not recommend a bypass road around Groton Center, and instead focused on intersection improvements, traffic control, and pedestrian amenities.
- Upheld Concept Plan process for commercial development, and recommended limited changes to business zoning.

Groton 2020 Update (2002)

HIGHLIGHTS:

- Contained largely the same emphasis as previous Master Plan.

MAJOR RECOMMENDATIONS AND ACCOMPLISHMENTS:

- Upheld the town's overall average density of two acres per unit.
- Continued to support agriculture through incentives and protections for farming.
- Continued to recommend against constructing bypass road around Groton Center.

Groton Housing Production Plan (2004)

HIGHLIGHTS:

- Emphasized providing affordable housing near existing town services.

- Encouraged priority for affordable housing to Groton Town employees, current and former residents, and veterans.
- Focused on the development of affordable housing in existing buildings.
- Recognized the housing needs of special needs populations such as seniors and people with disabilities.

MAJOR RECOMMENDATIONS:

- Create a Housing Task Force.
- Evaluate Groton's Inclusionary Zoning Bylaw for effectiveness.
- Evaluate Flexible Development bylaw for effectiveness of affordable housing incentive.
- Strong recommendation for Town to buy down or purchase outright units for affordable housing.
- Build affordable housing on Town-owned land.

Overarching themes

Sustainability and the master plan

Sustainability is the overarching focus of Groton's Master Plan and a common thread in all of the plan's elements. To facilitate a wide-ranging discussion of sustainability, the Groton Planning Board adopted the well-known Brundtland Commission's definition of sustainable development, originally published in *Our Common Future* (1987): "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."[1]

Sustainability calls for a comprehensive and integrative approach to community planning. Plans that disregard the environmental, economic, and social consequences of policy decisions do not promote a sustainable community. For example, environmental resource policies that ignore economic outcomes would probably be infeasible and therefore unsustainable. Similarly, an approach to economic development that dismisses impacts on the environment or social equity would also not be sustainable. A plan for sustainability should account for natural, economic, and social capital and meet the needs of these constituencies. To promote integrative planning, each Master Plan element will provide a "Sustainability Policies" review that explores the connection between that element's scope and purposes and the principles of sustainable development.

Sustainability efforts

Groton has numerous sustainability efforts underway to address specific resource interests such as open space and energy conservation, but the town is notable for two organizations with more broadly based missions. The leadership and message these organizations bring to Groton is crucial because they stress the inter-relatedness of sustainability.

Groton Local, a non-profit organization, has worked on a range of sustainability issues such as energy consumption, local food production, and local businesses. Guided by a board and officers, Groton Local has sub-groups that focus on a particular aspect of sustainability. For example, the Farm to School sub-group connects local growers with schools, providing a market for locally-raised food and a nutritious food source for school-age children. The Energy/Green Building sub-group hosts monthly energy seminars on energy-related topics.[2] This group has also done some work around building and supporting a local business base, but recently these efforts flagged when one of the group's leaders moved to another town.[3]

Groton Local is organized and run by volunteers, invites membership, and encourages dues. While looking to expand its membership base, Groton Local is focusing on ways to better organize and involve existing members. Though clearly grass-roots in organization and character, it has had an impact on the town, community groups, other organizations, and individuals in a relatively short time.[4]

The **Groton Sustainability Commission** is a Town board of nine appointed volunteers serving one-year terms. A relatively new group, the Commission's role is to focus, promote, and coordinate Groton's many sustainability efforts. They approach their charge in several ways,

[1] U.N. Documents Cooperation Circles: Gathering a Body of Global Agreements, Sustainable Development, *Report of the World Commission on Environment and Development: Our Common Future*, Part I, Chapter 2.I, "The Concept of Sustainable Development," http://www.un-documents.net/ocf-02.htm#I.

[2] Carol Quinn, Tucker Smith, and Anonymous, (Members, Groton Local), interview by Community Opportunities Group, Inc., February 12, 2010. Groton Local, Energy Group/Green Building, http://www.grotonlocal.org/node/11.

[3] Ibid.

[4] Ibid.

including community outreach, education, and involvement, and they also undertake initiatives with an emphasis on energy conservation and cost control. The Commission defines sustainability as "the commitment to adopt practices that support and balance the social, economic, and environmental aspects of our community now and into the future," which captures its holistic, long-term approach. A current example of the Commission's outreach and education efforts is the "sustainability café," an informal meeting for Groton residents to discuss sustainability issues. The discussion poses a set of key questions for Groton over the next forty years:

- What are the critical challenges facing Groton?
- What new opportunities will be available to Groton?
- What aspects of Groton are essential to preserve?
- How can Groton best preserve those aspects?

The Commission has conducted one sustainability café and may hold others.[5]

Sustainability principles

Sustainability is a difficult concept to define and even more difficult to measure. Using a set of principles provides a useful way to assess the sustainability of a place. The following section reviews Groton's fulfillment of the Commonwealth's Sustainable Development Principles.

Concentrate Development and Mix Uses. Though historically Groton's villages have provided areas of concentrated development and mixed uses, the Town's contemporary land use policy and regulations have done little to encourage this type of development pattern. One exception is Groton Center, which has been upheld as a location for reuse of existing structures, increased pedestrian amenities, intensification of development, and increased mix of uses. The Town has taken further steps toward building up its center by establishing the Station Avenue Overlay District and, more recently, the Town Center Overlay District, with provisions for mixed-use development at higher densities than found elsewhere. However, development has yet to occur. To further align with this principle of sustainability, Groton should identify and take steps to enable and encourage development—including changing land use regulations and offering development incentives—in areas identified for concentrated development.

Advance Equity. Groton has prioritized equity by providing for inclusive community planning and decision making. Additionally, community groups such as Groton Local have highlighted the issue of social equity and social sustainability, and should be commended for doing so. Groton's greatest obstacle to advancing social equity is its housing policy, discussed below. Without expanding housing opportunities, Groton cannot truly be an equitable and sustainable community.

Make Efficient Decisions. Sustainable development is often because it requires breaking with the status quo. To ensure that land use and other regulations, policies, and processes do not function as de facto controls on growth, municipalities need to make extra effort to ensure that their regulatory and permitting processes do not slow or stop the implementation of sustainable development goals. Groton recently took steps to coordinate development decisions by creating a consolidated Land Use Department. The Town could improve the clarity and predictability of permitting and approvals processes by adjusting Site Plan Review criteria, changing the Concept Plan requirement, and making the Flexible Development provision as of right. By removing some of these regula-

[5] Town of Groton, Sustainability Commission, http://www.townofgroton.org/main?cmd=get-townbody&id=171; http://sustainingroton.com/; Leo Laverdure (Groton Sustainability Commission, Groton, MA), interview by Fay, Spofford & Thorndike, LLC, March 25, 2010; Groton Sustainability Commission, "Affinity Grouping of Sustainabiity Café Inputs," September 28, 2010.

tory barriers, Groton could more easily attract desirable development.

Protect Land and Ecosystems. With nearly eight thousand acres of open space, Groton has prioritized this sustainability principle above most others. Over the course of its land use planning history, the town has shown enormous concern for the protection of environmentally sensitive lands, natural resources, agricultural lands, critical habitats, wetlands, and water resources, and to a lesser extent, cultural and historic resources. These resources need continued protection, and the Town's continued attention to natural resource and open space preservation is important. Going forward, Groton could focus more on other aspects of open space such as recreation lands and put greater emphasis on protecting its cultural and historic resources.

Use Natural Resources Wisely. This principle characterizes wise resource use as development that reduces waste and pollution through efficient use of land, energy, water, and materials. Groton has successfully managed its water resources, complying with the state Department of Environmental Protection's (DEP) Water Management Act permits and keeping water consumption below sixty-five gallons per person per day. The Groton Electric Light Department (GELD) actively promotes energy conservation and also supports renewable energy production. The Town has taken steps to allow more efficient use of land by allowing some clustering of housing development conversions of a single-family homes to multi-family structures. But in general Groton's land use and housing provisions—key pieces of wise natural resource use that directly affect the degree of land disruption and degradation—could be improved. For example, the Town's cluster housing provision is not as effective as would be if it included development incentives. Additionally, the Town's major multi-family housing provision is rarely used because its requirements are so onerous. Finally, with the exception of a small area of town, there is no provision for mixed-used buildings, an essential component of efficient land use.

Expand Housing Opportunities. Most of Groton's housing consists of detached single-family dwellings arranged in a very low-density residential development pattern. Groton's homes are expensive relative to the majority of surrounding towns, and while this benefits existing homeowners, it does not bode well for meeting the housing goals of this Master Plan. Nevertheless, Groton has taken steps to address regional housing needs, both by granting Chapter 40B comprehensive permits and creating low- or moderate-income housing units through the use of zoning incentives. It is important to note that 45 percent of Groton's 199-unit Chapter 40B Subsidized Housing Inventory consists of units constructed under special permits from the Groton Planning Board. To meet the Master Plan's goals for housing diversity - that is, a mix of housing types at all market levels - and specifically to provide more apartments, Groton will need to be open to modifying its zoning requirements in and adjacent to village commercial areas. Removing some restrictions from the accessory apartment bylaw would help, too.

Sustainability and Social Equity

Groton's greatest obstacle to advancing social equity is its housing policy. Without expanding housing opportunities, Groton cannot truly be an equitable and sustainable community.

Provide Transportation Choice. Groton's low-density land use pattern makes providing transportation choice a significant challenge. Most people live miles from where they work or shop, and residential densities are too low to support public transit. However, the Town has taken some steps toward expanding transportation choice. For example, the Nashua River Rail Trail provides access from Nashua, New Hampshire to Ayer. While most people use the Greenway for recreational purposes, it could be a viable commuting alternative for some people because it connects to Ayer's commuter rail station. Development patterns are also an important part of expanding transportation choice. By locating complementary land uses near each other (residences and shops, for example), walking and biking become more viable options for getting around. To better comply with this principle, therefore, Groton will need to look at its future land use pattern, as well as transportation provisions.

Increase Job and Business Opportunities. Groton has done little to attract business and increase local job opportunities. While this Master Plan places more emphasis on making businesses a part of balanced development, there is comparatively little interest in prioritizing this type of activity. Increasing local job and business opportunities is important part of advancing equity because it brings economic opportunities closer to residents. Also, locating jobs closer to residences makes transportation by alternative modes such as walking or biking more feasible. Local job creation can also be an important part of supporting resource-based sustainable businesses such as agriculture and clean-energy technologies.

Promote Clean Energy. Groton promotes clean energy (often referred to as alternative or renewable energy) in a few ways. It adopted a wind energy facility bylaw in 2009, and in 2011 adopted a large-scale solar photovoltaic bylaw. The Groton Electric Light Department has a number of programs in place to conserve energy, and also derives a small amount of its energy from renewable sources. Groton is clearly interested in increasing energy efficiency, for both public and private facilities. One of the particular challenges Groton faces regarding energy conservation is the prevalence of auto-oriented, single-family development, which requires large amounts of energy for heating, cooling, and transportation. Reducing energy consumption through more compact land use patterns and expanding housing opportunities will be important part of complying with this principle.

Plan Regionally. Regional planning in Massachusetts is a difficult task. Since the existing regional planning framework is limited and weak, decisions about land use, housing, resource protection, open space, and most aspects of community services are made locally, and usually for fiscal (rather than sustainability-related) reasons. Transportation is one exception, which is carried out by regional planning agencies (RPAs). Groton participates in projects and programs carried out by the Montachusett Regional Planning Commission. Beyond this, supporting efforts to reform the state's antiquated state zoning and subdivision control laws and efforts to conduct more regional planning will be important.

Roles and responsibilities of the Planning Board

Consistent with G.L. c. 41, § 81D, the Groton Planning Board led the process for developing this Master Plan. The Board's responsibilities included:

- Creating the scope for Phase I of the Master Plan.
- Lobbying Town Meeting to fund the plan.
- Selecting the consultants and creating their scope of work.
- Overseeing the public participation process.
- Conducting public outreach to support the public participation process.
- Guiding the Master Plan Working Groups.
- Directing the consultants in the creation of the Phase I Master Plan report.

2

community participation

Introduction

Citizen participation is crucial for the development of any city or town plan. Aside from the invaluable knowledge that residents bring to the planning process, providing multiple avenues for participation is the only way to ensure that both majority and minority perspectives will be heard, evaluated, and accounted for as the plan evolves. While a considerable amount of groundwork can be accomplished with raw data and statistics - demographic, economic, environmental, geospatial, and fiscal - there is no substitute for public dialogue about the health and well-being of a community.

Groton has a long history of participatory planning. Its people have a strong sense of efficacy, and its government has been designed to provide many points of access to public policy decisions. Keeping with this tradition, the Planning Board sought to include as many residents as possible throughout the development of this Master Plan. The following summarizes the citizen participation structure instituted and overseen by the Planning Board.

Opportunities to participate

Master plan advisory groups

The Planning Board created eight advisory groups that provided an important support system for this Master Plan. Through a broadly conducted outreach process, the Planning Board invited residents to request appointment to the advisory groups based on interest areas. One Advisory Group was created for each Master Plan element, and each group consisted of four to six members. To ensure good communication and sharing of ideas, both a Planning Board and Sustainability Committee member were appointed to each group.

During Phase I of the planning process, the Advisory Groups were asked to complete three major tasks:

- To respond to a set of policy questions from the consultants for each element. The purpose of this activity was to get additional information and direction on important policy issues related to each element. For the complete set of policy questions, see Appendix B.

- To provide feedback on the working papers submitted by the consultants for each element. These papers, once revised by the Advisory Groups and further edited by consultants, form the heart of the Phase I Master Plan.

- To create goals for each element. Once drafted, the goals were vetted at a February 2011 workshop, described below. The Advisory Groups continued to refine their goals after the workshop, providing additional revisions and edits where necessary.

In addition to these tasks, several Advisory Groups participated in other meetings with consultants to explore specific Master Plan issues. For example, the transportation consultants met separately with the Transportation Advisory Group and Trails Committee, and with Groton DPW Director Tom Delaney. The open space and natural resource consultants also met with the Trails Committee and Conservation Commission to get feedback on the Green Infrastructure and other open space maps.

All Advisory Groups made an extraordinary commitment to the Master Plan and contributed immensely to its development. The Plan - both in content and process - benefited from their participation.

Community meetings

Groton held two town-wide community forums and one specialized workshop as part of the Master Plan process.

May 2010

As the first community-wide meeting for the Master Plan, the Community Forum on May 13, 2010 served to introduce the public to the Master Plan process and provide an opportunity for feedback on Groton's future development pattern. The event was well-attended, with over eighty people arriving to participate. The forum began with a presentation by the consultants on the Master Plan, followed by a brief question-and-answer session.

After that, participants broke into small groups to undertake a mapping exercise in which they identified areas for preservation, conservation, and change in Groton. A spokesperson from each group presented their map to the larger assembly and the consultants facilitated a general discussion about the results. For a complete description of the activity, a composite of the small group maps, and notes from the large group discussion, see Appendix C, D, and E.

November 2010

The Community Forum on November 16, 2010 sought to elicit feedback on a selection of priorities for the Master Plan. Several weeks before the meeting, the Advisory Groups were asked to create and submit three specific "proposals" for projects or programs they considered important for inclusion in the Master Plan. The proposals were assembled and distributed to all sixty-one participants at the forum.

Working at first in small groups, participants read and discussed the proposals, and picked their top three for inclusion in the Master Plan. Having reviewed all the proposals, the consultants led participants in a large-group trade-offs-and-choices exercise. Here, large-scale proposal cards were held up and participants voted on which proposal they thought was more important. Starting with three proposals, participants deemed one - constructing a new Central Fire Station - to be more important than adopting Town-wide design guidelines and undertaking alternative transportation initiatives. Since it was considered a higher priority, the Central Fire Station proposal card was hung on the wall above the other two. After that, proposal cards were introduced one or two at a time for comparison with the other proposals. Participants discussed and voted on each, and the proposal cards were placed on the wall accordingly. From this process grew a "tree" of proposals that reflected community priorities. A record of this exercise is included as Appendix F.

Due to time constraints, participants were unable to evaluate and discuss all of the proposals. Originally, this exercise was to be continued at a Planning Board workshop in February 2011. However, the Planning Board decided later to focus on a Goals Workshop, described below.

February 2011

On February 12, 2011, members of the Advisory Groups, the Planning Board, and the general public who had demonstrated a strong commitment to the Master Plan, gathered for a Goals Workshop. Prior to the meeting, the Advisory Groups had completed goal statements for each element and the Planning Board wanted to capitalize on this effort by holding a workshop.

The purpose of the workshop was to clarify the goal statements, revise them if necessary, and decide whether to include or not include each in the draft Master Plan. To start, the twenty-six participants worked in randomly selected groups on a set of goals drawn from various elements. For each goal, the groups completed a form that asked for feedback on several questions and revisions to the goal if necessary. After evaluating the goals in small groups, a spokesperson summarized their discussion for all participants. Following a break for lunch, the entire group reconvened to review each goal, debate and decide on appropriate revisions, and vote on the final set of goals to be included in this draft Master Plan.

Interviews, focus groups, and other

Stakeholder interviews

Over the course of three days in February 2010, the consultants conducted a series of interviews with key stakeholders in Groton. The purpose of the interview was to gain insight on past planning processes, current issues, and stakeholder concerns. Over two full days, the consultants interviewed twenty-six stakeholders who included residents, business-owners, farmers, neighborhood group leaders, and Town staff and board and committee members. The interviews helped the consultants gain a better understanding of the history, culture, and sprit of Groton and informed many of the plan elements.

Department heads meeting

On February 11, 2010, the consultants attended the Town's weekly Department Heads meeting to facilitate a discussion about issues related to the Master Plan. The consultants led a discussion that focused on the following areas:

- The structure and operation of local government in Groton, including the relationship between local officials and Town boards and commissions, and how local decisions are made.
- Issues associated with Groton's community services and facilities.
- Pressing departmental needs or long-term initiatives in Groton's local government.

The meeting provided the consultants with insight and information that was used to enhance and shape the plan elements, particularly Chapter 10.

3

natural resources, water, and energy

What is this element about?

Scope

- Review the Town's existing sustainability measures and identify principles that relate to other elements of the Master Plan;
- Survey and assess Groton's natural resources;
- Evaluate the Town's current energy conservation measures; and
- Review water consumption trends, and offer recommendations for the town's public water suppliers.

Key findings

- Groton has an impressive legacy around preserving and protecting natural resources. The town can now focus on filling gaps in natural resource protection and ensuring that key natural resources, such as drinking water and agricultural land, are secured for future generations.
- Mapping various layers of Groton's natural assets illustrates how natural systems are related, interconnected, and interdependent. This natural structure should be used as the framework for future preservation, conservation, and growth.
- Groton has done much to conserve energy through its municipal electric light department. Extending energy conservation efforts beyond the municipal realm and affecting activities on private properties will require new efforts and levels of political will.
- Groton has successfully managed water withdrawals and achieved water conservation goals as defined by the state. A more difficult problem is controlling stormwater runoff, which will require Groton to assess and integrate its various of stormwater-related regulations and policies.

Ideas for sustainability

- *Prepare more detailed ecological inventories and analyses to identify lands that are critical to ecological functions and re-assess the effectiveness of existing environmental regulations and, where appropriate, consider modifying them*. Going beyond the town's current understanding of important natural resource areas and amending environmental regulations accordingly will allow Groton to accommodate future environmental issues and needs, which is at the heart of sustainability.
- *Investigate all potential future sources of water supply and establish acquisition and conservation plans to ensure their protection*. Sustaining a clean, safe water supply is one of the world's greatest sustainability challenges. For Groton, this means not just conserving water to meet current withdrawal limits, but preserving additional water supply sources so that the town can meet its future needs.
- *Establish regulations to encourage renewable energy generation projects*. Enabling and encouraging local renewable energy generation is critical to reducing dependence on fossil fuels. By creating a regulatory environment that encourages the development of renewable energy generation projects, energy production will be more secure, efficient, clean, and capable of meeting the town's needs far into the future.

- *Focus and strengthen efforts to protect agricultural land and encourage profitable local farms.* Promoting agriculture through farmland preservation and economic development practices will help to ensure that Groton residents have access to local and regional sources of food, both today and in the future. The viability of local agriculture is a major sustainability challenge because Groton's land is valuable and farms are not always profitable enterprises. It will take collaborative efforts by government, non-profit, and for-profit organizations to protect agricultural land and maintain the land in active agricultural use.

Existing conditions and trends

Natural resources

Like most small towns, Groton has worked on stewardship of natural resources primarily at the local level. However, the town has a strong regional awareness and understanding of the environment. One of the earliest and most successful examples is the Nashua River Watershed Association (NRWA), established in 1969 by long-time Groton resident Marion Stoddart. With a focus on curbing pollution and sustaining the natural resources of the watershed along the riverway, the NRWA has been instrumental in restoring the Nashua River and protecting more than eight thousand acres of land within the watershed and eighty-five miles of greenway along the river.[1] Groton itself has preserved a large amount of land along the Nashua River, but a significant gap still exists between the Town Forest in the south and the J. Harry Rich Tree Farm State Forest to the north.

Another structure for understanding, managing, and protecting regional environmental resources is the Area of Critical Environmental Concern (ACEC) program administered by the Massachusetts Department of Conservation and Recreation (DCR). The program's purpose is to foster local and regional stewardship of the state's unique and vital environments. An ACEC nomination begins with the community, and Groton was an active participant in securing the establishment of two ACECs: the Squannassit ACEC, which extends west of the Nashua River and includes portions of Groton, Ashby, Ayer, Harvard, Lancaster, Lunenburg, Pepperell, Shirley, and Townsend, and the Petapawag ACEC, which covers most of Groton east of the river as well as portions of Ayer, Dunstable, Pepperell, and Tyngsborough (see Map 3.1). [2] That most of the town (88 percent) falls within these two ACECs reinforces what Groton residents already know: they live in a landscape of unique natural and cultural value. The Squannassit-Petapawag ACEC Stewardship Committee meets regularly to work on issues related to the ACEC.

In addition to the NRWA and the two ACECs, organizations have formed in response to a growing awareness of the limits to current consumption and growth patterns. One example is Energy Raisers, a group of volunteers active in Groton and towns throughout the Nashoba Valley. The members of Energy Raisers help one another install alternative energy systems, such as solar hot water heaters, to make their homes more efficient. The group is named after the practice of barn-raising and modeled after an organization in Plymouth, New Hampshire.[3]

Natural resources inventory and assessment

This section assesses key natural resources - including ecological resources and biodiversity, water resources, and soils and agricultural resources - through a series of maps. [4]Together, these environmental layers constitute Groton's green infrastructure: the natural systems that support ecological communities and critical environmental processes. Green infrastructure includes large blocks of forest land, wetlands, and vernal pool complexes, and wildlife corridors, and the rivers, streams, and undeveloped ridgelines that connect them. Mapping the town's green infrastructure shows its importance, not only for Groton, but for the larger region as well.

ECOLOGICAL RESOURCES AND BIODIVERSITY (MAP 3.1)[5]

Ecology refers to communities of plants and animals and the underlying environment that supports them. This includes rivers, streams, ponds and associated wetlands, and vernal pools, both potential and certified.[6] Map 3.1 shows several areas of ecological value:

[1] Nashua River Watershed Association, "The Past and the Future,"www.nashuariverwatershed.org/index.html.

[2] Massachusetts Department of Conservation and Recreation, ACEC Program, www.mass.gov/dcr/stewardship/acec/.

[3] Energy Raisers, "Who We Are," http://www.energyraisers.org/; Leo Laverdure, (Groton Sustainability Commission), interview by Fay, Spofford & Thorndike, March 25, 2010.

[4] Appendix G describes the various data sources used to create these maps.

[5] Appendix K includes all of the maps for this Master Plan.

[6] A number of Groton's vernal pools have state certification which provides a higher degree of protection, largely due to the efforts of the Groton Conservation Commission.

- **Priority Habitat of Rare Species**, including areas with rare plant and animal sightings reported to the Natural Heritage and Endangered Species Program (NHESP) and surrounding natural lands. Together, they represent the "region" that is likely to provide suitable habitat for the particular species that have been observed. In Groton, these areas include land between the Squannacook and Nashua Rivers and substantial amounts of forested land around the lakes and wetlands in the east side of town. Projects located in a state-designated Priority Habitat area require a special regulatory review under the Massachusetts Endangered Species Act (MESA) unless they qualify for an exemption.

- The **BioMap** identifies core habitat and supporting natural landscapes across the Commonwealth. It focuses on the importance of the largest and most intact natural areas. Originally developed and recently updated by NHESP, the BioMap is a planning resource for identifying conservation and stewardship priorities for the state and local governments.

- **Areas of Critical Environmental Concern** (ACEC), described above.

Rare species reside in Groton not by accident, but because there is enough intact green infrastructure (such as the town's undeveloped wooded hills and rich river valleys) to support them. When green infrastructure becomes fragmented by uncoordinated development, habitat areas are too small and isolated to maintain viable populations of plants and animals. Maintaining green infrastructure for wildlife will become increasingly important as climate change occurs and habitats shift, because plant and animal populations will need move across the landscape in response to changing conditions.

One of the primary signs of human interference with the natural environment and threats to biodiversity is the presence of invasive species. According to Groton residents, the town has several common invasive species, including plants such as European Buckthorn, Oriental Bittersweet, Multiflora Rose, and Japanese Honeysuckle. Purple Loosestrife is also an invasive, although recent local efforts at controlling it through biological controls have helped.[7]

[7] Town of Groton, Comprehensive Master Plan, Subcommittee Response – Sustainability, Natural Resources, Water, and Energy, May 28, 2010.

WATER RESOURCES (MAP 3.2)

Surface Water Resources. Groton's surface waters include rivers and streams, wetlands, vernal pools, lakes, and ponds within the Nashua, Squannacook, and Merrimack River watersheds. As shown in Fig. 3.1, about a third of the town's surface waters are open waters, and the rest are swamps, bogs, marshes. The town's major water features include the Nashua and Squannacook Rivers, and James and Cow Pond Brooks. The one-hundred and five-hundred–year flood zones make these features especially noticeable. In east Groton, Whitney Pond and three Great Ponds - Baddacook Pond, Martins Pond, and Lost Lake/Knops Pond - make up an important complex of water bodies connected by streams. Wetlands, including the areas along riparian corridors and the hundreds of isolated wetlands and vernal pools that dot the forested hills, are a critical part the surface water system because they provide buffers that protect the water quality of rivers, streams, and ponds. They also help to ameliorate the effects of flooding while filtering nutrients and sediment from stormwater runoff before it reaches open waters.

The **Living Waters Core Habitat** shown in Map 3.2 represents the ecosystems most closely tied to water bodies and riparian corridors. These areas include the lakes, ponds, rivers, and streams that are most important to freshwater biodiversity. The areas are based on known occurrences of important plant and animal species, combined with an assessment of the habitat areas most important to their continued survival. The Critical Supporting Watersheds make the most direct hydrological contribution to the core habitats, providing an important buffering function.

The NRWA monitors water quality in the Nashua River at thirty-six points, including two in Groton. In the state's 2010 Proposed Integrated List of Waters, prepared by the Massachusetts Department of Environmental Proection (DEP), the segment of the Nashua River running through Groton has been designated a Category 5 or "impaired" waterway due to the presence of pathogens and phosphorus.[8] One effect of these pollutants, high

[8] The federal Clean Water Act (CWA) requires states to evaluate the quality of all surface water bodies for their ability to support a range of uses, including aquatic life support, fish and shellfish consumption, and drinking water supply. These are reported in an annual Integrated List of Waters. The state assigns a category to each water body according to its water quality. Category 5 water bodies are those that are "impaired or threatened for one or more uses" and are part of another CWA-required list known as the 303(d) list, which is reported to the federal government. These water bodies require a Total Maximum Daily Load (TMDL) be assigned to the offending pollutant, which functions as a "budget" for how much of that pollutant may be discharged into the water body. Category 5 waters are closely monitored to ensure TDMLs are not exceeded. Massachusetts

algae growth, can be seen at Pepperell Pond during the summer. Such conditions have encouraged the growth of invasive water chestnuts, which have a significant impact on recreational use of the Nashua River near Groton.[9]

According to the NRWA, urban and agricultural runoff are the main sources of pollution in the Nashua River in Groton's area. Non-local sources include point-source pollution from wastewater treatment facilities and leaks from aging sewer pipes in the Fitchburg area, and more intense non-point source urban runoff. The NRWA recommends stringent yet realistic upgrades to wastewater systems in Fitchburg to address these non-local pollutant sources.[10] The NRWA also monitors James Brook and has found issues related to bacteria and low dissolved oxygen, which likely result from urban and agricultural runoff. The organization also monitors the Squannacook River and other tributaries.

Several other waterways in Groton have been classified as impaired in the Proposed Integrated List of Waters, too. Other Category 5 water bodies include Martins Pond, listed for siltation, organic enrichment/low dissolved oxygen, and turbidity; Massapoag Pond, listed for metals, organic enrichment/low dissolved oxygen, and noxious aquatic plants; and the Squannacook River, listed for low pH, water temperature issues, and E. coli. Lost Lake/Knops Pond is listed as a Category 4 water body, i.e., impaired but not requiring a TDML. Its impairments include metals and exotic species.[11] The NRWA is working to address problems with surface water quality. Recent efforts include a workshop for agricultural commissions in the watershed which resulted in an informational handout of best management practices for water quality; and also a workshop on proper manure management techniques that was attended by Groton horse owners.[12]

Stormwater Management and Low-Impact Development. Since many pollutants enter water bodies in the form of non-point source pollution, implementing practices, technologies, and systems that reduce the amount of polluted runoff is a critical part of improving water quality at the local level. Two widely known ways of doing this are stormwater management and low-impact development, or LID. While these terms are often used interchangeably, there are important differences. LID generally refers to land development and redevelopment practices that reduce the amount and impacts of polluted runoff. For example, LID seeks to reduce impervious surfaces in order to reduce stormwater runoff. Additionally, LID emphasizes treating stormwater as close as possible to its source rather than funneling it into sewers that discharge large volumes of water far from the pollutant's origin. Some commonly used LID techniques include rain gardens and other bio-retention devices, rain barrels, and permeable pavements.

Stormwater management is often structured around the use of Best Management Practices (BMPs), an older and well-established concept within the field of environmental management dating back to the Clean Water Act of 1972. A BMP is a structural or non-structural activity or process used to reduce the volume and pollution content of stormwater discharge. While BMPs and LID techniques overlap, BMPs are usually employed as part of a stormwater management system and, for some municipalities, are often tied to the requirements of federal regulations. However, BMPs are increasingly folded into LID programs and regulations.

Groton regulates stormwater management under Chapter 198 of its General Bylaws. Adopted in 2006, the Stormwater Management and LID bylaw requires permits for projects of a certain size to ensure proper management of stormwater runoff and accompanying non-point source pollution. A Stormwater Advisory Committee administers the bylaw. There are two types of permits issued under Chapter 198: a Limited Stormwater Management Permit, required for disturbances of twenty to forty thousand sq. ft. or five hundred to one thousand cubic yards of displaced earth; and a Full Stormwater Management Permit that applies to disturbances greater than forty thousand sq. ft. or greater than one thousand cubic yards. The Full Stormwater Permit also requires the applicant to submit a Stormwater Management Plan. Projects subject to a Full Stormwater Management per-

Executive Office of Energy and Environmental Affairs, Department of Environmental Protection, Division of Watershed Management – Watershed Planning Program, Massachusetts Year 2010 Integrated List of Waters: Proposed Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act, April 2010. Kathryn Nelson (Water Monitoring Coordinator, Nashua River Watershed Association), email message to Community Opportunities Group, Inc., June 1, 2010.

[9] Kathryn Nelson (Water Monitoring Coordinator, Nashua River Watershed Association), email message to Community Opportunities Group, Inc., June 1, 2010.

[10] Ibid.

[11] Massachusetts Executive Office of Energy and Environmental Affairs, Department of Environmental Protection, Division of Watershed Management – Watershed Planning Program, Massachusetts Year 2010 Integrated List of Waters: Proposed Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act, April 2010.

[12] Kathryn Nelson, June 1, 2010.

mit must comply with Stormwater Design Criteria outlined in Chapter 352, Article 2 of the General Bylaws. All standards for stormwater infrastructure are based on DEP's Massachusetts Stormwater Handbook.

Groton further encourages LID through the following additional regulatory controls:

- **Site Plan Review:** Groton's site plan review regulations require no net increase in stormwater runoff. In addition, the Planning Board encourages applicants to use LID techniques. This has resulted in several LID projects and some projects that use both conventional and LID-based drainage approaches.[13]

- **Subdivision Regulations:** The Town's subdivision regulations encourage LID and refer applicants to the Town Center Overlay District LID Design Standards (see Zoning Bylaw, below).

- **Zoning Bylaw:** Groton's Zoning Bylaw incorporates LID in the Town Center Overlay District, which has design standards that require the use of LID techniques, most of which are stormwater BMPs.

Groton is also addressing LID and stormwater management at the site level through the James Brook Stormwater Improvement Project (funded by DEP through a Section 319 Urban Stormwater Improvement Grant), currently in its final stages of completion. The project's goal is to reduce non-point source pollution flowing into James Brook and the Nashua River by implementing LID-based stormwater BMPs along Main Street, Station Avenue, and Court Street. In addition to implementing BMPs, the project has a number of public education elements.

Drinking Water Resources. In Groton, drinking water supplies draw from aquifers, or areas of water-bearing permeable rock or gravel that store and transmit groundwater. The health and viability of aquifers relate directly to the health of the larger ecosystem. Map 3.2 shows the importance of the Squannacook River, Cow Pond Brook, and Baddacook Pond to Groton's water supplies. They, in turn, are connected to the surface watersheds, wetlands, and streams that feed them. A third large aquifer underlies the Reedy Meadow area in the north part of Groton. It supports the well serving the Groton-Dunstable Reional High School and two public wells in Pepperell.[14] The town is currently investigating the possibility of another municipal well in the Reedy Meadow aquifer.

DEP regulates water supply protection areas around drinking water supplies, and these areas usually form the basis for local regulation as well. Zone I is a protective radius around a public well or wellfield, and it typically includes a radius of four hundred feet. Zone II represents the area that provides the most direct supply of water to the well under stress pumping conditions. Wells without a DEP-approved Zone II have an Interim Wellhead Protection Area (IWPA). Like most Massachusetts towns, Groton has adopted zoning to limit land uses and use intensity in state-designated water resource protection areas. In addition, Groton has adopted zoning to limit activity throughout the watersheds that drain into DEP Zone II areas. Together, the two DEP-approved areas and the larger watersheds determine the boundaries of Groton's **Water Resource Protection District (WRPD)**, also shown on Map 3.2.

While hydrography and soil types determine the location of Groton's surface and drinking water resources, the town's water supply and distribution systems determine how water is delivered to the public for daily water use and - most importantly - how the supply will be managed to ensure its sustainability for future residents. Groton has two public water systems: the West Groton Water Supply District and the Groton Water Department. The West Groton Water Supply District (WGWSD) serves the area along Townsend Road, West Main Street, Kemp Street, Hill Road, and other smaller streets in that vicinity. It provides water to 521 service connections and serves a population of about 1,550 people through approximately nineteen miles of water distribution mains. The system has two water supply sources: the Townsend Road Wellfield and the Town Forest Well.

The **Groton Water Department (GWD)** serves all other areas of Groton, except for a section of town along its northern border. It is a town department overseen by the Groton Water Commission, a three-member elected board.[15] As of 2009, the GWD serviced 1,807 water connections through a total of fifty-one miles of water distribution mains.[16] The water system has four groundwater wells, all active except for the Shattuck Well, which serves as an emergency source because it has elevated levels of

[13] Michelle Collette (Town Planner, Town of Groton, MA), email message to Community Opportunities Group, Inc., June 2, 2010.

[14] Barbara Ganem (Town of Groton Conservation Administrator), email to Community Opportunities Group, Inc., June 29, 2010.

[15] Town of Groton, Directory, Groton Water Commission, http://www.townofgroton.org/main?cmd=get-townbody&id=20.

[16] Town of Groton, *2009 Annual Town Report*.

Table 3.1. Water Management Act Permitted Withdrawals, Groton Water Department

Five-Year Time Periods		Daily Average (millions of gallons/day)	Total Annual (millions of gallons/year)
Period 1: Years 2-5	Aug 1995 - Nov1999	0.447	162.99
Period 2: Years 6-10	Dec 1999 - Nov 2004	0.497	181.24
Period 3: Years 11-15	Nov 2004 - Nov 2009	0.517	188.54
Period 4: Years 16-20	Dec 2009 - Nov 2014	0.547	199.49

Source: Massachusetts Department of Environmental Protection, "WMA Permit #9P-2-13-115.01 – Groton Water Department," July 19, 2009.

Table 3.2. Water Management Act Permitted Withdrawals, West Groton Water Supply District

Five-Year Time Periods		Daily Average (millions of gallons/day)	Total Annual (millions of gallons/year)
Period 1: Years 2-5	Mar 1994 - Feb 1999	0.27	98.55
Period 2: Years 6-10	Mar 1999 - Feb 2004	0.27	98.55
Period 3: Years 11-15	Mar 2004 - Feb 2009	0.27	98.55
Period 4: Years 16-20	Mar 2009 - Feb 2014	0.27	98.55

Source: Massachusetts Department of Environmental Protection, "Water Withdrawal Permit No. 9P2-2-11-115.01 - West Groton Water Supply District," May 16, 2006.

iron and manganese.[17] Groundwater supplies often carry these elements, which are not considered a health risk, but they sometimes have an unappealing taste, odor, or color.[18]

Water Management Act. An important indicator of the sustainability of a community's water supply is whether it complies with the Water Management Act permits issued by the DEP. Since 1988, any public or private entity seeking to withdraw more than 100,000 gallons of per day (gpd) from either ground or surface water sources is required to obtain a Water Management Act permit. The permits grant water allowances in five-year periods. The maximum daily average withdrawal and total annual withdrawals for both the Groton Water Department and the West Groton Water Supply District are shown in Tables 3.1 and 3.2.

These limits, compared with actual pumping rates for wells in both water supply systems in Table 3.3, show that actual withdrawals have been consistently lower than the maximum permitted withdrawal amounts. Pumping rates for the WGWSD show that between 2007 and 2008, rates for the Townsend Road Wellfield fell dramatically while rates for the Town Forest Well increased. This is because the Town Forest well was placed in service mid-year in 2007, and it took on some of the volume previously provided by the Townsend Road Wellfield. Another indicator of whether water is being used wisely within a water system is the number of gallons used per person per day, or residential gallons per capita per day (RGPCD). The DEP has adopted a performance standard of sixty-five RGPCD to measure the efficiency of public water supply systems in Massachusetts. According to the most recent data available, the GWD and WGWSD residential consumption rates are sixty and fifty-five RGPCD, respectively, putting them well below the DEP's benchmark.[19]

Water Conservation Measures. The GWD and WGWSD's ability to comply with their water withdrawal permits may be attributed in part to the water conservation programs in place for both systems. The GWD uses an increasing block rate structure that creates incentives to reduce water use by establishing tiered water rates. Customers who use the least amount of water obtain the lowest tier of water rates and pay the lowest price per unit of water. The opposite is true for the highest water users in the water system who pay a higher price per unit of water. The Board of Water Commissioners also has the authority to issue both voluntary and mandatory water restrictions to limit outdoor water use in order to manage peak water consumption. Most recently, the

[17] Massachusetts Department of Environmental Protection, "Source Water Assessment and Protection (SWAP) Report for Groton Water Department," http://www.mass.gov/dep/water/drinking/2115000.pdf.

[18] U.S. Environmental Protection Agency, Ground Water & Drinking Water, "Secondary Drinking Water Regulations: Guidance for Nuisance Chemicals," http://www.epa.gov/safewater/consumer/2ndstandards.html.

[19] Massachusetts Department of Environmental Protection, "Public Water Supply Annual Statistical Report, 2008, Groton Water Department," 2008. Massachusetts Department of Environmental Protection, "Public Water Supply Annual Statistical Report, 2008, West Groton Water Supply District," 2008.

Table 3.3. Water Supply Pumping Rates, 2007-2009 (Millions of Gallons per Year)

Groton Water Department				West Groton Water Supply District			
Water Supply	2007	2008	2009	**Water Supply**	2007	2008	2009
Baddacook Well	51.70	63.79	60.30	Townsend Rd. Wellfield	53.57	9.57	17.68
Whitney Well #1	79.10	77.48	65.14	Town Forest Well	14.34	49.86	39.40
Whitney Well #2	25.36	16.16	8.74				
Shattuck Well	0	0	0				
Total	156.16	157.43	134.18	Total	67.91	59.43	57.08

Source: Groton Water Department, West Groton Water Supply District, Massachusetts Department of Environmental Protection Public Water Supply Annual Statistical Reports," 2007, 2008, and 2009.

Commissioners exercised this authority by establishing a mandatory water conservation program for all outdoor water use between June 1 and September 30, 2009, and they will most likely issue a similar mandate in 2010.[20]

In addition to pricing and regulatory water conservation measures, the GWD uses public education to encourage less water use. For example, the GWD provides customers with free water conservation kits, including leak detection tablets that enable customers to determine if toilets are constantly running, low-flow showerheads, kitchen and bathroom faucet aerators, and an adjustable toilet flapper. Customers also receive water conservation literature with their water bills, and the GWD's website also provides outdoor and indoor water conservation tips.[21] The WGWSD's water conservation measures also include an increasing block rate structure. Like the GWD, the District has authority to issue both voluntary and mandatory water restrictions to limit outdoor water use during the summer months.

SOILS AND AGRICULTURAL RESOURCES (MAP 3.3)

Agricultural land and landscapes are both a natural and cultural resource, for they reflect centuries of human interaction with the environment.[22] Map 3.3 illustrates the relationship between existing agricultural uses and the underlying value of soils for farming. Based on U.S. Department of Agriculture (USDA) soil surveys, the map shows that a remarkable percentage of Groton soils qualify as either Prime Farmland or Farmland of Statewide Importance. These two classes of soils represent varying levels of agricultural value. Prime Farmland soils are the most fertile, flat, tillable, and well-watered soils in the state. Soils classified as Farmland of Statewide Importance do not meet Prime Farmland criteria, but they still have value for a variety of crops if managed properly. Groton also has Farmland of Unique Importance, which includes other soils that can support specific crops such as cranberries, fruits, and vegetables.

Much of Groton Center was built on Prime Farmland soil, a belt of which continues south along Farmers Row to the Surrenden Farm. This makes sense because historically farming was a primary livelihood for Groton residents, and farms needed to be close to homes. More recently, residential subdivisions have been built on prime farmland, a trend that has changed community landscapes across the country and even the world. In Groton, Prime Farmland areas were attractive for residential subdivision development because they are well-drained and easy to subdivide and build on. When dairy farming declined over the past half century, the many of the town's farms became more valuable for their development potential than agricultural products, and thus became ripe for subdivision. According to the Massachusetts Audubon Society, Groton ranked eighth in the state for loss of agricultural land (and sixteenth for loss of forested land) from 1985 to 1999.[23]

Map 3.3 also shows agricultural land uses in Groton such as orchards, nurseries, cropland, and pasture, as recorded in digitized aerial photographs from 2005. Not surprisingly, most of the active farms are on prime farmland soils or soils of statewide importance, with the exception of some of the hilly orchard and pasture land north of the town center. Finally, the map identifies agricultural parcels that have been permanently protected with a conservation restriction (CR) or under the state's Agricultural Preservation Restriction (APR) program.[24] However, these properties do not always correspond to

[20] Town of Groton, *2009 Groton Annual Town Report*.

[21] Groton Water Department, "Water Conservation," http://groton-water.org/index_Page554.htm.

[22] Note: The identification, protection, and promotion of agricultural landscapes are addressed in Chapters 4, 5, and 9 of this plan.

[23] Massachusetts Audubon Society, *Losing Ground: At What Cost?* (November 2003), 5-6.

[24] For more information about CRs and APRs in Groton, see Chapter 5.

the best farmland soils. Rather, they reflect state and local recognition of the importance of livestock farming and orchard production, neither of which requires prime soils. Additionally, Groton's existing protected open space also does not necessarily coincide with agriculturally rich lands, leaving many areas of Prime Farmland and Farmland of Statement of Importance unprotected.

NATURAL RESOURCES ASSESSMENT (MAP 3.4)

The Natural Resources Assessment Map integrates information from the previous maps to illustrate clearly the critical core ecological and water supply systems in Groton. The map simplifies the complexity of the inventories and establishes three levels of conservation importance, described below, making it easier to see these critical systems and their relationship to each other. These areas are generally depicted on the map and they should not be used to establish natural resources importance at the individual parcel level. Rather, they show how various areas support ecosystems and water supplies.

Preservation Areas indicate the presence of multiple resource values, e.g., wildlife habitat, the aquifers that feed Groton's water supply wells, and rivers, streams, and ponds, including a corresponding three- hundred-foot buffer to protect water quality and wildlife habitat. Large wetland complexes and upland forest blocks that lie immediately adjacent to riparian corridors or overlap with DEP-approved wellhead protection areas also fall within the boundaries of the Preservation Areas in Map 3.4. The resulting pattern shows how the aquifers that feed the town's wells are found along the same river and stream corridors that are the most important for wildlife habitat. This is fortunate, for it means that investing to protect Groton's water supply also expands conservation areas for other resources. The Preservation Areas include some of the largest undisturbed natural areas and important connecting corridors between them. By definition, most of the Preservation Areas should be preserved in their entirety in order to protect the underlying natural systems.

Conservation Design Areas include areas with importance for one or two resources (for example, wetlands and floodplains or vernal pools and large forest blocks) but they are not critical for sustaining the underlying ecological or water supply system. They provide habitat for plants and animals, especially by incorporating large areas of forest on hillsides dotted by isolated wetlands and vernal pools. In addition, they are significant sources of water that ultimately feed Groton's aquifers. Unlike Preservation Areas, however, Conservation Design Areas can accommodate some new development without destroying the underlying ecological and water resource systems they influence - provided that developments are designed to respect these systems.

Growth Areas are places that are least important to maintaining functioning natural systems. Many are already developed or otherwise disturbed, or actively managed for agriculture or recreation in a way that largely precludes any contribution to the ecosystem as a whole. This does not mean they are unimportant as open space for other reasons, such as historic, visual, or cultural value. However, their loss would not significantly impair water supplies or ecosystems.

GAPS IN NATURAL RESOURCE PROTECTION (MAP 3.5)

The Gaps in Natural Resource Protection Map highlights Groton's vulnerable natural resource areas. The map builds on the Natural Resource Assessment (Map 3.4) to show important resource areas that remain unprotected. The gaps should be considered priorities for future conservation and preservation. Important gap corridors include:

- The central reach of the Nashua River from the Town Forest north to the J. Harry Rich State Forest.
- Portions of the Squannacook River from the Town Forest north through West Groton.
- Most of the James Brook, from the Ayer border north through Groton Center.
- Martins Pond Brook from Martins Pond to Lost Lake/Knops Pond.
- Whitney Pond and Cow Pond Brook.
- Nod Brook and Unkety/Hawtree Brook.
- Reedy Meadow Brook.

Portions of these gap corridors have some regulatory protection under the Wetlands Protection Act, G.L. c. 131, § 40 and Groton's wetlands bylaw. However, many riparian corridor functions such as flood mitigation, water quality buffering, and wildlife habitat connectivity require a much wider buffer and more control over land use changes that are not covered by state or local wetland regulations. Protection also requires Groton to enforce wetland regulations on thousands of acres of private land where land clearing, farming, logging, or other disturbance may never come before the town for review. An additional level of analysis should be part of future action planning to protect Groton's riparian corridors, including an assess-

ment of which areas are most likely to be threatened by future land use change.

Existing natural resource protection tools

Groton uses most of the common resource protection tools available to Massachusetts towns under state law, such as the Wetlands Protection Act and Rivers Protection Act. The law empowers local conservation commissions to protect wetlands by regulating activity within one hundred feet of covered wetland resource areas and two hundred feet adjoining rivers and perennial streams.[25] This provides for the protection of thousands of acres of land, but it requires the vigilance of local conservation commissions. Bringing vernal pools under the Wetlands Protection Act's jurisdiction in the 1990s provided another tool which Groton has used to protect isolated wetlands. Groton also has its own local wetlands bylaw, which is even stronger than the Wetlands Protection Act.

Since only a portion of Groton has municipal sewer service, Title 5 of the Massachusetts Environmental Code is another important tool to protect water bodies and ecosystems. With Groton's diverse topography and glacial soil deposits, however, the restrictions that Title 5 places on growth can have unintended consequences for new development. For example, Title 5 may allow growth in hilltop areas while preventing development in locations that otherwise make sense for new homes and businesses.

Energy

Unlike water, plants, animals, and soils, energy (as referred to in this chapter) is not a natural resource per se. Rather, it is a product required for most basic functions in the industrialized world. Energy is typically produced by the extraction and combustion of fossil fuels - natural resources that are increasingly known for their scarcity and negative environmental impacts. Energy and sustainability are usually discussed together because resources once thought of as limitless supplies of energy to homes, businesses, and cars will not last at their current rate of exploitation. Further, the most frequently used sources and methods for energy production result in a range of extremely damaging environmental impacts, e.g., greenhouse gas emissions, one of the greatest threats to global environmental health. For these reasons, energy conservation and clean energy production are cornerstones to any plan for sustainability.

Energy is derived from many sources. Most energy is produced from fossil fuels such as petroleum, natural gas, and coal, which provided about 83 percent of the country's total energy supply in 2008. Other sources, including nuclear power and "renewables" (hydroelectric, wind, solar, geothermal, and biomass), together provided about 16 percent of the U.S. energy supply in 2008.[26] Just as the sources of energy vary, so do the uses of energy. Much of the energy used in the U.S. (40 percent in 2008) supports the production of electricity that is sold to individual homes and businesses. About 38 eight percent of energy supplies go to the transportation sector (which is powered almost entirely by petroleum), 20 percent to industrial uses, and the rest to commercial and residential uses (in non-electrical form).[27]

Local energy efforts

Groton Local has hosted regular talks, films, demonstrations, panel discussions, and workshops on energy. These seminars are often available for viewing on Groton public access cable television channel, and include topics such as geothermal energy, home insulation, green building, biodiesel use, and many more. While town groups like Groton Local seek to reduce energy use through public education and awareness-building, Town departments have made efforts to increase energy conservation programmatically, altering established practices and making system-wide changes that could potentially result in sustained and substantial decreases in energy use.

Groton Electric Light Department. The Groton Electric Light Department (GELD) is the town's municipal electric utility. It is governed by three elected commissioners serving staggered three-year terms, and run by a manager.[28] GELD actively promotes responsible energy consumption through programs and public information. Recently, GELD created two programs to steer electricity use away from peak hours when demand is highest: demand response and time of use. The demand response program allows customers to have their air conditioning use automatically reduced by a few degrees during peak hours. Time-of-use customers shift their electricity use to off-peak hours when electricity is cheaper. Together, the two programs result in more efficient electricity use and cost savings for customers.

[25] Massachusetts Department of Environmental Protection, Water, Wastewater & Wetlands, "Protecting Wetlands in Massachusetts," http://www.mass.gov/dep/water/resources/protwet.htm.

[26] U.S. Energy Information Administration: Independent Statistics and Analysis, Annual Energy Review, "U.S. Primary Energy Consumption by Source and Sector, 2008," http://www.eia.doe.gov/emeu/aer/pecss_diagram.html.

[27] Ibid.

[28] Groton Electric Light Department, "Light Commissioners," http://www.grotonelectric.org/prod01.php.

Furthermore, GELD offers public information on energy use and efficiency to customers. For example, its website includes an online energy calculator to estimate the energy consumption and cost for most appliances, a web page for children to learn about energy efficiency, and newsletters that accompany residential and commercial bills, with information on GELD products and services and tips for saving energy. GELD also sells low-cost products to increase energy efficiency, such as compact fluorescent light bulbs and insulator gaskets for use behind switches and outlets to prevent heat loss.

GELD provides a range of services to help its customers increase the energy efficiency of their homes, including free energy audits, infrared camera evaluation of windows, walls, and doors to identify heat loss in a home or business, and free refrigerator and freezer removal and recycling. Additionally, GELD through its wholesale energy agent, the Massachusetts Municipal Wholesale Electric Company (MMWEC), assists customers with the purchase and installation of solar photovoltaic panels and inverters at discounted prices, using pre-qualified installers.[29] In addition to pursuing more sustainable energy use through conservation measures, GELD has been pursuing energy production through renewable resources. It already has a small contract with a hydro-electric power company, and GELD is a member of the Berkshire Wind Cooperative Corporation (see "Renewable Energy" below).[30] Fig. 3.2 presents a breakdown of GELD's energy sources by type and shows that citizens and businesses served by GELD are already served in part by renewable energy sources.

Groton Public Facilities. In September 2007, the Groton Board of Selectmen joined the U.S. Environmental Protection Agency's Community Energy Challenge, a program in which communities pledge to assess energy use in municipal facilities, set targets for reductions in energy use, and work toward meeting those targets.

As one of the first steps in the program, the town used Portfolio Manager, an EnergyStar product, to conduct an energy inventory of municipal buildings in 2008. A second inventory was established for schools buildings in the Groton-Dunstable Regional School District (GDRSD).[31] These inventories provide a ranked list of energy-efficiency improvement projects to move Groton toward greater and sustained energy conservation for all municipal facilities. Unfortunately, the town has not been able to implement the improvements according to the ranked list because of funding constraints.[32] Still, Groton has made many efforts to improve energy efficiency of municipal facilities. For example, the town considers and undertakes energy efficiency improvements through regular building maintenance, whenever feasible, including:[33]

- Replacement of lights with compact fluorescents as needed;
- Installation of programmable thermostats;
- Installation of single-location, programmable centralized heating, ventilation and air conditioning (HVAC) controls at the Town Hall;
- Replacement or repair of insulation when possible;
- Replacement of windows, with Energy Star rated windows, when needed and as appropriate; and

[29] Massachusetts Municipal Wholesale Electric Company, How We're Green, "Solar," http://www.mmwec.org/solar-power.html.

[30] Tammie Lemire (Groton Electric Light Department), interview by Fay, Spofford & Thorndike, LLC, April 12, 2010.

[31] Christopher Coutu (Town of Groton Water Department), email message to Community Opportunities Group, Inc., May 26, 2010.

[32] Gary Hoglund (Volunteer, Town of Groton), Interview by Fay, Spofford and Thorndike, LLC, April 9, 2010.

[33] R. Thomas Delaney, Jr. (Director of Public Works, Town of Groton), interview by Fay, Spofford and Thorndike, LLC, April 6, 2010.

- Replacement of older furnaces with high-efficiency gas furnaces.

Schools. In addition to the Portfolio Manager inventory of GDRSD buildings, the school department has implemented "lifestyle" changes in the schools whenever possible, including lowering temperatures, improving temperature uniformity, and reducing nighttime setback temperatures. However, capital improvements in the schools have been addressed in an opportunistic manner rather than on the basis of priority ranking, again because of funding constraints. One of these improvements was for the GDRSD, which received a grant for energy efficiency improvements in one school through the Massachusetts Department of Energy Resources (DOER) Energy Efficiency and Conservation Block Grants program in February 2010. While the upgrades will be made to a Dunstable-based school rather than one in Groton, it is still an improvement in energy efficiency for the school district as a whole.[34]

Recreational Facilities. Groton's Department of Public Works (DPW) has made efforts to conserve energy use in its maintenance of Town recreational facilities. For example, the DPW mows athletic fields only when necessary. In recreation-related buildings, the DPW has made energy-efficiency improvements such as switching to compact fluorescent light bulbs.[35]

Renewable Energy. Across the country, cities and towns are taking steps to provide for the establishment of alternative energy generation facilities, particularly wind generation. Groton is a leader in this regard, having established a Wind Energy Conversion Facility bylaw in 2009. The bylaw is noteworthy because it provides for small-scale (private use) wind energy generation facilities by right and large-scale facilities by special permit in all districts except the Conservancy (C) and Open Space (O) districts. Building on these steps by installing a meteorological tower to study potential sites and conducting in-depth feasibility analyses will require further funding.[36]

GELD also took an important step toward using cleaner and more sustainable energy resources when it joined the Berkshire Wind Power Cooperative Corporation. The Corporation consists of fifteen non-profit public power entities throughout Massachusetts and it will own and manage the Berkshire Wind Power Project on Brody Mountain in Hancock, Massachusetts. Upon completion of the project, GELD will receive a little over 5.5 percent of the project's output.[37]

Issues

Natural Resources

Understanding Ecosystems. Groton has protected thousands of acres of land for conservation, but this does not ensure the integrity of the underlying systems that protect the town's water supplies, ecosystems, and biological diversity. As the Natural Resources Inventory and Assessment maps show, there is no shortage of information on critical natural resources in Massachusetts. However, this information is intended for analysis of large areas. It is difficult to distinguish meaningful differences between wetlands, streams, and forest patches at the individual neighborhood or parcel level. As Groton seeks to increase its conservation holdings, it will need to understand ecosystem functions at a smaller scale so it can choose its preservation and conservation priorities wisely.

There are critical gaps in protection for areas most important to ecological diversity and water supplies. These areas includes the central reach of the Nashua River in Groton, the James Brook and Martins Pond Brook corridors, and Unkety/Hawtree Brook. A more subtle gap, mentioned at the public workshop in May 2010, crosses the north-central part of Groton from the Nashua River to Unkety Brook and Bradacook Pond.

Farmland Protection. Some of Groton's agriculturally significant lands remain unprotected. Many of Groton's most valuable agricultural lands are not protected by Agricultural Preservation Restrictions or conservation restrictions. Although some areas coincide with other protected open spaces, these protections do not result in contiguous - and therefore usable - swaths of agriculturally rich land. Without a clear policy and programs to conserve valuable farmland, these agricultural areas will remain at risk.

Water

Consistency in Water Conservation Programs. Since the Groton Water Department and West Groton Water Supply District. draw from separate watersheds, they

[34] Ibid.

[35] R. Thomas Delaney, Jr. (Director of Public Works, Town of Groton, MA), interview by Fay, Spofford and Thorndike, LLC, May 24, 2010.

[36] Gary Hoglund (Volunteer, Town of Groton), Interview by Fay, Spofford and Thorndike, LLC, April 9, 2010.

[37] Tammie Lemire (GELD), interviewed by Fay, Spofford & Thorndike, LLC, April 12, 2010.

may need different conservation measures. This could create confusion for users if, for example, one system issued mandatory water conservation measures during the summer and one did not. While a certain amount on inconsistency is unavoidable, in general both water supply entities should strive to have similar water conservation programs to ensure better compliance and participation from town users.

Water Pollution. Groton will need to take the initiative to work with other watershed communities to identify and resolve interconnected water pollution issues. The NRWA should continue to serve as a resource and possible facilitator or regional watershed problems.

Low-Impact Development. Groton lacks coherent, clear policy and regulatory controls for Low-Impact Development (LID). Currently there are several pieces to Groton's approach to stormwater management and LID, which appear in the town's stormwater management bylaw, Zoning Bylaw, and subdivision control regulations. However, these discrete elements are not consistent and, moreover, they do not reflect Groton's fairly evolved thinking on this issue.

The Town may also want to consider looking at particular issues around non-point source pollution and LID in the Lost Lake area. Although Groton is pursuing the development of a wastewater treatment facility to help with sewage issues in and around the lake, there are other pollutants (e.g. run-off from lawn fertilizers and other chemicals) that may also be affecting the area. The Town should determine which pollutants are harming the lake and evaluate the potential for enhanced LID regulations to mitigate future pollution.

Energy

Energy Efficiency in Homes and Businesses. Groton has carried out energy efficiency efforts for its municipal facilities, but there has been little intervention in the residential and business sectors. It is more difficult to effect change on private property. However, some tools do exist and the Town could take advantage of them.

Green Communities Act. Under Chapter 169 of the Acts of 2008, Massachusetts embraced a series of policies to reduce energy consumption and dependence on fossil fuels at all levels of government, in private businesses, and households. Cities and towns willing to meet criteria set by the Executive Office of Energy and Environmental Affairs (EOEEA) became eligible for "Green Communities" designation and grants for energy conservation and renewable energy production projects. The criteria include:

- As-of-right siting for renewable or alternative energy generating facilities;
- Expedited permitting for renewable or alternative energy generating facilities;
- An energy use baseline for municipal buildings, vehicles, street lights, and traffic lights, and a program to reduce energy consumption by 20 percent within five years;
- Purchase only fuel-efficient vehicles for municipal purposes; and
- Policies to minimize life-cycle costs in new residential and commercial buildings. (See "Stretch Code" discussion, below.)

Many of Boston's west and north suburbs and communities in Western Massachusetts moved quickly to address the state's program requirements, but participation from the north-central region has been weak. Of the fifty-three currently designated communities, only one of Groton's neighbors (Tyngsborough) appears on the statewide list. Groton is ineligible to seek a Green Communities designation because the Groton Electric Light District (GELD) does not contribute to the state's Renewable Energy Trust. However, some residents have advocated for Groton to adopt the Green Communities criteria as policy, regardless of the Town's ability to get official designation.[38]

Funding for energy conservation and energy generation projects. Groton has a number of energy-related projects that require a large capital investment, such as a meteorological tower to study possible sites for wind generation. To date, lack of funding has been the primary obstacle to moving forward with these projects. Groton faces an additional impediment in this regard because it is ineligible for funding from the Green Communities Program, which provides grants and loans for energy conservation and alternative energy generation projects.[39]

[38] Gary Hoglund (Natural Resources, Water, and Energy working group member, Town of Groton, MA), email to Community Opportunities Group, Inc., December 13, 2010.

[39] GELD provides low cost electricity to Groton's residents and businesses, which is a benefit to the community in reducing energy costs. However, one of the ways that GELD maintains its low electric rates is by not contributing to the state's Renewable Energy Trust, which makes the town ineligible for the Green Communities Program and related funding opportunities. Gary Hoglund (Volunteer, Town of Groton), Interview by Fay, Spofford and Thorndike, LLC, April 9, 2010.

Knowledge of Energy-Related Practices. The energy conservation field is growing and changing rapidly. Since Groton relies heavily on volunteers and volunteer organizations to research and spearhead energy-related initiatives, it is difficult to coordinate, schedule, and implement such activities.[40]

Goals and recommendations

GOAL: PROTECT THE INTEGRITY OF GROTON'S NATURAL RESOURCE SYSTEMS AS GROTON CONTINUES TO DEVELOP.

Recommendations:

- **Develop ecological baseline inventories.** Using the Preservation and Conservation Design Areas on Map 3.4 as a starting point, work with non-profit and educational partners and local volunteer scientists to prepare more detailed ecological baseline inventories and identify lands that are critical to ecological functions.

- **Identify the most important contributing parcels and make them preservation priorities.** Groton should tap the capabilities of its strong non-profit and education partners and knowledgeable residents to identify and assess ecologically significant areas at the parcel level. Once the parcels have been identified and analyzed, Groton can use the information to inform its land conservation priorities. Additionally, Groton should work further with non-profit partners to prepare management plans for these areas.

- **Based on the ecological inventory and analysis, reassess the effectiveness of existing environmental regulations and, where appropriate, consider modifying them.** One example of this is to reassess the value of wetlands buffers in protecting sensitive ecological resources. If the existing regulations are found to be insufficient, the Town should consider modifying them to include alternate buffer zones or enhanced performance standards to protect key species and resource system functions.

GOAL: USE BEST MANAGEMENT PRACTICES TO PRESERVE AND PROTECT GROTON'S GROUNDWATER AND SURFACE WATER RESOURCES.

Recommendations:

- **Analyze the hydrologic function of Groton's natural water systems, especially the relationship between groundwater, wetlands, and surface water features, to determine safe groundwater removal quantities.** Though Groton's water withdrawal amounts are consistently below what is permitted by the DEP, the Town should conduct a more thorough study of safe, sustainable water withdrawal amounts, taking into consideration likely future development. Specifically, the Town should assess potential impacts of future growth and change to Zone II and III of existing and potential wells.

- **Investigate all potential future sources of water supply and establish acquisition and conservation plans to ensure their protection.** As Groton grows, it will need to consider other water supply sources, so securing additional well sites and protecting surface watersheds will become increasingly important. The Town should proactively identify these areas and make plans to either acquire the land outright or establish conservation plans for them. For areas already designated as Zone II, Groton should purchase additional land so these areas are appropriately protected. Climate change will almost certainly bring a more volatile mix of droughts and floods, which suggests that additional watershed areas should be protected to increase recharge and prevent contamination from flooding.

- **Continue and expand public education around water conservation issues for local residents and business owners.** A community's water conservation

[40] Gary Hoglund (Volunteer, Town of Groton), interview by Fay, Spofford and Thorndike, LLC, April 9, 2010.

potential depends significantly on private voluntary efforts. Therefore, Groton needs to create public education programs around water conservation issues, such as on-site retention and treatment of water and how smaller lawns and landscaping techniques, such as xeriscaping, can reduce water use.

- **Develop a clear policy on Low Impact Development (LID) within Town departments and better integrate LID requirements into subdivision control and site plan review requirements.** Instead of encouraging LID at the project level, the Town should develop clear regulations to require LID where appropriate and ensure they are consistent between various regulatory controls, including site plan review and subdivision control. In addition to increasing clarity and consistency, Groton should widen the scope of LID to more development types (for example, residential) and increase public awareness about on-site retention and treatment of water.

GOAL: REDUCE GROTON'S DEPENDENCE ON NONRENEWABLE ENERGY SOURCES THROUGH INCREASED ENERGY CONSERVATION EFFORTS AND ALTERNATIVE ENERGY GENERATION.

Recommendations:

- **Organize a more effective approach to funding and implementing energy conservation projects and alternative energy projects.** Groton has made progress identifying and scoping energy conservation projects. However, many projects have not been able to move forward due to capacity issues and lack of funding. Groton should increase its organization around energy projects by doing the following:
  - Ask GELD to complete energy audits for all public buildings.
  - Develop an implementation plan for energy conservation and renewable energy projects that assesses and ranks their readiness to proceed so they are ready when funding is available. Ideally, there would be a designated Town staff person to lead and manage this effort.
  - Investigate programs that provide volunteers to assist with managing energy initiatives to provide additional capacity to the Town.[41]
  - Continue use of available building inventory tools (such as EnergyStar's Portfolio Manager) to develop a plan toward energy demand reduction, conservation, and efficiency.
  - Explore opportunities for GELD to establish a fund to assist Groton with capital for energy efficiency or renewable energy projects. This could take the form of a revolving loan fund that could be used to finance energy conservation measures. Loans could be given for projects which pay for themselves within a certain timeframe, such as five years or less, and energy savings used to pay back the loan.
- **Establish regulations to encourage renewable energy generation projects.** Groton showed strong support for establishing renewable energy generation facilities within the town when it created its Wind Energy Conversion Facility bylaw in 2009. The Town should continue to encourage the construction of renewable energy facilities by creating an expedited permitting process and zoning incentives for these types of projects. These measures are part of the Green Communities criteria, described in the preceeding Issues section.
- **Consider adopting the Massachusetts Green Communities Criteria.** Since Groton has a municipal light district and does not contribute to the state's Renewable Energy Trust, it is not eligible for official designation in the state's Green Communities program. This in turn makes the Town ineligible for grants and other funding sources for energy-related projects. However, Groton could adopt the Green Communities criteria as a way to meet its energy-related goals.
- **Consider adopting the Stretch Code.** Municipalities can influence energy conservation through building regulations. In Massachusetts, the State Building Code is a uniform code, which means that cities and towns have no authority to adopt local building codes. In response to government and industry concerns, however, the Massachusetts Board of Building Regulations and Standards recently amended the State Building Code and gave cities and towns the option to adopt a "Stretch Energy Code," which places higher standards and inspection requirements on residential and commercial construction.

  Under the Stretch Code, new single-family and two-family home construction (three stories or less) must meet a minimum "Home Energy Rating Standard"

[41] One example of this is a program at the University of New Hampshire that assists communities with tracking and assessing energy and water consumption in buildings.

(HERS). The required HERS rating differs by building size, measured in gross floor area. Residential additions and alterations may be required to meet the same performance standards as new construction or a set of "prescriptive" (not performance-based) alternatives. For commercial construction, projects over five thousand sq. ft. but under one hundred thousand sq. ft. can be evaluated either by performance-based or prescriptive standards. Projects under five thousand sq. ft. are exempt, and those over one hundred thousand sq. ft. must be evaluated by performance standards. All projects subject to the Stretch Code must undergo a post-construction evaluation by a certified inspection agent who then reports compliance to the local Building Inspector.[42]

Adopting the Stretch Code requires a public hearing and approval by Town Meeting. Though relatively new, the Stretch Code offers a clear option for towns that are serious about requiring green building standards. However, it does involve some increased costs for the home builder or homeowner, and for the Town in the form of additional training and professional staff time. To date, sixty-four cities and towns have adopted the Stretch Code, including Tyngsborough.[43] For Groton, adopting the Stretch Code is one way to meet the town's sustainability goals that involve building energy use.

- **Continue to support GELD's energy efficiency and energy generation programs and encourage them to further develop and promote their demand reduction system to reduce peak period electricity use.** The Town and GELD took a significant step toward alternative energy production when Town Meeting approved a solar photovoltaic bylaw in 2011. Going forward, Groton should continue this positive partnership by supporting GELD's energy conservation and generation measures. In addition, the Town should encourage GELD to intensify its demand reduction system, which would result in less peak period electricity use. This would not only save money for customers and also result in fewer greenhouse gas emissions.

- **Reduce energy consumption in Groton's commercial and residential buildings through a public education campaign.** Undertake a public education campaign for energy efficiency in homes and businesses that encourages people to take the following measures:

  - Unplug electronic units, such as computers, televisions, and DVD players, that are in stand-by mode or not being used.

  - Increase recycling in homes and offices, especially aluminum cans.

  - Use occupancy sensors or motion sensors for lighting indoors in businesses, and photo cells for outdoor lighting for homes and businesses.[44]

  - For the summer months in homes with individual air conditioning units, use a programmable timer on the air conditioner, and on cool nights open a window and use a fan.[45]

  - Landscape properties with include trees and shrubs to shade buildings and create a barrier from the heat. In the winter months, these trees will block the wind chill.

  - Minimize use of home electronics and appliances during the day when electrical usage is high.[46]

  - Take advantage of GELD's free energy audits, which provide specific energy-saving recommendations for the home or business.

GOAL: IDENTIFY AND PROTECT AGRICULTURAL LAND RESOURCES TO SUPPORT THE CONTINUATION AND EXPANSION OF AGRICULTURE IN GROTON.

Recommendations:

- **Work with the information in Map 3.3 (Agricultural Resources) and Map 3.5 (Gaps in Natural Resource Protection) to develop preservation priorities that address both natural and water resource protection needs and needs to protect Groton's remaining farmland.** Most of the gap corridors shown in Map 3.5 contain soils classified as Prime Farmland and Farmland of Unique Importance. Groton should

[42] Massachusetts State Board of Building Regulations and Standards, 780 CMR, 8th Ed., Chapter 115: Appendix AA, Stretch Energy Code.

[43] EOEEA, Green Communities Division, "Stretch Code Adoption by Community" (November 19, 2010).

[44] National Grid, Energy Efficiency, https://www.nationalgridus.com/masselectric/.

[45] National Grid, Energy Efficiency, "Energy Saving Tips," https://www.nationalgridus.com/masselectric/home/.

[46] U.S. Department of Energy, Energy Tips, "Energy Saving Tips," http://www.energy.gov/energysavingtips.htm.

focus its limited land acquisition resources on lands that contain these agricultural resources and thereby meet multiple goals of this Master Plan.

- **Recognize that the long-term viability of agriculture will require ongoing support from all levels of government, including local government.** As land continues to become more valuable for purposes other than farming, it will eventually convert to new uses. Groton has already witnessed a decline in the amount of land devoted to agriculture, and the town's desirability will exert more pressure on remaining farms. Saving farmland for agricultural use will require continued land subsidies: through public land acquisition, purchase of Agricultural Preservation Restrictions (APR) and conservation restrictions (CR), and partnerships with non-profits to pool public and private resources.

- **Recognize that farms are businesses.** Farm owners and operators cannot conduct business efficiently and profitably without local and regional customers and the flexibility to adapt their business practices to changing market demands. Efforts to ensure continued access to local sources of food will need to combine a focus on land preservation with the economic development recommendations in Chapter 9 of this Master Plan.

4

cultural & historic resources

What is this element about?

Scope

- Review Groton's existing inventories of cultural and historic resources.
- Map the town's historic sites and cultural landscapes.
- Identify types of cultural and historic resources that need further protection.
- Review existing procedures and methods for storage or archival materials and permanent records.
- Assess risks to cultural and historic resources and identify those that need further protection.
- Identify potential actions and strategies to limit the impacts of future development on cultural and historic resources.

Key findings

- Groton needs to cultivate a stronger sense of stewardship for historic resources, similar that which exists for natural resources.
- An effective preservation program hinges on understanding and appreciating historic resources - buildings, structures, objects, landscapes, archaeological sites, and historic records and artifacts.
- Historic preservation efforts such as creating heritage tourism programs and protecting the character of historic retail centers can compliment and contribute to the town's economic development interests.
- With proper standards and oversight and municipal regulations in place, historic buildings can be adapted for new uses.

Ideas for sustainability

- *Provide zoning flexibility to encourage the reuse and restoration of historic buildings.* Reusing historic buildings

lessens the need for new building materials and limits the amount of waste generated by new construction. In addition, older buildings often occupy less land than structures built to newer zoning requirements.

- *Work with residents to identify and create additional local historic districts.* Pursing historic preservation initiatives that strengthen existing town centers and villages is a primary tenet of sustainable development. Though preservation efforts are often considered at the site or building level, they can be part of a larger effort to make existing activity nodes more pedestrian-friendly and economically vibrant. In this way, they are part of a process of concentrating development in existing areas, reducing auto-dependency, and providing economic and social opportunities within walking distance.
- *Make information about Groton's cultural and historic character, buildings, districts, cemeteries, and other heritage treasures widely available to residents and visitors in formats that are attractive and easily understood.* Cultural and historic preservation can be a crucial

educational tool for teaching residents about a community's history and instilling a sense of pride and stewardship in a place. Without a set of commonly held values, decisions about what to preserve for future generations would be considerably more difficult, and many cultural and historic resources would be at risk. Educating residents and visitors about Groton's culture and history is critical for developing enough interest and will to protect historic resources for future generations.

Existing conditions and trends

Local historic resources[1]

Historic areas

In Groton, a range of forces including agriculture, commerce, industry, and leisure combined to create four distinct historic areas with different architectural styles, building scale, and landscape character: Groton Center, with its historic commercial, institutional, and municipal buildings; Farmers Row, with its historic farmhouses, agricultural landscapes, and estates; West Groton, with its industrial complexes and modest Victorian-era housing; and Lost Lake, with its twentieth-century summer cottages and unique land use pattern.

Groton Center developed as the civic, commercial, and institutional center of the town during the eighteenth century. Religious structures and Federa-style residences as well as a colonial-era burial ground and several small town commons are well-preserved reminders of Groton Center's historic importance to the town as a whole.

Farmers Row developed around 1673 as the Lancaster Turnpike, the connecting route between Groton and the village of Lancaster to the southwest. Residential and agricultural buildings developed along the road as farmers took advantage of the rich soils in the area. By the late 1800s, the area's impressive views of the hills of central Massachusetts and southern New Hampshire began to attract summer residents who built estates designed by some of the most fashionable architects and landscape architects of the period.

West Groton initially developed during the mid-eighteenth century as an agricultural community. The two brick Federal style edifices - the Asa Tarbell House (ca. 1800) at 6 West Main Street and the Abel Tarbell House (ca. 1800) at 16 West Main Street - attest to the prosperous farming enterprises in this area. As the nineteenth century progressed, West Groton began to attract industrial establishments along the Squannacook River. Prominent industrial buildings from this period include the Groton Leatherboard Company on West Main Street (c. 1870) and the Sampson Saw Mill on Cannery Row (c. 1890). Hollingsworth Vose, a specialty paper mill on the Squannacook River, still operates today. In addition, a number of Victorian-era, one-and-a-half story Gothic Revival and Italianate style homes were built to house workers in the mills. After the Leatherboard Company burned to the ground in 1914, the mill was rebuilt and continued to operate through the middle of the twentieth century. By the end of the century, the mill had closed and the complex was abandoned. In the late 1990s, developers purchased the property and completed a certified rehabilitation of the buildings for an assisted living facility now known as Rivercourt Residences.

Beginning in 1924, the Lost Lake area developed as a summer cottage community around a large pond in the eastern part of Groton. Renamed Lost Lake, the area was initially conceived as an 8,000-parcel campground with 2,000 square foot lots marketed for seventy-five dollars each. However, only 350 cabins were eventually constructed since most owners purchased two or three lots each and combined them into a single cottage parcel. Most cottages were built as summer residences, but many were weatherized and converted to year-round homes during the 1950s and 1960s.[2]

Historic buildings

Groton has an impressive collection of historic buildings that reflect more than four centuries of historic settlement. They include buildings rendered in architectural styles popular during the eighteenth, nineteenth, and twentieth centuries, such as Georgian, Federal, Greek Revival, Gothic Revival, Italianate, Queen Anne, Shingle, Craftsman, and Colonial Revival, and vernacular examples of traditional farmhouses. Many of the town's historic properties have well-preserved outbuildings, including carriage houses and barns, and landscape features such as fencing and stone walls. Groton has continued to document its historic houses through historic resource inventories, but historic outbuildings and landscape features are not as well understood.

[1] Unless otherwise noted, the source of this information is as follows: Sanford Johnson, *Groton Historic Resource Survey Project*, Town of Groton Historical Commission, 2006-2007.

[2] Boston University Preservation Studies Program, *Historic Preservation in Groton: A Guide to Planning*, (January 1989), 33.

The private schools in Groton Center own several historic buildings. The campus of the Groton School, founded in 1884 and designed by the landscape architecture firm of Frederick Law Olmsted, includes a number of historic brick and stone buildings designed by renowned architects of the period. Lawrence Academy, incorporated in 1793, contains approximately one dozen historic buildings including three high-style Federal Period residences, an 1863 Second Empire-style brick dormitory, nineteenth-century Victorian residences used as dormitories and offices, and buildings from the mid-twentieth century. The Country Day School of the Holy Union (ca. 1850) on Main Street, a Colonial Revival style building originally constructed by Susan Prescott as a School for Young Ladies, is another example of an early educational facility in Groton. All three schools have been documented in Groton's historic resource inventory and are located within historic districts. Town officials work closely with the schools to ensure the preservation of each institution's historic resources.

Non-profit organizations own and manage other historic structures in Groton. The Governor Boutwell House (1851) at 172 Main Street, an impressive Greek Revival/Italianate-style building with decorative architectural features including quoins, bracketed window hoods, and an elaborate entrance porch, is owned by the Groton Historical Society (GHS) and operated as a museum. The non-profit Grange organization owns the Groton Grange (c. 1890) at 80 Champney Street, a vernacular style wooden building with corner boards, scrolled eave brackets, and an entrance porch with pilasters and square posts. The building was restored in 2011 and is still being renovated for accessibility.

CHURCHES

Groton's historic church buildings serve as important landmarks and cultural institutions. Most continue to serve ecclesiastical purposes, but some have been adapted for non-religious uses. Groton also has vacant Catholic churches due to recent parish consolidations by the Archdiocese of Boston. Most of the historic religious structures are located in Groton Center. The First Parish Church (1755, remodeled 1839) at 1 Powderhouse Road is a two-story, wood-frame building with a steeple. Remodeled in the Greek Revival style, the building has an entrance portico with fluted Tuscan columns, paneled pilasters, and a wide frieze and molded cornice. It served as Groton's town hall until the existing town hall was built in 1859. Other historic churches in Groton Center include the Groton Union Congregational Church (1826) at 218 Main Street and the Baptist Church (1841) at 264 Main Street.

In West Groton, the Stick-style Christian Union Church (1885) at 35 West Main Street is a well-preserved, highly ornate wood building. Its many decorative features include a spindle frieze in the bell turret, carved gable ornaments with quatrefoils and trefoils, peaked window hoods, stagger-butt shingles in the gables, belt courses between different siding materials, arched stained glass windows, and an oculus window in side gable. Two historic English Revival style Roman Catholic churches, Sacred Heart (1887) on Main Street, designed by architect Henry Vaugh and originally located on the campus of the Groton School, and St. James Church (1927) on St. James Avenue in West Groton are now vacant.

TOWN-OWNED BUILDINGS

The Town of Groton owns a unique collection of historic buildings and structures. They include:

- **Groton Town Hall (1859)** at 173 Main Street stands prominently in the town center. This two-story brick Victorian Eclectic building is highlighted by an architrave with modillions and closed gabled porch with Corinthian columns. The Town restored the building in 1998.

- **The Groton Public Library (1893)** at 99 Main Street is a one-story yellow brick building designed in the Classical Revival style with a hipped roof, gabled entry porch supported by paired Ionic fluted

columns, and square pilasters. A modern addition located at the rear of the building expands the interior use of the building with minimal impacts to the architectural integrity of the historic facade.

- **The Sawtell School (1833)**, a brick one-room schoolhouse, was originally constructed as the District 7 School and later renamed the Chicopee School. Today, this building is operated and maintained by the Sawtell School Fund Association, which was established in the late 18th century for public education purposes. The Town approved the use of CPA funds to restore an outhouse on the property and the School continues to host school tours and other educational initiatives.

- **The Boutwell School (1914-15)**, a single-story yellow brick Spanish Revival style building, now functions as an Early Childhood Center operated by the Groton Dunstable Regional School District (GDRSD). Across the street, the brick two-story Victorian Eclectic style Legion Hall (1869), with its paired arched windows, decorative brick window hoods, and granite lintels, currently houses both municipal offices on the first floor and the American Legion on the second floor.

- In recognition of Groton's agricultural heritage, the town purchased the historic **Samuel Williams Barn (c. 1840)** on Chicopee Row in the late 1990s as part of a larger conservation project to protect an important open space parcel in town. Volunteers restored the early timber framed barn for use as an educational center and the property is now managed by an appointed town committee. As a requirement of the preservation grant used to fund the restoration, the structure is permanently protected by a preservation restriction.

While the majority of Groton's municipally owned structures are well preserved and continue to serve as government facilities, there are several exceptions. Determining appropriate reuse options for these buildings and adapting the structures in a historically appropriate yet sustainable and energy-conscious manner will be a challenging task for the town and future owners.

- The two-story, brick Classical Revival style **Prescott School** on Main Street, recently decommissioned, is used as administrative offices for the GDRSD. In anticipation of a new use for the property, the town sought National Register designation for the building to recognize its historic significance and plan for its future protection. Groton must now determine a reuse plan for the building that respects its architectural integrity and contributes to the economic vitality of the town center.

- **Squannacook Hall (1887)** at 33 West Main Street in West Groton is a wood-frame Victorian Eclectic style building with an entrance porch with clipped gable, exposed rafter ends, gable returns, corner boards, band of wood shingles on the façade between floors in stagger-butt and sawtooth patterns, and a rose window in the gable peak. Originally constructed as the town's first fire station, the building's architectural integrity has been compromised by the application of vinyl siding over the original wood clapboards and a storm window partially obscuring the original rose window. However, despite these modifications, the building still contributes to the overall streetscape of West Main Street in West Groton and is considered to be an important opportunity for a community space.

- The Colonial Revival/Prairie style brick **Tarbell School (1915)** on Pepperell Road in West Groton is now vacant. The Town appointed a study committee in 2009 to examine the building's condition and potential reuse options, and issued a Request for Proposals (RFP) last year to solicit interest from potential buyers.

Objects and monuments

Groton's historic resource inventory includes eight objects and monuments located throughout the town. There are several commemorative twentieth-century markers and a nineteenth-century fountain on the grounds of an estate on Farmers Row. One of Groton's most unique historic resources is its collection of four slate milestones dating from the late eighteenth century. The Prescott Milestone (1787), installed in Groton in 1787 by Dr. Oliver Prescott, depicts a hand with pointed finger above a cyma reversa molding and the inscription "36 Miles to Charles-R. Bridge / 1787." The other milestones are located in front of the Groton Inn at 130 Main Street, at the south end of Main Street on the west side near Old Ayer Road, and near the Groton School on Farmers Row. In 1940, the Historic American Buildings Survey (HABS) documented all four Groton milestones in drawings and photographs.[3]

[3] See Historic American Building Survey (HABS), *Built in America*, American Memory, Library of Congress, http://memory.loc.gov/ammem/collections/habs_haer/index.html.

Cemeteries

Groton's two historic cemeteries represent noteworthy examples of contrasting cemetery designs.

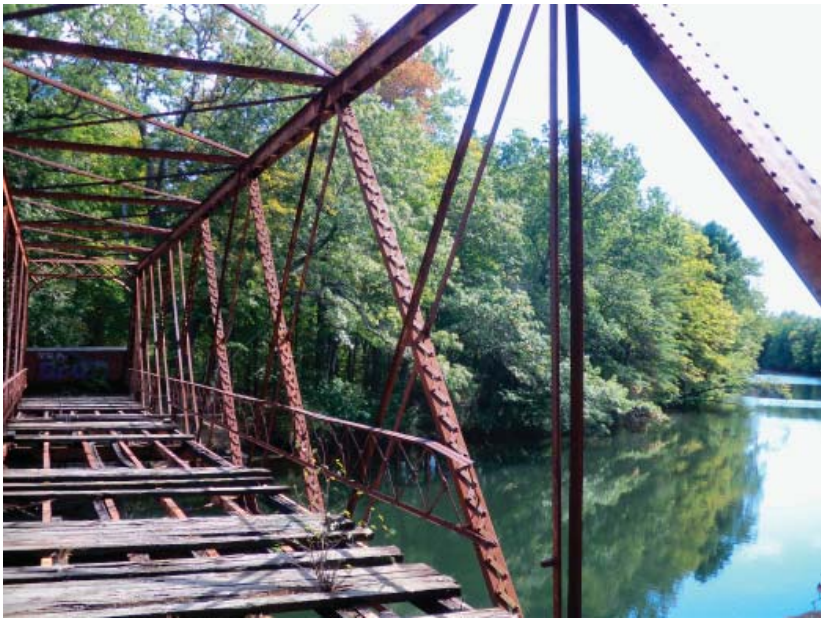
- **The Old Burying Ground (1704)** on Hollis and School Streets, a Colonial-era cemetery, has a remarkable collection of eighteenth-century slate headstones with distinctive carvings of death's heads and urn and willow designs. Other decorative features include narrow pathways, dry-laid granite stone walls, and wrought iron gates. The stones exhibit some deterioration due to age and environmental conditions, but few have been vandalized, and any broken stones have been repaired or replaced as necessary.

- The privately owned **Groton Cemetery (1847)** was designed in the rural landscape aesthetic popularized during the mid-nineteenth century Garden Cemetery movement. Decorative obelisks, columns, and other ornamental stones that depict biblical and secular symbolism are interspersed along curvilinear scenic paths and avenues. An elaborate wrought iron gate flanked by granite stone walls provides a decorative entrance to the grounds. This cemetery is also well maintained, with minimal damage to existing stones and infrastructure.

Only one other cemetery has been documented in Groton, a ca. 1900 horse cemetery at Surrenden Farm. Other historic family cemeteries may exist as well, but they have not been surveyed.

Structures

Fitch's Bridge (1898) is a steel Warren Truss bridge over the Nashua River, built by the Berlin Iron Bridge Company of Connecticut. Fitch's Bridge was closed in the mid-1960s due to safety issues, but the structure retains many original features, including ornamental rosettes along the safety rail. In addition to its historic significance, the bridge is considered a vital east-west connective link for the town's trail system. Local residents have coordinated efforts to restore the bridge, and the town appropriated CPA funds in 2005 for design plans. However, the bridge remains closed and un-restored. As one of only a few remaining examples of early steel bridges in the Commonwealth, Fitch's Bridge may be eligible for recognition in Preservation Massachusetts' Most Endangered Historic Resources program, which focuses public attention on threatened resources and works with communities to find a way to preserve them.[4]



Historic and heritage landscapes

Groton's heritage landscapes - areas created by human interaction with the natural environment - attest to more than four centuries of development. They range from large farmsteads to small residential properties, including estates, farmland, parks, cemeteries, scenic roadways, and former industrial sites such as quarries, mills, and factories. Identifying and documenting heritage landscapes is critical for understanding their role in a community's cultural identity. To date, Groton has not surveyed its historic landscapes and as a result, they are less understood and recognized than its historic built fabric. The Department of Conservation and Recreation (DCR) has published guidelines for identifying, documenting, and protecting heritage landscapes.[5]

Many of Groton's heritage landscapes relate to the town's agricultural history while others commemorate a historical event. The GHC recently initiated a town-wide survey of Groton's heritage farmsteads and their associated agricultural landscapes, such as the Surrenden Farm, Groton Center Farm, Gibbett Hill, and Blood Farm, and

[4] Most Endangered Historic Resources Program, Preservation Massachusetts, Inc., http://www.preservationmass.org/programs/most-endangered.

[5] Public Archaeology Laboratory, Inc. (PAL), *Reading the Land - Massachusetts Heritage Landscapes: A Guide to Identification and Protection* (undated), prepared for the Massachusetts Department of Conservation and Recreation, Heritage Landscape Inventory Program.

other historic farms as well. In addition, Groton maintains three historic common areas in the town center. The Town Common at the intersection of Main and Pleasant Streets, Prescott Common at the corner of Old Ayer Road and Main Street, and the Minuteman Common in front of the First Parish Church commemorate significant activities of the town founders, revolutionary war leaders, and early religious leaders.

Archaeological resources

Groton has a significant collection of Native American and European residential and industrial archaeological sites, and until recently very few had been professionally surveyed and documented. In 2010 the Town contracted with staff at the University of Massachsuetts, Amherst to complete the Community-Wide Archaeological Reconnaissance Survey of Groton Massachusetts. The results of this survey are discussed in the Historical and Archaeological Resource Inventories section, below.

Preservation organizations

Four municipal committees and one non-profit organization are actively engaged in preserving Groton's cultural and historic resources. They have worked together in the past and frequently include the same people on their boards and memberships, but they have not developed formal communication channels.

The **Groton Historic Districts Commission (GHDC),** established in 1963 in accordance with G.L. c. 40C, § 4, is the municipal review authority responsible for protecting and preserving resources located within the town's two local historic districts, Groton Center and Farmers Row. The six-member GHDC holds public hearings to review and determine the appropriateness of proposed alterations to buildings located within the two districts. The districts include buildings owned by the town, educational institutions, non-profit organizations, and private property owners. The GHDC works to ensure that historic resources are protected while addressing the contemporary needs and financial considerations of property owners. The Building Department provides administrative support to the GHDC.

The **Groton Historical Commission (GHC)**, established in 1973 under G.L. c. 40, § 8D, oversees historic preservation planning and advocacy, including historic resource surveys, National Register nominations, and community outreach. The GHC also administers Groton's demolition delay bylaw with assistance from the Building Department. By statute, local historical commissions oversee municipal bylaws and policies affecting town-owned historic resources. They work with other departments, boards, and commissions to ensure that community planning and development decisions support historic preservation. Local commissions are preservation advocates and an important resource for information about a community's cultural resources and preservation activities.[6]

The **Groton Archives Committee** is a seven-member appointed committee established to support the preservation of historic municipal records and archival artifacts. The Committee identifies funding sources and has sought a central location for archiving the Town's collection of historic artifacts.[7]

The **Groton Historical Society (GHS)** is a private non-profit organization dedicated to collecting and preserving artifacts, documents, and historical memorabilia significant to the history and lives of Groton residents. The GHS owns the Governor George S. Boutwell house and operates it as a house museum and archives. The museum contains a permanent collection of furniture, historic artifacts, and decorative objects as well as revolving exhibits. In addition, the GHS maintains a "rolling stock" of artifacts, including a c. 1850 Stagecoach, a c. 1900 Town Hearse, and an 1802 horse-drawn water pump. The organization conducts educational programs throughout the year, including free lectures and school tours. Currently, the museum is only open for special events and by appointment.

Preservation planning efforts

Local preservation planning

In 1989, Groton commissioned its first preservation plan for the community, *Historic Preservation in Groton: A Guide to Planning*. The GHDC and the Groton Planning Board contracted with the Boston University Preservation Studies Program to review the town's historic resources and develop a plan for future preservation efforts. The plan identified five preservation needs: heritage education, completion of a comprehensive inventory, land use and zoning provisions, public stewardship, and expansion and creation of historic districts. Through this focus, the plan established the following recommendations. Action taken on them is noted in italics.

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[6] Massachusetts Historical Commission, *Preservation Through Bylaws and Ordinances, Draft* (March 2009), 4.

[7] Michael Roberts, (Chair, Groton Archives Committee, Member, Groton Historical Commission, and Chair, Groton Sustainability Commission, Town of Groton, MA), interview by Community Opportunities Group, Inc., May 21, 2010.

- Establish buffer zones around existing and proposed historic districts to preserve the essential setting of these districts and to allow design review of infill construction.

- Preserve Gibbett Hill through options such as town acquisition, protective easement, or establishment of a zoning overlay district. The Plan included a model bylaw for a scenic uplands district. (*This property is now protected through a conservation restriction and is owned by various farms.*)

- Protect the character of Lost Lake through zoning initiatives such as cluster development requirements to preserve open space as well as design review and building size thresholds.

- Establish a local Heritage Education Program to conduct activities such as walking tours, slide shows/videos, oral histories, tours and classes, workbooks, and archives conservation.

- Update and expand the Town's historic resource inventory to include archaeology and structures over fifty years old, rewrite existing forms, complete narrative history, description of methodology, and improvements to public access. (*Ongoing.*)

- Improve administration of the Town's historic districts through documentation of structures in historic districts, development of design review standards, educational training of HDC members, and increased public awareness.

- Expand the town's existing districts by extending boundaries to include the entire parcel of designated properties, extending the Farmers Row district on both sides of Pleasant to Main and along both sides of Elm Street, and extending the Groton Center district to include Court and Station Avenues and Hollis Street.

- Examine resources on Old Ayer and Lowell Roads for local landmark designations.

- Consider West Groton for a local historic district. (The plan included proposed boundaries for this district.)

- Increase technical education to homeowners.

In 2002, Groton completed a Master Plan update that devoted much attention to historic preservation planning. The plan's general preservation-related goal was to, "preserve and protect the natural and man-made qualities of Groton that connect its past to the present as well as its relationship to the state and the nation."[8] The plan recommended several actions and some have been completed, such as adopting a demolition delay bylaw and the Community Preservation Act (CPA). A third recommendation - to complete and update the town's historic resource inventory - is ongoing.

State preservation planning studies

The 2006–2010 State Preservation Plan prepared by the MHC identifies several recommendations for communities in the Eastern Region, which includes Groton. The recommendations include expanding and improving survey documentation of rural historic landscapes, farmsteads, and agricultural buildings, and documenting lakeside cottage developments and estate complexes. Though generalized for the entire region, MHC's recommendations are relevant to Groton due to the town's wealth of agricultural landscapes and farm buildings, the Lost Lake cottage development, and a number of estates on Farmers Row. Groton has been actively surveying its historic resources over the past five years, but the town has not documented its landscapes or the historic resources of Lost Lake.

The State Preservation Plan also includes recommendations for National Register designations in the Eastern Region, including registration of historic village centers, secondary villages, and agricultural and rural landscapes. These recommendations are particularly relevant to Groton because the town has not designated its historic villages (the Town Center, West Groton and Lost Lake) or its significant agricultural and scenic landscapes on the National Register. MHC identified these landscapes as among the most threatened resources in the Eastern Region due to suburban development trends.

Regional preservation initiatives

Groton is one of forty-five communities in Massachusetts and New Hampshire located in the Freedom's Way National Heritage Area, a nationally designated region whose natural, historic, and scenic resources represent significant historical events.[9] Freedom's Way communities participate in regionally coordinated projects and

[8] Town of Groton, *Groton 2020 Update: Planning Directions* (April 2002), 45.

[9] National Heritage Areas are designated by Congress. Each National Heritage Area is governed by separate authorizing legislation and operates under provisions unique to its resources and desired goals. Freedom's Way National Heritage Area, "Freedom's Way National Heritage Area," http://www.freedomsway.org.

events, including oral histories, tours, and publications. In Groton, Freedom's Way recently sponsored a presentation of an oral history project documenting the region's agricultural heritage. Freedom's Way also coordinates "Strollin' & Rollin'," an annual event that highlights a different community's historical sites through walking, riding, and driving tours.

Historic and archaeological resource inventories

HISTORIC RESOURCE INVENTORIES

An historic resource inventory is fundamental to historic preservation planning at the local level. In order to protect historic assets, a community must first identify and understand them. The inventory process involves preparing an inventory form for each property, with information on the architecture and physical appearance, history, and significance of the property, and photographs and a locus map. MHC places the completed inventory forms in the Inventory of Historic and Archaeological Assets of the Commonwealth. For Groton, the state inventory currently includes 456 buildings, eight objects, nineteen structures, twenty-seven areas, and three burial grounds.[10] Older historic inventory forms, particularly those completed more than ten years ago, do not include secondary features such as outbuildings, stone walls, and landscape elements. Groton's inventory forms are on file at Town Hall and MHC, and the most recently completed forms can be accessed on the Groton Public Library website. MHC also maintains an online database of inventoried properties statewide and is currently scanning forms so the documents can be retrieved from the database. However, the MHC does not expect Groton's inventory forms to be available on the internet for several years.

As part of the Community-Wide Preservation Project, the GHC carried out a multi-phase historic survey called the Groton Historic Asset Survey to document the town's historic and archaeological assets and update and expand its historic resource inventory. Using CPA funds, the GHC hired a consultant for the first two phases of the survey, which documented Groton's historic buildings, structures, objects, and landscapes in the two historic districts, as well as resources in West Groton and elsewhere in the community. The GHC is currently preparing a survey of historic agricultural landscapes. This project will develop a historic agricultural context for Groton, identify agricultural sites and features throughout the town, and provide recommendations for interpretation and management of these resources.

ARCHAEOLOGICAL RECONNAISSANCE SURVEY

During the drafting of this Master Plan, Groton contracted with staff at the University of Massachusetts, Amherst to complete the Community-Wide Archaeological Reconnaissance Survey of Groton, Massachusetts. The purpose of the survey was to identify and record possible archaeological resources within the town. Not only did the consulting team inventory and record an extensive number of resources, but also they note that Groton contains many areas with a high potential for additional unrecorded archaeological sites, most of which have been minimally disturbed. This suggests a need for continued vigilance for archaeological resources.

The survey added nine Native American and forty-one historic sites to the registry with the State Archaeologist at the Massachusetts Historical Commission (MHC). Furthermore, the study highlights the potential for many more sites, noting that the surroundings of historical structures often contain archaeological deposits even though site forms do not yet exist for them.

The Reconnaissance Survey recommends that Groton adopt a bylaw that requires a review of archaeologically sensitive areas. The process would begin with a proponent's application for a permit, and the project area would be located on the archaeological potential maps included in the Reconnaissance Survey. If the project area is within a zone of high archaeological potential then it would go to the Groton Historical Commission (GHC) for review. If the Commission determines that the project would impact archaeological resources, the Town would ask MHC to determine whether a professional archaeological survey would be necessary. In some cases, it would be important to avoid the site and place it under a Site Preservation Restriction, which would ensure that the proponent could not harm the site. If future proposed development threatened to harm the site, GHC could require an archaeological survey.[11]

Preservation tools

STATE REGISTER OF HISTORIC PLACES

The State Register records all Massachusetts properties designated within local or National Register historic districts, individually listed in the National Register, designated as a National Historic Landmark, protected by

[10] Massachusetts Historical Commission, "Town Profile for Groton," Inventory of Historic and Archaeological Assets of the Commonwealth, accessed February 2010.

[11] Charles, Sheila, and Christopher Donta, Brian Jones, and Mitchell T. Mullholland, *Community-Wide Archaeological Reconnaissance Survey of Groton, Massachusetts*, March 2011.

preservation restrictions under G.L. c. 184, §§ 31-32, or formally determined eligible for the National Register by the National Park Service. The MHC updates the list annually. Table 2.1 identifies Groton properties currently listed on the State Register.

NATIONAL REGISTER OF HISTORIC PLACES

Established by the National Historic Preservation Act of 1966, the National Register of Historic Places is the official federal list of districts, sites, buildings, structures, and objects that have been deemed significant in American history, architecture, archaeology, engineering, and culture. Properties may be listed individually or as part of a district. The National Park Service administers the National Register, but nominations usually begin at the local level. Though listing is primarily an honorary designation, it does provide some protection under Section 106 of the National Historic Preservation Act, which requires federal agencies to consider the effects of their projects on historic properties. Any development or construction project seeking federal funding, licenses, or permits must be reviewed by the State Historic Preservation Officer (MHC). Mitigation is required for any proposal that may have an adverse effect on a National Register property.

As shown in Table 4.1, Groton has five properties listed individually on the National Register (NRIND) but no National Register districts. Although the individual designations indicate a property's discrete significance in the history of Groton and the Commonwealth, many are located within historically significant areas that merit district designation such as Groton Center and West Groton. Recognizing individually listed properties within the context of their surroundings would illustrate the important interrelationship that resources play in defining Groton's historic and architectural character.

Table 4.1: Properties Listed on the State Register of Historic Places

Historic Name	Address	Designation*	Date of Designation	Number of Properties
District 7 School	366 Chicopee Row	NRIND	01/29/2008	5
First Parish Church	1 Powder House Rd	LHD	07/09/1964	1
		PR	04/15/1986	1
Governor George S. Boutwell House	172 Main Street	LHD	07/9/1964	5
		NRIND	01/05/2005	5
Groton Historic District #1	Main St from Old Ayer Rd to Court St	LHD	07/09/1964	45
Groton Historic District #2	Main St from Court St to School St	LHD	03/22/1965	54
Groton Historic District #3	Farmers Row (Rt. 111) Pleasant St to Joy Lane	LHD	07/09/1964	27
Groton High School (Prescott School/ Butler School)	145 Main Street	LHD		1
		NRIND		
Groton Leatherboard Company (Rivercourt Residences)	6 West Main Street	NRIND	04/18/2002	8
Groton Inn	130 Main Street	LHD	07/09/1964	4
		NRIND	08/03/1976	4
Joseph Bennett – Arthur Shattuck House	653 Martins Pond Rd	PR	08/30/2000	1
		NRIND	02/33/2006	5
Residence next to Town House Lot (William Prescott House)	Main Street	LHD	07/09/1964	1
		PR	05/07/1981	
Samuel Williams Barn	164 Chicopee Row	PR	03/28/2000	1

Source: Massachusetts Historical Commission, State Register of Historic Places 2009 (2009). Acronyms: NRIND: National Register of Historic Places; LHD: Local Historic District; PR: Preservation Restriction.

PRESERVATION RESTRICTIONS

Preservation restrictions (PR) provide the highest level of protection for historic resources. Groton has four properties protected by historic preservation restrictions under G.L. c. 184, §§ 31-33 (Table 4.2). A preservation restriction is a legally enforceable agreement between the property owner and a qualified non-profit or governmental organization to maintain exterior (and in some cases, interior) features of a property. The non-profit monitors the property and approves any proposed changes to portions of the building covered by the restriction. For properties listed in the National Register, donation of a preservation restriction to a qualified organization may allow the owner to take a federal charitable contribution tax deduction. All but one of Groton's PRs run in perpetuity. Groton's most recent PR, placed on the Groton Grange in 2009 as a condition of CPA funding, expires in thirty years.

PRESERVATION TOOLS BY COMMUNITY

Groton residents have a strong preservation ethic and a shared interest in protecting historic resources. As shown in Table 4.2, Groton is the only town in the region that has adopted and implemented all five of the most frequently used preservation tools available to cities and towns. However, Groton has designated only individual properties on the National Register of Historic Places, not districts. Furthermore, Groton has not expanded the scope of its preservation regulations for a long time. For example, it has not designated any additional local historic districts since 1963.

Municipal legislation

LOCAL HISTORIC DISTRICTS

Groton has three local historic districts (LHD): Districts I and II, which are located in Groton Center, were voted on in 1964. (District II was denied by the Attorney General, and then voted on again in 1965 and approved.) District III, the Farmers Row Historic District, was also established in 1964. The districts were created following the loss an historic building on Main Street that was demolished in 1963 without input from the community. The boundaries for Groton's historic districts do not encompass the entire parcel for each property in the district, a fact noted in the town's 1989 Preservation Plan. The GHDC considers building alterations on the features of designated properties that are technically located outside the district, but this practice has not been strengthened or formalized by an extension of the district boundaries.

Groton's historic district rules and regulations were last updated in 1988. While they provide some guidance about what the GHDC will allow, they do not clearly articulate guidelines for appropriate design within an historic context. Many communities have created design guidelines for their historic districts that include architectural graphics to assist property owners and local boards when reviewing changes to historic buildings.

DEMOLITION DELAY BYLAW

Groton adopted a demolition delay bylaw in 2006, implementing a recommendation from the 2002 Master Plan. Under the bylaw, a property owner proposing to demolish a structure seventy-five years or older must submit a request to the GHC for consideration of historic significance. A determination of historical significance by the GHC triggers a six-month demolition delay period, during which the GHC works with the property owner to explore alternatives to demolition or appropriate mitigation. After the delay period expires, however, property owners may demolish their building. Many Massachusetts communities have found that six months is not enough time for the process that may be required to save a historic structure. Working with property owners to find alternatives, such as seeking a new owner or a suitable site to relocate the building, can be complicated and time consuming. As a result, many communities have extended their demolition delay periods to twelve or eighteen months.

Table 4.2: Preservation Tools by Community

Town	CPA	Demolition Delay Bylaw	Local Historic Districts	Scenic Roads Bylaw	National Register Designation
Ayer	Yes	No	No	No	Yes
Dunstable	Yes	Yes – 9 month delay	No	Yes	Yes
Groton	Yes	Yes – 6 month delay	Yes	Yes	Yes
Littleton	Yes	Yes – 6 month delay	No	Yes	Yes
Pepperell	No	No	No	Yes	Yes
Shirley	No	No	Yes	Yes	Yes
Tyngsborough	Yes	Yes – 6 month delay	No	No	No
Westford	Yes	Yes – 6 month delay	No	Yes	Yes

Sources: Massachusetts Historical Commission, Preservation Through Bylaws and Ordinances (Draft) March 11, 2009, and State Register of Historic Places (2009).

Groton's recently completed Historic Asset Survey will improve implementation of the demolition delay bylaw by allowing the GHC to identify buildings that meet the age threshold and determine significance in response to a demolition request. However, the GHC's oversight of all potentially historic structures is still limited by the fact that not all of the town's buildings have been documented on historic resource inventory forms. A database and GIS maps of inventories properties would help local officials identify properties efficiently.

Preservation Tools in Groton

Groton is the only town in the region that has adopted and implemented all five of the most frequently used preservation tools available to cities and towns. However, Groton has designated only individual properties on the National Register of Historic Places, not districts. Furthermore, Groton has not expanded the scope of its preservation regulations for a long time. For example, it has not designated any additional local historic districts since 1963.

SCENIC ROADS BYLAW

Groton adopted the Scenic Roads Act, G.L. c. 40, § 15C, and a Scenic Roads Bylaw in 1974, and revised its regulations in 2008. The Town made all local roads (except Route 119, Route 225, Route 40, and Route 111) subject to the bylaw. The Scenic Roads Bylaw requires Planning Board approval, following a public hearing, for the removal of trees or stone walls during repair, maintenance, reconstruction, or paving within the right-of-way of a scenic road. Groton does not have scenic roads documentation in text, photographic, or other formats that would support enforcement actions in the event of a violation.

COMMUNITY PRESERVATION ACT

Groton is one of 143 cities and towns that have adopted G.L. c. 44B, the Community Preservation Act (CPA). Revenue generated by the CPA surcharge must be used to address three core statutory purposes:[12]

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

Communities must use at least 10 percent of their CPA revenue for each of these purposes. The remaining funds may be appropriated for any of the allowed uses, or for land for recreational use. CPA-funded projects have to meet certain statutory requirements, including compliance with the Secretary of the Interior's Standards for the Treatment of Historic Properties and placement of preservation restrictions on historic properties. Some communities have required preservation restrictions for all preservation projects, private and public, funded with CPA revenue. Funded projects must also serve a public purpose and may include municipal projects as well as projects for non-profit entities.

Groton adopted the CPA in 2004, imposing a surcharge of 3 percent on local real estate tax bills.[13] The state provides matching funds from the Community Preservation Trust Fund to each participating community. The actual amount that Groton received from the state has varied from year to year, depending on the funds available in the trust fund and the number of participating CPA communities. As the number of CPA communities has grown, the available state match has diminished significantly. While communities with the full 3 percent surcharge initially received a 100 percent match from the state, they now receive matches of less than 40 percent. In 2010, Groton received a 37.8 percent match from the state totaling $199,379.[14]

The **Community Preservation Committee (CPC)** prepares and updates a Community Preservation Plan that establishes policies for distributing CPA funds. Groton's 2009 Community Preservation Plan sets an overall historic preservation goal to "preserve and protect the natural and man-made qualities of Groton that connect its past

[12] Massachusetts Community Preservation Coalition, www.communitypreservation.org.

[13] Groton simultaneously approved two exemptions authorized by the statute: low- and moderate-income homeowners are not required to pay the CPA surcharge, and the first $100,000 of assessed valuation are excluded from the surcharge calculation.

[14] Massachusetts Department of Revenue http://www.mass.gov/?pageID=dorterminal&L=5&L0=Home&L1=Local+Officials&L2=Municipal+Data+and+Financial+Management&L3=Data+Bank+Reports&L4=Community+Preservation+Act&sid=Ador&b=terminalcontent&f=dls_mdmstuf_CPA_cpamatch&csid=Ador

to the present as well as its relationship to the state and the nation," as well as other long-term preservation-related objectives. In 2010, the town approved CPA funds for several historic preservation projects: an archaeological survey, restoration of the Grange, historic town document preservation, footstone reinstallation at the Old Burying Grounds, and a community-wide historic agricultural study. Previously funded preservation projects include the Sawtell School, Squannacook Hall, and Fitch's Bridge, the town-wide historic resources survey, and a National Register nomination for the Prescott School.

Archives and records management

In addition to Groton's wealth of historic buildings and structures, the town is endowed with a wonderful collection of historic artifacts, including old municipal records, antique books and maps, and other artifacts representing its past. To ensure the continued conservation of these resources, Groton established an Archives Committee in 1988 to seek funds and space for preserving and storing the town's historic records. These artifacts, ranging from historic papers to decorative objects to historic farm and fire equipment, are stored in various locations around Groton, including the Town Clerk's office, the Groton Public Library, and the GHS. The Groton Town Clerk is required by statute to maintain vital records for the town. With CPA funding, the Clerk has been rebinding original documents to preserve older records. As each volume is rebound, an electronic copy of the document is made. These electronic records are not yet available for public use.[15]

The public library also contains a collection of historic books, maps, and other documents in its historical room on the second floor, which is a secured, climate-controlled space. The Town has allocated CPA funding to scan these fragile documents and make them accessible on the library website. The GHS maintains a collection of furniture and decorative objects as well as historic records and photographs. Other historic artifacts are stored in various locations in Groton, including archival collections at the Groton School and Lawrence Academy.[16]

[15] Michael Bouchard (Town Clerk, Town of Groton, MA), interview by Community Opportunities Group, Inc., May 21, 2010.

[16] Michael Roberts, (Chairman, Groton Archives Committee and Member, Groton Historical Commission, Town of Groton, MA), interview by Community Opportunities Group, Inc., May 21, 2010.

Issues

Vacant or Underutilized Historic Buildings. Groton has vacant or underutilized buildings that could be put to productive use. Groton has several municipal structures, including former schools and a community building, that are either vacant or underutilized. The town also has several churches and historic carriage houses and barns that are now obsolete and unused. Returning these buildings to active use presents an opportunity for both historic preservation and serving community interests and needs. While Groton's inventory of vacant or underutilized structures is relatively small, these structures offer many possible reuse options such as community meeting space, performance venues, and office space. In addition, underutilized structures could provide new and different housing options for residents.[17] This is particularly true for larger, formerly single-family homes which could be converted to multi-unit structures.

Barriers to Adaptive Reuse. While Groton's regulations allow multi-family conversions under its existing zoning regulations, current requirements make this type of adaptive reuse infeasible for most cases. Adapting historic structures can present a number of challenges, including system upgrades, energy retrofits, significant structural changes. failing septic systems, site limitations, and zoning restrictions. It is also important to ensure that redevelopment occurs in a manner that does not compromise the building's architectural integrity. These issues can result in higher construction costs, but this is not always the case. Therefore, adaptive reuse should always be considered before demolition and new construction.

Limited Effectiveness of Preservation Tools. Groton's existing preservation tools are not as effective as they could be. Although Groton employs a range of preservation tools, some are limited in scope and effectiveness. For example, the demolition delay bylaw does not provide enough time to prevent the loss of historic structures. While teardowns may not seem like a pressing problem for Groton today, they will become one as market pressures increase. When faced with the proposed demolition of an important historic resource and an inflexible property owner, the Town may find it difficult to navigate the complicated negotiation process required to save a threatened building within the six-month delay period. To be successful, the GHC would need to convince the property owners to reconsider the initial demolition plan, encourage them to reuse the structure onsite, pursue a new owner for the property, or move the structure elsewhere after

[17] For more information, see Chapter 8.

identifying a suitable site. As many Massachusetts communities have discovered, a six-month delay does not accommodate all of these steps.

In addition to issues with demolition delay, Groton's local historic districts need attention. The existing district boundaries do not encompass the entire parcel of each resource, leaving features located outside of the district vulnerable to alteration or loss.

The Local Historic District rules and regulations need revision and updating. The GHDC's existing rules and regulations are more than twenty years old, and they do not include design guidance for historically appropriate alterations and materials. Design guidelines should contain both written and graphic illustration of materials, design concepts, and energy improvements appropriate for historic buildings. This would provide property owners with clear direction for developing alterations that will be compatible with the architectural character of their historic buildings. While the GHDC recognizes the need for design guidelines, the all-volunteer board has been unable to prepare them.

Groton's Local Historic Districts are limited in their geographic distribution. Groton designated its local historic districts more than forty years ago. Since then, the Town has neither expanded these districts nor created new ones, despite recommendations in previous plans. Currently, historic resources on the periphery or outside existing LHDs are vulnerable to inappropriate alterations. Groton's 1989 Preservation Plan identified several areas where additional local historic districts should be pursued, including West Groton. Other areas, such as Lost Lake, also have significant historic resources that are worthy of LHD protection.

Archives. There is no central facility or database for historic records and archives. Groton's historic records and artifacts are stored in various locations throughout the town. The Town wants to develop a central repository for historic artifacts and records for preservation and public access. Using CPA funds, the Town has preserved some historic documents and records and made them available online. However, Groton does not have a facility to store and exhibit larger artifacts such as the rolling stock currently stored at the Boutwell House.

Archaeological Resoures. Groton lacks a process or mechanism to protect archaeological resources. Despite Groton's wealth of archaeological sites and artifacts, the town is only now beginning to gain an understanding of the resources found within its borders. The Archaeological Reconnaissance Survey provides a framework for protecting archaeological resources from inappropriate development. Groton needs to consider regulatory measures to protect these resources from disturbance or destruction.

Municipal Historic Buildings. Many of Groton's Town-owned historic buildings are in need of repair. The Town of Groton owns an impressive collection of historic buildings, but many need restoration and repair. Town Hall, the Public Library, the Old Burying Ground, Fitch's Bridge, and the Prescott School are just a few examples of Groton's diverse historic properties. Groton has been a good steward of its historic resources, but it has not taken important preservation steps such as adopting consistent procedures to employ the Secretary of the Interior's Standards for the Rehabilitation of Historic Properties when it considers renovation work for public buildings. The Town has also not established an administrative rule requiring boards, commissions, and departments to seek GHC review as part of the project planning process.

Public Awareness. Groton has a need for stronger awareness of and support for historic preservation initiatives. Despite Groton's wealth of historic resources and the important role they play in the visual character of the town, residents and officials seem hesitant to strengthen and expand preservation regulations and initiatives. Local preservation groups conduct educational activities to promote Groton's historic buildings and landscapes, yet these

resources remain less recognized than the town's natural and open space resources.

Goals and recommendations

GOAL: PURSUE ADAPTIVE REUSE OF HISTORIC PROPERTIES.

Recommendations:

- **Provide flexibility in zoning to encourage the reuse and restoration of historic buildings, particularly for housing.** Regulatory barriers - particularly zoning regulations - often prevent the successful reuse of historic structures. Groton's Zoning Bylaw could be amended to allow reuse of non-residential structures such as historic barns, carriage houses, and mill structures for uses not permitted within the underlying zoning. In addition, the Town should also ensure that its zoning regulations do not interfere with the conversion of larger, single-family homes to multi-unit buildings. Though Groton allows conversions of single-family structures to a maximum of three units, this is only possible in a few cases. For any proposed adaptive use of an historic structure, the town should ensure that the redevelopment proposal is designed for compatibility with Groton's visual character.

- **Require projects that affect Town-owned historic structures to adhere to the Secretary of the Interior's Standards for Historic Preservation.** The Secretary of the Interior Standards establishes guidelines for modifying historic buildings in a manner that does not impact historic features and architectural character. Adopting these standards would not only provide specific advice for the treatment of historic structures, but would also demonstrate Groton's leadership in historic preservation.

- **Continue to seek funding for reuse and preservation of Town-owned historic resources.** Groton should continue to pursue funding for historic preservation of municipal structures. While the CPA is one funding mechanism, this money is limited to the amount raised by the community and the available match from the state. Also, there are competing community needs for CPA funds. While preservation grants are often available from MHC for restoration of public buildings, the program is competitive and available only on a year-to-year basis. Other preservation grant programs are also limited. Private fundraising may be an option, but it would involve competing with other community needs and may involve legal issues, too. Seeking donated restoration services may be another option.

- **Identify appropriate reuse options for Town-owned historic structures through collaborative problem-solving between the GHC and other Town boards and departments.** Groton should solicit input from a range of Town boards and departments on historic preservation options for its vacant and underutilized historic municipal properties. Groton could also host community forums such as design charrettes, where Town officials, residents, design professionals, and community leaders explore various reuse and design options for historic buildings, as another means to determine viable preservation options.

GOAL: PROTECT GROTON'S CULTURAL AND HISTORIC RESOURCES.

Recommendations:

- **Review Groton's existing preservation bylaws for opportunities to strengthen and expand resource protection.**

  - *Strengthen the Demolition Delay Bylaw.* Groton's existing demolition delay bylaw has a delay period of only six months, which is rarely enough time for a successful preservation strategy. A twelve-month delay period (typical in a number of Massachusetts communities) would allow time for the GHC to work with property owners to explore and pursue alternatives to demolition.

  - *Develop historic design guidelines.* The GHDC should pursue the creation of design guidelines for use by district property owners as well as other local residents. While the GHDC reviews all aspects of each designated property regardless of the historic district boundary, the criteria for review should be stated clearly in design guidelines to provide transparency and predictability for developers and property owners. Groton could contract with a preservation professional to develop design guidelines or work with a university program to utilize student services. CPA funds, MHC's Survey & Planning Grant Program, and other funding sources are available for this type of project.

  - *Work with residents to identify and create additional local historic districts*. Groton has not expanded its historic districts since they were first adopted in 1963, nor has it created any new districts despite recommendations in previous plans. With-

out district designation, it is difficult to ensure that the town's historic building features will not be lost to inappropriate alterations. While this legislation is not appropriate for all of Groton's historic areas, there are certainly cohesive, historically significant areas where a district should be considered. Successful implementation will require public education about the historic and architectural significance of each identified area and a close working relationship with residents throughout the process.

- *Consider Architectural Preservation Districts for some areas of Groton.* In areas where building scale and development patterns play a more significant role in defining historic character than architectural detail, Architectural Preservation Districts (APDs) may be more appropriate than a local historic district.[18] An APD protects a neighborhood's overall character by regulating some aspects of demolition, major alterations, and new construction. It is an appropriate tool for neighborhoods or areas that would benefit from some level of protection but may not need or desire the regulatory burden of an LHD, which involves a rigorous review and decision process for any alterations to a building's exterior architectural features. APDs focus on general neighborhood characteristics such as the siting and scale of buildings, the relationship of buildings to each other and to the street or road, and the relationship between the built and natural environment.

- **Encourage collaboration between Groton's preservation groups.** Despite past collaborations, Groton's preservation groups have not developed formal communication channels to ensure awareness of current issues and activities. Routine distribution of meeting agendas and minutes, scheduling of occasional group meetings to share resources and ideas, and development of joint activities are ways to increase communication and improve effectiveness.

- **Work with regional, state, and national preservation groups on local preservation issues.** Preservation Massachusetts, Inc., the MHC, and the National Trust for Historic Preservation provide technical and financial assistance on preservation issues. College and university programs can also provide preservation assistance. Pursuing these types of partnerships is important for smaller towns without dedicated staff to lead preservation planning initiatives.

- **Continue to pursue a central facility to store and exhibit Groton's historic artifacts and create a database that identifies Groton's archival resources and their locations.** While Groton has several public and private institutions with archival collections, it does not have a central repository for historic artifacts and records, nor does it have a central database that identifies all of the archival resources in Groton and their location. Groton needs to develop a central archive accompanied by a database of the collections. This will increase Groton's ability to offer local history programming and activities based on these resources.

- **Continue the Groton Historical Commission's efforts to complete a comprehensive inventory of Groton's cultural and historic resources, including areas, structures, buildings, objects, and historic landscapes.** Despite Groton's recent survey efforts, the town still has historic resources that remain undocumented and therefore vulnerable to alteration or loss. This includes historic resources located outside Groton Center, West Groton, and Farmers Row, and landscapes, cemeteries, farmsteads, and twentieth century resources located throughout the town. Groton is currently completing an agricultural history project that will provide a preliminary inventory of some historic landscapes. The town could build upon this effort by undertaking a heritage landscape inventory in accordance with the DCR's guidelines.

- **Develop a comprehensive database of historic resources that includes local historic districts, National Register properties, and inventoried properties, and integrate the database with the Groton's Geographic Information System (GIS).** An accessible, easy-to-maintain, comprehensive database that can be used by local officials and boards to identify the town's historic properties is important for protecting historic resources. Once completed, this information should be incorporated into the town's GIS and made accessible for other public uses.

- **Provide efficient public access to historic resources information.** The GHC's web page (on the Town website) should include a link to the Groton Public Library's online inventory. In addition, once the MHC has finished scanning Groton's inventory forms and linked them to the state's online database,

[18] Architectural Preservation Districts are sometimes called Neighborhood Conservation Districts or Neighborhood Architectural Conservation Districts.

Groton should provide a link to the MHC database and also to the complete inventory file.

- **Increase the effectiveness of Scenic Roads review.** Although Groton has a Scenic Roads bylaw, there is little if any documentation available to assist the Planning Board in making determinations or to enforce the bylaw when a violation occurs. The character-defining features of Groton's scenic roads should be documented in the event that alterations occur without proper permits.

GOAL: INTEGRATE HISTORIC PRESERVATION OBJECTIVES INTO GROTON'S DEVELOPMENT REVIEW AND PERMITTING PROCEDURES.

Recommendations:

- **Institute a regular, formal role for the Groton Historical Commission in the review of projects that affect historic resources.** The GHC performs a range of services, including working in cooperation with other municipal departments, boards, and commissions to ensure that historic preservation is considered in community planning and permitting decisions. Groton should establish a formal policy to include the GHC in development review and discussions concerning the conservation and preservation of both municipal and privately owned historic resources.

- **Adopt recommendations in Groton's Archaeological Reconnaissance Survey for integrating archaeological resource protection into the development review process.** Groton's Archaeological Reconnaissance Survey provides recommendations for integrating archaeological review into the larger development review process. Groton should adopt these recommendations.

GOAL: DEVELOP ECONOMIC AND EDUCATION STRATEGIES THAT CAPITALIZE ON GROTON'S HISTORIC AND ARCHAEOLOGICAL RESOURCES.

Recommendations:

- **Make information on Groton's cultural and historic character, buildings, districts, cemeteries, and other heritage treasures widely available to residents and visitors in formats that are attractive and easily understood.** Groton should pursue techniques for promoting its historic resources such as historic house plaques, historic district signage, educational brochures, and interpretive signage at heritage sites. The Town's existing historic resource inventory and new archaeological reconnaissance survey and agricultural heritage study can provide the basis for developing these materials. Groton should also consider developing heritage education initiatives, such as guided community tours, history days, and historic house tours, to attract visitors and build appreciation for local history and culture.

- **Make Groton's informational and educational materials on historic resources available online.** There are many technology-based opportunities for distributing public information on historic and cultural resources. The Groton Public Library currently provides online access to many of its historic records, including recently completed historic inventory forms. However, the Town website does not have a link to these online documents from either the GHC or GHDC pages, or a link to the GHS or Massachusetts Historical Commission's website. Groton's municipal website could also provide technical assistance information to property owners seeking to restore historic buildings. If the Town creates historic district design guidelines, they also should be available online, much like the Conservation Commission's Wetlands Bylaw and Wetlands Protection Regulations. Self-guided walking tour brochures, historic photographs, and personal narratives are other options for online services that could attract interest in Groton.

- **Continue to identify eligible buildings and districts for listing on the National Register of Historic Places and pursue designation.** While Groton has pursued National Register designations in the past, these efforts have focused on individual properties, not districts. The 1989 Preservation Plan identified areas eligible for designation, and the recent historic resources survey also identified specific areas and properties for consideration. While listing on the National Register is an honorary designation, it is an important historic preservation tool. National Register designation increases community pride, awareness, and stewardship of a community's historic significance and resources, making it less likely that they will be compromised or destroyed. Groton should pursue National Register designations per the recommendations of previous plans and the historic resources survey.

5

open space & recreation

What is this element about?

Scope

- Identify Groton's existing open space and recreational resources and the organizations responsible for their protection and management.
- Explore the Town's municipal policies and regulations affecting these resources.
- Examine the challenges faced by the town in its efforts to protect, promote, manage, and use its open space and recreational resources.
- Present opportunities for future conservation and recreation efforts.

Key findings

- Groton has a long and successful history of protecting open space, but ecologically significant parcels remain unprotected, particularly along waterways. Finding new ways to protect them will remain challenging due to competing demands for funding.
- By identifying and protecting some key parcels, Groton could develop a connected trails system that supports both passive recreation and alternatives to driving within the town.
- Groton is trying to manage conservation land and address issues such as invasive species, abutter encroachment, and sustainable forestry management. However, the town's collection of small, scattered open space parcels and the timber harvesting concerns residents have raised in the past will continue to make land management a challenging endeavor.
- Groton's private recreation groups provide a significant benefit through programming and field maintenance. However, Groton has few opportunities for non-competitive sports or recreation programs for adults, and the town needs more affordable recreation activities. A municipal recreation department would provide a better way to meet these needs.

- Despite local interest and effort, Groton has not been able to develop and sustain a community garden. This remains an important open space goal.

Ideas for sustainability

Some key Open Space and Recreation recommendations that will increase Groton's sustainability include:

- *Protect priority open space parcels.* The concept of sustainability directly relates to the irreplaceable nature of natural resources and the importance of protecting them from degradation or loss. Preserving and protecting open space is one way to balance the use of natural resources with nature's ability to replenish them.
- *Pursue development of a town-wide trail system.* Creating a town-wide trail system would not only promote public enjoyment of open space and the natural environemnt, but also provide an alternative to vehicular transportation.Groton.
- *Develop management strategies and individual management plans for the town's conservation lands.* Preserving and enriching biodiversity requires more than preventing new development. It also depends on consistent land management practices, tailored to the needs

of each tract of open space, to ensure that conditions such as invasive species and abutter encroachment do not compromise the fragile resources that comprise these landscapes.

Existing conditions and trends

Open space inventory

Saving open space has been a high priority in Groton for many years. Today, Groton has 7,970 acres of protected land - more than 30 percent of the town's total area. However, some important parcels with limited or no protection remain vulnerable to future development.

Open space by type and function

Conservation Land. Groton's conservation lands include open fields, woodlands, and water resources. Over the years, the Groton Conservation Commission, the state, and several non-profit conservation organizations have protected many tracts of land through outright purchase, land donations, and conservation restrictions. The Planning Board has also played a role by negotiating with developers for concessions during the permitting process. Groton continues to expand its open space inventory by successfully advocating for land protection, maintaining the local conservation fund, using Community Preservation Act (CPA) funds, and obtaining land acquisition grants from the state.

Agricultural Land. Groton began as a farming community but gradually lost much of its agriculture to farm abandonment and residential development. However, the Town and its non-profit partners have made concerted efforts to protect land for agricultural use - vegetable and livestock operations, orchards, tree farms, equestrian facilities, and hayfields. Private initiatives, Agricultural Preservation Restrictions (APRs), and conservation land leases to farmers have helped to preserve Groton's agricultural heritage. Beyond the economic and cultural value of farming, working landscapes also contribute to Groton's scenic beauty. Groton residents say they value local agriculture, and the demand for local, organic food sources is rising. New production and purchasing arrangements such as Community Supported Agriculture (CSA) help farmers operate more profitable businesses. As fuel prices and demand for quality local food increase, small farms have more opportunities to thrive. Still, it remains unlikely that the value of land for crop production will be able to compete with its value for new development. Protecting agricultural lands as working landscapes will continue to require the involvement of town government and non-profit organizations.

Forested Land. Woodlands play a vital role in the health of Groton's ecological and water resource systems as well as the town's rural character. They provide visual interest, critical wildlife habitat, and passive recreation opportunities because many trails cross through the woods. During the eighteenth and early nineteenth centuries, large portions of western and central Groton were cleared for farming. As agricultural operations ceased or diminished in scale, cleared lands reverted to forests. This evolution is evident in the presence of stone walls that once defined the boundaries of farm fields but now lie within wooded parcels. Today, Groton's protected open space includes three significant forests: the 500-acre Groton Memorial Forest in West Groton near the Shirley town line, the 700-acre Wharton Plantation in the northeast corner of Groton, and the 506-acre J. Harry Rich Tree Farm State Forest in the northern part of Groton along the Nashua River and Pepperell Pond. In West Groton, an area known as The Throne is one of the largest, most important contiguous undeveloped tracts in town with hardwood and softwood forest, vernal pools, wild cranberry bogs, and wetlands. The Town, state, Groton Conservation Trust, and New England Forestry Foundation protect much of the land in The Throne area.

Public Parks and Recreation Areas. Groton maintains eight town commons - Badger, Firemen's, Legion, Minuteman, New Town, Prescott, Orchard, and Sawyer - and a few small parks including Carole Wheeler Memorial Park, Cutler Memorial Park, and Christine Hanson Memorial Playground.[1] Groton also has more than a dozen municipal and privately owned recreation facilities. The Town's recreation complexes include baseball, softball, football, and soccer fields at the Cow Pond Recreation Facility, and ball fields and a track at the Groton-Dunstable Regional High School. The Groton School and Lawrence Academy also maintain their own playing fields.

Trails. Groton has an extensive network of trails on public and private property, including conservation lands owned by the Conservation Commission and Groton Conservation Trust, the Town Forest, and privately owned parcels. Some additional trails on private land are protected through easements. The Groton Trails Committee is responsible for managing trails and has carried out many projects to clear, establish, mark, and map trails in the town. The Nashua River Rail Trail, an eleven-mile bicycle and walking path that runs between Ayer and

[1] Town of Groton Park Commission, www.townofgroton.org/main.

Table 5.1. Groton Open Space and Recreation Land in Municipal, State, and Private Ownership

Category	Use	Acres	Level of Protection
Town Conservation Land	Conservation	1,910.0	Permanently Protected
Town Forest, Parks, Cemeteries	Conservation, recreation,* burial	618.0	Permanently Protected
Groton Water Department	Aquifer protection	284.0	Limited Protection
State-owned	Rail trails, boat launches, wildlife management areas, and tree farm	739.1	Permanently Protected
Private, Non-Profit Conservation Land	Land owned by the GTC, Groton Land Foundation, Mass Audubon, NEFF, and Dunstable Rural Land Trust	3,110.8	Protection levels vary
Private/town owned	Land protected by conservation restrictions (CR) and agricultural preservation restrictions (APR)	1,309.0	Permanently Protected
TOTAL OPEN SPACE		7,970.8	Includes land with Permanent and Limited Protection

Source: Town of Groton Conservation Commission, "Groton Open Space Inventory 3-11-2011", March 11, 2011.

* Most recreation land in Groton is considered permanently protected due to restrictions placed on land through the acquisition process.

Nashua, New Hampshire, passes north-south through Groton.

Open space by ownership

Groton has several public and private organizations committed to protecting land for conservation and other purposes. These groups have collaborated on many land acquisitions and they maintain good working relationships. One of Groton's recent purchases, the Surrenden Farm, attests to the spirit of cooperation that exists between the Town and a variety of non-profit organizations. The Surrenden Farm includes 360 acres of land with considerable frontage on the Nashua River, extensive agricultural fields, and a collection of historic buildings. The Town, the Groton School, the Trust for Public Land (TPL), and the Groton Conservation Trust (GCT) pooled their resources to acquire and protect the Surrenden Farm, which had been slated for development of some 130 new homes. In addition to hayfields and river frontage, Surrenden Farm includes extensive wetlands and forested areas. Purchased in phases beginning in 2006, the property is now known as the General Field (owned by the GCT) and Surrenden Farm West (owned by the Town with oversight by the Groton Conservation Commission). The farm is protected by conservation restrictions and a management plan has been prepared for the Town's portion of the property.[2] Table 5.1 summarizes Groton's open space by ownership, use, acreage, and level of protection. Many of these properties are illustrated on Map 5.1, Open Space and Recreation Resources.

PUBLIC OPEN SPACE

Public open space in Groton includes both municipal and state-owned land. Protected open space owned by the Town is managed by the Groton Conservation Commission, the Town Forest Committee, and the Groton Water Department. With the exception of land held for protection of water supplies, Groton allows public access to conservation parcels for passive recreation such as hiking and picnicking. In some cases, biking, boating, fishing, and swimming are also allowed. Publicly owned conservation land is fairly stable. Although government agencies can sell land, public scrutiny and opposition makes the risk of losing conservation land very low. Moreover, the sale of conservation land usually requires approval from the state legislature.

Groton Conservation Commission. Established in 1963, the Groton Conservation Commission (GCC) administers G.L. c. 131, § 40, the Wetlands Protection Act, and the local wetlands bylaw. It also manages and maintains approximately 1,910 acres of conservation land and oversees conservation restrictions and APRs on privately held land. The Academy Hill Conservation Area (213 acres), the Flavell Crossing Conservation Area (106 acres), the Groton Woods Conservation Area (117 acres), and the Williams Barn Sorhaug Woods area (93 acres) are among the largest conservation properties overseen by the GCC. All but Sorhaug Woods were acquired under Groton's Flexible Development special permit process. The GCC is staffed by a Conservation Administrator. In the past, Groton had a part-time land manager, too, but the position was eliminated due to funding constraints.

The GCC has general use regulations for all of its conservation land and specific rules for some parcels. GCC

[2] Surrenden Farm Ad Hoc Committee, *Surrenden Farm Resource Management Plan* (February 2011).

members have begun surveying conservation properties to document current conditions and identify resource protection needs. Once completed, this baseline inventory may be useful for developing property-specific management plans like the plan for Surrenden Farm. The GCC currently permits limited logging on some conservation parcels, and a certified forester is reviewing town-owned forests for the development of sustainable forestry management practices. While the GCC also allows short-term agricultural leases on several conservation parcels and wants to grant more agricultural leases as well, its efforts have been hindered by site limitations, lease restrictions, and abutter concerns. Revenue generated by forestry and agricultural activities on conservation land is retained in a recently adopted revolving fund and used to help offset the cost to maintain conservation land. The GCC also has limited maintenance funding in its annual operating budget.[3]

Table 5.2. Non-Profit Conservation Organizations with Landholdings in Groton

Name	Acres	Location
The Groton Conservation Trust (GCT)	1,436.9	Various Locations
New England Forestry Foundation (NEFF)	1,022.7	Six major properties
Groton Land Foundation	185.9	Three parcels
Massachusetts Audubon Society	437.3	Rocky Hill Conservation Area
Dunstable Rural Land Trust	28.0	Dan Parker Road
TOTAL	3,110.8	

Source: Groton Conservation Commission, "Groton Open Space Inventory 3-11-2011," March 11, 2011.

Town Forest Committee. The all-volunteer Town Forest Committee manages the Town Forest, which consists of more than 505 acres of wooded parcels along the Nashua River. Established in 1923 by William Wharton, it was one of the first town forests in the country, and it includes land that was given to or purchased by the Town for town forest purposes. The committee oversees the Town Forest's use for passive recreation and periodic, selective harvesting of timber. Proceeds from timber harvesting remain in a reserve fund for forest maintenance.

Groton Water Department. Parcels under the care of the Groton Water Department range from less than an acre to forty acres. They include properties with existing water storage tanks and wells and land for future storage and supply needs. Land in the watershed of a drinking water supply is protected from development while the associated water supply remains active. If the Town decommissions any of its existing water supplies at some point in the future, the watershed protection parcels could be designated as "surplus" land. However, it is unlikely that Groton voters would ever agree to sell them.

Recreation Land. The Groton Park Commission has care and custody of most of the Town's recreation land. (See also, "Recreation land and Facilities Inventory" below.) Many of these properties qualify as protected land because the Town acquired them for recreational purposes. Still, other large recreation parcels such as the Groton Pool and Golf Center and the Groton Fairgrounds are not protected in perpetuity.

Commonwealth of Massachusetts. The state owns eight properties in Groton with a combined total of just over 709 acres. State-owned lands include the largest conservation holding in Groton: the 506-acre Harry J. Rich Tree Farm State Forest on Nod Road, managed by the Department of Conservation and Recreation (DCR). Other properties include the Nashua River Rail Trail, boat launches at Baddacook and Knops Ponds, and a small parcel on Gibbet Hill with a decommissioned fire tower.

PRIVATE NON-PROFIT ORGANIZATIONS

Several non-profit organizations own open space in Groton. These groups work together and with the Town to protect lands with significant conservation interest. Table 5.2 summarizes these properties by ownership, acreage, and general location.

Groton Conservation Trust. The Groton Conservation Trust (GCT) is a private, non-profit land trust founded in 1964 to acquire, preserve, and provide public access to lands with significant conservation value.[4] Today, the GCT owns and manages thirty-five named properties totaling 1,400 acres. The properties include agricultural fields, woodlands, meadows, river frontage, and wetlands, ranging in size from a small one-acre buffer strip of land along an outlet stream of Martins Pond to 160 acres of land at Surrenden Farm. The GCT's holdings also include sixty acres of scattered parcels at Lost Lake and 120 acres of protected woodland on Throne Hill. The GCT currently leases two properties for agricultural use as hayfields. It recently updated its "Groton Conservation Properties Map" and plans to revise its "Guide to

[3] Groton Conservation Commission, "2010 Community Preservation Proposal," 1.

[4] Groton Conservation Trust, www.gctrust.org.

Properties" booklet, which provides maps, narrative descriptions, and trails information for thirteen sites. Some, but not all, of the GCT's properties are protected with conservation restrictions.

After more than four decades of acquiring land, the GCT is turning its attention to property management. It will be conducting an inventory of its lands, including mapping existing habitats, updating trail maps, and reviewing lands currently in agricultural use. The GCT wants to address local recreation needs, too. Recreation uses allowed on GCT lands include hiking, geocaching, and limited hunting. To enhance public appreciation of conservation land and trails, the GCT plans to review its existing properties - particularly the isolated ones - to identify potential ways to link them, especially in high activity areas such as the Town Center, the High School, and the Nashua River, and near the Town's recreation facilities. [5]

Groton Land Foundation. The Groton Land Foundation (GLF), a subsidiary of the GCT, was created in 1988 as a vehicle to carry out limited development projects, i.e., when the cost to acquire and protect land is offset, in part, by the sale of a few house lots. The GLF has helped to protect 185 acres of land in Groton, including fifty-five acres in the West Throne Hill/Wheatley Development and seventy-five acres in the Shepley Hill development.[6] For the past several years, however, the GLF has remained inactive due to real estate market conditions.

Dunstable Rural Land Foundation. The Dunstable Rural Land Foundation owns 28.8 acres on Dan Parker Road. Its land is surrounded by Chapter 61 and Chapter 61A land abutting the Groton-Dunstable town line, and other vacant parcels owned by the New England Power Company and other private property owners.

New England Forestry Foundation. Founded in 1946, the New England Forestry Foundation (NEFF) is a regional non-profit that owns and manages approximately 23,000 acres of land in New England. NEFF was founded as a conservation organization dedicated to promoting sustainable forestry management practices. In Groton, NEFF manages just over one thousand acres of woodlands, such as the 704-acre Wharton Plantation along Dunstable Road and Baddacook Pond, the 140-acre Sabine Woods near Groton Place and Groton School, the 47-acre Groton Place on Long Hill Road, and the 16-acre Baddacook Woods parcel between Allens Trail and Lost Lake Drive. Despite its conservation ethic, NEFF does not have conservation restrictions on most its properties. The Baddacook Woods property is the only NEFF parcel that is permanently protected with a conservation restriction. [7]

Massachusetts Audubon Society. The Massachusetts Audubon Society (MAS), New England's largest conservation organization, protects more than 34,000 acres of conservation land in Massachusetts.[8] MAS owns the 437-acre Rocky Hill Wildlife Sanctuary, a diverse landscape of rocky outcroppings, red maple swamps, vernal pools, and pond shores located within an Area of Critical Environmental Concern (ACEC) and BioMap Core Habitat designated by the Natural Heritage & Endangered Species Program (NHESP). The property is protected with a conservation restriction held by the GCC.

LAND WITH LESS THAN FEE SIMPLE OWNERSHIP

Conservation Restrictions. Groton has 1,085 acres of land protected by conservation restrictions (CR). These restrictions protect a variety of privately owned parcels with importance for wildlife habitat, the watersheds of public drinking water supplies, and agricultural and forested properties. Most of Groton's CRs do not provide for public access, but some exceptions exist. For example, the restriction placed on the 250-acre Gibbet and Angus Hills properties allows limited access to public trails, a hilltop park, and a structure known as the Castle. The Groton-Dunstable Regional School District placed a restriction on seventy-five acres of land abutting the high school, and this land is open to the public.

For most types of residential development, Groton requires applicants to set aside open space within a subdivision either by donating conservation land to the GCC or conveying a CR to the GCC or a non-profit conservation organization. As a result, Groton has obtained many land donations and CRs from developers, for a total of some fifteen hundred acres.

Agricultural Preservation Restrictions (APR). Three properties with a combined total of about 224 acres of land are protected through APRs:

- The Hillbrook Orchard. In 1983, the Town and the Commonwealth of Massachusetts purchased an

[5] David Black, Groton Conservation Trust, interview by Community Opportunities Group, Inc., September 14, 2010.

[6] Pine and Swallow, www.pineandswallow.com/conservation_based_land_planning/indext/php.

[7] Ray Lyons, New England Forestry Foundation, interview by Community Opportunities Group, Inc., February 19, 2010.

[8] Massachusetts Audubon Society, *Annual Report 2010*, 6.

APR on the Hillbrook Orchard, protecting seventy-two acres along both sides of Old Ayer Road.

- The O'Neill Property. The Town and state purchased APRs on this ninety-four-acre property in three phases. Parcel I, with twenty-eight acres of orchard on Old Ayer Road, and Parcel II, with forty-two acres of orchard and woodland on Prospect Hill, were protected in 1998. The third parcel, a twenty-four-acre orchard between Higley Street and the Rail Trail, was protected in 1999.

- Brooks Orchard. In 2004, the state purchased an APR on 113 acres of old orchards off Martins Pond Road from the Webber family in order to protect this scenic drumlin from development.

Trail Easements. Groton has very few easements for trails on private land. According to the Trails Committee, it has been more beneficial to design new trails on public land. The Committee has worked with the Planning Board and Conservation Commission to identify lands with potential trail connections when the Town considers acquiring and receiving open space parcels.[9]

LANDS WITH LIMITED OR NO PROTECTION

Chapter 61, 61A and 61B. Approximately ninety-one properties with more than two thousand acres in Groton are subject to temporary restrictions under G.L. c. 61, c. 61A or c. 61B. Collectively, the Chapter 61 statutes allow municipalities to tax eligible land according to its forestry, agricultural, or recreational use value, rather than market value. In exchange for a significant property tax reduction, the property owner grants a right of first refusal to the town to acquire the land before it converts to another use. Towns may assign their right of first refusal to non-profit conservation organizations. Groton has exercised its right of first refusal in several instances and purchased property before it could be sold for development.

Unprotected Private Land. Groton has many large, important parcels of open space with no protection in place to prohibit or limit future development. The properties include farmlands, forests, greenways, wildlife habitats, and hilltops. The Town recently reviewed its 2001 Priority Parcels list and identified sixty-two parcels, ranging in size from three to 134 acres, with a combined total of more than 2,074 acres that remain unprotected. In addition, Groton has some other large properties that could be developed in the future, though the risk may be fairly low because the land is institutionally owned. Two examples include MIT's 218 acres at the Haystack Observatory site on the Groton/Tyngsborough/Westford line, which has hiking and riding trails, and the 247-acre Grotonwood Camp, owned by the American Baptist Churches of Massachusetts. The Conservation Commission has reached an agreement with the Church to place a CR on thirty-five acres of the Camp, but the restriction has not yet been recorded.

Conservation trails

Local Trails. Groton's extensive trail system provides many passive recreation opportunities such as hiking, running, cross-country skiing, and bird-watching. The Groton Trails Committee, volunteers, and local Eagle Scouts have worked diligently to maintain the trails by installing signage, constructing bridges, and clearing debris so the trails will be easy to use. Groton's Town website provides maps for ten trails, but the Trails Committee website is more extensive, with photographs, maps, and a link to the GCT's "Guide to Properties" booklet. The maps identify trail paths, stone walls, natural features, and wildlife sightings. In addition, the Trail Committee has posted video trail narrations and several online questing activities, or treasure hunts. It also sponsors guided trail hikes, and another local organization sponsors an annual cross country race through the Town Forest.

Although Groton has posted signs prohibiting vehicles on town trails and conservation lands, there has been some erosion and trail damage from unauthorized motorized vehicles. The Trails Committee has hosted public meetings to discuss issues relating to inappropriate use of the trails.

Rail Trails. The Nashua River Rail Trail, an eleven-mile former railroad right-of-way, passes through Ayer, Groton, Pepperell, and Dunstable. Opened in 2002, the trail is managed by DCR. It has a ten-foot wide paved surface for its entire length and a five-foot wide gravel equestrian path for seven miles of the trail, from Groton Center to the New Hampshire border in Dunstable. The entire trail is open to pedestrians, bicyclists, inline skaters, wheelchair users, and cross-country skiers.[10] There are efforts to develop additional rail trails on several other abandoned railroad right-of-ways in Groton, including a trail along the Squannacook River in West Groton that would extend through Townsend. However, this proposal has received some resistance from abutters in Townsend.

[9] Joachim Preiss, Groton Trails Committee, interview by Community Opportunities Group, Inc.

[10] Massachusetts Department of Conservation and Recreation, www.mass.gov/dcr/parks/northeast/nash.htm.

Table 5.3. Town-Owned Recreational Facilities

Name	Location	Acres	Manager	Facilities
Amory A. Lawrence Memorial Playground	Broadmeadow Road	14.4	Park Commission	Two ball fields, basketball court, picnic area, playground, gazebo
Cow Pond Brook Facilities*	Cow Pond Brook Road	110.0	Park Commission	Playing fields, bridle path, cross country skiing
Cutler Field	Townsend Road	7.0	Park Commission	Ball field, little league field, basketball court, playground
George and Agnes Rider Park	Lost Lake Drive	1.7	Park Commission	Basketball court
Groton Pool and Golf Center	Boston Road	113.0	Country Club Authority	Golf course, tennis courts, swimming pool, outdoor pavilion, function hall, cross country skiing, driving range
Groton Fairgrounds / Hazel Grove Park	Jenkins Road	28.0	Park Commission	Equestrian, bridle path, horse boarding. Questions remain on the current exclusive use of the property.
Sargisson Beach	Whiley Road	19.0	Conservation Commission	Hiking, fishing, swimming, skating, picnic areas, firepits
Stonebridge Farm Recreational Area	Stonebridge Way	11.0	Park Commission	Ball fields, tennis court
Tarbell School	Pepperell Road	1.44	Park Commission	Playground and grass field at rear of former school site. Town recently issued a RFP for disposition of the site.

Sources: Town of Groton, Open Space and Recreation Plan 2005-2010; Groton Conservation Commission, Open Space Inventory, 2010.

* Note: Only 12 acres of this property are currently designated for recreational facilities.

Recreation facilities

In addition to conservation lands that support passive recreation, Groton has several active recreation areas - land with one or more facilities that have been developed for organized or intensive recreation uses. Table 5.3 summarizes Groton's recreation areas by name, location, size, management, and existing facilities. (See also, Map 5.1, Open Space and Recreation Resources.)

Playgrounds and playing fields

The Park Commission manages several playing fields located throughout the town. Most are located close to Groton Center, such as the Lawrence Playground complex, and small ball fields and playgrounds at the Boutwell School and North and Middle Schools. Outlying facilities include Cutler Field and the Tarbell School playground in West Groton, the Cow Pond Brook and Stonebridge Farm fields on the east side of town, and the High School Fields in the north. All of these facilities are equipped with irrigation systems. In the past decade, Groton has expanded and improved several facilities and has constructed new fields, courts, and parks. For example, the Park Commission and Groton Youth Baseball League recently installed lights at the Cow Pond Brook facility and will be constructing a new baseball field. In addition, the Town recently constructed a basketball court at the Lost Lake Fire Station with CPA funds.[11] The Stonebridge Farm fields were built as a result of Groton's "transfer lot" bylaw.

Despite these improvements, Groton's fields often cannot meet the demand for recreational facilities. Preventing overuse of fields and limiting excessive water use and fertilizer applications are among the concerns Groton faces as it seeks to maintain safe, quality playing surfaces. Groton is currently studying the potential for developing four additional lacrosse/football fields at the Cow Pond Brook facility.[12] Local officials say the new facilities, if constructed, would likely meet Groton's needs for the next twenty-five years.[13] Groton also reserved fourteen acres of the Surrenden Farm as unrestricted land for future uses allowed under the CPA, including active recreation. However, developing fields on the Surrenden Farm

[11] Town of Groton, *Annual Town Report 2009*, 31.

[12] Jon Strauss, Groton Park Commission, email to Community Opportunities Group, Inc., October 13, 2010.

[13] Don Black, Groton Park Commission, interview by Community Opportunities Group, Inc., February 12, 2010.

property will be very difficult. The access road is narrow and substandard, and severe erosion from previous clear cutting will require significant infrastructure improvements to regrade the site for parking and field development. Local institutions, including the Groton School and Lawrence Academy, also have recreation facilities but with limited public access.

Water-dependent recreation

Despite its abundant water resources, Groton has only one public beach, Sargisson Beach, in the Lost Lake area. In addition, there are several boat launches along the major rivers and at Lost Lake/Knops Pond and Baddacook Pond, which provide access for boating, kayaking and canoeing.

Other recreation facilities

Groton Pool and Golf Center. Groton recently restructured the management and operation of the former Groton Country Club, which has changed from a membership-only facility to a town function and is now called the Groton Pool and Golf Center.[14] The facility is open to the public on a user fee or per diem basis, offering golf, tennis, swimming lessons, and summer camp programs for children. The 113-acre property includes a nine-hole golf course, tennis courts, a driving range, a small pro-shop, a covered pavilion, an outdoor pool, and a function hall. The Town wants the Groton Pool and Golf Center to operate as a self-supporting enterprise.

Equestrian Facilities. Equestrian facilities are an important part of Groton's recreation inventory. They include the Groton Fairgrounds, the Shepley Hill Farm Equestrian Center, and a network of trails, as well as the Nashua River Rail Trail. The Groton Riding and Driving Club and Groton Pony Club have an informal agreement with the Town to use the twenty-eight-acre Groton Fairgrounds, also known as Hazel Grove Park. Although these groups have had exclusive use of the facility for many years, the legality and intention of the arrangement is unclear since there does not appear to be a written contract. The Fairgrounds, deeded to the Town in 1940, are managed by the Park Commission but maintained by users. The facility includes a racetrack for equestrian activities and several barns.[15]

Skating. In the past, Groton operated the Evan Holofcencer Ice Rink behind the Legion Hall in the town center. However, this facility has not been operated in many years.

Recreation management

PUBLIC ORGANIZATIONS

The Groton Park Commission is a five-member elected board with responsibility for managing the Town's fields, commons, and parks. Although Groton had a Recreation Department with paid staff until five years ago, the Town does not operate recreation programs for residents. Instead, private sports organizations offer programs at publicly-owned playing fields, with approval from the Park Commission, as well as privately-owned facilities at Lawrence Academy, the Groton School, and the Groton-Dunstable Regional School District.

Most towns of Groton's size do not rely entirely on private recreation organizations, yet it appears that the current arrangement has worked relatively well.[16] The private sports groups maintain the fields they use, and while the Groton Department of Public Works (DPW) provides maintenance equipment, the Town does not have to pay for ongoing field maintenance. Still, there are concerns that privately operated programs may be too expensive for some residents and provide limited recreation options (mainly for youth), with no cultural, educational, or leisure components. During this Master Plan process, residents said Groton should consider re-establishing the Recreation Department. This will be explored in an update of the Open Space and Recreation Plan in 2010-2011.

The Groton Trails Committee maintains, oversees, and promotes the town's extensive trails network. The Trails Committee works closely with the GCC and Planning Board to create new trails through the permitting process. It also has worked with the Montachusett Regional Planning Commission on a study with Lancaster, Sterling, and Townsend to identify existing trails and possible inter-local connections.[17]

Groton Council on Aging offers recreational and leisure programs for elderly residents at the Groton Senior Center. Offerings include exercise programs such strength training, yoga, Tai Chi, Zumba, and dance classes, and cultural enrichment programs such as quilting and paint-

[14] Groton Pool and Golf Center, http://grotoncountryclub.com/.

[15] Groton Conservation Trust, "The 2010 Groton Conservation Properties Map."

[16] Don Black (Town of Groton Park Commission), interview by Community Opportunities Group, Inc., February 12, 2010.

[17] Groton Annual Town Report 2007, 78.

ing. In addition to these options, seniors may swim for free at the Groton School Pool.[18]

Groton Dunstable Regional School District offers a variety of cultural enrichment and recreation programs for youth and adults. Adult education classes, dances and social nights for teens, and adult athletic leagues are offered at the Peter Twomey Youth Center. Other offerings through the GDRSD include arts and crafts, fitness programs, dance classes, and business-finance education.

PRIVATE RECREATION ORGANIZATIONS

Groton has many private recreation organizations. Existing groups include the Squannacook River Runners Club, which sponsors local road races and summer track and field programs. Other groups include youth baseball, softball, basketball, football, hockey, and soccer associations. The YMCA at Camp Massapoag in Dunstable, as well as Lawrence Academy and local private equestrian groups, also offer youth programs and camps. Groton maintains a list of private recreation organizations and programs on the Town website.

Municipal regulation, policies, and funding programs

Groton Conservation Fund. Groton established its conservation fund in 1964 to set aside money for land acquisitions. The conservation fund has been instrumental in protecting many of Groton's most important conservation parcels, including the ninety-three-acre Williams Barn/Sorhaug Woods parcel, the thirty-three-acre Hurd parcel off Route 119, and the 360-acre Surrenden Farm. Groton also used its conservation fund to purchase an APR on the 153-acre O'Neill property and CRs on the thirty-six-acre Shattack Homestead property and 250 acres located on Gibbet and Angus Hills. In the past, Groton Town Meeting often approved transfers of CPA revenue to the conservation fund. However, recent town meetings have not continued this practice, which has hindered the GCC's ability to maintain a preferred conservation fund balance of $750,000 to $1,000,000.[19]

Community Preservation Act (CPA). Groton has committed more than $6.5 million in CPA funding to open space and recreation projects. The funds have been used for land acquisitions, open space planning, and maintaining the conservation fund, as well as trail repairs, beach docks, and the construction of recreation facilities.[20]

Transfer of Development Rights. Groton's Flexible Development bylaw, adopted in 1980, has a transfer of development rights (TDR) provision which allows developers to set aside "transfer lots" in exchange for development rights in Flexible Developments. A transfer lot is a parcel that contains at least eighty thousand sq. ft. of upland and has special visual, ecological, agricultural, or recreational value. By providing a transfer lot, applicants become eligible for a Flexible Development density bonus of two units and to construct up to six additional units per year over the maximum allowed under the Development Rate Limitation bylaw.

Regional open space planning

Open space resources extend beyond municipal boundaries. Since Groton shares many of its most significant open spaces and natural landscapes with neighboring towns, regional cooperation is essential for protecting fragile environments.

Area of Critical Environmental Concern. As described in Chapter 3, Groton contains portions of two Areas of Environmental Concern (ACEC): the Petapawag ACEC, with 25,680 acres in Ayer, Dunstable, Groton, Pepperell, and Tyngsborough, and the Squannassit ACEC, with 37,420 acres in Ashby, Ayer, Groton, Harvard, Lancaster, Lunenburg, Pepperell, Shirley, and Townsend.[21] These areas support diverse wildlife populations that thrive from the quality of the habitats and the interconnectedness of open spaces. Both ACECs have significant concentrations and varieties of natural resources, habitat types, and rare, endangered, and threatened plant, animal and fish species. They also contain historic eighteenth and nineteenth century structures and landscapes. Though the towns with land in the ACECs have local conservation areas, coordinated planning will be essential for the long-term protection and management of these aeras. The Nashua River Watershed Association (NRWA) currently serves as facilitator for the Squannassit-Petapawag ACEC Stewardship Committee.

Nashua River Watershed. Groton is one of thirty-one communities in north-central Massachusetts and south-

[18] Groton Annual Town Report 2009, 43.

[19] Groton Conservation Commission, CPA Proposal 2010.

[20] Groton Community Preservation Committee (CPC). See Chapter 4, Cultural and Historic Resources, for additional information about the Community Preservation Act.

[21] Massachusetts Department of Conservation and Recreation, ACEC Program, http://www.mass.gov/dcr/stewardship/acec/index.htm.

ern New Hampshire located within the Nashua River Watershed. The non-profit conservation organization, the Nashua River Watershed Association (NRWA), works with watershed communities to protect the significant natural and ecological resources in the region. The NRWA has been instrumental in protecting important greenways, agricultural lands, water supply lands, wildlife corridors, and recreational/scenic properties along the Nashua River. Since its founding, the NRWA has helped to protect eighty-five miles of greenways and over eight thousand acres of open space in the watershed.[22]

Statewide Comprehensive Outdoor Recreation Plan. The Commonwealth prepares a Statewide Comprehensive Outdoor Recreation Plan (SCORP) to remain eligible for grants from the federal Land and Water Conservation Fund. The SCORP divides Massachusetts into seven regional planning areas. Groton falls within the Northeastern Region, which includes most of Middlesex and Essex Counties. The Northeastern region ranks second statewide for total population, fifth for total acres of open space and second for total number of parcels held as open space. The most recent SCORP (2006) evaluates statewide and regional needs for outdoor recreation facilities and estimates near-term future demands. Major issues in the SCORP that relate to Groton include resource protection, stewardship, education and information, partnerships, access, maintenance, innovative tools for land protection, and the protection and development of trails. While the state's findings have to be considered in the context of the region as a whole, some findings may be useful to Groton's own planning.

For the Northeast Region overall, open space for conservation and passive recreation purposes exceeds that of other regions. Recreation activities with equal popularity in the Northeast Region and the state as a whole include swimming, walking, sightseeing, hiking, and fishing; activities notably more popular in the region include baseball, sunbathing, horseback riding, off-road vehicle driving, snowmobiling, boating (motorized), surfing, soccer, tot lots, and hockey (pond). Groton provides resources for all of these pursuits, although the presence of off-road vehicles on Town conservation lands is an issue in the community. While the SCORP identifies activities that are less popular in the Northeast Region than in other regions, such as road biking, cross-country skiing, and running, these activities appear to be quite popular in Groton. The SCORP reports a high level of satisfaction with the region's wildlife conservation areas and agricultural resources, and some dissatisfaction with the lack of bikeways. As for activity needs, the region's residents place the highest priority on road biking, playground activity, swimming, walking, golfing, and basketball, and moderate priority on tennis, fishing, and mountain biking. These activities point to needs for more playgrounds, neighborhood parks, and golf courses, and better access to agricultural lands, lakes and ponds, and rivers and streams.[23]

When Groton updates its 2005 Open Space and Recreation Plan, it will evaluate recreation existing recreation programs and facilities and review the SCORP. The GCC plans to survey local residents about local recreational needs and interests, too.

Priority conservation areas

Groton established a Land Acquisition Committee in 2001 to prepare an inventory of all undeveloped parcels in town with ten or more acres. After completing the inventory, the Committee reviewed all parcels for public purposes such as open space protection, water supply protection, active recreational use, school sites, and sites for municipal facilities such as fire stations, and prioritized them for future acquisition.[24] Ultimately, the Committee identified 410 parcels owned by 185 different landowners and gave priority to ninety-five parcels. In 2009, Groton reviewed the priority list again and updated the status of each parcel. Of the ninety-five priority parcels identified in 2001, thirty-two are now permanently protected.

As part of this Master Plan process and Open Space and Recreation Plan update, the GCC will consider whether to create and adopt a criteria-based ranking system to evaluate potential land acquisitions. Currently, the GCC gives highest priority to preserving parcels that help to maintain the town's rural, agrarian character and sustain a healthy and diverse ecosystem. Priority also goes to parcels that link existing protected open space, protect and preserve a greenway along the Nashua and Squannacook Rivers and tributaries, have significant wildlife habitat and corridors, and preserve Groton's agricultural heritage.[25] However, even with these priorities, it is difficult to compare similar open space parcels and determine which property should receive precedence without ranking each property under an established set of criteria. Groton will have to decide whether to focus acquisition efforts only on high-priority sites or purchase less significant sites as they become available.

[22] Nashua River Watershed Association, http://www.nashuariverwatershed.org/.

[23] Massachusetts Executive Office of Energy and Environmental Affairs, Massachusetts Outdoors 2006, 78-85 passim.

[24] Land Acquisition Committee, Report & Recommendations, October 17, 2001.

[25] Ibid.

Issues

Ecologically significant parcels remain unprotected. As discussed in Chapter 3, Groton still has ecologically critical parcels that remain vulnerable to alteration and development. This is particularly true for parcels along Groton's waterways, including the Nashua and Squannacook rivers.

Groton does not have a town-wide trail system. Groton has many public trails and a devoted Trails Committee that has worked to increase public awareness and use of the trails.[26] However, the Town still lacks a connected town-wide trail system.

Groton's trails system has management needs. In addition to missing connective links in the trail system, Groton's trails have management needs. Trails Committee volunteers do an excellent job of maintaining trails, but finding new volunteers for support and relief has been difficult. In addition, motorized vehicles have damaged some trails and sensitive habitat areas. The Trails Committee has worked with residents and the rider community to educate them about vehicle impacts. It is important to direct riders to appropriate parcels where motorized vehicle use is allowed, but it will remain a challenge because many riders tend to use properties near their own homes.

The Town has not developed a ranking system to prioritize open space acquisitions. Groton will find it very difficult to plan effectively and implement an open space acquisition strategy without ranking criteria and a transparent process for establishing open space priorities. The need for a ranking system is especially important for parcels under Chapter 61, 61A, and 61B agreements. Although Groton has a right of first refusal to purchase these properties, it must act within 120 days of receiving written notification from a landowner. Since the Town cannot (and should not) acquire every parcel of open space as it becomes available, setting priorities is critical. Otherwise, Groton will find itself pressed to decide and act quickly - at least with regard to Chapter 61 properties - and risk losing a parcel of open space that might address important open space and natural resource needs.

There are opportunities and challenges for agricultural use of conservation land. Agriculture, as a way of life and an economic pusuit, is a cross-cutting theme in this Master Plan. One of Groton's important challenges is how to use more conservation land for agriculture. The Master Plan's Open Space and Recreation Working Group reports that Groton has opportunities for additional farming on conservation land. While the GCC has granted licenses for agricultural use of several parcels, other parcels have proven more challenging due to access constraints, statutory limits on the duration of licenses, and lack of water.

Challenges for Agriculture

Agriculture, as a way of life and an economic pusuit, is a cross-cutting theme in this Master Plan. One of Groton's important challenges is how to use more conservation land for agriculture. While the GCC has granted licenses for agricultural use of several parcels, other parcels have proven more challenging due to access constraints, statutory limits on the duration of licenses, and lack of water.

Groton needs alternative funding sources for open space acquisition and maintenance. Raising funds for land acquisition is a constant challenge that requires extraordinary effort. The CPA provides an ongoing source of funding for open space purchases, but the annual debt service on Surrenden Farms will exhaust much of the Town's CPA funding, especially as the state match continues to decline.

The goals and agendas of Groton's conservation groups and organizations need better coordination. Groton is fortunate to have conservation groups that work actively and successfully to protect open space. However, these organizations have their own priorities and they do not always coordinate their efforts. For example, despite a long-standing and generally positive relationship, Groton has not been able to convince NEFF to take steps to protect all of its large and critical landholdings through conservation restrictions.

Groton needs effective management strategies for its conservation parcels. While Groton has successfully protected many parcels of conservation land, the properties need to be managed in a sustainable and ecologically

[26] Joachim Preiss (Chairman, Groton Trails Committee), interview by Community Opportunities Group, Inc., July 30, 2010.

appropriate manner. GCC members and volunteers have begun the labor-intensive process of visiting each parcel to document existing conditions and identify management concerns. The Town may need to supplement the GCC's volunteer efforts by hiring a professional naturalist to complete more thorough environmental reviews. Invasive species and abutter encroachment are just a few of the management concerns that need to be addressed. Related issues include the following:

Active management of forests can cause public concern. Groton recently procured the services of a consulting forester, using revenue from timber harvesting on conservation, water, and municipal land. The forester's first task will be to assess the potential of forested parcels for sustainable forestry practices. In the past, Groton residents have expressed concern about harvesting existing forests, so these types of activities on conservation land may trigger public opposition. A public education campaign and a transparent process to select parcels for sustainable management will be important to alleviate abutter concerns.

Groton has many CRs on small lots throughout town, which makes it difficult for the GCC to review and manage them. However, it is important to survey these properties in order to manage abutter encroachment. Ironically, part of the problem stems from past donations of conservation parcels negotiated by the Planning Board.

Opportunities to participate in active sports are limited by the number of available recreation facilities and the types of programs offered by private organizations. In the past decade, Groton has developed several new recreational facilities and expanded others. However, issues with recreational opportunities remain, including:

- Few recreational programs for adults, seniors, or people with disabilities.
- A lack of affordable recreational programs.
- Limited opportunities for non-competitive sports.
- Recreational facilities that are far from activity centers. For example, the Park Commission is working on expanding the existing Cow Pond Road recreation facility, but this is far from Groton's villages, schools, and other neighborhoods.

The Groton Pool and Golf Center has limited programming and facility issues. Recent changes to the Groton Pool and Golf Center (formerly the Groton Country Club) will expand recreation choices for Groton residents. Still, the Center offers a limited number of programs and many of its facilities are in disrepair. The facility's location near Groton Center creates an opportunity to expand recreational and cultural offerings and attract more participants.

Groton Fairgrounds requires additional planning to enable greater community access. Groton Fairgrounds (also known as Hazel Grove Park) has significant potential for expanding public recreation options. Its location next to conservation land on the Nashua River offers unique opportunities for trail development, including use of the Fairgrounds for access and parking. However, the current users of the Fairgrounds have concerns about safety and security for the horses and their riders if public access is allowed to the site. Groton will need to consider a range of issues and interests, beyond those of current users, in order to determine appropriate public access to the Fairgrounds.

Groton has not been able to sustain a community garden, despite resident desire and efforts. Although groups such as Groton Local have expressed much enthusiasm for establishing a community garden, securing land for this activity has been difficult. While more common in urban environments where open space is scarce, a community garden in Groton would provide gardening opportunities for those with little or no land and also enhance a sense of community. As with any open space, there are maintenance challenges specific to community gardens, so planning for one would require a strategy not only for land acquisition and design, but also long-term management.

Goals and recommendations

GOAL: ENSURE THAT GROTON'S AGRICULTURAL, FORESTED, AND RECREATIONAL OPEN SPACES ARE PROTECTED, ENHANCED, AND EXPANDED FOR PRESENT AND FUTURE GENERATIONS.

Recommendations:

- **Continue to develop and maintain a comprehensive open space inventory database that will identify and assess all of the town's open space parcels and associated resource value.** While Groton currently has a database of public and private conservation parcels, municipal landholdings, and unprotected priority parcels, the database should be expanded to include information on each parcel's resource value. This will allow the users to better understand the role each parcel plays in the larger ecosystem. Updating

Groton's GIS to incorporate this type of data will be important as well.

- **Develop a ranking system to prioritize unprotected open space parcels.** A set of criteria for ranking and assessing unprotected open space parcels will be essential to help Groton set acquisition priorities. This will be particularly important as funds available for acquisition continue to diminish. Criteria should include:
  - Whether the parcel is located in a Preservation or Conservation Design Area as illustrated in Map 3.4.
  - Whether the parcel is adjacent to or could be easily connected to other open space.
  - Whether the parcel can contribute to the development of a town-wide recreational trails network.
- **Protect priority open space parcels.** Using Map 3.4, Natural Resource Assessment, Map 5.1, Open Space and Recreation Resources, an assessor's parcel map, and the open space ranking criteria described above, Groton should aggressively seek to protect high-priority open space and be willing to forego attempts to acquire lower-ranking properties. Once the priority sites are confirmed, the Town should work with other conservation groups to approach property owners and discuss opportunities for land protection, including fee-simple acquisition and conservation restrictions or easements.
- **Pursue development of a town-wide trail system.** As Groton's remaining undeveloped parcels await either development or protection, there is a unique opportunity to create a permanent network of trails linking the town's residential areas, bike paths, regional trails, and the Nashua and Squannacook Rivers. Building on the many existing trails on Town-owned conservation land, the network would give hikers, bikers, and equestrians direct access to a continuous network of trails. Ultimately, the Town could develop various trail segments as interpretive trails with signage and written guides describing the area's historical features and natural history. To begin connecting trail segments, Groton should focus on existing trails on public land with paths and sidewalks along town roads.[27]
- **Continue to fund land protection with CPA revenue and the Conservation Fund.** While Groton should continue to protect land through donations and other low-cost means, there will be instances where outright acquisition is the only viable option for protecting a significant parcel. Toward these ends, the GCC must have funding available if the Town needs to respond quickly when a vulnerable landscape is threatened. Encouraging property owners to consider other protective techniques such as CRs and APRs would offer another cost-effective alternative.
- **Continue to review the Town's conservation parcels for opportunities to allow agricultural use.** Groton currently leases some of its conservation parcels for agricultural use, but the GCC has received limited interest in other parcels due to site conditions. Working with local farmers to determine their needs and concerns would provide the town with information that could help them to better assess potential parcels for farming.

GOAL: IMPROVE MANAGEMENT OF OPEN SPACE AND RECREATION PARCELS.

Recommendations:

- **Develop management strategies and individual management plans for the Town's conservation lands.** Working with Groton's conservation groups to complete surveys for all conservation lands will allow the Town to take a proactive approach to land management, identifying and developing strategies to address site-specific concerns such as invasive species. This effort could also include coordination with neighboring towns to manage shared resources like the Squannacook and Nashua Rivers. Due to the effort involved with developing management plans, the town could consider securing professional services to complete these plans. In addition, the GCC may need to update its conservation land regulations as part of the process of developing property management plans.
- **Conduct educational outreach on the benefits of sustainable forestry management.** Groton's sustainable forestry activities need to be accompanied by an outreach strategy to ensure transparency and public understanding. This is especially true for landowners with properties adjacent to forestry sites.
- **Encourage developers to consolidate open space set-asides, rather than create small, fractured conservation properties.** Reviewing the town's Flexible Development bylaw to encourage developers to pre-

[27] Chapter 6 also includes recommendations for developing trails.

serve a high priority off-site parcel or dedicate a single consolidated open space area within the development would be advantageous to Groton's open space inventory. A larger open space could serve multiple functions such as a common area with play structures, small playing fields, and a community garden.

- **Maintain Groton's recreational facilities in a manner that limits environmental impacts.** As the demands for Groton's playing fields increase, it will be important to protect them from overuse and to provide proper maintenance. For example, the Town should work with recreation groups to identify ways to reduce stormwater runoff on recreation parcels.

GOAL: EXPAND AND REVITALIZE GROTON'S RECREATIONAL RESOURCES, INCLUDING PARKS, ATHLETIC FIELDS, GREENWAYS, AND WATERWAYS.

Recommendations:

- **Review Groton's private and public recreation offerings to ensure that programming is inclusive, diverse, cost-effective, and sustainable.** Though Groton has numerous private sports activities - primarily for Groton youth - the community also wants more affordable, less-competitive recreational programs for children and adults. Expanding Groton's recreation offerings will require additional planning, professional expertise, and management in order to determine the appropriate range of public offerings. To that end, and to ensure that an expanded recreation program is off to a good start, Groton should:
  - *Investigate the potential for sharing recreational resources with a neighboring town.* This could be especially useful for providing activities that require special equipment and facilities such as swimming and tennis.
  - *Conduct a recreational needs survey for underserved populations such as adults, seniors, and residents with disabilities.* Recreation programs and services should address the needs of many population groups. A detailed needs survey would help to determine whether existing offerings align well with resident interests.
  - **Create new recreations facilities for Groton residents.** Many of the athletic fields are over capacity. Groton should pursue developing additional fields at Cow Pond Brook, which could serve multiple sport types, to allow for more efficient maintenance and ease scheduling conflicts. The Town should also consider constructing additional canoe/kayak launches on the Nashua River to increase water access.
  - *Appoint a Recreation Manager or Recreation Director.* An expanded and more inclusive range of recreational programs will require professional management. Groton should have its own Recreation Director to take responsibility for managing recreation programs that are well publicized and meet user needs. This position could work in cooperation with the Park Commission, which currently coordinates the use of most recreation facilities.
- **Expand and publicize the offerings of the Groton Pool and Golf Center as a recreational facility for all age groups.** Changes to the former Groton Country Club provide new opportunities to expand Groton's recreation offerings for residents young and old. Promoting this resource and its central location will be an important tool for galvanizing interest in the facility and ensuring its long-term sustainability.

GOAL: ENABLE AND SUPPORT THE CREATION AND MAINTENANCE OF COMMUNITY GARDENS FOR PUBLIC USE.

Recommendations:

- **Review Groton's Town-owned properties, both developed and undeveloped, for suitability as community gardens.** Groton should review its municipal properties and identify those that might be suitable for a community garden. Important criteria include a having a water source, suitable soils, and adequate space. Identifying properties in locations close to potential users (for example, near Groton's villages or residential neighborhoods) is also an important factor to consider.
- **Appoint a municipal representative or group to advocate for development of a chosen community garden site.** Appointing Town staff or another Town Hall representative to serve as liaison with interested community groups and individuals will be important to the successful development and maintenance of a garden site.

6

transportation

What is this element about?

Scope

- Assess and map Groton's current and proposed transportation infrastructure, including sidewalks, trails, signage, and roads, and its regional context to analyze the town's local and regional transportation needs.
- Identify key attributes of the transportation system, including ownership and development patterns of the Town's sidewalks and multi-use trails.
- Analyze key pedestrian corridors and identify walkability barriers and constraints.
- Assess potential for alternate modes in lieu of private automobiles.
- Review the region's planned infrastructure improvement projects, including those for Routes 119, 40, 111, and 225, as well as relevant regional transit system improvements or service changes.
- Suggest and map short and long-range multi-modal transportation goals and objectives that Groton might consider.

Key findings

- Groton's narrow roadways contribute to its visual character, reduce maintenance costs, and slow traffic speeds. However, these types of roadways may not always process traffic efficiently and do not easily or safely accommodate pedestrian and bicycle facilities.
- One of Groton's major policy choices will be to balance the need to maintain traffic flows while increasing capacity and safety for bicycles and pedestrians and preserving the aesthetic qualities of its roadways. This will require a thoughtful and flexible approach to roadway design, rather than a one-size-fits-all policy.

- Groton has a decent inventory of existing sidewalks, trails, and paths, but many are disconnected. Increasing connectivity to create an alternative transportation network is a major challenge and goal of this Master Plan.
- Groton's low-density land use pattern and small population make it very difficult to provide public transit. However, there is potential for some small-scale, multi-passenger motorized transportation to increase mobility for those who cannot or do not want to drive.

Ideas for sustainability

Some key Transportation recommendations that will increase Groton's sustainability include:

- *Act regionally*. A transportation system has an enormous impact on sustainability. Since sustainable transportation is inherently a regional issue, it is difficult to implement at the local level. Groton will need to look beyond its own political borders and interests, work with surrounding communities, and advocate at the state and federal levels for sustainable transportation initiatives.
- *Pursue technical assistance, planning, and implementation funds for intra-local fixed-route transportation service in Groton*, such as a loop route running between Groton Center, Four Corners, and West Groton.

Federal funding is available to support demonstration projects and acquire service vehicles. Public transportation is critical for sustainability because it helps to reduce the negative impacts of auto-based transportation.

- *Adopt an official policy to provide multiple transportation modes on Groton's roadways.* The DPW should continue its efforts to design roadway projects with multiple transportation modes in mind.

- *Create new sidewalk and trail connections.* Groton has significant opportunities to connect existing trails, thereby linking several neighborhoods and multimodal corridors and improving non-auto circulation throughout the town.

- *Reduce cut-through traffic in residential areas by introducing traffic calming techniques in appropriate locations.* Growth in vehicular, pedestrian, and bicycle traffic on Groton's major roadways means that residential neighborhoods are increasingly vulnerable to cut-through traffic, which compromises public safety and neighborhood quality of life. Traffic calming measures should be pursued in several areas, accompanied by a strong public outreach and participation from the surrounding neighborhood.

Existing conditions and trends

Regional transportation network

Roadways

In Groton, Routes 119, 40, 225 and 111 link the town to the greater region.

- Route 119 (Boston Road to the south of Old Ayer Road, and Main Street to the north) is Groton's busiest road. Traversing the town in a general northwest-southeast direction, it provides access to I-495 in the Town of Littleton. It is also the only arterial in Groton under the jurisdiction of the Massachusetts Department of Transportation (MassDOT). Route 119 is congested southbound during the morning commuter peak hours and northbound during the evening commuter peak hours. Commuter peak period congestion is most notable in the Town Center.

- Route 225 provides east-west access through Groton between the Towns of Westford and Shirley and overlaps Route 119 between the Four Corners intersection at Sandy Pond Road and Pleasant Street in Groton Center.

- Route 40 provides east-west access east of Main Street on Lowell Road in Groton and eventually connects to state Route 3 in the Town of Chelmsford.

- Route 111 runs northeast to southwest through Groton and provides regional access between Pepperell and Ayer. Route 111 also overlaps Route 119 between the Pepperell Line and Elm Street in Groton Center and continues to Ayer via Pleasant Street and Farmers Row.

The MassDOT conducts traffic counts along selected major roadways in various years. Although there is not always enough data for each roadway segment to establish a trend, the numbers do provide a sense of the relative amount of traffic along these roads. Historical traffic volumes for Groton's major roadways are summarized in Table 6.1.

Regional trails

The Nashua River Rail Trail (NRRT) extends approximately eleven miles between Ayer and Nashua, New Hampshire, running north-south through Groton. Dedicated in October 2002, it has an equestrian path that extends from Station Avenue in Groton to the north. It also connects to Ayer's MBTA Commuter Rail Station, about a three- to four-mile or fifteen- to twenty-minute bike ride. User counts taken in 2007 and 2008 at Station Avenue indicate that more than one thousand people take advantage of the NRRT on a typical summer Saturday.

Together with the Town of Townsend, Groton is pursuing construction of the 3.7-mile Squannacook River Rail Trail.[1] If funded, the trail will follow an abandoned Boston & Maine railroad corridor and connect the northwest corner of Groton to Townsend, serving a combination of recreational and transportation needs. Approximately 0.9 miles of the Squannacook River Rail Trail is located in Groton, and 2.8 miles is located in Townsend to the northwest of Groton. The proposed multi-use path parallels Route 119 from Elm Street eastward from Townsend, connecting to Groton along the Squannacook River and Bertozzi Wildlife Management Areas.

Regional public transportation

There are no public transportation facilities within Groton, but residents have nearby access to commuter rail

[1] Massachusetts Department of Transportation, MassDOT, Project Need Form for Groton, Massachusetts, (March, 2009).

Table 6.1. Groton Average Weekday Traffic, 2004-2007.

Roadway	2004	2005	2006	2007
Boston Road (Route 119) near Town Hall				19,500
Boston Road (Route 119) at Littleton Line	16,700			
Farmers Row (Route 111) near Route 225				7,200
Forge Village Road (Route 225) at Westford				4,700
Lowell Rd (Route 40) at Westford Town Line	3,900	5,000	3,500	4,600
Sandy Pond Road west of Boston Road (Rte. 119)				4,100
Longley Road (Route 225) at Pepperell Town Line	4,100			
Route 225 at Shirley Line				3,900
Farmers Row (Route 111) north of Long Hill Road	2,500			
Chicopee Row at Dunstable Line	2,000			
Broadmeadow Road west of Main St (Route 119)				1,200
Nashua Road at Pepperell Line	810			

Source: Massachusetts Department of Transportation (MassDOT), Highway Division, Traffic Volume Counts, http://www.mhd.state.ma.us/default.asp?pgid=content/traffic01&sid=about. Traffic counts listed by rank, busiest to least busy.

stations in Ayer, Littleton, and Shirley on the Fitchburg Line, which runs between Boston's North Station and Fitchburg. Located approximately four to six miles from Groton Center, the commuter rail stations offer free, though limited, surface parking. Most Groton residents who take the Fitchburg Line board at the MBTA station in Ayer, but some also commute on the Lowell Line, boarding in Lowell or North Billerica.[2] Groton pays an annual regional assessment to MassDOT of $65,000 to $67,000 for shared transportation services that benefit town residents, such as commuter rail. As noted above, bicyclists can also access the Ayer Station via the NRRT.

The Lowell Regional Transportation Authority (LRTA) provides weekday RoadRunner paratransit service for elderly residents and people with disabilities. People use the RoadRunner service for work, medical, shopping, social, and recreational trips; the service provides approximately sixty trips in Groton each week.[3] All users must register in advance with LRTA, and trips must be pre-arranged two days in advance. Fares are one dollar for trips within Groton and $1.50 for trips outside the town lines. Trips to Boston or Burlington medical facilities are twenty-five dollars per trip. Though Groton's public transportation assessment from MassDOT has been used primarily to subsidize regional commuter rail service, the Town was reimbursed for the LRTA's Road Runner service out of the MassDOT assessment by just under $20,000 during 2010. It is possible that more of the assessment could be used to subsidize enhanced LRTA or Groton Senior Center Services.

AIRPORT ACCESS AND TAXI SERVICES

Groton has no local airports or in-town taxi services. Boston Limo service or other taxi carriers serving nearby communities provide scheduled limousine service between Groton and commercial airports, such as Logan Airport in Boston and Manchester Airport in Manchester, NH.

Local transportation

Local roadways

Groton has jurisdiction over the vast majority of its roadways. About 101 of Groton's 110.67 centerline miles are local - and mostly two-lane - roads. The remaining miles are split relatively evenly between MassDOT and private jurisdiction. In terms of functional classification, Table 6.2 shows that local roads comprise most of the roadway mileage in Groton (70 percent), and only 22 percent of Groton's roads operate as arterials.[4]

Typically, arterials include roadways such as divided interstate highways, freeways, and expressways, but none of these exists in Groton. Rather, Groton's arterials include roads such as Route 119/Main Street. These types of roadways present special challenges in areas such as Groton Center, where vehicular traffic of local and regional origin converges with pedestrian and bicycle traffic

[2] Central Transportation Planning Staff (CPTS), *MBTA System-wide Passenger Survey: North Side 2008-2009, Station-by-Station Tables* (June 2010).

[3] Tom McDonald (Lowell Regional Transit Authority), personal communication to Fay, Spofford and Thorndike, Inc., April 13, 2010.

[4] For functional class definitions, see Appendix A.

Table 6.2. Town of Groton, Roadway Centerline Miles by Functional Classification and Jurisdiction

		Urban and Rural Combined		
Function	Arterial	Collector	Local	Total
	22.79	11.11	76.77	110.67
Jurisdiction	MassDOT	Town	Private	Total
	5.43	100.87	4.37	110.67

Source: Massachusetts Department of Transportation (MassDOT), Office of Transportation Planning, Data and Maps, Year End Report, 2009 Road Inventory Year-end Report (January, 2010).

in a relatively uncontrolled setting. While access cannot be precluded along arterial roadways, it should be limited to some extent to allow the roads to perform their primary function: to move traffic efficiently and at a good level of service. In situations where arterials do run through a town center, it is important to balance vehicular mobility needs with pedestrians and cyclists. Limited traffic calming features such as curb extensions or enhanced-visibility crosswalks are examples of devices to slow vehicle speeds and accommodate multiple users of the same roadway space. Groton could also reduce the speed limit through the center of town (if justified by measured 85th percentile speeds) to enhance comfort and safety for pedestrians and cyclists.

For the most part, Groton's roadways are well maintained. Arterials and collectors are typically striped with centerlines and edge lines, and they have good to excellent pavement quality. The Town does a good job of allocating its limited resources to maintain the street and sidewalk system. Groton commits all of its Chapter 90 funding to roadway and sidewalk maintenance. In FY 2010, Groton received $384,000 from the Chapter 90 program; in FY 2011, $394,000.[5] Chapter 90 assistance is expected to continue into the foreseeable future. However, as new development occurs and the length of the roadway and sidewalk system increases, maintenance will become more challenging than it is today.

Trails

Groton has a highly active volunteer Trails Committee that is committed to creating and enhancing as many public trails as possible. In fact, Groton stands out as the town that provides more trails than any other community in the Montachusett Regional Planning Commission's (MRPC) jurisdiction. The Town is currently mapping all of its trails and will soon have data on the total number of trail miles and similar information.[6] Groton also has the paved Nashua River Rail Trail that runs generally parallel to Route 119 and provides access to sidewalks, trails, paths, homes, businesses, and schools in or near the center of Groton.

Paratransit

At the local level, the Groton Senior Center (GSC) provides paratransit for Groton seniors, primarily for social purposes. The GSC handles ten to fifteen weekly trips and operates only three days per week. Its services are reimbursed from the Town's annual MassDOT assessment for regional public transportation services. Groton Senior Center fares are two to three dollars per trip, and the GSC reports that usually they can accommodate most trip requests on a weekly basis.[7] The Town reports that it has not been able to disburse more than 20 percent of its MassDOT assessment for local services, though that could change in the future.

Issues

Need for an official policy for accommodating multiple transportation modes through roadway design. Over the years, Groton's Department of Public Works (DPW) has considered the needs of transportation modes other than vehicles. Whenever possible, these needs are accommodated in the design of new roadways or repairs to existing roadways.[8] On less-traveled roads, design considerations may be to simply provide a wider shoulder to accommodate bicycles. On major roadways, user needs may require infrastructure such as crosswalks, sidewalks, and striped bike lanes. While it is admirable that the DPW already considers these needs, the Town should adopt an official policy around it. This will ensure the practice remains consistent, transparent, and is sus-

[5] Massachusetts Department of Transportation, MassDOT, Chapter 303 Acts of 2008, FY 2011 Apportionment, April 1, 2010.

[6] Groton Master Plan Transportation Advisory Group, meeting with Fay, Spofford and Thorndike, Inc., June 29, 2010.

[7] Martha Campbell (Director, Groton Council on Aging, Town of Groton, MA), April 13, 2010.

[8] Michelle Collette (Land Use Director/Town Planner, Town of Groton, MA), March 7, 2011.

tained over the years through changes in the DPW's personnel and management.

Increasing pedestrian and bicycle infrastructure on roadways may drive traffic onto residential streets. Groton's Main Street, Route 119, is the town's primary connection to surrounding communities and is already heavily used. However, Groton residents are very concerned about morning and evening peak congestion on this roadway. To accommodate alternative modes while not diverting traffic into surrounding residential areas, Groton should work with MassDOT to fund pedestrian and bicycle enhancements so the roadway can accommodate multiple users while continuing to process traffic efficiently.

Existing sidewalks and trails are not continuous or connected. While Groton has put some pedestrian infrastructure in place, many barriers to walkability remain. With the exception of sidewalks in new developments (required on one side of the street), Groton's sidewalk system is confined primarily to its historic downtown and two of its village centers - West Groton and Four Corners - and there are many discontinuities in the existing system. Groton has an excellent system of off-road trails, but many of them are disconnected from one another and do not meet current requirements under the Americans with Disabilities Act of 1990 (ADA), as amended.Pedestrians are often forced to share space with motor vehicles on unpaved shoulders or on the roadway itself. On low-volume roads, this may be acceptable, but on most roadways it is not a desirable condition. Removing some of these barriers to walkability will have a tremendously positive effect on the quality of life of Groton's residents and visitors.

Integrating new and existing pedestrian and bicycle infrastructure. Connecting new sidewalks to existing infrastructure such as multi-use paths and also enhancing bicycle access will be a major challenge for the Town. Going forward, it will be important to tap Groton's local enthusiasm for expanding sidewalks, paths, and trails to ensure continual support for projects over time.

Sustaining funding for Groton's existing auto-based transportation system while developing an alternative transportation network. In Groton, there appears to be substantial satisfaction the existing transportation system for motor vehicle users. The Town's primary challenge will be to identify and allocate resources to enhance mobility for non-auto users. As Groton's roads, sidewalks, and trails are extended, maintenance will become more costly.

Enhancing transportation options for seniors. The aging of the "Baby Boom" generation and steady growth of the senior population is changing communities across the nation. By 2050, it is projected that Americans sixty years and over will outnumber children (people under fourteen) for the first time in history.[9] This means that over time, a greater number of senior citizens will be unable to drive and will have a greater need for transportation options. The town's current interest in adapting its roadway system so that it is more accessible to all users, including senior citizens, is fundamental to addressing this problem.

Auto dependency and greenhouse gas emissions. In the United States, the transportation sector accounts for one-third of all carbon emissions, which drive climate change.[10] As one of the most pressing sustainability challenges, the current pattern of auto-dependency must be reduced in order to address climate change. Groton is already addressing this by endeavoring to strengthen its bicycle and pedestrian infrastructure and enable more

Barriers to Around-Town Mobility in Groton

Groton has put some pedestrian infrastructure in place, but many barriers to walkability remain. Groton's sidewalk system is confined primarily to its historic downtown and two of its village centers, and there are many discontinuities in the existing system. Pedestrians are often forced to share space with motor vehicles on unpaved shoulders or on the roadway itself. While Groton has an excellent system of off-road trails, many are disconnected and do not meet current requirements under the Americans with Disabilities Act of 1990 (ADA), as amended.

[9] Katharine Hunter-Zaworski, "Getting Around in an Aging Society," *Planning*, American Planning Association (May 2007). http://www.planning.org/planning/2007/may/gettingaround.htm

[10] Joyce Allgaier, Climate Change Snapshot, *Planning*, American Planning Association, April, 2010.

people to walk and ride bikes rather than drive. The Town needs to also address this issue through public education efforts and regional collaboration.

Ensuring all-weather circulation system reliability. In March 2010, several of Groton's roads were closed due to a fifty-year flood event that affected neighboring town and left all of the Nashua River's major bridges under water. In addition to these rare storm events, the town experiences regular weather-related problems with some of its roads. For example, Broadmeadow Road, a "floating road" that relies only on the underlying peat for its structural support, floods at least once a year causing motorists to use alternate routes for a brief period of time.[11] Roadway closures due to non-recurring flooding or drainage problems could become a common issue if weather events increase in severity and frequency.

ADA and MAAB Compliance. Like all communities, Groton must comply with the ADA and the requirements of the Massachusetts Architectural Access Board (MAAB). This will be a challenge as the Town strives to make more of its transportation system accessible to persons with disabilities while also keeping up with existing maintenance needs and ensuring the system is financially sustainable.

Goals and recommendations

GOAL: DESIGN STREETS AND ROADS THAT ACCOMMODATE AS MANY MODES OF TRANSPORTATION AS POSSIBLE, GIVEN ROADWAY CHARACTERISTICS AND TRANSPORTATION DEMANDS.

Recommendations:

- **Implement a 'Complete Streets' policy, which requires the design and upgrading of new and existing streets to accommodate a range of transportation modes and users of all ages and abilities.** Groton should create an official, formal policy that requires the DPW to consider and accommodate the needs of multiple transportation modes into roadway design - also known as the "Complete Streets" approach to roadway design. While the DPW already embraces this approach, a formal policy will ensure this practice continues into the future. Specific action items would include:
  - Joining the national Complete Streets Coalition.
  - Adopting for local use, as much as possible, the MassDOT Highway Division's Project Development and Design Guide.
  - Establish an active liaison with Bay State Roads, a cooperative effort of the Federal Highway Administration, MassDOT, and the University of Massachusetts, to educate Town officials and the public about ways to make Groton streets and roads more efficient and accessible.
  - Ensure that impacts on the town's natural and cultural environment and rural character are considered with potential transportation enhancements and future roadway system maintenance needs, to ensure a balanced approach to roadway design.
- **Provide bicycle facilities on roadways where feasible and appropriate.** Many of the trail opportunities in Groton will accommodate bicycles as well as pedestrian use. However, the Town should also pursue the construction of designated bike lanes on roadways where appropriate. One example is in the town center between Lowell Road and Pleasant Street. Here, Main Street is wide enough to accommodate eleven-foot through lanes and five-foot directional bike lanes with parking, for a distance of approximately 2,200 feet. This would require coordination with MassDOT, and specific elements would have to be designed to assess the viability of the bike lanes. Going forward, future development should require amenities for walking and sitting, and integration wherever possible with existing bicycle paths.
- **Consider traffic calming techniques to reduce cut-through traffic in residential neighborhoods.** With increasing traffic (including pedestrian and bicycle activity) on Groton's major roadways, residential areas are vulnerable to cut-through traffic. Groton should proactively consider traffic calming for certain areas, accompanied by a strong public outreach and participation effort in the surrounding neighborhood. The following locations should be considered for traffic calming strategies:
  - Gay Road
  - School Street
  - Whitman Road

[11] Michelle Collette (Land Use Director/Town Planner, Town of Groton, MA), personal communication to Fay, Spofford and Thorndike, Inc., April 21, 2010.

- Martins Pond Road
- Higley and Peabody Streets

- **Pursue bicycle and pedestrian infrastructure funding opportunities.** A new Federal Highway Administration policy encourages state and local governments to invest in pedestrian and bicycle infrastructure, and additional federal and state financial resources are expected to become available to fund alternative transportation enhancements.[12] Groton's work on the Nashua River Rail Trail and with Townsend on the Squannacook River Rail Trail demonstrates the Town's ability to fund and implement these types of transportation improvements. New policies and programs will most likely provide opportunities for Groton to pursue similar projects in the future.

  Additionally, Groton is eligible to apply for grant assistance for the design and construction of multi-use trails along existing roads, especially where ADA requirements can be met and a right-of-way can be obtained to construct the improvements.[13]

GOAL: CREATE AN ALTERNATIVE TRANSPORTATION NETWORK BY CONNECTING ROADS AND SIDEWALKS WITH TRAILS AND PATHS.

Recommendations:

- **Create new sidewalk and trail connections.** The Town has identified several appropriate corridors for important sidewalk and trail connections.[14] Great attention should be given to designing all sidewalks and trails in a manner compatible with Groton's natural setting and rural aesthetic. There are important environmental and legal issues that must be addressed for each trail. However, the following potential projects present a significant opportunity for Groton to connect various rail trails, linking several neighborhoods and multi-modal corridors and significantly improving non-auto circulation throughout Groton.

  - Main Street (Route 119) from Groton Center to the Post Office on one side of the street. The Town should pursue this improvement in conjunction with MassDOT. A longer term goal could be to continue the sidewalk past the CVS and Post Office to Johnson's Restaurant and Skyfields Drive.
  - Main Street from Champney Street to Nod Road. The Town should pursue this improvement in conjunction with MassDOT. This should also include access to the Mill Run Shopping Plaza and the Rail Trail where it crosses Route 119.
  - West Main Street (Route 225) between the easterly end of the existing sidewalk and Riverbend Drive. Conceivably, this could be pursued in one or two phases, preferably all the way to Riverbend Drive and Long Hill Road.
  - Farmers Row between Peabody Street and Culver Road.
  - Higley Street between Farmers Row and Peabody Street.
  - Lowell Road between Main Street and Gay Road. Given the setting of Lowell Road, this could conceivably be a multi-use trail rather than sidewalk. Because Lowell Road crosses wetlands, the Town should consider installing short lengths of boardwalks on one side of the road behind guardrail areas. Right of way issues will need to be resolved to move forward with implementation. This could also be done in phases, with Phase I extending to Gibbet Hill and Phase II to Gay Road.

- **High priority multi-use trails include:**

  - Squannacook River Rail Trail – Phase I to Bertozzi Wildlife Management Area, approximately 0.9 miles in Groton. This project is in the state's Transportation Improvement Plan. A grant assistance request was submitted, and funding is pending MassDOT approval.
  - Fitch's Bridge connection across the Nashua River near the Pepperell Line. Fitch's Bridge is in the state Transportation Improvement Plan. A grant

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[12] U.S. Department of Transportation, Federal Highway Administration, Environment, Human, Bicycle and Pedestrian, "Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations," Signed on March 11, 2010 and announced on March 15, 2010, http://www.fhwa.dot.gov/environment/bikeped/policy_accom.htm.

[13] For a summary of funding for bicycle and pedestrian projects, see "Bicycle and Pedestrian Provisions of the Federal-aid Program, Funding Sources for Bicycle and Pedestrian Projects," http://www.fhwa.dot.gov/environment/bikeped/bp-broch.htm#funding.

[14] These suggestions are based on meetings held with the Master Plan Transportation Advisory Group and Trails Committee on June 29, 2010.

assistance request was submitted and funding is pending MassDOT approval. If constructed, Fitch's Bridge will provide a missing non-auto link between Pepperell Road (Route 111) and Main Street (Route 119). This project will be complimentary to adding Main Street sidewalks to Nod Road, as discussed above.

- Squannacook River Rail Trail Phase II from the Bertozzi Wildlife Management Area to the Town of Ayer Line, approximately 4.2 miles in West Groton. This former railroad corridor has more challenging environmental and cost issues than the pending Phase I Squannacook River Rail Trail (SRRT) but would provide a substantial multi-modal access enhancement to West Groton. Although it would require inter-town and state cooperation, a goal could be to extend the SRRT from West Groton along the railroad corridor to Route 2A near Ayer Center.

- Red Line Rail Trail. This roughly one-mile north-south former rail corridor in the northeast corner of Groton connects to Town athletic fields and has fairly level terrain.

- B&M corridor from West Main Street to Fitch's Bridge. If constructed, this northeast to southwest rail corridor would provide an alternative for access to Fitch's Bridge rather than Pepperell Road.

- Jenkins Road trail connection to a B&M rail corridor to the Fitch's Bridge. This roughly 4,200 foot extension of the westerly end of Jenkins Road would provide northwest to southeast access to the future Fitch's Bridge, enhancing multimodal connections between Groton Center and West Groton.

- Lovers Lane from Boston Road (Route 119) to Whitman Road to the Groton Country Club site. This trail should be designed to discourage all motor vehicle traffic, and accommodate bicycles, pedestrians, and other non-motorized users.

- **Consider setting aside a small fraction of the Town's Chapter 90 funds and dedicate them to alternative transportation projects.** Groton could ensure continued funding for both regular maintenance of existing infrastructure and financing an alternative transportation network by designating a small amount (1–2 percent) of its Chapter 90 funds to financing new pedestrian and bicycle projects.

GOAL: EXPLORE AND PROMOTE MULTI-PASSENGER MODES OF TRANSPORTATION FOR GROTON RESIDENTS TO REDUCE SINGLE-OCCUPANCY VEHICLE TRIPS.

Recommendations:

- **Explore the potential for intra-local fixed-route transportation service in Groton.** The service could be a loop route running from Groton Center to Four Corners and West Groton and returning to Groton Center. If Groton decides to pursue this type of transportation, the Town should apply for FTA 5130 grants which could provide a demonstration grant and perhaps funds for service vehicles. To pursue these grants, Groton would need to coordinate with the LRTA, which provides the existing paratransit service. To prepare for such a project, the Town would need to consider the following:

  - How the service will be provided.

  - Who will operate the service. The LRTA is a logical choice, but the Town could conceivably designate a local operator.

  - The number of vehicles needed, e.g. two vehicles, one in service and one spare, and their dimensions and capacities.

  - Where vehicles would operate from, e.g., the LRTA vehicle maintenance area or Station Avenue in Groton Center.

  - The precise service route. One possibility would be a route originating at Main Street/Station Avenue, heading south to CVS, returning to Groton Center and extending north to Pleasant Street and the Mill Run Plaza, turning southward on Mill Street to Farmers Row, turning westward on Long Hill Road and continuing to the Senior Center, West Groton, and returning back to Groton Center. This loop could also be extended to the Boston Road Marketplace at Four Corners.

  - The number of formal and informal (flag) stops, whether there should be shelters at major stops, and locations for vehicle layovers. (It is assumed that "idling" will not be permitted.)

  - Operating hours and frequency of the service, and whether the schedule will change seasonally.

- Anticipated operating costs for labor, fuel, maintenance, etc.
- Possible connections to activity centers and other transportation links (e.g. bike paths) and whether bicycles will be permitted to board at major stops.
- The constituency that will support and advocate for the initiative, and the intended users of the service. The Town will need to ensure there is broad support for this project.
- Fare amounts and an appropriate or acceptable annual service subsidy. (Public transportation rarely covers its own costs from revenues. An 80/20 subsidy to revenue stream is common. To increase revenue, the Town could consider permitting interior and/or exterior advertisements.)

This type of project would be a new and substantial endeavor for Groton, and it would require a fair amount of town resources and political will. However, if planned in conjunction with other initiatives to improve local transportation connections, the project could substantially increase mobility for Groton residents.

- **Support creation of a limited shuttle feeder service between key Groton locations and the Ayer Commuter Rail Station.** The shuttle schedule would be timed to coincide with the arrivals and departures of Fitchburg Line trains. The service could be initiated as a pilot program and would depend on an Interagency Agreement between Groton, the MBTA, the Lowell Regional Transit Authority (LRTA) and the Towns of Ayer and/or Shirley, who are responsible for maintenance of the station areas. If created, the shuttle service should include an emergency ride home provision.

GOAL: REDUCE TRANSPORTATION-RELATED GREENHOUSE GAS EMISSIONS.

Recommendations:

- **Support regional initiatives and projects to help reduce greenhouse gas emissions.** Decreasing auto-dependency in Groton will require regional solutions. One example of this type of project is the Ayer Commuter Rail Station parking garage, which will increase access to rail services for Groton residents. Also, the Nashua River Rail Trail provides an opportunity for Groton residents to bike to the Ayer rail station, and there is opportunity for ride-sharing initiatives and programs. Groton should seek and support these types of program.
- **Conduct public education to encourage fewer auto trips.** Educate and encourage residents to share rides and to walk and bike for recreation and transportation purposes. This type of public education effort should be undertaken while aggressively pursuing priority pedestrian and bicycle travel connections, as described above.
- **Erect signage to discourage idling.** To reduce pollution from automobiles, Groton should create informational signage to shut off car and truck engines when standing for five minutes or longer (as set forth in G.L. c. 90, s. 16A). Signs should also direct people to turn off all car, bus, and truck engines within three hundred feet of a school.
- **Encourage the use of alternative, low-emissions vehicles.** Municipalities can encourage the use of electric vehicles (EVs) by providing charging stations in strategic locations throughout town. In Groton, however, because the demand for this transportation option is still unknown, the Town should first explore the potential for EV charging stations before investing in this technology. Groton could also lead by example in this area, transitioning its own fleet of cars and trucks to low-emissions vehicles.

GOAL: CONTINUE TO ENSURE THAT GROTON'S ROADS, TRAILS, AND SIDEWALKS ARE SAFE AND ACCESSIBLE FOR ALL USERS.

Recommendations:

- **Continue to monitor closely and address Groton's high-crash locations.** Such locations include:
  - Lowell Road (Route 40) at Main Street (Route 119)
  - Higley Street at Farmers Row
  - Townsend Road at Route 119 (in cooperation with the Towns of Townsend and Pepperell)
  - Farmers Row near Peabody Street
- **Improve accessibility and universal design for trails.** Groton should work with its GIS mapping consultant to compile a summary of its accessible trails. Most recreational trails are not required to be accessible. However, Groton should strive to make

its trails ADA compliant as much as possible except where one of the following four situations occurs:[15]

- Where trail compliance would cause substantial harm to cultural, historic, religious, or significant natural features or characteristics.
- Where trail compliance would substantially alter the nature of the setting or the purpose.
- Where trail compliance would require construction methods or materials that are prohibited by federal, state, or local regulations or statutes.
- Where trail compliance would not be feasible due to terrain (excessive slope or cross-slopes) or the prevailing construction practices.

- **Consider investing in a small amount of electronic automatic and manual count equipment to routinely measure and monitor traffic volumes on Groton's local street system.** Automatic traffic recorder (ATR) units would enable Groton to make better decisions about roadway management and maintenance. For example, by measuring traffic on certain roads, Groton could estimate the traffic consequences of spring flood detours. The Town could also measure peak seasonal traffic volumes, which would help prioritize road maintenance. Since this would involve an investment, however, the Town should research the level of use such equipment would have before purchasing it.

[15] U.S. Access Board, "Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas Final Report, September 30, 1999," http://www.access-board.gov/outdoor/outdoor-rec-rpt.htm.

7

land use

What is this element about?

Scope

- Identify and analyze growth trends, identify land use conflicts, evaluate the effect of existing land use regulations on future growth, and suggest regultory changes to support town goals.
- Review Groton's Zoning Bylaw.
- Identify land use strategies to address local priorities.
- Develop a future land use map based on direction and input from the Planning Board.

Key findings

- Very low-density single-family development is the dominant land use in Groton. However, Groton also has regulations for alternative approaches to site planning, which provide a range of environmental, aesthetic, and functional benefits.
- Groton's four villages provide important land use lessons for the town.
  - In Groton Center and West Groton, pre-zoning development patterns demonstrate the importance of denser, mixed-use development for enhanced quality of life.
  - For Lost Lake, the transition from a seasonal summer enclave to year-round residential area presents infrastructure challenges.
  - In Four Corners, a continually evolving development pattern provides opportunities for new businesses and community service establishments.
  - The challenge in each village will be to preserve existing assets while accommodating additional growth and change.
- Groton has zoned an extremely small amount of land for business use, and this makes any substantial business expansion unlikely. The Station Avenue area provides some options for new businesses, but without land use policy changes the town's economic development interests will be very difficult to pursue.
- Under existing zoning, Groton's vacant, developable land and large properties with additional development potential could support approximately 1,956 additional house lots. The town needs to decide how best to accommodate residential and commercial growth and still protect functional landscape systems with ecological, agricultural, and recreational value. These landscape systems should serve as a frame around nodes or clusters of housing and mixed uses, thereby protecting Groton's natural and cultural resources while providing for the development of distinctive neighborhoods and activity centers.

Ideas for sustainability

- *Plan and provide for additional housing density in each village.* Targeting denser and more diverse housing development to village centers consumes less land, produces fewer impervious surfaces, and generally generates fewer negative environmental impacts than low-density development. It also enables true mixed-use environments where people can walk more and

drive less, resulting in fewer fewer greenhouse gas emissions than in single-use, lower-density development areas.

- *Ensure that Groton's villages are comfortably walkable.* In addition to intensifying residential development in the villages, creating safe, secure pedestrian environments is key to encouraging people to walk more and use their cars less.

- *Increase the attractiveness of the alternative land development regulations.* Groton's residential density and dimensional requirements promote sprawl. Although most residential development plans filed with the Planning Board attempt to make good use of the Flexible Development bylaw, the Board of Health's regulations and the local Wetlands Bylaw add significant requirements that effectively cause Flexible Development plans to look more like conventional subdivisions. In addition, the minimum lot size for Residential Compound developments could be reduced to make this option more for landowners. The Town needs to embrace strategies that result in fewer impervious surfaces and more open space.

Existing conditions and trends

All communities have recognizable arrangements of residential, commercial, industrial, and institutional development, transportation features, vacant land, and water. These arrangements make up particular **land use patterns** that can be grouped into categories with common attributes. The presence of distinctive land use patterns contributes to that hard-to-define virtue known as "community character." Groton's community character is composed of several faces, each with defining natural and built features: historic centers, emerging villages, institutional compounds, suburban neighborhoods, farms, large tracts of forested land, and remarkably little commercial development.

Communities express their land use policies through **zoning:** the practice of dividing land into mapped districts, each with prescribed use, density, and intensity regulations. Since zoning involves a multitude of policy choices and adoption by town meeting, it is inherently political. Development that pre-dates zoning tends to be organic, such as the comparatively tight cluster of buildings and mix of uses that make up Groton Center. By contrast, development that followed the adoption of zoning tends toward a more uniform appearance because the lots and structures had to meet specific dimensional requirements. Groton is somewhat unusual because years ago, the Town instituted regulations for creative site development while still adhering to a basic framework of low-density residential land use. As a result, it has both conventional or "uniform" and flexibly designed neighborhoods.

Land use has physical, visual, and economic implications for each town and the region of which it is part. Accordingly, the land use policies of one community play a major role in the health and well-being of many other communities, yet zoning falls squarely within the authority of individual cities and towns. Today, many communities - including Groton - say they want to align their land use policies with the principles of sustainability, yet just as zoning is inherently political, sustainability is inherently regional. In Massachusetts, the impediments to regional sustainability consist of outdated state laws, the state's exclusive jurisdiction over some aspects of land development, local government finance, the limited purview of regional planning commissions, and the ideology of home rule. The absence of a regional sustainability framework means that each town is largely on its own to be good stewards of its natural, built, and human resources - and those of its neighbors.

Land use patterns

Rivers, wetlands, hills, transportation, and public priorities have shaped land use in Groton since the town's inception. Known to Native Americans as Petapawag—or "swampy land"—Groton has an abundance of wetland and water resources that comprise one of its key defining elements.[1] Marshes, bogs, and swamps nestle among Groton's rolling hills. Two major rivers, the Nashua and the Squannacook, meander in a south-north direction through the western half of town. Rivers served as the initial basis for settlement in Groton, for they supported fishing, provided a source of water for farming, facilitated trade, and supplied power for the town's early industries. Today, the rivers continue to shape Groton's development because many acres of land have been preserved along both rivers, and protecting more land remains a local priority. In addition to the rivers, Lost Lake/Knops Pond and Whitney Pond have shaped development in the eastern part of town, serving the basis for the Lost Lake village area.

From a bird's eye view, Groton's two most noticeable development nodes are Groton Center and West Groton: early villages that sprung up around crossroads and railway hubs. Groton Center is clustered around the intersection of Main Street/Route 119 and Farmers Row, two

[1] Town of Groton, "A Brief History of Groton," http://www.townofgroton.org/main?cmd=History.

early roads which provided east-west and north-south access. West Groton is situated between the Nashua and Squannacook Rivers, along and to the north of West Main Street. Both villages served as railroad junctions in the mid- to late-nineteenth century, which reinforced their importance.[2] While the railroads are gone, the villages retain many of their earlier features. Consequently, they provide two of the few examples of compact, mixed-use development in Groton. Another village settlement, Lost Lake, is characterized by small lots and a narrow street pattern due to its origins as an enclave of summer cottages. Groton's fourth village, Four Corners, is still emerging in form and identity. It consists primarily of recent subdivisions located around the intersection of Routes 119 and 225 and Sandy Pond Road.

Outside the villages, most development in Groton is scattered along older roadways or in pockets of newer subdivisions. Indeed, low-density and primarily residential growth interspersed with farms, other open space, and forests are the primary defining features in Groton's present-day land use pattern.

Existing land uses

On one level, single-family home development is the most prevalent land use in Groton. According to data from the Groton Assessor's Office, land devoted to single-family homes accounts for a little more than one-third of the town's total acreage. (See also, Map 7.1) On another level, however, Groton has large amounts of open and forested land, and this can be seen from just about any road in town or in aerial photographs. Since the land use inventory in Table 7.1 is based on assessor's parcel records, the single-family residential class includes both conventional lots and very large parcels: the latter often consisting of a home surrounded by many acres of forested, wet, or otherwise undeveloped land. If measured on the basis of *land coverage*, the amount of land actually used for single-family residential purposes is less than three thousand acres.[3] This has significant implications for Groton's future growth because some of the land in single-family parcels may have additional development potential.

Residential Uses. Given Groton's rural history and large-lot zoning, it is not surprising that single-family homes make up the majority of the town's existing development. Two-acre zoning applies in most of Groton, so its single-family homes are particularly low density: on average, including old and new lots, less than one unit per acre.[4] Single-family home development largely follows the historical road network but also can be found in newer subdivisions, such as in the Four Corners area. Other areas with this cul-de-sac form include Throne Hill Road, Castle Drive, and the very northwest corner of town on Crosswinds Drive. By contrast, two-, three-, and multi-family housing (including condominiums) account for a minuscule amount of Groton's land area: less than 2 percent combined. Much of Groton's moderately dense housing is the result of historical (pre-zoning) development rather than present-day land use policy. The villages

Table 7.1. Land Use by Class and Acres in Parcels

Land Use Class	Acres	Percent	Land Use Class	Acres	Percent
Single-family residential*	7,349.5	34.0%	Non-profit charitable use‡	3,268.0	15.1%
2- 3-family residential	253.0	1.2%	Vacant land	2,755.9	12.7%
Multi-family residential†	128.0	0.6%	Chapter 61, 61A, 61B land	1,093.5	5.1%
Retail and restaurant	54.2	0.3%	Other private open space	23.9	0.1%
Other commercial	120.6	0.6%	Public; town	3,647.5	16.9%
Industrial and utilities	79.2	0.4%	Public; federal, state, county	690.0	3.2%
Educational use (private)	460.2	2.1%	Public services	6.7	0.0%
Religious use	300.2	1.4%	Roads, water, and unclassified**	1,409.6	6.5%
			Total	21,633.2	100.0%

* Includes mobile homes.

† Includes condominiums.

‡ Includes open space and conservation land owned by private charitable organizations and land trusts.

**"Unclassified" means parcels with unknown land use.

Source: Town of Groton, Assessor's Database and Parcel Map, 2010; Town of Groton, Land Use Department. Numbers may not total due to rounding.

[2] Charles W. Elliot, *Comprehensive Planning for Groton: The Master Plan* (January, 1963), I-31 – I-35.

[3] MassGIS, "Land Use 2005" (June 2009), and Community Opportunities Group, Inc.

[4] Office of Geographic Information (MassGIS), Land Use (2005), www.massgis.com.

of West Groton and Groton Center, and also Lost Lake, contain the majority of Groton's mixed residential uses.

Commercial and Industrial Uses. Historically, commercial and industrial land uses were an important but never a large presence in Groton, and this remains true today. As in many New England towns, Groton's early industries consisted of mills located along waterways. The Squannacook River, Baddacook Brook, and James Brook all supported early mills, and the Hollingsworth and Vose company (established in 1843 as a paper mill and now an R&D and pilot manufacturing company) still stands in West Groton.[5] The town also had a soapstone quarry and hop-growing industry.[6]

Commercial activity developed in West Groton and Groton Center, which remain the town's primary commercial areas. Today, retail, restaurant, and other commercial uses occupy just 168 acres - or 0.8 percent - of Groton's land. Industrial uses (including utilities) account for another seventy-nine acres. Since 1950, most commercial development has occurred along the Route 119 corridor, and some industrial development exists here as well. There are a few other industrial areas in West Groton and, as in many communities, at the edges of town.[7]

Residents sense a growing commercial presence in Groton, and in some ways this is true. For example, the Boston Road Marketplace at Four Corners is a large, highly visible addition to Groton's commercial development inventory. Assessor's records indicate that since 1999, construction has occurred on only four commercial parcels. However, the assessor's records do not always align well with records of permits and approvals. Two notable, recently developed commercial properties not reflected in the assessor's data are the Mill Run Plaza at 491-495 Main Street and Gibbet Hill Grill on Lowell Road. At least two more commercial projects were approved in the past decade, but they have not been constructed yet.[8] Still, most of these are fairly small by commercial development standards. That Groton has experienced so much discussion about commercial growth despite the small amount that has actually occurred indicates needs for a better understanding of the kinds of businesses residents may want and regulations to encourage those types of developments.

Educational and Religious Uses. Groton has two prestigious private secondary schools: Lawrence Academy and the Groton School. Both play a central role in the reputation of the town, its visual character, and its land use inventory. Private educational uses account for 460 acres in Groton. Lawrence Academy, located in Groton Center, owns seventy-two acres, and The Groton School, 242 acres. With thoughtfully planned and well-maintained grounds and facilities, both contribute to town's country aesthetic. In addition to the private schools, Groton has several churches, but one large institution—the American Baptist Churches of Massachusetts—accounts for almost 80 percent of the town's religious land uses. The church's main property is located on the western edge of Lost Lake.

Non-Profit and Charitable Purposes. Charitable organizations serve multiple functions in a community and they have similarly variable land use implications. Many of Groton's charitable organizations are land conservation or preservation organizations, so much of the land in this class is protected or semi-protected open space. Together, charitable organizations own over three thousand acres, or 15 percent of the town's land. Of this, the majority of land is owned by the Groton Conservation Trust, the Groton Land Foundation, the Massachusetts Audubon Society, and the New England Forestry Foundation. Not all of these lands are protected in perpetuity, but most are undeveloped and they figure prominently into the town's open space system.

Vacant Land. Assessors records identify about twenty-four hundred acres of vacant land in Groton, including fifteen hundred acres with some degree of development potential.[9] For purposes of this Master Plan, "vacant land" consists of privately owned, undeveloped land that is not subject to deed restrictions, conservation restrictions, or

[5] Charles W. Elliot, "Comprehensive Planning for Groton: 'The Master Plan'" (January, 1963), I-34.

[6] Town of Groton, "A Brief History of Groton," http://www.townofgroton.org/main?cmd=History.

[7] Town of Groton, Assessor's Database, 2009.

[8] The two commercial projects that were permitted but not built are Crossroads Plaza at Four Corners, and 536 Main Street. Both have kept their special permits and other approvals current.

[9] This estimate includes vacant parcels with at least two acres. There are some smaller, vacant residentially zoned parcels in Groton, but not with enough land area to meet current zoning requirements. Groton also has some potentially usable land in parcels that already have a residence, i.e., existing lots with enough land to support one or more additional lots.

other legally enforceable mechanisms to preclude or delay development. It also does not include land in agricultural, forestry, or recreational use. Though many of these properties clearly have some development potential, they are not "vacant" because the land currently supports a productive or extensive use (see below). Table 7.2 reports the vacant land in Groton by degree of development potential. The future of these parcels depends largely on Groton's land use goals and zoning regulations.

Table 7.2. Acres of Vacant Land by Estimated Potential for Future Development

	Residential	Commercial	Industrial
Developable	1,167.6	22.9	0.0
Partially Developable	301.2	0.0	0.0
Undevelopable	945.4	0.0	2.8
Total	2,414.3	22.9	2.8

Source: Town of Groton, Assessor's Database and Parcel Map, 2010; Town of Groton, Land Use Department.

Note: "Undevelopable" land consists of land with no development potential due to factors such as extensive wetlands and lack of access. In some cases, "undevelopable" land may also include parcels protected in whole or in part by conservation restrictions, but this could not be determined in the assessor's database.

Agriculture, Forestry, and Recreation Land. About one thousand acres in Groton are under Chapter 61, 61A, or 61B agreements, which means the land is taxed at its forestry, agricultural, or recreational value, not fair market value. The intent of the state laws that authorize these agreements is to encourage productive and extensive land uses. Forestry properties (Chapter 61) account for just over four hundred acres and agricultural lands (Chapter 61A), about 577 acres. Available land coverage data suggest that most of the agricultural land is used to grow crops.[10] As discussed in Chapter 9, however, Groton has more agricultural activity than may be obvious if farmland is measured only by Chapter 61A acres. The town also has numerous "backyard" farms on private, and predominantly residential, properties. Finally, Groton's northwest corner has forty-eight acres of privately owned hiking trails (Chapter 61B). Unclassified privately-owned open space also exists in various locations throughout Groton, with a combined total of approximately twenty-four acres.

Public Land. The Town of Groton owns over thirty-six hundred acres of land. Much like the land held by non-profit charitable organizations, the Town's properties serve a variety of purposes, all tied in some way to the functions of local government. The Groton Conservation Commission, a major contributor to the vast open space holdings in Groton, controls and manages more than 40 percent of all Town-owned land. Other types of Town-owned land include municipal buildings and facilities, the Town Forest, and public recreation areas, e.g., athletic fields, Sargisson Beach, the Groton Country Club, and public school fields and playgrounds.

Although Groton has several recreation areas, it has very few parks: places set aside and designed, constructed, landscaped, and maintained for quiet public enjoyment. Federal, state, and county governments collectively own 690 acres, but the Commonwealth owns most of it: about 665 acres. The J. Harry Rich State Forest in the northern part of Groton is the largest state-owned property, and the Division of Fisheries and Wildlife owns a sizeable tract of land along the Squannacook River. The federal government owns the Post Office and the county owns a parcel along Groton's western border.

Regional trends

Housing growth

In the past ten years, Groton and the communities around it absorbed varying rates of new housing development. According to estimates recently released by the Bureau of the Census, the highest housing growth rate occurred in Shirley, at 23.6 percent, followed by Dunstable, Ayer, and Groton, as shown in Table 7.3. The patterns of growth and change in Groton's region are largely consistent with the westward migration of households from the Boston area, in part due to housing costs and also to the gradual relocation of employment centers to the outer suburbs. Still, Groton and most of its neighbors have seen a decline in residential growth rates compared with 1990-2000 conditions.[11]

Most of these communities have witnessed some demand for new commercial development, too, mainly Westford and Littleton, both with direct access to the region's major highways. Demand for retail and office space in Groton's area is generally weaker than in communities closer to

[10] Town of Groton, Assessor's Database, 2009.

[11] To some extent, this can be explained by the sharp decline in new-home construction that has occurred since the beginning of the foreclosure crisis. Nevertheless, it is important to note that the New England housing market was particularly hard-hit by the recession of the early 1990s, when new-home construction dropped and remained depressed until 1992-1993.

Table 7.3. Estimated Rates of Housing and Household Growth, 2000-2009

	Households			Housing Units		
Community	2000	2009	Pct. Change	2000	2009	Pct. Change
GROTON	3,268	3,516	7.6%	3,393	3,836	13.1%
Ayer	2,983	3,252	9.0%	3,154	3,582	13.6%
Dunstable	936	1,070	14.3%	944	1,077	14.1%
Littleton	2,960	3,007	1.6%	3,055	3,086	1.0%
Pepperell	3,845	4,019	4.5%	3,917	4,264	8.9%
Shirley	2,061	2,471	19.9%	2,158	2,668	23.6%
Townsend	3,092	3,266	5.6%	3,182	3,348	5.2%
Tyngsborough	3,741	3,850	2.9%	3,806	4,109	8.0%
Westford	6,836	7,073	3.5%	6,941	7,194	3.6%

Source: U.S. Bureau of the Census, Census 2000, Summary File 3, and American Community Survey (ACS) 5-Year Data, 2005-2009.
Note: the ACS is a new sample-based survey conducted by the Bureau of the Census. Actual (100 percent) housing and household counts from Census 2010 are unlikely to be published before completion of this Master Plan. The 100-percent counts may differ from the estimates reported above. However, the ACS estimate of Groton's housing units is not out of line with the number of new residential building permits issued between 2000-2009, according to other data published annually by the Bureau of the Census.

Boston and Worcester, in part due to the region's close proximity to New Hampshire. In addition, Groton and most of its neighbors function as bedroom communities with small daytime populations. Office and industrial growth, though evident in Westford and Littleton, has been remarkably limited in Groton and other small towns nearby, none of which is positioned to compete with Devens. Zoning serves as an additional impediment in these communities. This is particularly true in Groton because the town has so little land zoned for nonresidential development.

Devens

In Groton's area, few events have influenced growth and change more than the closure and redevelopment of Fort Devens as a regional employment center now known as "Devens." Acquired by MassDevelopment (formerly the Massachusetts Government Land Bank) in 1995, Devens has gradually become home to more than eighty businesses and 3,500 jobs.[12] Devens includes land in Harvard, Shirley, and Ayer, and its northernmost boundary is less than a half-mile from Groton in the southwest corner of town.

Under the state legislation that authorized MassDevelopment to acquire and develop the property (Chapter 498 of the Acts of 1993), the agency offers a variety of development incentives to lure employment to North-Central Massachusetts. In addition, Chapter 498 provides for "one-stop" or unified permitting by the Devens Enterprise Commission, a board with all of the development review and permitting powers normally held in towns by Planning Boards, Conservation Commissions, Historic District Commissions, Boards of Health, and others. MassDevelopment is responsible for providing municipal services to its businesses and residents, including public safety, public works, and public schools. In many cases, these services are actually provided through inter-local agreements with town governments in the region.

The unified permitting, development incentives, and customized financing available to prospective businesses make Devens attractive to companies in an expansion or relocation mode. Some communities in Groton's region say that while Devens has brought jobs to the area, it also has made it more difficult for cities and towns to promote their own commercial and industrial land for economic growth. Although MassDevelopment has succeeded at bringing new employment to the region, its ability to create more housing is constrained by limits under Chapter 498 and the Devens reuse plan approved by Harvard, Ayer, and Shirley in November 1994. A few years ago, MassDevelopment commissioned a new reuse plan and proposed to turn Devens into a new town. However, voters in Ayer and Harvard rejected the proposal. Among the concerns voiced at the time was the potential impact that adding more than one thousand new housing units might have on the regional housing market. Today, the long-term fate of Devens remains unclear, but MassDevelopment is actively marketing the few remaining business-zoned properties on the site.

[12] MassDevelopment, Devens Annual Report (2009), and Devens: A Community of MassDevelopment, http://www.devenscommunity.com/index.html.

Regulatory framework

Existing zoning

Zoning districts

The Groton Zoning Bylaw (ZBL) provides for eight districts, seven of which are mapped. Table 7.4 summarizes the amount of land in each district.[13] (See also, Map 7.2.)

Other than minimum lot size and frontage requirements, all of Groton's zoning districts have identical dimensional requirements, as shown in Table 7.5.

Table 7.4. Use Districts

District Name	Acres	Percent Total
Residential Agricultural District (RA)	18,489.02	85.4%
Residential Business District (RB)	5.04	0.0%
Business District (B-1)	227.07	1.5%
Manufacturing District (M)	146.81	0.7%
Conservancy District (C)	1,856.69	8.6%
Official Open Space District (O)	674.06	3.1%
Public Use District (P)	262.42	1.2%
Total	21,661.11	100.0%

Source: Town of Groton, GIS Database, Zoning.

USE REGULATIONS

The **Residential-Agricultural (R-A)** district is a very-low-density residential use district for single-family and two-family homes, both allowed by right, together with agricultural and forestry uses, which are permitted throughout the town. The Planning Board has authority to grant special permits for creative site planning options such as Flexible Development, Planned Multifamily/Residential Development, and frontage waivers for lots in a Residential Compound Plan, but Groton also requires a Major Residential Development (MRD) submission to the Planning Board for any development of six or more lots. In addition, the Board of Appeals may approve special permits for single-family to multi-family conversions (up to three units), subsidized elderly housing, and conversion of seasonal dwellings for year-round use.

The major distinguishing feature of the R-A district is its dimensional requirements. The minimum lot size is eighty thousand sq. ft. (two-acre zoning, in builder's acres), and the minimum frontage is 225 feet. These create an extremely low-density residential development pattern.

The **Residence Business (R-B)** district is a very small, low-density residential district that contains six properties with a combined total of about five acres of land, all located along Main Street and School Street in Groton Center. Though the R-A and R-B districts have nearly identical use regulations, the R-B district provides for a few business uses as well: business or professional offices, banks, and restaurants by special permit from the Board of Appeals, and custom craft shops by right. The district's minimum lot area and frontage regulations apply to residential but not business uses, which makes sense because most of the nonresidential properties do not meet current requirements.

The **Business (B-1)** district provides for retail, offices, banks, and custom craft shops by right, and other businesses such as gas stations, auto repair, commercial amusement, and hotels or inns by special permit. Located in pockets mainly along Route 119, including Groton Center, the B-1 district accounts for only 1 percent of Groton's zoned land. It has the same dimensional requirements as the R-B district, but neither the lot area nor frontage requirement applies to business uses. Residential uses are allowed in the B-1 district under the same rules

Table 7.5. Dimensional Regulations: Use Districts

	Minimum Lot Dimensions		Maximum Height			Minimum Building Setback (feet)		
District	Area (sq. ft)	Frontage (lft.)	Feet	Stories	Maximum Lot Coverage	Front	Side	Rear
R-A	80,000	225	35	3	25 %	50	15	15
R-B	40,000	175	35	3	25 %	50	15	15
B-1	40,000	175	35	3	25 %	50	15	15
M-1	40,000	175	35	3	25 %	50	15	15
C	80,000	225	35	3	25 %	50	15	15
O	—	—	35	3	25 %	50	15	15

Source: Town of Groton, Town Bylaws, Chapter 218, Zoning.

[13] Town of Groton, Town Bylaws, Chapter 218, Zoning, 2.218-12.

that apply in the R-B district. The main difference between the two zones is that the R-B district is primarily intended for residential development and the B-1 district, primarily for commercial development.

The **Manufacturing (M-1)** district provides for industrial manufacturing uses. Like the R-B and B-1 districts, the M-1 district is small—only 147 acres. The Zoning Bylaw is unspecific about the types of industrial uses allowed in this district. It refers to just two classes of industrial use: research laboratories (by special permit) and manufacturing enterprises (by right). Some commercial development is also permitted in this district, such as banks and restaurants if located near an industrial building with at least 50,000 sq. ft. of floor space, and automatic teller machines (ATM), wholesale trade, fuel storage facilities, commuter parking lots, transportation terminals, heliports, and noncommercial landing areas by special permit. The only residential use permitted in the M-1 district is a watchman's quarters, i.e., a single-family home occupied by a caretaker or security personnel for an industrial use. The dimensional standards for this district are the same as those for the R-B and B-1 districts.

The **Conservancy (C)** district was created to protect critical natural resources such as groundwater, floodplains, wetlands, wildlife, and open space. Like many Massachusetts towns, Groton established the C district before the legislature passed the Wetlands Protection Act, G.L. c. 131, § 40. Uses involving construction or site disturbance are generally prohibited in the C district, but agricultural and other uses exempt under the state Zoning Act are allowed because they must be, and some recreation uses are allowed by special permit as well. There is also a provision for single-family dwellings by special permit from the Board of Appeals, provided the site proposed for construction is not a wetland despite its inclusion in the C district.

The **Official Open Space District (O)** applies to open space dedicated or used for public or semipublic purposes. Some of the land in this district is also protected by deed or conservation restrictions. Previously the O district included both open space and municipal facilities, but in 2001, Town Meeting created the Public Use (P) district and rezoned all of the municipal facilities, thus making activity in the O district more consistent with its stated purposes. The O district allows recreational uses (excluding golf courses) and some agricultural uses, but generally any use involving construction or site disturbance is prohibited.

The **Public Use (P)** district provides for a variety of public facilities. As noted above, this district includes land formally located in the O district. Municipal buildings and facilities, public utilities, cemeteries, and outdoor storage of fuel products are allowed by right, while community clubs, hospitals, subsidized elderly housing, windmills, meteorological towers, large-scale wind energy conversion devices, and parking facilities may be allowed by special permit.

The **Open Space-Agricultural (OS-A)** district was created in 2003, but it never served its intended purpose and the Town never placed any land in it.

OVERLAY DISTRICTS

Floodplain Overlay District (FOD). The boundaries of the Floodplain Overlay District are based on Groton's Flood Insurance Rate Maps (FIRM) and the Flood Boundary and Floodway Maps, which the federal government recently updated and revised. The district prohibits new construction within the one hundred-year floodplain.

Water Resource Protection Overlay District (WRPOD).[14] Groton's Water Resource Protection Overlay District consists of three sub-districts (WPD I, WPD II, and WPD III), each with special regulations designed to protect public water supplies. WPD I applies to land surrounding a well or wellfield, defined as the protective radius ("Zone I") required by the Massachusetts Department of Environmental Protection (DEP) as a condition of permitting a public drinking water supply. The boundaries of WPD II correspond to two areas regulated by DEP: a well or wellfield's "Zone II," or the areas from which an operating well draws water under stress pumping conditions, and the Interim Wellhead Protection Area for wells that do not have a designated Zone II. The third sub-district, WPD III, includes the watershed of each DEP Zone II.

The hierarchy of sub-districts matters because it assumes declining degrees of risk to drinking water wells, which is why each sub-district has different use regulations. Since DEP imposes very strict limits on activity within Zone I/WPD I, the rules most likely to affect Groton property owners are found in WPD II and WPD III. Regardless of the underlying zoning, the WPD II and III sub-districts prohibit a wide range of uses with the potential to contaminate drinking water, from manufacturing or disposal of hazardous materials to landfills, auto junkyards and storage facilities, commercial car washes, gas stations, storage of road salt, and dry cleaning operations and re-

[14] The Zoning Bylaw occasionally refers to the WRPOD as the Primary and Secondary Water Resource Protection Districts. The version discussed in this chapter reflects amendments through April 28, 2008.

tail dry cleaning establishments. Some uses prohibited in WPD II may be allowed by special permit in WPD III, however, e.g., dry cleaning establishments, earth removal, underground storage of fuels, or stockpiling snow. In both sub-districts, the only use permitted by right is a single-family dwelling.

Recreational Overlay District (ROD). This small overlay district applies only to the Town-owned Groton Pool and Golf Center (formerly the Groton Country Club) on Lover's Lane. Town Meeting established the district in order to create regulations that would allow the land to be used as a multi-purpose recreation area with related facilities such as a restaurant or store.[15] The regulations include procedures for adding more land to the district, but the Town has not expanded it.

Town Center Overlay District (TCOD). Established in 2007 as the Station Avenue Overlay District and renamed the Town Center Overlay District in 2011, the TCOD is based on planning for the reuse of the Station Avenue area in Groton Center. The district provides for civic, residential, and commercial uses (or a mix thereof) by special permit in addition to uses permitted in the underlying R-A, R-B, B-1, and P districts. Uses specific to the TCOD include:

- Small-scale retail store or service establishments.
- Business or professional offices.
- Restaurant or other place for serving food, but not including drive- through service windows.
- Mixed-use development consisting of two or more of the above-listed uses.
- Mixed-use/residential development consisting of one or more of the above-listed uses together with duplex dwellings and/or multifamily dwellings.[16]

Other Provisions and Requirements

Off-Street Parking. Groton requires quite a bit of off-street parking for some classes of land use. Providing adequate parking is appropriate, but too much parking consumes excessive amounts of land and increases impervious cover, which in turn generates polluted runoff. Although small businesses need convenient parking for their clientele, high parking requirements can be a significant burden for them. Some examples of high or very high parking requirements in Groton include:

- Office uses: minimum of two spaces plus one space per each 180 sq. ft. of gross floor area (GFA).
- Retail uses: a minimum of one space for 250 sq. ft. GFA.
- Restaurants: minimum of five spaces, plus one space for every two persons seating capacity as determined by the State Building Code.
- Medical, dental, or other health office: a minimum of six spaces plus one parking space for every 125 sq. ft. GFA area in excess of 500 sq. ft.
- Wholesale and industrial establishments: one parking space per 1.3 employees on the largest shift, with expansion capacity to not less than one space per 250 sq. ft. GFA.

Appearance. Section 218-24 of the ZBL contains two noteworthy provisions: "avoidance of uniformity" and "promotion of harmonious development." Adopted in the late 1970s, both provisions represent an early effort to prevent monotonous residential development and ensure aesthetically pleasing commercial development. The avoidance of uniformity provision prohibits the issuance of a building permit for a single- or two-family dwelling if it is "substantially like" any building on an abutting lot or across the street. The bylaw defines "substantially like" as being the same in more than three of a list of physical qualities, including the height and length of the main roof, width of the building, location of windows, or location of a garage or porch.

It is unclear how this review is done or by whom, or what appeal process is available to an applicant aggrieved by the decision of the reviewing authority. The promotion of harmonious development applies to new structures in the R-B, B-1, or M-1 districts and requires submittal of plans for the location and external appearance of a building, which the Planning Board then reviews and approves, approves with conditions, or disapproves. The ZBL does not state any criteria to guide the Planning Board's decision, however.

Site Plan Review. Groton requires Site Plan Review (SPR) by the Planning Board for new commercial, industrial, institutional, or multifamily construction and substantial alterations to existing nonresidential structures. Section 218-25 establishes three tiers of review, scaled to

[15] Michelle Collette (Town Planner, Town of Groton, MA), interview by Community Opportunities Group, Inc., November 24, 2010.

[16] Town of Groton, Town Bylaws, Chapter 218, Zoning, ss. 218-18.D.

the size of a project. Level I applies to projects with fewer than five parking spaces or up to one thousand sq. ft. of additional gross floor area. The submittal requirements are fairly simple and do not require professionally prepared plans. Level II site plan review applies to projects with six to forty new parking spaces or one to five thousand sq. ft. of additional gross floor area. Applicants for Level II approval must file a site plan prepared by a registered design professional with storm drainage calculations, a landscaping plan, a professionally prepared assessment of traffic and safety impacts, an existing conditions plan, and a development impact report if requested by the Planning Board. The most rigorous requirements apply to Level III site plan review, which includes all Level II the submittal requirements plus architectural plans and elevations, an analysis of the consequences of the proposed development, and a scale model (although this may be waived by the Planning Board). Level II and III reviews require a special permit, even if the proposed use is permitted by right.

Some of Groton's site plan criteria are fairly prescriptive, others are unspecific, and still others are not integrated as well as they could be with other local requirements. For example, there is little specification for lighting impacts for new projects either in the zoning text itself or in the Planning Board's Site Plan Review Regulations, yet there is great concern about lighting in Groton. In addition, while the site plan review criteria require no net increase in stormwater runoff, they do not yet reflect Groton's fairly evolved policy on stormwater and Low Impact Development (LID).[17]

Flexible Development. Groton established Flexible Development in 1980 in order to provide an alternative to standard residential subdivisions. The Flexible Development bylaw has been amended several times, most recently in 2003. It applies to parcels or contiguous parcels in the R-A district, and there is no minimum land area requirement to qualify for approval. The bylaw provides for divergence from R-A dimensional rules and standard subdivision requirements in the following two ways:

- Allowing alternative site planning and design through a five-step variation on the four-step process typically found in Open Space-Residential Development (OSRD) bylaws. Groton's process requires an inventory of existing site features; consideration of larger site context; designation of contiguous open space for preservation; designation of development areas; and delineation of lot lines. At least 35 percent of the site must be set aside for open space (not including wetlands) that serves conservation, historic preservation, outdoor education, recreation, and similarly beneficial and low-impact public purposes.

- Encouraging applicants to modify the lot size and shape and other dimensional requirements to attain the objectives of the bylaw.

A Flexible Development may include single-family, two-family, and multi-family dwellings with up to five units. The bylaw does not allow an increase in the number of units that could have been built under conventional zoning through the alternative design, and applicants must submit a yield plan to prove what a conventional plan could support. However, a Flexible Development may receive density bonuses for public benefits such as additional open space, housing for persons over the age of fifty-five, and transfer lots (see "Transfer of Development Rights" below). For projects with more than ten units, a 15 percent affordable housing requirement applies. The affordable units are in addition to the number of units attainable in a conventional plan.

Major Residential Development (MRD) applies to three types of development: the creation of six or more residential lots, the creation of more than two lots with driveway access onto a street existing at the time the lots were created, and more than one lot with construction less than two hundred feet from an existing street. Under any of these circumstances, applicants must apply to the Planning Board for a special permit and submit both conventional and alternative development plans.

Depending on the number of lots involved, the alternative plan must include either a shared driveway or hammerhead lot, a Residential Compound subdivision plan, or a Flexible Development plan. In addition to the comparison development plans, the Planning Board may require an economic impact analysis, data or descriptive materials describing the proposed development, and other information. After reviewing the application, the Planning Board has authority to decide which plan best promotes a range of broad objectives, including traffic and pedestrian safety, economic impact, preservation of recreational facilities and natural resources, housing for special populations, and alignment with the goals set forth in the Groton 2020 Master Plan. The effect of the MRD bylaw is that no land in Groton can be divided into more than five house lots (or less, depending on the type of application) without a discretionary special permit from the Planning Board.

Concept Plan Approval. Concept Plan Approval requires a two-thirds vote of Town Meeting before the

[17] For additional discussion, see Chapter 3.

Planning Board can grant a special permit for Planned Multifamily/Residential Development or Major Projects: business or manufacturing uses with fifteen thousand or more sq. ft. of gross floor area, a footprint of over five thousand sq. ft., or additions that increase the floor area of an existing structure by five thousand sq. ft. or more. This means that an otherwise permitted business use requires not only a special permit due to the size of the project, but also pre-approval by Town Meeting in order to be eligible for the special permit. As specified in the ZBL, the concept plan is an extensive submittal: a schematic development plan, floor plans for proposed structures, development program, market analysis, project schedule, and impact analysis. If approved by Town Meeting, the concept plan becomes the basis for granting a special permit for the project.

The relatively low size threshold and extremely uncertain and risky process of subjecting proponents and their projects to Town Meeting make Concept Plan Approval a significant barrier to commercial, industrial, and multifamily housing development. It is not clear whether the primary intent of Concept Plan Approval is to set high standards for project planning, to secure buy-in from residents at Town Meeting, or to discourage both multi-family housing and moderate- and larger-scale nonresidential uses.

Transfer Lots/Transfer of Development Rights. Although not referred to as Transfer of Development Rights (TDR) in the ZBL, Groton's provision for Transfer Lots amounts to a TDR program. A transfer lot is a parcel at least eighty thousand sq. ft. with special visual, ecological, agricultural, or recreational value, though it may not be wetlands. The parcel may be used to establish a density bonus of two units in a Flexible Development. Additionally, establishing a Transfer Lot allows up to six additional units per year over the amount allowed under the Development Rate Limitation bylaw. This provision was adopted in 1980.

Development Rate Limitation. Groton adopted a Development Rate Limitation bylaw in 1980 in order to control the rate of new housing growth. Like other growth phasing bylaws, Groton's is not designed to reduce the overall build-out potential of the town. Rather, it attempts to calibrate the rate of development with the town's capacity to provide services and infrastructure for its growing population. The bylaw directs the Building Inspector to issue permits for single- or two- family homes only if their construction brings the town-wide total of new dwelling units to fewer than 120 units within the previous twenty-four months, *or* results in ten or fewer new dwelling units in a single project. Some exceptions apply, however. A Transfer Lot qualifies a developer for an additional six units above the 120-unit cap. Also, a developer can add two more units than otherwise allowed simply by using the Flexible Development process. In addition, the Board of Appeals may authorize more rapid development for housing that will have a minimal impact on public services or will address unmet housing needs in the community, e.g., affordable housing.

The Development Rate Limitation bylaw directs the Planning Board to report to Town Meeting every five years on the bylaw's effectiveness. In response to the Planning Board's comments, Town Meeting may extend, change, or eliminate this provision.

Concept Plan Approval: Opportunity or Barrier?

The relatively low size threshold and extremely uncertain and risky process of subjecting proponents and their projects to Town Meeting make Concept Plan Approval a significant barrier to commercial, industrial, and multifamily housing development. It is not clear whether the primary intent of Concept Plan Approval is to set high standards for project planning, to secure buy-in from residents at Town Meeting, or to discourage both multi-family housing and moderate- and larger-scale nonresidential uses.

Other land use controls

Subdivision regulations

The Massachusetts Subdivision Control Law (G.L. c. 41 § 81K-GG) gives local planning boards the power to adopt and administer regulations governing the subdivision of land. The scope of subdivision control primarily consists of roadways, drainage, and utilities, the intent being to ensure that lots have adequate access and that new roadway construction does not displace drainage to other nearby properties. Groton first adopted subdivision regulations in 1950, soon after the first Planning Board was established in 1948. The regulations are now located in Chapter 381 of the Town's General Bylaws. They were

recodified in 1990 and substantially revised in 2003. The Planning Board's subdivision regulations include standards and requirements for the following areas:

- General site design, including minimization of development disturbances, street hierarchy and layout, lot configuration, access, provision of open space, and wetlands protection.
- Street location, alignment, and standards for width and grade, and right of way.
- Specifications for stormwater and drainage infrastructure.
- The provision of municipal services such as water, electricity, fire protection, and sewerage.
- The provision of, street trees, curbing, and signage.
- Specifications for the provision of easements.

Future development potential

Residents of small towns often want to know what their community's future population will be, but the more important questions have to do with the community's potential for growth and where growth is likely to occur. Future development involves changes in land use, whether for homes, businesses, schools, roads, or other purposes, both public and private. While new residential development does accommodate population growth, the number of dwelling units required to house a given population will increase more rapidly than the rate of population growth as households become smaller and non-family households increase. In fact, this is what happened in many Massachusetts towns during the last decade.[18]

A community's future development potential is largely determined by the physical characteristics of its land, its zoning requirements, and provisions for wastewater disposal. Despite Groton's relatively large total area, its capacity for new development is not as great as people may think - assuming what can be done as of right under existing zoning. Table 7.6 provides an estimate of the number of single-family house lots that could be developed at some point in the future, given the amount of vacant land that remains in Groton, together with "surplus" land in existing single-family parcels, i.e., land in excess of the acreage required for a conforming lot. Map 7.3 illustrates the locations of vacant and underutilized land in Groton today.

If the total number of housing units increased by 1,956 single-family homes, Groton's future housing inventory would include about 5,500 units: an increase of 55 percent over existing conditions. For three reasons, however, the actual outcome could be somewhat higher:

- Some developments built under special permits will qualify for modest density bonuses, e.g., developments that save open space in transfer lots;
- Some of the land included in Table 7.6 may be developed with Chapter 40B comprehensive permits, so the land will yield more units than could be built under existing zoning; and
- Groton has existing properties with redevelopment potential, and the land associated with them is not included in Table 7.6. If redeveloped for multi-family purposes, these properties will have more units than could be built in a conventional subdivision or flexible plan development on the same amount of land.

Regardless of the type of land use - residential, commercial, or industrial - total or "gross" future growth projections can mask critical development impact considerations that have less to do with quantity than quality. For example, if the seventy-four senior housing units at River Court Residences had been constructed as free-standing single-family dwellings, they would occupy some 135 acres of land instead of the 8.5-acre site where the converted mill building is located. The very low-density zoning that governs residential development in Groton may keep total growth down, but it also means that a large amount of land is used to support human activity.

Among the consequences of this framework is fragmentation of Groton's open spaces and wildlife habitat. As the Massachusetts Audubon Society reported in the third edition of *Losing Ground: At What Cost?*, Groton had the Commonwealth's sixth highest rate of land consumption per new dwelling unit between 1985 and 1999.[19] The Town will need to consider the types of development patterns it wants to encourage in order to house its present and future population, and the environmental and social consequences of each available option. The maps that accompany this chapter of the Master Plan suggest

[18] Detailed population, household, and housing growth statistics for Groton and the surrounding towns are reported in Chapter 8 of this plan.

[19] Massachusetts Audubon Society, *Losing Ground: At What Cost?* (November 2003), 11.

Table 7.6. Estimated Residential and Commercial Development Potential: Groton

	Land Area (Sq. Ft.)			
Use Class	Gross Area	Area with Limited or No Constraints	Net Developable Area	Development Potential (Lots or Sq. Ft.)
Residential Development				
Existing Lots > 5 Acres	132,879,780	95,673,442	84,192,629	1,052
Vacant Land Parcels				
Developable > 2 Acres	50,860,656	40,330,897	36,297,807	454
Partially Developable > 2 Acres	11,347,380	5,673,690	5,106,321	64
Accessory > 5 Acres	1,772,892	709,157	638,241	8
Chapter 61 > 2 Acres	17,502,408	13,126,806	11,814,125	148
Chapter 61A > 2 Acres	26,872,164	18,810,515	16,929,463	212
Chapter 61B > 2 Acres	2,234,628	1,675,971	1,508,374	19
Total Residential Lots				1,956
Commercial				
Developable >2 Acres	997,524	498,762	448,658	125,688

Source: Groton Assessor's Parcel Database, Applied Geographics, Inc., Assessor's GIS Parcel Map, MassGIS, and Community Opportunities Group, Inc.

Notes:

(1) "Gross Area" is the sum of the area in all parcels in each class of land, expressed in sq. ft.

(2) "Area with Limited or No Constraints" includes land without steep slopes and that is relatively free of wetlands. It represents anywhere from 40 to 80 percent of "Gross Area," depending on the class of land and the location of the parcels included in each class.

(3) Net Area is land assumed to be available for new house lots or construction of commercial space, net of land allocated to roads and odd lot configurations.

that Groton's physical evolution can be guided to accommodate growth while safeguarding the landscape systems that contribute to the town's beauty.

GREEN INFRASTRUCTURE ASSESSMENT (MAP 7.4)

The Green Infrastructure Assessment Map synthesizes data from several maps in Chapters 3 and 4. It illustrates a planning approach that is based on protecting **functional landscape systems**. It also shows how systems of different types are woven together to create some of Groton's most dynamic and significant landscapes. By protecting Groton's town-wide green infrastructure, residential and business growth can continue in a manner that does not compromise the ecosystems, rural character, and economic value embodied by these landscape systems. In addition to helping Groton set priorities for conservation and recreational development, the Green Infrastructure Assessment helps to illustrate another aspect of Groton's character: the most interesting and vibrant landscapes are those where natural features of woods, streams, ponds, and marshes are tightly woven into the cultural fabric of country roads, farms, and villages.

Linked strategies and actions that can accomplish multiple goals in preserving these landscapes should be a high priority in Groton, especially where critical for protecting functional elements of natural or cultural systems. Two areas that stand out as dynamic natural/cultural landscape compositions are the James Brook Valley and the Nashua River corridor north of West Main Street. In both areas, conservation of almost any property can ensure survival of important habitat, set aside farmland against future need, and provide room for hiking trails.

GREEN INFRASTRUCTURE PLAN (MAP 7.5)

The Green Infrastructure Plan suggests options for providing a functional network of Green Infrastructure as Groton continues to develop. It identifies unprotected areas that contain both natural and cultural resource systems as well as important recreational opportunities. The priority areas include:

- **West Groton Village and its landscape context:** Centered on the historic district, this area extends a mile north and south along the Squannacook River to include the Blood Farm and undeveloped woodlands that, if preserved, would link West Groton to both the Town Forest and the Throne.

- **The Nashua River corridor:** Extending from West Main Street north to the bend of the Nashua River at the Pepperell town line, this area includes riparian habitat along the river, significant farmland, and key trail connections – including the possibility of reus-

ing the historic Fitch's Bridge for a pedestrian crossing.

- **Longley Road/Chicopee Row:** This area preserves a rural gateway on the north side of Groton Center, and includes Groton Cemetery, the Williams Barn, and Shepley Hill. It makes an important open space connection from the Nashua River Corridor to the east side of Chicopee Row.

- **Reedy Meadow/Unkety Brook valley:** This is another key east-west corridor across the north end of Groton. It incorporates a rich landscape of forest, swamp, riparian corridor and orchards, and could contain trails connecting the Nashua River to the High School and east across Chicopee Row to the lands of the New England Forestry Foundation.

- **Farmers Row:** This area is well known and loved as the rural southern gateway to Groton Center and home of the Groton School campus. With the preservation of the Surrenden Farm, the south end is secure, but the corridor north to the town center could still be subject to future land use change.

- **James Brook corridor:** While much of the upper reaches of James Brook are in conservation, its visual and ecological qualities are threatened by fragmentation.

- **Old Ayer Road:** The southern reach of the James Brook and Old Ayer Road includes farms, orchards, historic sites, woodlands, and riparian corridor that together embody the charm of Groton's rural landscape.

- **Martins Pond Brook and Lost Lake/Knops Pond:** Including part of the Town-owned Brown Loaf property, this corridor connects Martins Pond to Lost Lake/Knops Pond and includes the historic village. Its forested context would provide for an east-west trail connection.

Issues

Groton's village boundaries and identities need better definition. Through both historical precedent and current community sentiment, it is clear that the future of Groton's villages is a high priority for the town. Groton Center, West Groton, and the Lost Lake area are established villages, with historic value and relatively defined and built-out development patterns. Four Corners is an emerging village whose form and function need better definition. While Groton residents seem to have general agreement about what the villages are, the geographic extent of each village is less clear. The village realm could be established by examining comfortable walking distances from a center (for example, a quarter mile), but this may not be suitable for each place. Conducting a separate planning exercise, with community input, could better help establish boundaries for the villages.

Groton's villages share a common set of issues. They include:

- Lack of a mixed-use zoning provision in the villages.

- Pedestrian facilities that could be improved, with bump-outs, refuges, and clear, safe crosswalks.

- Onerous, obsolete, or insufficient zoning for business development.

- Lack of housing at intensities sufficient to bring more activity to the villages.

Groton needs better development control and guidance for commercial development. Both the town's existing regulations and community input for this Master Plan demonstrate Groton's concern for the scale and aesthetics of new commercial development. The Land Use Working Group for this Master Plan cited poorly designed commercial development - especially strip commercial development - as a primary concern as Groton continues to evolve. Adjusting existing regulations and creating new guidance for more development control will be key to addressing this need.

Groton needs to update its development controls for residential development. Like commercial construction, Groton wants more control over the general form and aesthetics of residential development. This sentiment is not new—it occupies a central place in Groton's concept of "rural character," which has been a cornerstone of planning efforts since the 1960s. The desire for development control is also evident in Groton's zoning, e.g., the "avoidance of uniformity" and "promotion of harmonious development" clauses in § 218-24. However, regulatory measures such as these present many issues because they are either too vague (as with the uniformity and harmonious development provisions) or discretionary and unpredictable. Like commercial development, clear regulations and guidance over the kind of residential development Groton wants (or does not want) will be necessary to ensure both the town's desired outcome and fairness to applicants and developers.

Upcoming infrastructure projects may override land use planning goals. Groton has large areas that are not served by public water and sewer. Currently, the Town is planning for sewerage in the Lost Lake area, and many residents think West Groton needs public sewer service, too.[20] However, introducing sewer service unlocks development potential. This may be welcome in some areas, but it is important to have land use regulations that ensure new development will be Groton-sensitive in scale and character.

Groton's future growth and development goals require zoning changes to support them. Adjusting Groton's Zoning Bylaw to accord with the town's development goals will be very challenging because so many existing land use policies make development quite difficult. Although discouraging new development may seem consistent with Groton's interests, an effective plan for sustainable, context-sensitive development must wrestle with and resolve fundamental questions about social fairness and economic prosperity in concert with protecting natural resources. Key zoning issues include:

The Zoning Bylaw needs to be aligned with Groton's growth and development goals.

Adjusting Groton's Zoning Bylaw to accord with the town's development goals will be very challenging because so many existing land use policies make development quite difficult. Although discouraging new development may seem consistent with Groton's interests, an effective plan for sustainable, context-sensitive development must wrestle with and resolve fundamental questions about social fairness and economic prosperity in concert with protecting natural resources.

- **Business Use Regulations.** The commercial and industrial zoning districts (R-B, B-1, and M-1) have very little land and vague (if not obsolete) use regulations that do not align with Groton's economic development goals.

- **Site Plan Review.** The Site Plan Review process imposes heavy submittal requirements on fairly small projects. The size thresholds for Level I, II and III applications need to be revisited. In addition, the Site Plan Review criteria could be more specific, particularly for elements such as lighting. Furthermore, the criteria do not specifically require a LID approach to new development, a policy that is present in other town regulations. Finally, due to the small size of projects eligible for Level I review, the process should be streamlined.

- **Concept Plan Approval.** The Major Project and Concept Plan Approval provisions create serious barriers for new commercial and industrial development and any sizeable multi-family housing development. Both components need to be reassessed if Groton wants to encourage economic development and expand housing choices. Moreover, the Concept Plan Approval requirement should be reviewed by Town Counsel for consistency with case law.

- **Major Residential Development (MRD)** also needs to be reviewed by Town Counsel for consistency with recent case law. Groton's MRD bylaw is virtually identical to one overturned by the Massachusetts Appeals Court in Wall Street Development Corp. v. Planning Board of Westwood, 72 Mass. App. Ct. 844 (2008).

- **Planned Multi-family/Residential Development (PRD)** could help to provide a wider range of housing choices in Groton, but in its current form, the bylaw will remain ineffective for meeting the town's sustainability needs.

- **Flexible Development.** Groton's existing Flexible Development bylaw has several positive characteristics. It is similar to many of the Open Space-Residential Development (OSRD) bylaws found throughout the Commonwealth. Groton has options to make Flexible Development a more attractive tool for developers, even if the bylaw is uncoupled from MRD, but the trade-offs would most likely involve some additional incentives.

- **Dimensional Regulations; Business Development.** Groton's zoning does not impose minimum lot size or frontage requirements on nonresidential uses, but all other dimensional requirements (height, maximum lot coverage, and setbacks) are the same for all uses in all districts. These uniform requirements do

[20] Infrastructure, including water and sewerage, is further discussed in Chapter 10.

not account for different types of buildings in different parts of town. For example, for smaller businesses in village or partially residential areas, reducing the front setback requirement might allow a local business to fit in better with its surroundings. Though Groton has created other regulations and processes to control the scale and form of development (notably, Concept Plan Approval), the dimensional standards in each use district should express the type of development the town wants and should also relate rationally to the purposes for which a lot will be used. Many of the older, small lots in areas zoned for business do not comply with the present front setback requirement; if they did, Groton Center would not look at all as it does today.

- **Dimensional Regulations; Residential Development.** The present minimum lot frontage regulations in Groton's residential districts (Article IV) are among the most non-sustainable aspects of the Zoning Bylaw. The town may have adopted large frontage requirements in order to reduce its overall development potential or to create new neighborhoods with a semi-rural appearance. However, the effect of requiring so much frontage per lot is an inefficient, sprawl-like development pattern with longer-than-necessary streets and more impervious surfaces to serve new homes. Moreover, separating homes with 225 feet of frontage and setting them back from the road by fifty feet is not rural development. Instead, it spawns highly consumptive land use and high water use per capita (to maintain large yards).

  The MRD process, requiring new developments with three to eight units to be submitted as a Residential Compound Plan or larger developments to be submitted as a Flexible Development Plan, was probably seen as a way to create better projects without disturbing the very low-density standards embedded in Article IV of the Zoning Bylaw. However, the *Westwood* decision (2008) raises serious questions about the future of Groton's MRD bylaw. The Town's strategy for mandating sensitive site planning is most likely unenforceable should a developer decide to appeal. Groton needs to explore new options *now*.

- **Off-Street Parking.** The existing off-street parking requirements need to be overhauled, especially for business uses. Requiring large amounts of commercial parking places a heavy burden on small businesses and increases polluted runoff, and it is extremely land consumptive, which limits design options. If Groton wants aesthetically pleasing business development that fits with the more compact development patterns in its villages, the off-street parking requirements should be revised, including a variety of options for developers to comply with.

- **Mixed Uses.** Groton's zoning lacks a mixed-use provision except in the Town Center Overlay District. This is especially challenging for development of the town's villages. Vertical mixed-use development - especially residential over retail - is critical for places like the villages. It creates more housing opportunities, supports a compact development pattern, and adds vitality because people can live, work, and obtain goods and services all in one place. The Zoning Bylaw needs to provide for construction of mixed-use buildings to enable the compact, walkable villages centers the town desires.

- **Rate of Development.** Groton's Development Rate Limitation bylaw was implemented in a time of high growth. However, the market for housing has cooled considerably and it is not likely to regain the levels of production attained in the recent housing boom. Moreover, this growth control technique may not align with Groton's housing goals.

- **Districts.** Groton has some potentially obsolete zoning districts, notably the Conservancy (C) and Open Space-Agricultural (O-A) districts, as well as the Recreational Overlay District. While these districts may have served Groton well at their inception, their value today is questionable at best. This is particularly true for the O-A district, a "text-only" district with no geographic identity on the Zoning Map.

Open Space

Despite Groton's abundant open space, there are few landscaped parks designed for quiet enjoyment. Much of the town's existing open space is conservation land protected in perpetuity, which makes sense given the relationship between properties owned by Groton and its non-profit partners and the natural resources each property is designed to protect. However, communities need a variety of open space and recreation opportunities, yet in Groton, the existing open space framework is oriented toward natural resource protection, passive recreation, sports, and outdoor play. Residents say that reflective green spaces or contemplative gardens could be created behind the Prescott School, by Tarbell School, and near the Senior Center by the Squannacook Rod and Gun Club. Providing these types of opportunities will require a broad base of support and public funding.

Goals and recommendations

GOAL: PROMOTE A SUSTAINABLE LAND USE PATTERN IN GROTON BY ENCOURAGING VIBRANT, MIXED-USE, AND VISUALLY DISTINCT ACTIVITY CENTERS IN THE TOWN'S VILLAGES. (SEE ALSO, MAP 7.6: FUTURE LAND USE.)

Recommendations:

- **Define the boundaries and roles for each village.** Groton should undertake a concerted planning effort to define both the physical boundaries of the villages, and the role each will have in Groton as the town continues to evolve. This will be important not only to foster general understanding and consensus for what the villages are, but also to provide a foundation for other policies. For example, establishing general boundaries for the villages will be important if the Town wishes to create design guidelines that apply to certain areas. This planning effort should incorporate as much community input as possible to define the village boundaries.

- **Create specific plans for each village to shape growth.** Since the initial wave of town planning in the 1960s, towns like Groton have achieved many of their initial town-wide development goals, but their policies are increasingly ineffective at managing the change at the village level. After Groton has defined village boundaries, the Town should consider creating individual plans for each area. These could include aspects such as the type of business or commercial presence each village should have, and also provide a foundation for creating design guidelines for each village. (See discussion of design guidelines, below.)

- **Plan and provide for additional housing density in each village.** Increasing the amount of allowed housing density is a critical part of developing and enhancing Groton's four villages. One way to do this would be through an overlay district that allows additional residential uses beyond what is permitted in the underlying use district. Adding a mixed-use provision to the Zoning Bylaw would also provide additional housing opportunities in the villages. (See zoning recommendations, below.)

- **Establish land use policies that encourage greater connectivity and promote use of alternative transportation modes, and identify existing and former railroad right-of-ways for acquisition and use for alternative modes of transportation.** Groton was instrumental in creating the highly successful Nashua River Rail Trail is now pursuing construction of the Squannacook River Rail Trail. Known as "rails-to-trails" projects, these endeavors have a substantial land use component because they usually require towns to identify, negotiate, and in most cases, acquire parts of the right-of-way to create the trail. This process is often long and complicated, so to pursue this type of project Groton needs to be organized and strategic. The Town should start by identifying and prioritizing parts of former railroad right-of-ways for acquisition. This could involve creating a land parcel database and will certainly require ongoing community outreach and one-on-one negotiations with property owners.

- **Make Groton's villages are comfortably walkable.** While Groton wishes to connect the entire town with pedestrian facilities, this is especially crucial in the villages. The Town needs to ensure there are adequate pedestrian facilities, including sidewalks, crosswalks, ramps, and where necessary, traffic signals. (See also, Transportation Element).

GOAL: COORDINATE LAND USE AND INFRASTRUCTURE PLANNING.

Recommendation:

- **Consider Groton's capital improvements plan in all relevant land use planning efforts. Infrastructure installation often encourages development.** For example, bringing public water or sewerage to a new area not only provides a new public service, but may also act as a catalyst for growth. In this way, planning for infrastructure can have dramatic land use consequences. In this way, planning for new infrastructure *is* land use planning.

  The Land Use Department needs to be at the table for any discussions about future infrastructure and public facilities, including annual preparation of Groton's Capital Improvements Plan. Decisions about the location of new infrastructure should not be made without consulting a land use map for future development and referring to the Town's Master Plan. Furthermore, addressing local interests in new facilities such as reflective green spaces will require investment by the Town and should be integrated within the Capital Improvements Plan.

GOAL: ESTABLISH DESIGN GUIDELINES THAT ENCOURAGE CREATIVE, THOUGHTFUL DESIGN IN COMMERCIAL AND MULTI-FAMILY DEVELOPMENTS.

Recommendations:

- **Create and adopt design guidelines for commercial construction and multi-family housing.** To attract new development that is consistent with the general form and style of the surrounding area and overall community, Groton should adopt design guidelines to influence the form and aesthetics of different types of development in different parts of town. Design guidelines may be created for an area or a type of development. Area design guidelines would be fitting for Groton's villages (see below).

  However, Groton has also expressed specific concern over the appearance of commercial construction and multi-family housing, which suggests that design guidelines by development type might be more appropriate. The Town should think carefully about its interest in multi-family development design guidelines. Currently, there is little to no opportunity for serious multi-family residential development due to regulatory constraints. Unless Groton intends to loosen these regulations and allow (or better yet, encourage) more multi-family construction, it makes little sense to create design guidelines for this type of development. Groton will need to consider which areas should be subject to design guidelines and what aspects of the built environment the guidelines will address (e.g. form, massing, scale, architectural detail, materials).

- **Consider creating design guidelines for each of Groton's villages.** To control the aesthetics of development in Groton's villages, Groton could create village design guidelines. The guidelines could apply to all villages or be different for each. If the Town also creates commercial and multi-family design guidelines, care should be taken to ensure the guidelines to do not conflict. Additionally, in Groton Center, the design guidelines would need to be coordinated with any Historic District Guidelines that are created.

- **Establish a design review process.** In addition to creating design guidelines, Groton will also need to consider how they will be administered. One option would be to establish a Design Review Committee to administer the guidelines or to conduct an advisory review as part of the Planning Board's Site Plan Review process. The Town could also designate an existing board or committee to conduct the review. The process should be well-integrated with the existing development review procedure to ensure a timely, clear, and predictable process for all applicants.

GOAL: ENSURE GROTON'S ZONING BYLAW SUPPORTS AND IS CONSISTENT WITH OTHER MASTER PLAN GOALS.

Recommendations:

- **Business Districts.** When the Planning Board updated the 2002 Master Plan, a key component of its work plan was an economic development strategy for the town. While zoning is only one aspect of building a stronger local economy, zoning can facilitate economic development or frustrate it. If Groton wants to encourage economic development, it has to provide adequate land, articulate clear use regulations, and establish dimensional regulations that acknowledge the needs of the business community. For example:

  - *District Boundaries.* Groton could expand the R-B, B-1, and/or M-1 districts to allow more business opportunities. However, the B-1 district is a blunt tool that assumes all business-zoned areas are the same, but they are quite different. A more appropriate strategy would be to replace the existing B-1 district with a business district designed for each village area, i.e., a Groton Center Village District, a West Groton Village District, a Four Corners Village District, and a Lost Lake Village District. The use and dimensional regulations that apply in each district should relate to the unique conditions in each area and be conscious of community-wide economic development goals.

  - *Use Regulations.* The Zoning Bylaw should reflect the types of businesses the town wants rather than controlling so many uses through special permits. Groton can broaden and refine the list of allowed business and manufacturing uses to achieve its economic development goals. Furthermore, some provision for mixed-use development should be available in all village business districts at a density tailored to each village.

  - *Dimensional Regulations.* Groton should revise the dimensional regulations for nonresidential uses in the R-B, B-1, and M-1 zoning districts, though as stated above, the dimensional regulations in each village should be crafted to respond to unique local conditions. While the Town already exempts business uses from minimum lot area and frontage standards, the front setback

and lot coverage standards are unrealistic. New standards should be informed by a visual and technical analysis of Groton's historic and existing land use patterns, consultation with developers, landscape architects, and engineers, and a public consultation and information process. In addition, the Town should have a minimum open space ratio for business development and regulate the placement of open space on commercial lots.

- *Site Plan Review.* Groton should change the Level I-Level II size thresholds so that Level I applications can be made for alterations and expansions of up to two thousand sq. ft., which in turn would form the entry standard for alterations requiring Level II review. However, another (and perhaps better) way to set Level I/II size thresholds for additions and alterations would be some percentage of increased floor area over the existing conditions on a lot (e.g., 50 percent of the existing floor space) or two thousand sq. ft., whichever is less. In addition, the Level I process should be conducted and administered by professional staff rather than the Planning Board because the projects are so small. The new construction standard for Level II reviews should be increased from a maximum of five thousand sq. ft. to ten thousand sq. ft., which means that projects exceeding ten thousand sq. ft. would require a Level III review.

In addition, the Site Plan Review criteria for lighting should be updated and clarified, and Groton's LID policy should be specifically incorporated within the bylaw. Finally, requiring an analysis of infrastructure and facilities impact should be limited to a project's physical or operational impact, i.e., roadways, intersections, and public utilities. For uses allowed by right, the Town needs to avoid basing site plan review decisions on a project's impact on public services such as schools and public safety, so requiring applicants to prepare and submit a fiscal impact analysis makes little sense. Site plan review - whether administrative or conducted as a special permit process - should never create the discretion to deny otherwise permitted uses.

- **Off-Street Parking.** Groton needs to modernize its off-street parking requirements in order to reduce the environmental and aesthetic impacts of over-sized parking areas and also reduce burdens on small business owners. The following parking requirements are useful and appropriate adjustments that would bring Groton somewhat closer to current practices in the planning community:

  - Professional or business office: One space per 300 sq. ft. GFA, with a modest reduction for upper-story office space (which usually generates less traffic than first-floor office uses).

  - Retail store: One space for 300 sq. ft. GFA and a maximum of one space per 200 sq. ft. GFA; and in multi-tenant buildings, a parking exemption for a retail use occupying less than 800 sq. ft. of floor area.

  - Restaurant: One space for every four seats in village business districts.

  - Shared parking. By special permit, allow two or more property owners to share access and off-street parking in all of the village business districts.

  - Reserve parking. Give the Planning Board authority to approve delayed construction of some off-street parking for a year or two until a commercial project is completed, occupied, and operational, at which time the actual need for off-street parking can be determined.

- **Dimensional Regulations in the Residential Districts.** Although the dimensional regulations in the R-A and R-B districts call for an inherently unsustainable growth pattern, they also serve a valid planning objective: managing Groton's overall build-out potential. Simply reducing the existing requirements to more common standards such as a minimum lot area of forty thousand sq. ft. and minimum frontage of 125 or 150 linear feet will not eliminate the risk of sprawl - as evidenced by conditions in many suburbs with these types of requirements. Groton's best option for avoiding conventional developments that waste land is to make the Flexible Development bylaw and subdivision tools such as Residential Compound as attractive as possible to developers. This is especially important because the MRD bylaw, which requires Residential Compound and Flexible Development submissions for projects that meet specified thresholds, is unlikely to stand when challenged in court.

- **Flexible Development.** Some possibilities for making Flexible Development more attractive to developers and more effective for the town without sub-

jecting projects to a Major Residential Development process:[21]

- Eliminate the special permit requirement and offer, instead, an as-of-right approach to Flexible Development.
- Increase the density bonus for Flexible Developments that include a transfer lot.
- Replace the existing "over-55" density bonus with a bonus for projects that include small detached condominiums and duplexes.

- **Planned Multi-family/Residential Development (PRD)** needs to be reconceived and made more effective for providing housing choices. At minimum, the following changes should be considered:
  - Eliminate the requirement for Concept Plan Approval by Town Meeting. Instead, provide for a concept plan special permit submission to the Planning Board, followed by Site Plan Review for review and approval of a definitive plan consistent with the special permit.
  - Reduce the density constraints of the existing bylaw by establishing a clear gross density standard for a PRD site, e.g., instead of requiring a minimum lot of eighty thousand sq. ft. plus ten thousand sq. ft. per bedroom, consider a standard such as one unit per 7,500 sq. ft. of upland outside the Water Resource Protection Overlay District, sub-districts WPD-I and WPD-II, and one unit per ten thousand sq. ft. of upland in WPD-III.
  - Reduce the minimum setback requirements in § 218-27(C)(4)(d) and the minimum open space requirement in § 218-27(C)(4)(e) for projects constructed within some specified radius around a village center or neighborhood activity center (Groton Center, West Groton, Lost Lake, and Four Corners). Housing constructed within and adjacent to a village should contribute to the village's physical form.
  - Require affordable housing in the same manner as provided for in § 218-26, Flexible Development.

- **Transfer Lots/Transfer of Development Rights.** Groton adopted TDR in 1980, and it is considered one of the more successful TDR programs in Massachusetts. As with most TDR programs, Groton's has been used most effectively when the Town was actively involved as a partner. One of the barriers to more successful use of TDR in Groton has been a lack of consensus on the location of sending and receiving zones. Map 7.6, Future Land Use, should serve as a guide for designating receiving zones.

[21] Note: Due to the *Westwood* decision, a group of planners and land use attorneys has met periodically to explore options to comply with the Appeals Court ruling while not diluting the effectiveness of existing MRD and Open Space-Residential Development (OSRD) bylaws modeled on the MRD concept. One option under discussion is a mechanism to require OSRD (or Flexible Development) without a special permit, i.e., a subdivision plan that must incorporate OSRD principles. The legality of this approach has not been determined, however.

8

housing & residential development

What is this element about?

Scope

- Report and analyze population, household, and housing market trends in Groton and, as applicable, in Groton's region;
- Identify local and regional housing needs that remain unmet by ordinary market activity, including but not limited to affordable housing needs;
- Evaluate Groton's residential zoning and other local tools that regulate housing production; and
- Identify housing policy and housing development strategies to address the town's housing goals and aspirations for a sustainable future.

Key findings

- Outside of its village, Groton's residential development pattern is generally land-consumptive i.e., it consumes a large amount of land per dwelling unit. While this type of development pattern offers privacy and high asset value to homeowners, it also exacerbates the scarcity of land, increases the cost of housing, encourages excessive use of energy and water, and promotes dependency on cars.
- Groton's housing development pattern also meets some needs at the expense of other needs that already exist, both locally and regionally. Sustainable housing policy must address these inequalities.
- To create a more sustainable framework for housing development, Groton may need to look beyond its borders and collaborate with other communities to address housing policy on a regional basis.

Ideas for sustainability

- *Equitable housing choices at all market levels are integral to sustainability, not a byproduct of it*. Offering a wider variety of housing in appropriate locations will help Groton achieve its sustainability goals by bringing people close to goods and services, jobs, and transportation, and by building diverse neighborhoods.

- *Providing affordable housing is far more than a state "mandate."* Access to housing is a fundamental prerequisite to basic human rights. People without the means to house themselves have difficulty accessing jobs, education, and health care: elements of personal security that people with suitable housing take for granted. By providing realistic ways for developers to create new affordable units, Groton will be able to increase its supply of housing for lower-income people and reduce barriers to population diversity.
- *Encourage or require green building practices*. Steps to encourage or require green buildings would further Groton's interests in reducing consumption of non-renewable energy sources and conserving water.
- *Provide for more housing in and around the villages*. Concentrating housing near goods and services would help to reduce auto-dependency (if safe, suitable, and accessible pedestrian facilities are available) and may help to reduce or delay development pressures on undisturbed land and agricultural land.
- *Promote compact development and mixed uses*. Groton's very low-density, segregated land use pattern contrib-

utes to its high cost of government services per capita, which in turn reduces affordability for older citizens and young families.

Existing conditions and trends

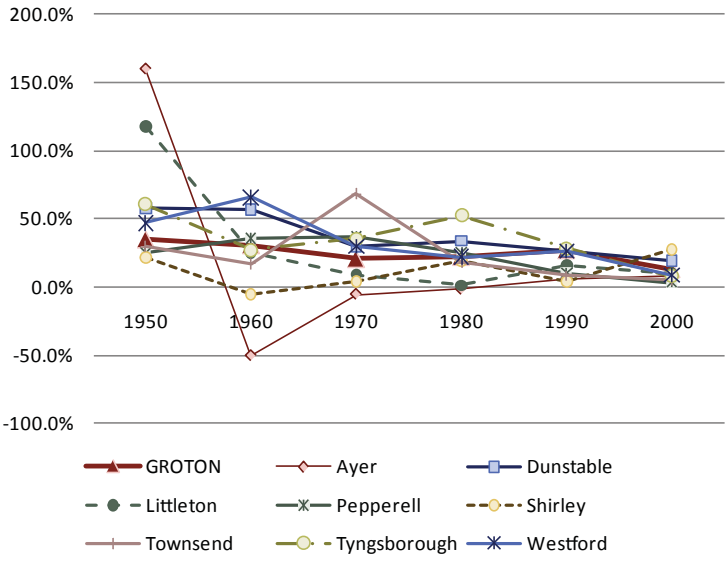
People, households, and families: who lives in Groton?

A town's total population includes all people counted as residents, regardless of the type of building they live in or their household or citizenship status. Since most people are members of *households*, population characteristics often approximate household characteristics. In small towns like Groton, household characteristics tend to mirror *family* characteristics because the vast majority of households are families. The mix and cost of housing, access to jobs and services, the reputation of local schools, and many other factors tend to influence the make-up of a community's households. Planning for present and future housing needs requires more attention to households than total population because households generate demand for housing.

Groton has grown quite a bit in the past twenty years, but the demographic changes that have occurred here are more noteworthy than the town's population growth rate. These changes matter in the housing element of a master plan because they attest to the evolution of Groton's housing market. Groton has always been a relatively affluent town, but the economic position of its households is higher today than twenty years ago, and compared with other towns in the region, the cost of Groton's housing is higher, too. Household incomes, household sizes and composition, and lifestyles have changed.

Fig. 8.1. Population Growth 1950-2009

Sources: MA State Data Center, ACS 2005-2009



Population characteristics

Unlike most neighboring towns, Groton does not have a history of dramatic growth spurts. Fig. 8.1 shows that Groton's decennial population growth rate increased during the 1990s, but over time, the town has gained population at a fairly consistent pace ever since World War II. Its current population, estimated at 10,600 (rounded), represents a 13 percent increase since 2000. This is roughly in the middle for the region as a whole.[1]

RACE, ETHNICITY, AND CULTURE

Groton's population is overwhelmingly white, non-Hispanic, and of English, Irish, Italian, or German descent, much like the towns around it.[2] There are very few racial or ethnic minorities in Groton's region, and those residing in Groton or other towns nearby are predominantly Asian. By contrast, African Americans are conspicuously underrepresented in all of the towns in Groton's area, yet they are the largest racial minority group in Massachusetts. Similarly, the Hispanic population regardless of race is very small in Groton and most neighboring communities.

According to the American Community Survey, Groton's small foreign-born population includes about 6 percent of the total population (674 people). Nearly 40 percent of the foreign-born population migrated to the United States from South Central Asian and East Asian countries.[3] Some Groton households customarily speak their native language at home, and not surprisingly, Asian languages are among the most common. However, the town has other language customs, too, ranging from Spanish to Russian, German, Persian, French, and Italian.[4]

Slightly more than 60 percent of Groton's residents are natives of Massachusetts, but Groton has a higher rate of people moving from out-of-state than most of the towns around it. Nevertheless, year-to-year population turnover is very low, and for the most part it seems that

[1] The population statistics in Fig. 8.1 are based on actual population counts for 1930-2000 and estimated population counts for 2009. The substantial drop in Ayer's population from 1940-1950 reflects the departure of military personnel following World War II. Source: U.S. Bureau of the Census and the State Data Center at the University of Massachusetts-Amherst, Donohue Institute.

[2] ACS Five-Year Estimates 2005-2009, B04001.

[3] ACS 2005-2009, B05006.

[4] ACS 2005-2009, B16001.

Table 8.1. Population by Race and Hispanic/Latino Origin, Groton Region

	Total Population	Race				
Geography	(Est. 2009)	White	Black	Asian	All Other	Hispanic
Massachusetts	6,511,176	82.8%	6.1%	4.8%	12.4%	8.3%
Ayer	7,601	87.7%	4.1%	2.7%	9.7%	7.5%
Dunstable	3,281	95.5%	0.0%	2.7%	1.9%	3.0%
GROTON	10,587	95.8%	0.1%	2.6%	1.6%	3.2%
Littleton	8,705	96.1%	0.1%	2.9%	1.1%	0.3%
Pepperell	11,325	97.6%	0.8%	1.1%	1.3%	0.7%
Shirley	7,848	85.1%	7.1%	1.7%	13.2%	9.3%
Townsend	9,519	96.3%	0.4%	0.2%	3.5%	3.2%
Tyngsborough	11,594	93.8%	0.3%	4.0%	2.2%	1.2%
Westford	21,984	87.1%	0.6%	10.0%	3.0%	1.3%

Source: ACS Five-Year Estimates 2005-2009.

Table 8.2. Population Age in Groton, 1990-2009

	Population Count			Percent Change		
Age Cohort	1990	2000	2009	1990-2000	2000-2009	1990-2009
Under 5 years	618	837	571	35.4%	-31.8%	-7.6%
5 to 17 years	1,453	2,280	2,694	56.9%	18.2%	85.4%
18 to 24 years	653	400	727	-38.7%	81.8%	11.3%
25 to 34 years	1,176	968	460	-17.7%	-52.5%	-60.9%
35 to 44 years	1,595	2,155	1,747	35.1%	-18.9%	9.5%
45 to 54 years	972	1,505	2,223	54.8%	47.7%	128.7%
55 to 64 years	469	734	1,246	56.5%	69.8%	165.7%
65 to 74 years	351	362	503	3.1%	39.0%	43.3%
75 years and over	224	306	416	36.6%	35.9%	85.7%
Total	7,511	9,547	10,587	27.1%	10.9%	41.0%

Sources: 1990 Census of Population and Housing, Census 2000, and ACS Five-Year Estimates 2005-2009.

Groton's newcomers are "buy-up" families from elsewhere in Middlesex County and the Boston metropolitan area.[5]

POPULATION AGE

In Groton and all communities, the population is aging. Although Groton has absorbed significant school-age population growth in the past twenty years, it also has witnessed a substantial decline in persons 25 to 34 years - the youngest members of the so-called "Baby Bust" - as shown in Table 8.2. Furthermore, the twenty-year growth rate for persons 35 to 44 years (9.5 percent) masks the 19 percent decrease that has occurred since 2000. Overall, the data in Table 8.2 point to a shrinking base of younger families and an expanding base of empty nesters. The rate of school-age population growth will continue to decline, consistent with conditions over the last ten years, as "Echo Boom" babies mature.[6] Meanwhile, older citizens will make up larger shares of the total population, though it is difficult to predict how many will remain in Groton for their retirement years. Compared with regional and state averages, Groton has a smaller percentage of over-65 residents and this has been true for at least the last twenty years.

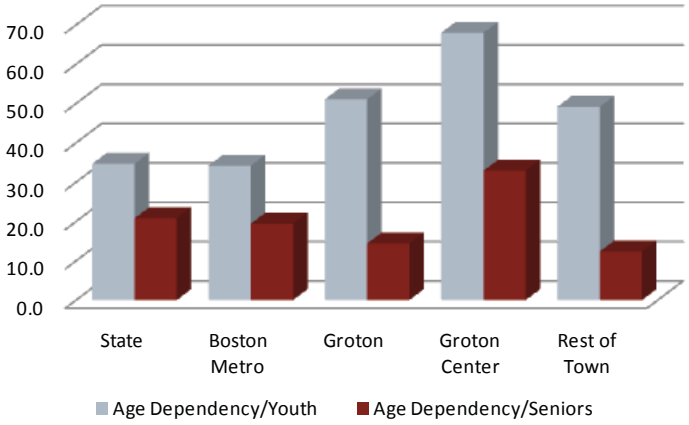
Together, Groton's relatively large under-18 population and small senior citizen population results in a very high **dependency ratio.** A dependency ratio represents

[5] ACS 2005-2009, B06003, B07003.

[6] The "Baby Bust" refers to the national drop in birth dates that occurred between 1961 and 1981, following the postwar "Baby Boom," 1946-1964. The "Echo Boom" captures a second era of high birth rates, running approximately from 1977 to 1995, when the "Baby Boom" population formed households and began to raise families.

the portion of a population that depends on the working-age population for basic support: from government services and education to housing. The statewide dependency ratio is 55.3, with children under 18 generating 63 percent of the total dependent population and older citizens, 37 percent. In Groton, however, the dependency ratio is 65.3, and the dependent population is overwhelmingly composed of children under 18 (78 percent).[7] Fig. 8-2 shows that Groton Center has a much higher age dependency ratio than the rest of town, mainly due to the concentrated presence of children under 18.

Fig. 8.2. Age Dependency Ratio (2009)
Source: ACS 2005-2009



EDUCATION AND MEANS OF SUPPORT

Groton's population is exceptionally well educated. In general, education levels throughout the United States have improved in the past thirty years, and Massachusetts stands out for having one of the most highly educated populations in the nation. Still, significant education disparities persist between Massachusetts cities and towns, and this can be seen in Groton's region. More than 65 percent of Groton's population over 25 has a college, graduate, or professional degree (up from 54 percent in 2000), yet the average for the state is 38 percent (up from 33 percent in 2000). Westford is the only nearby town that approximates Groton for educational attainment. Moreover, Westford and Groton are the only communities in the immediate region that exceed the Middlesex County average (48 percent) for adults with a college degree or higher.[8]

That Groton places such a high value on quality schools makes sense in light of the accomplishments of its adult population. Furthermore, Groton's high level of educational attainment is reflected in the employment and earnings characteristics of its working-age people. Seventy-four percent of Groton's over-15 population is in the labor force, and with the exception of young adults (16 to 24 years), the labor force participation rate by age cohort in Groton exceeds that of the state and the Boston metro area.[9] Groton residents also tend to stay employed even in difficult economic times, for the town's unemployment rate invariably falls below the statewide rate.[10] Its residents have high earnings, too, for male residents with full-time employment have the highest annual wage and salary income ($102,442) in Groton's region, and female residents, the second highest ($61,596).[11] The competitiveness of Groton's labor force has a great deal to do with the economic well-being enjoyed by most of its households.

Household characteristics

HOUSEHOLDS AND FAMILIES

Since 1990, Groton has gained households faster than all surrounding towns except Dunstable. Although Groton remains a town of families, it has witnessed changes in the make-up of its households. For example, the percentage of family households has decreased slightly, and non-family households - people living alone or with non-relatives - account for nearly one-fourth of all households in Groton today. The shift between family and non-family households is modest, but it suggests some similarity between Groton's experience and that of the state. In some towns around Groton, family household growth continues to outpace total household growth, but even in towns such as Dunstable and Westford (with traditionally high rates of family household growth) the rates of increase have begun to fall.

Household sizes have gradually declined since 1970, but not to the same degree in suburbs and small towns, where single-family homes intended for family occupancy dominate the housing stock. In Groton, household and family sizes actually *increased* between 2000 and 2009. The increases are small but noteworthy; the average household size rose from 2.90 to 2.99 people and the average family size, from 3.31 to 3.46 people.[12] These statistics rein-

[7] ACS 2005-2009, B01001. See also, Chapter 9.

[8] ACS 2005-2009, B15002, and Census 2000, Table DP-2, Profile of Selected Social Characteristics, Massachusetts and Town of Groton.

[9] ACS 2005-2009, B23001.

[10] Massachusetts Department of Revenue, "Labor Force and Unemployment," 1990-2010. Municipal Data Bank. http://www.dls.state.ma.us/mdm.htm.

[11] ACS 2005-2009, B19326.

[12] ACS 2005-2009, S1101, and Census 2000, Summary File 1, Tables P17, P33.

force that Groton appeals to families. Even though the percentage of family households with dependents has dropped in Groton, the number of children under 18 per family remains very high. At an average of 1.17 children per family (Fig. 8-3), Groton has the region's largest families. Still, 30 percent of all households in Groton are two-person households. Married couples without dependents account for most of them, yet in the past ten years, the percentage attributable to unrelated people living under one roof has increased from 16 to 20 percent.

NON-FAMILY HOUSEHOLDS

Approximately 23 percent of Groton's households are non-family households, including single people living alone and two or more unrelated people living in the same house or apartment. However, the vast majority are one-person households, which helps to explain the non-family average household size of 1.36 person. Groton and most of the surrounding towns have much smaller percentages of one-person households than either the state or the Boston metropolitan area, but they also have smaller percentages of non-family households in general. About 30 percent of the one-person households in Groton are seniors, mainly women. Since 1990, the characteristics of non-family households in Groton have changed very little. [13]

HOUSEHOLDER AGE

Groton's substantial presence of children and families and the limited presence both of older citizens and non-family households go hand in hand with the age characteristics of its householders. Compared with the state as a whole and the Boston metro area, Groton has a strikingly small share of young householders and much larger shares of householders well established in their careers. The overwhelming majority of these mid- and late-career householders are heads of family households, and their households are far more likely to be families than non-families.

HOMEOWNERS AND RENTERS

Groton's 88 percent homeownership rate (Fig. 8-5) comes as no surprise. The vast majority of Groton's housing consists of detached single-family homes and the town is designed for family homeowners. Most of the surrounding towns are single-family home communities with very high homeownership rates, too. However, Ayer stands out for its sizeable inventory of renter-occupied housing. While Ayer's housing units constitute less than 11 percent of all units in the region, it houses 28 percent of the region's

Fig. 8.3. Average Children per Family
Source: 1990 Census, Census 2000, ACS 2005-2009

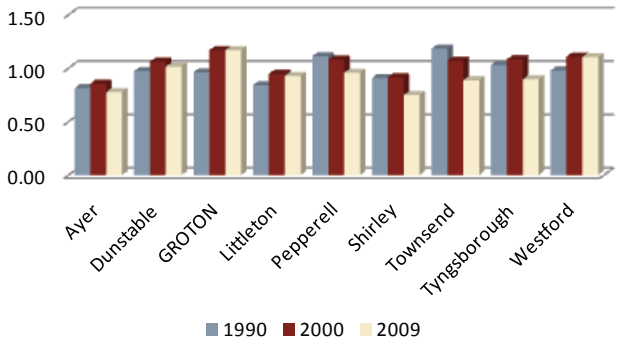


Fig. 8.4. Householder Ages
Source: ACS 2005-2009

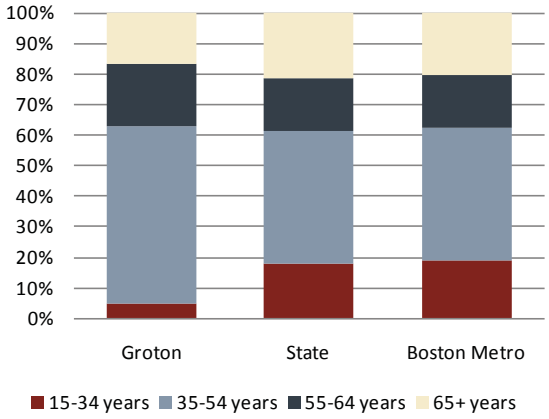
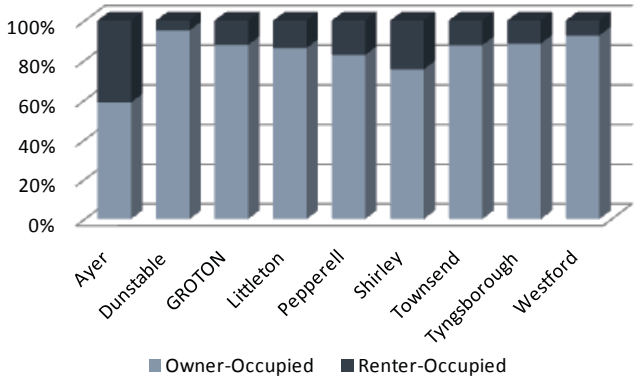


Fig. 8.5. Homeowners and Renters Groton 2009
Source: ACS 2005-2009



renters. Groton has almost 12 percent of all housing units in the region and 8 percent of the renters.[14]

Groton and all of its neighbors have witnessed significant changes in housing tenure over the past twenty years. From 1990 to 2009, the number of homeowner households in Groton increased nearly 51 percent, from 2,045 to 3,083. Region-wide, homeowner households increased

[13] ACS 2005-2009, B11016, and Census 2000, Summary File 1, Table.

[14] ACS 2005-2009, B25001 and B25003.

39 percent, with the highest growth rate in Dunstable, at 59 percent. Against the backdrop of growth in homeownership opportunities, the region witnessed a substantial drop in renter households. Groton, Westford, Littleton, and Pepperell all tallied renter-occupied housing losses of 18 percent or more. Today, Groton's region has 7,473 more homeowners and 835 fewer renters than in 1990.[15] These changes speak to the strength of the region's housing market because in many cases, the loss of rental units occurred because of condominium conversions. In virtually every town in Groton's area, the rate of homeownership growth exceeded the rate of total housing growth. As a result, growth in owner-occupied housing was fueled not only by new housing construction but also by modernization and conversion of older multi-family dwellings to for-sale units.

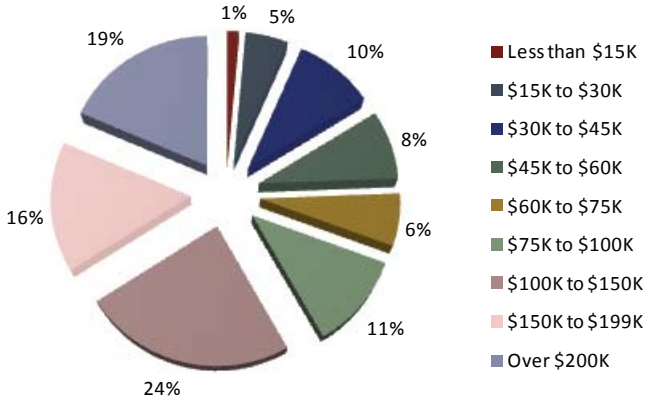
HOUSEHOLD AND FAMILY INCOMES

Most Groton households seem to live comfortably. Today, Groton's median family income ranks highest in the region and its median household income is second highest, barely below Westford's. Thirty-four percent of all households in Groton have annual incomes of $150,000 or more (Fig. 8-6), and Groton has the region's largest percentage of households with incomes over $200,000 (19 percent). Affluent families account for 90 percent of Groton's highest-income households.[16]

The prevalence of upper-income families in Groton can be detected in nearly every demographic measure of the town, its relationship to the region, and the ways in which

Fig. 8.6. Household Income Distribution Groton 2009

Source: ACS 2005-2009



Groton fundamentally differs from the economic centers that employ most of its labor force. In Groton, the median income increases by family size, and even Groton's single women with children are comparatively well off, with a median income of $66,000. Of course, Groton has families that struggle, too. Nineteen percent of its families have annual incomes below $75,000, and Groton has an isolated number of households receiving some form of public assistance. In addition, the income picture of Groton seniors is quite different from that of working-age families, for the median income of over-65 households is less than half the median household income for the town as a whole and only 39 percent of the median family income. Overall, however, the statistical picture of Groton is that of a well-resourced, highly educated and socially homogeneous community despite differences in the economic position of some of its households.

Housing characteristics

Groton's housing inventory includes some 3,800 units, or slightly less than 12 percent of the region's homes. Due to its size, history, zoning, and location at the outer edge of the Boston metro area, Groton is evolving as a low-density residential community with an average of 117 housing units per square mile (sq. mi.), or 0.18 units per acre. Approximately 13 percent of all housing units in Groton are located in Groton Center, which contains a little more than 5 percent of the town's total land area. In this part of town, the average housing density is greater: 0.46 units per acre. Table 8.3 summarizes the distribution of land (excluding water), and estimated numbers of housing units and households in Groton's six census block groups: relatively cohesive areas used by the Bureau of the Census to report population, social, economic, and housing data in cities and towns. Block Group 5, also known as the Groton Census Designated Place (CDP), includes Groton Center and the surrounding neighborhoods.

Physical characteristics of housing

AGE OF HOUSING

Groton's housing is relatively new. Nearly one-fourth of all housing units in Groton today were constructed between 1990 and 1999, which means the town experienced considerable housing growth and landscape change in the not-distant past. In fact, Groton, Westford, and Tyngsborough all grew rapidly during the 1990s.

By contrast, about 17 percent of Groton's present housing units were constructed before 1940, the first year the decennial census began to collect detailed information about the physical and financial characteristics of housing in the United States. The town has a noteworthy inventory of historic homes, mostly clustered around Groton Center

[15] 1990 Census of Population and Housing, Tables H001, H002, H003; Census 2000, Tables H1, H2, H3; and ACS 2005-2009, B25009. Note: these statistics include Shirley, where some of the renter-occupied housing decline stemmed from the closure of Fort Devens in 1995. If the entire loss in Shirley is removed from regional calculations, the net reduction in renter-occupied units is -687.

[16] ACS 2005-2009, B19013, B19113.

and West Groton. However, historically significant residences can be found in most parts of Groton, including several houses that pre-date 1800, situated along the town's earliest roadways.[17]

HOUSING TYPES

The vast majority of Groton's existing housing consists of detached single-family dwellings on fairly large lots. According to current estimates from the Bureau of the Census, one-family homes comprise 88 percent of the town's housing stock (Fig. 8-7).[18] A large percentage like this suggests that Groton's housing is essentially homogenous, yet a closer look at the single-family home inventory reveals some diversity. For example, quite a few interwar- and postwar-era homes can be found around Lost Lake and in neighborhoods just outside of Groton Center and West Groton. These homes tend to be fairly small, (see Table 8.5) with an average of three bedrooms and 1,400 sq. ft. of living space. The largest homes fall on both sides of the age spectrum: new houses built during the past decade and extant residences from the late-eighteenth century.

Groton has some of the region's largest residences. Homes with four or more bedrooms make up over half of all occupied units in Groton and 25 percent in Middlesex County. Westford and Dunstable also have many large homes, but not to the extent found in Groton. Together, these towns have nearly 60 percent of the region's inventory of large homes and most of the region's new housing, too.[19]

Groton's limited inventory of multi-family, townhouse, and detached condominiums includes units in small projects as well as fairly sizeable developments. Two-family homes account for about 5 percent of all dwellings in

Groton Census Block Groups
Source: U.S. Bureau of the Census

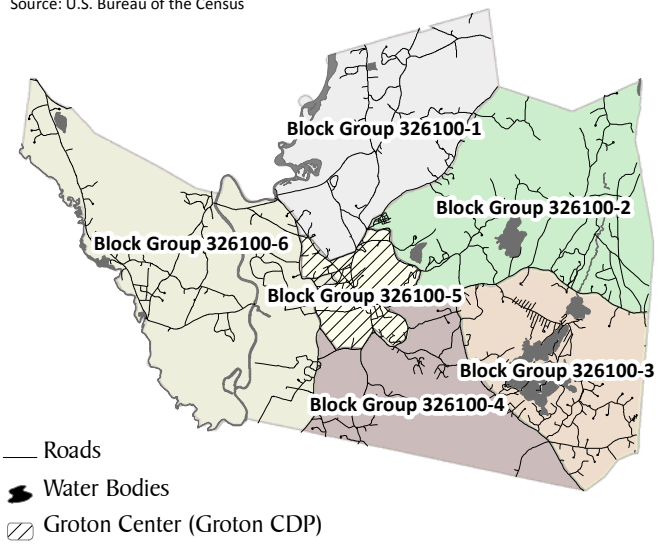


Table 8.3. Existing Housing, Households, and Population

	American Community Survey Estimates				
Census Block Group	Land Area (Acres)	Population	Housing Units§	Housing Density (Units/Acre)	Households§
1	3,520.4	1,900	546	0.16	546
2	4,724.4	1,810	510	0.11	510
3	2,862.4	2,540	1,202	0.42	927
4	2,931.6	677	254	0.09	254
5*	1,055.9	1,210	489	0.46	444
6	5,878.1	2,450	835	0.14	835
Total	20,972.8	10,587	3,836	0.18	3,516

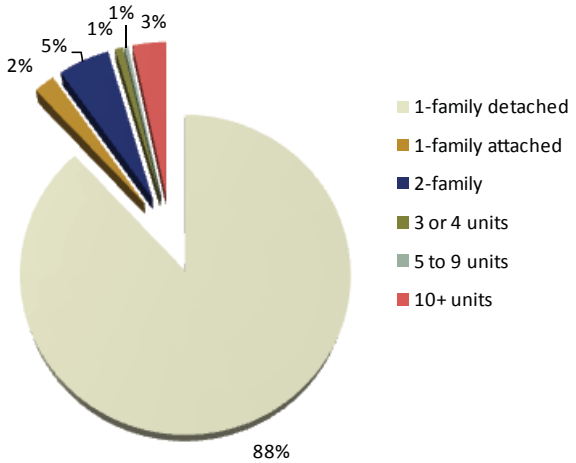
Sources: MassGIS Census Block Group Geography Data, ACS 2005-2009 Five-Year Estimates.

Notes:

* Groton CDP.

§ It is likely that Block Groups 1, 2, 4, and 6 have some vacant dwellings, but the most recent ACS tables report matching numbers of total housing units and households (occupied housing units).

Fig. 8.7. Housing Types in Groton
Source: ACS 5-Year Data 2005-2009



[17] Town of Groton Assessor's Office, parcel database export (unnamed), January 7, 2010; and Massachusetts Historical Commission, Massachusetts Cultural Resource Information System (MACRIS), user-defined query, November 2010.

[18] Bureau of the Census, American Community Survey 2005-2009 Five-Year Estimates, B25024, "Units in Structure," Detailed Tables Series.

[19] ACS 2005-2009, B25042, B25037.

Table 8.4. Age of Housing Stock

Town	Total Units	Year Constructed							
		Since 2000	1990-99	1980-89	1970-79	1960-69	1950-59	1940-49	Pre-1940
Ayer	3,582	5.9%	14.2%	11.6%	9.9%	12.8%	9.4%	8.3%	28.0%
Dunstable	1,077	18.5%	19.3%	21.3%	9.4%	9.5%	9.5%	3.3%	9.3%
GROTON	3,836	11.9%	24.5%	13.6%	11.4%	7.6%	10.9%	3.5%	16.5%
Littleton	3,086	10.0%	14.8%	9.3%	15.4%	9.1%	20.1%	5.2%	16.0%
Pepperell	4,264	7.2%	14.9%	26.6%	17.3%	9.5%	6.3%	1.3%	16.9%
Shirley	2,668	8.5%	18.0%	13.8%	15.9%	8.5%	12.1%	2.7%	20.5%
Townsend	3,348	6.8%	10.4%	13.6%	27.4%	7.3%	9.3%	3.3%	22.0%
Tyngsborough	4,109	7.4%	20.4%	28.5%	12.8%	10.0%	8.2%	4.0%	8.7%
Westford	7,194	6.5%	23.2%	17.4%	16.7%	12.8%	7.1%	3.3%	12.9%
Regional Total	33,164	8.2%	18.3%	17.6%	15.6%	10.1%	9.7%	3.8%	16.6%

Source: ACS 2005-2009 5-Year Data.

Table 8.5. Characteristics of Existing Single-Family Homes (Sample; 2010)

					Average Assessed Value			
Year Built	Units	Average Lot Size (Acres)	Average Net Living Area	Average Number of Bedrooms	Land	Building	Total	Ratio Building to Land Value
2005-2009	69	1.93	3,222	4.0	$188,978	$366,765	$555,743	1.94
2000-2004	244	1.97	3,227	4.0	$198,772	$380,710	$579,481	1.92
1990-1999	776	1.96	2,640	3.9	$193,757	$289,447	$483,204	1.49
1980-1989	493	1.87	2,445	3.7	$196,504	$235,227	$431,731	1.20
1970-1979	348	1.68	1,991	3.4	$188,314	$169,325	$357,639	0.90
1960-1969	249	1.39	1,751	3.3	$186,610	$135,992	$322,602	0.73
1950-1959	211	1.29	1,496	2.9	$172,293	$103,251	$275,544	0.60
1920-1949	359	1.39	1,343	2.5	$166,699	$82,144	$248,843	0.49
1900-1919	106	1.76	1,873	3.3	$178,566	$108,323	$286,889	0.61
1870-1899	58	1.91	2,202	3.4	$181,047	$148,072	$329,119	0.82
1800-1869	122	1.90	2,585	3.7	$198,062	$211,250	$409,312	1.07
1750-1799	37	1.91	2,961	3.9	$228,424	$275,700	$504,124	1.21
Pre-1750	16	1.88	2,602	3.6	$210,597	$243,784	$454,381	1.16

Source: Groton Assessor's Office, parcel database export (2010).

Groton, and while scattered throughout town, they tend to be concentrated in Groton Center, in pockets elsewhere on Route 119, and in West Groton. Most of these homes are fairly old, for even though Groton's zoning provides for two-family dwellings, available data show that the Town does not receive many applications to construct them. Groton Center neighborhoods also have some older three-family and small multi-family buildings. In addition, Groton has a well-known senior housing and assisted living facility, River Court Residences, located in a converted mill on West Main Street by the Squannacook River. Finally, there are 178 condominiums in Groton, mainly two-bedroom units with an average of 1,550 sq. ft. of living space. Many are quite valuable, assessed on average for $235,000. In some cases they appear to be conversions of older multi-family buildings. More than half have been added to the town's housing stock since 1990. In some cases, the units are single-family dwellings - detached condominiums - served by shared septic systems.[20]

[20] Massachusetts Department of Revenue, "Parcels by Use Class," Municipal Data Bank.

Financial characteristics

OWNER-OCCUPIED HOUSING

Groton's homes are very valuable. The high housing values found in Groton reflect the town's desirability, which in turn reflects the great qualities that Groton has to offer: excellent public schools, prestigious private schools, scenic open space, and a small-town experience that family homebuyers often want for their children. In addition, Groton's large house lots all but guarantee that its homes will be both large and high-end. Though not the most expensive houses in the region, Groton's single-family homes tend toward the uppermost end of the market, with price bands defined by Ayer on one end, Dunstable on the other, and Tyngsborough at the mid-point. Table 8.7 reports the first, second (median), and third quartile home values in Groton's region, in 2009 dollars.

Table 8.6. Size of Dwelling Units

		Distribution by Number of Bedrooms			
Geography	Occupied Units	1 BR	2 BR	3 BR	4+ BR
Ayer	3,252	22.1%	31.9%	28.0%	18.1%
Dunstable	1,070	0.5%	7.1%	52.3%	40.1%
GROTON	3,516	3.2%	14.3%	30.7%	51.7%
Littleton	3,007	9.2%	15.3%	45.7%	29.8%
Pepperell	4,019	8.1%	14.3%	43.5%	34.1%
Shirley	2,471	5.1%	30.1%	40.5%	24.3%
Townsend	3,266	5.4%	19.6%	54.0%	21.0%
Tyngsborough	3,850	4.8%	19.5%	47.5%	28.3%
Westford	7,073	3.3%	12.3%	37.8%	46.5%

Source: ACS 2005-2009 5-Year Data.

Table 8.7. Existing Housing Values by Quartile (2009 Dollars)

Geography	Lower Quartile	Second Quartile (Median)	Upper Quartile
Ayer	$238,200	$315,600	$381,900
Dunstable	$407,400	$496,000	$656,400
GROTON	$358,800	$469,000	$631,300
Littleton	$324,900	$407,500	$564,700
Pepperell	$273,900	$353,800	$460,000
Shirley	$246,000	$340,700	$435,400
Townsend	$250,800	$299,300	$369,900
Tyngsborough	$300,600	$377,700	$468,600
Westford	$355,000	$459,200	$616,700

Source: ACS 2005-2009.

Most but not all Groton homeowners (78 percent) have at least one existing mortgage, and some carry additional debt, e.g., a second mortgage. The median monthly housing cost for homeowners as a portion of household income is about 24 percent. This statistic matters because it is an indicator of the economic position of Groton's homeowners and how much they are willing to pay in order to live in Groton. Relative to surrounding towns, Groton is generally affordable to a majority of its residents; in most neighboring communities, the mid-point of monthly housing costs as a percentage of household income ranges from 25 to 29 percent.[21] Owing to Groton's high household wealth, the percentage of homeowners paying a large share of their income for housing is relatively small: 28 percent of homeowners with a mortgage, and 21 percent of those without a mortgage, as shown in Table 8.8.[22]

RENTER-OCCUPIED HOUSING

Not all of Groton's 433 renter-occupied housing units technically qualify as "rental housing." In many cases - both in Groton and the surrounding small towns - the units occupied by renters were not developed as rental housing and could easily be converted to for-sale units. For example, single-family and two-family dwellings provide housing to 60 percent of the renter households in Groton, 76 percent in Westford, and all in Dunstable. Statewide and in Middlesex County, however, the same unit types generate only 27 to 29 percent of all renter-occupied units. In Groton, most of the housing units developed and managed for rental occupancy are owned by the Groton Housing Authority, River Court Limited Partnership, Groton Affordable Housing, Inc./RCAP Solutions (Groton Commons), and Dementian Guschov, Jr. (Winthrop Place). Together, the units in these developments comprise 38 percent of all renter-occupied housing in Groton.[23]

[21] ACS 2005-2009, B25092, B25008,

[22] Note: for purposes of this discussion, "large share" means monthly housing costs that exceed 30-33 percent of the homeowner's monthly gross income. Under existing federal and state policies, low-income households paying more than 30 percent are defined as "housing cost burdened."

[23] Town of Groton Assessor's Parcel Database (FY 2010); U.S. Department of Agriculture, Rural Development, Multi-Family Rental

Table 8.8. Homeowner Housing Costs and Household Incomes (2009 Dollars)

Geography	Number of Homeowners	Median Household Income	Median Monthly Housing Cost	Households with High Housing Costs			
				All Homeowners	With Mortgage	Without Mortgage	Seniors
Ayer	1,909	$79,212	$1,899	35.5%	40.1%	19.3%	41.2%
Dunstable	1,017	$113,992	$2,483	32.8%	34.2%	28.6%	49.4%
GROTON	3,083	$126,829	$2,636	26.5%	28.1%	20.7%	38.8%
Littleton	2,592	$105,556	$2,488	29.3%	29.0%	30.3%	42.1%
Pepperell	3,321	$101,888	$2,214	32.5%	34.6%	22.5%	37.9%
Shirley	1,863	$76,182	$1,957	41.5%	48.9%	10.2%	24.5%
Townsend	2,860	$85,022	$1,792	34.0%	38.5%	13.3%	32.3%
Tyngsborough	3,403	$104,502	$1,991	24.5%	28.0%	8.9%	30.2%
Westford	6,542	$125,324	$2,460	29.2%	32.5%	18.4%	41.8%

Source: ACS 2005-2009.

Except for Groton's financially subsidized rental units, monthly rents in Groton run quite high. The lower-quartile contract rent shown in Table 8.9 is heavily influenced by the rents charged in subsidized developments. The mid-point and higher-end rents reflect market reality and the impact of so many single-family and two-family homes on the structure of market-rate rents in Groton. However, the River Court Residences development also contributes to Groton's high market-rate rent statistics because the unsubsidized units are expensive.

Table 8.9. Existing Contract Rents by Quartile (2009 Dollars)

Geography	Lower Quartile	Second Quartile (Median)	Upper Quartile
Ayer	$620	$744	$931
Dunstable	$413	$443	$978
GROTON	$436	$1,137	$1,403
Littleton	$400	$606	$1,103
Pepperell	$571	$745	$1,063
Shirley	$680	$880	$1,320
Townsend	$684	$757	$1,017
Tyngsborough	$805	$950	$1,164
Westford	$724	$991	$1,402

Source: ACS 2005-2009.

For Groton renters, the median monthly housing cost in relation to household income is about 22.7 percent - much lower than the median for Massachusetts, 29.9 percent, or Middlesex County, 28.7 percent. Like the counterpart statistic for homeowners, the mid-point of housing costs as a percentage of renter household income is an indicator of what tenants customarily pay to live in Groton. Renters in Groton, along with Dunstable and Westford, generally find housing they can afford. However, Table 8.10 shows that the renter households in these three communities have higher incomes than those living in many of the surrounding towns. Groton's renter households have the highest incomes of all.[24]

Housing for low-income people

Most towns have some types of modestly priced housing, such as small, post-war single-family homes, multi-family units, or apartments with low monthly rents. These units stay affordable as long as the market will allow. Under a Massachusetts law that went into effect in 1969, however, all communities are supposed to have housing that remains affordable to low-income households even when home values appreciate under robust market conditions. The units retain their affordability under a deed restriction that lasts for many years, if not in perpetuity. Both types of affordable housing meet a variety of needs and both matter. However, the market determines the price of unrestricted affordable units and a recorded legal instrument regulates the price of deed restricted units. While any household (regardless of income) may purchase or rent an unrestricted unit, only a low-income household may purchase or rent a deed restricted unit.

Housing; RCAP Solutions, Inc.

[24] ACS 2005-2009, B25071, B25119.

CHAPTER 40B

Table 8.10. Rental Housing Costs and Renter Household Incomes (2009 Dollars)

Geography	Number of Renters	Median Household Income	Median Monthly Housing Cost	Median Housing Cost % Monthly Income	Renters with High Housing Costs	Elderly Renters with High Costs
Ayer	1,343	$44,542	$855	24.1%	43.1%	83.7%
Dunstable	53	$62,250	$493	16.1%	19.4%	N/A
GROTON	433	$60,202	$1,503	22.7%	19.7%	50.3%
Littleton	415	$19,073	$741	33.4%	54.7%	59.0%
Pepperell	698	$39,419	$824	26.1%	37.4%	36.6%
Shirley	608	$45,938	$994	28.4%	45.0%	75.9%
Townsend	406	$28,542	$839	30.0%	50.0%	15.5%
Tyngsborough	447	$37,470	$1,119	31.1%	56.3%	45.1%
Westford	531	$55,917	$1,148	22.7%	25.3%	55.1%

Source: ACS 2005-2009.

When less than 10 percent of a town's housing stock consists of deed restricted low-income units, G.L. c. 40B, §§ 20-23 ("Chapter 40B") empowers the Zoning Board of Appeals to issue comprehensive permits for developments with low-income housing. The 10 percent minimum is based on the total number of year-round housing units reported in the most recent decennial census; for Groton, this means that 334 units out of a total of 3,339 (Census 2000) must be affordable to low-income people. The Massachusetts Department of Housing and Community Development (DHCD) maintains a list of deed restricted low-income units in each city and town. Known as the Chapter 40B Subsidized Housing Inventory, the list determines whether a community meets the 10 percent minimum. It also tracks expiring use restrictions, i.e., when non-perpetual low-income housing deed restrictions will lapse. Table 8.11 reports Groton's Subsidized Housing Inventory, which includes 199 low-income units (6 percent) as of March 2011.

A Chapter 40B comprehensive permit is a type of unified permit: a single permit that replaces the approvals otherwise required from separate local permitting authorities. The Board of Appeals may approve, conditionally approve, or deny a comprehensive permit, but in towns that fall short of the 10 percent minimum, aggrieved developers may appeal to the state Housing Appeals Committee (HAC). By consolidating the approval powers of multiple town boards and creating an administrative appeals process, the state legislature hoped to provide more low-income housing in suburbs and small towns. Despite many years of controversy about Chapter 40B, Massachusetts voters recently defeated a ballot question to repeal the law.

Several Massachusetts communities, including Groton, have adopted special zoning that encourages or requires developers to provide low-income housing in their projects. If the low-income units meet the same requirements that DHCD imposes on comprehensive permit developments, the units become eligible for the Subsidized Housing Inventory. According to DHCD, 45 percent of Groton's Subsidized Housing Inventory consists of units built without a comprehensive permit. They include eighty-three rental units (not all of which are actually affordable to low-income households)[25] in two developments and five homeownership units in three developments. In addition, Groton has used Community Preservation Act (CPA) funds for affordable housing planning and predevelopment costs.

MEASURING AFFORDABILITY

The intent of Chapter 40B is to provide an equitable distribution of low-income housing throughout the state. However, the number of Chapter 40B units in a city or town does not measure local housing needs or the degree to which people can afford the housing they occupy. From a housing policy perspective, a home is not affordable to low-income people if it requires them to pay more than 30 percent of their monthly gross income for housing costs: a mortgage payment, property taxes, and house insurance for homeowners, or rent and basic utilities for tenants. By definition, low-income households paying more than 30 percent of their income for housing costs are considered housing cost burdened. From time to time, the U.S. Department of Housing and Urban Development (HUD) publishes housing affordability statistics for every state, county, city, and town. HUD's most recent statistics omit small towns like Groton and a majority of its neighbors, with the exception of Westford.[26] Nevertheless, it is possible to make a conservative estimate of the number

[25] Under current state policy, the Subsidized Housing Inventory includes all units in a mixed-income rental development as long as 25 percent of the apartments are low-income units or at least 20 percent are very-low-income units. For example, all seventy-four units at River Court Residences, a mixed-income development, are listed on the Subsidized Housing Inventory even though fifty-nine tenants pay market rents.

[26] HUD, Comprehensive Housing Affordability Strategy (CHAS), CHAS 2005-2007 Excel files at www.huduser.org/. Derived from American Community Survey 2005-2007 Three-Year Data. The

Table 8.11. Chapter 40B Inventory in Groton (2010)

Project Name	Street	Type/Subsidy	SHI Units	Affordability
Groton Residential Gardens*	Mill and Main St.	Ownership	11	Perpetual
Brookfield Commons*	Brookfield Rd.	Ownership	8	2029
Squannacook Hill*	Townsend Rd.	Ownership	5	Perpetual
Brookfield Commons*	Brookfield Rd.	Ownership	2	Perpetual
Meadow Brook	Nashua Rd.	Ownership	2	Perpetual
Fawn Terrace	Fawn Terrace	Ownership	2	2054
Lowell Road	Lowell Rd.	Ownership	1	Perpetual
698A & B Townsend Road	Townsend Rd.	Ownership	2	Perpetual
River Court Residences	West Main St.	Rental/MassDevelopment	74	2040
Groton Commons*	Willowdale Rd.	Rental/HUD 202	34	2031
Winthrop Place*	Main St.	Rental/USDA	24	2044
GHA/Petapawaug Place*	Lowell Rd.	Rental/State Elderly	20	Perpetual
GHA/Petapawaug Place*	Lowell Rd.	Rental/State Family	5	Perpetual
GHA/Sandy Pond Road	Sandy Pond Rd.	Rental/State§	9	2036
Total			199	

Source: MA Department of Housing and Community Development (DHCD), Subsidized Housing Inventory, December 2010.

*Denotes low-income units created under a comprehensive permit.

§The Sandy Pond units were created under Groton's TDR zoning and sold to the Groton Housing Authority. Source: Groton Planning Department.

† The Town has received approval for five additional SHI units that are not yet reflected on the inventory.

of low-income households and unaffordably housed people in Groton, using recent data from the Bureau of the Census and earlier housing affordability statistics from HUD.

Affluent towns almost always appear to have very little need for affordable housing because the number of lower-income households is so small. A decade ago, about 23 percent of Groton's households (778) had low incomes and just over half (404) met the federal definition of housing cost burden. At the time, Groton had only ninety-three units on the Subsidized Housing Inventory, and nearly all were rental units.[27] Considering the distribution of household incomes and the size of homeowner and renter households in Groton as of 2009, and the HUD income limits that applied to affordable housing in Groton's area in 2009, it is reasonable to assume that about 24 percent of Groton's households (846) have low incomes and 57 percent of the low-income households (484) are housing cost burdened. As in 2000, most were homeowners. This makes sense because Groton has so little rental housing, and most of the rental developments that do exist are wholly or partially subsidized. It seems that the already-limited class mix that existed in Groton a decade ago has not changed very much, yet the proportion of lower-income households that need affordable housing has increased. HUD affordability statistics indicate that similar changes have occurred in Westford. In Middlesex County and the Greater Boston area, however, the percentages of low-income households and cost-burdened low-income households have increased at even higher rates. While regional housing needs have grown, they remain inequitably distributed.[28]

AVAILABILITY OF AFFORDABLE HOUSING

Communities sometimes find Chapter 40B frustrating because they already have quite a bit of low-cost housing, yet the units do not qualify for the Subsidized Housing Inventory. However, housing units that are affordable due to their age, condition, or location are not the same as units with a deed restriction that keeps units affordable and available for low- and moderate-income people. In Groton and other towns, homeownership and rental units offered at below-market prices do not always house families with lower incomes. Units listed on the Chapter 40B Subsidized Housing Inventory have to comply with numerous requirements, including price controls and

three-year survey covers communities with populations of 20,000 or more.

[27] DHCD, Chapter 40B Subsidized Housing Inventory, July 1997. The 1997 list is the last update DHCD published before Census 2000. When the list was updated again to reflect Census 2000 housing counts (April 2002), Groton had 95 low-income units.

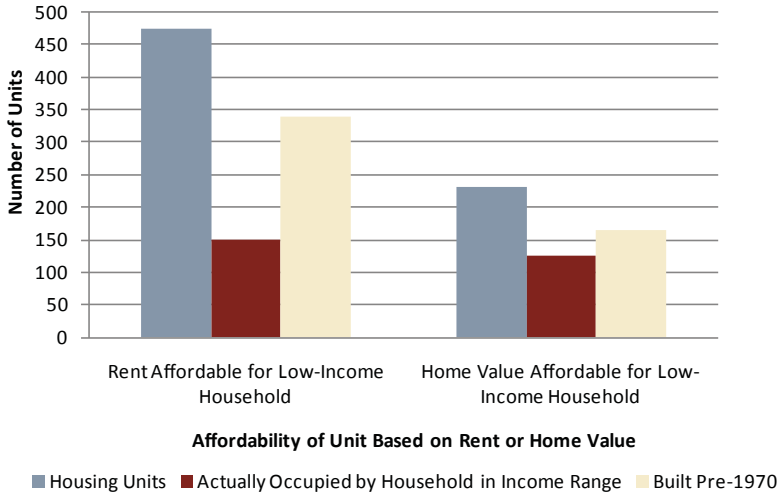
[28] HUD, CHAS 2005-2007 Data.

income eligibility rules, regardless of whether the units were constructed under a comprehensive permit or an inclusionary zoning special permit. However, this is not the case for unrestricted privately owned housing.

HUD tracks and reports an affordable housing barrier known as **affordability mismatch,** which means housing units that are affordable but unavailable to low-income households because the units are already occupied by higher-income households. In Groton and all of the surrounding towns, the number of units affordable to low-income households significantly exceeds the number of units on the Chapter 40B Subsidized Housing Inventory, yet low-income households remain housing cost burdened. This is partially because an affordability mismatch prevents them from purchasing or renting existing units they could otherwise afford. For example, nearly 90 percent of the rental units in Groton a decade ago had monthly rents that were technically affordable to low-income households, yet only 32 percent were actually occupied by low-income tenants (Fig. 8-9).[29]

Fig. 8.9. Affordability Mismatch (2000)

Source: HUD, CHAS 2000 Data



Housing for people with disabilities

Affordability is not the only type of housing need that a master plan housing element should consider. Housing for people with disabilities involves more than providing barrier-free dwellings for people with mobility impairments. For example, the closing of state hospitals and other residential centers that housed people with mental and cognitive disabilities has created needs for community-based housing. In addition, people with sensory impairments have housing design needs that differ from the needs of people who use wheelchairs. The Mass Access Registry, a statewide service that lists accessible and access-retrofit units in each community, does not identify any accessible units in Groton.[30] However, Groton has housing for people with disabilities, including four of the thirty-four units at Groton Commons on Willdale Road (constructed for elderly and disabled people) and the assisted living units at the Rivercourt development. Groton's Subsidized Housing Inventory does not include any units in group or congregate residences for adults with major life-long impairments.

It is difficult to measure local needs for accessible housing. Groton is so small that population surveys sometimes fail to capture disability-related information. Moreover, concentrations of people with disabilities are more likely to be found in communities that offer meaningful housing choices, namely the cities and larger towns. Needs for barrier-free and other accessible housing are likely to increase in tandem with the aging of the population, both for those with specific disabilities and people with chronic health problems. In addition, the Groton-Dunstable School District has several students with severe disabilities in out-of-district placements.[31] When these students reach the age of 22, supportive housing will almost certainly be part of their long-term planning needs.

Housing market

Housing Sales

Groton is primarily a "buy-up" community for households in the Boston and Lowell metro areas, where a majority of the town's residents work. Real estate transaction records for recent housing sales show that about 85 percent of Groton's incoming homebuyers traded up from a house or condominium in another town, using their equity to make a downpayment on a more valuable home in Groton.[32] From 2000 to 2007, Groton's single-family sale prices rose at a fairly steady pace of about 4.5 percent per year (Fig 8.10). Though prices in Groton did not increase as rapidly as those in some of the neighboring towns, Groton also did not add as many new hous-

[29] More recent affordability mismatch data for towns in Groton's size range will not available until 2012.

[30] CHAPA, MassAccess Registry, www.massaccesshousingregistry.org.

[31] Massachusetts Department of Elementary and Secondary Education (DESE), Groton-Dunstable School District Profile, SPED Population, http://profiles.doe.mass.edu. There are 31 students in out-of-district placements.

[32] The Warren Group, Real Estate Records Search, user-defined query, Groton, Massachusetts: single-family home sales, 2006-2010.

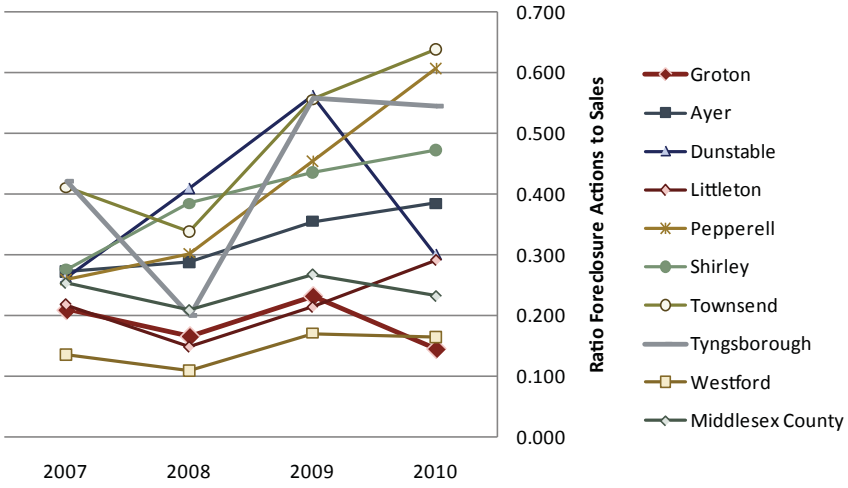
ing units. Nevertheless, consistently high sale prices kept the median price in Groton at or very close to the regional maximum - usually below Dunstable and very similar to sales price trends in Westford.

Foreclosures

Any near-term growth projections made today must account for the direct and indirect effects of the national foreclosure crisis on housing development and the economy. In 2007, mortgage foreclosures accelerated throughout the United States and the housing market entered a prolonged state of paralysis. The foreclosure crisis toppled major banks and triggered a recession, which in turn caused a dramatic increase in unemployment. What began as an urban problem linked to sub-prime loans has gradually shifted to suburbs and small towns. In Groton, sale prices have fallen about 3 percent per year, on average, though the statistical average masks a dramatic one-year drop that occurred between 2007 and 2008. Just as sale prices have decreased, so has overall sales volume. Total sales declined somewhat for two years in a row in Groton, Westford, and Dunstable before hinting at a mild market rebound in 2010. Other communities in Groton's region have not fared as well. Housing prices remain depressed in Ayer, Pepperell, and Townsend, where sales decreased 9 to 13 percent per year between 2007 and 2010.[33]

Massachusetts towns have not experienced the degree of market turmoil that persists in many parts of the country, but foreclosures have occurred in and around Groton. The ratio of foreclosure activity to sales activity in Groton peaked in 2009, with 2.3 foreclosures per ten houses sold. As indicated in Fig. 8.11, however, foreclosure-sales ratios have reached extraordinary levels in nearly all of the adjacent towns except Westford. In fact, Groton and Westford are the only communities in the immediate region with foreclosure-sales ratios that have remained below the Middlesex County average since the foreclosure crisis began. In addition, the ratios for single-family homes have risen faster than for any other residential (or nonresidential) use. According to available data, there are currently some 280 distressed properties in Groton's region.[34]

Fig. 8.11. Foreclosure-Sales Ratios (2007-2010)
Source: The Warren Group



NEW DEVELOPMENT

Planning Department records indicate that Groton has had episodes of rapid growth since the late 1970s, including subdivision plans with nearly 600 new house lots in the 1980s and another 314 after the 1990-1991 recession. The Planning Board approved 370 more lots between 2000-2009, as shown in Table 8.12 but the largest project - a 130-lot subdivision of the Surrenden Farm property - will never be constructed because the Town, the Trust for Public Land (TPL), and the Groton Conservation Trust pooled their resources and acquired the property for open space.[35] As of 2010, construction was underway or recently completed for several developments included in Table 8.12, for a combined total of 222 dwelling units.[36]

Although building permit records also reveal a slowdown in new residential construction, Groton has not experienced the same rate of decline in housing growth as some of its neighbors. Both Groton and Westford have maintained fairly consistent production levels since 2005, yet as Fig. 8-12 illustrates, Groton's annual production since 2005 pales in comparison to the number of units permitted in 2001 and 2002.[37]

[33] The Warren Group, Town Stats, user-defined database query, calendar year housing sales and median sale prices, Groton, Ayer, Dunstable, Littleton, Pepperell, Shirley, Townsend, Tyngsborough, and Westford, 1998-2010.

[34] The Warren Group, Foreclosures, user-defined database query.

[35] The data in Table 8.12 also include a two-lot development that will not be constructed because the Town acquired the land for open space in 2003.

[36] Groton Land Use Department, "Subdivisions Under Construction," 2001-2009, undated.

[37] University of Massachusetts, Donohue Institute, State Data Center, Annual Building Permits by City, Town, and County, 2000-2009.

Table 8.12. Number of Lots in Approved Plans by Decade, 1970-2009

Development Type	1970-79	1980-89	1990-99	2000-009	Total by Type
Conventional Plans	117	7	137	16	277
Flexible Development Plans	0	32	0	0	32
Special Permit (MRD)	0	548	177	354	1,079
Total by Decade	117	587	314	370	1,388

Source: Groton Planning Department, 2010.

Notes:

(1) The 2000-09 lot count includes Surrenden Farm.

(2) Table 8.13 does not include lots shown on "Approval Not Required" or ANR plans endorsed by the Planning Board.

Regulating housing growth

Zoning

Groton's primary tools for regulating housing growth include zoning and the Subdivision Control Law. The Board of Health's sewage disposal regulations, which supplement Title V of the Massachusetts Environmental Code, also have the effect of regulating housing growth even though technically they are intended to protect public health and safety. Most of the town lies within a single zoning district, Residential-Agricultural (R-A), a very-low-density zone intended primarily for detached single-family dwellings on lots with at least 80,000 sq. ft. of upland. Although Groton also allows two-family dwellings by right in the R-A district, the town does not see many applications to construct them (Fig. 8-12). High land values, large-lot zoning, and sewage disposal requirements would make it challenging for homebuilders to construct many two-family dwellings in Groton. In addition, the Water Resource Protection Overlay District (WPD) limits allowable residential uses to one single-family dwelling per lot regardless of uses permitted in the underlying district. The WPD covers well over half the town.

Groton's Zoning Bylaw offers some opportunities to develop mixed residential uses. For example:

- **Flexible Development.** A Flexible Development under § 218-26 may contain single-family, two-family, and multi-family dwellings. When a Flexible Development plan includes more than ten units, it must provide an affordable housing benefit to the Town. The affordable units are in addition to the maximum number of homes the developer is otherwise allowed to build, i.e., the number of homes a developer could build in a conventional subdivision with 80,000 sq. ft. lots. Groton also offers a modest density bonus for projects that meet specified planning goals, such as providing more open space than the required minimum (35 percent of the site), senior housing, or a "transfer lot" under Groton's Transfer of Development Rights (TDR) provision.[38]

  Groton has made creative use of Flexible Development to accomplish multiple planning objectives. The Town does not apply the rate-of-development cap to bonus units created in exchange for a TDR lot. In 2003, Town Meeting decided to offer two density bonus units for each TDR lot, which has helped to produce housing and also protect valuable open space. In addition, the Flexible Development/TDR was used to create nine affordable rental units for the Groton Housing Authority at Sandy Pond Road.

  Originally adopted ca. 1980, a Flexible Development plan involves a voluntary special permit application for developments with one to five housing units and a mandatory special permit application for developments with six or more units. The mandatory application process became effective in 1997 when Groton adopted a Major Residential Development (MRD) provision, § 218-26.1. The Massachusetts Appeals Court recently overturned the MRD concept in a case against the Westwood Planning Board.

- **Multi-Family Conversion.** Under § 218-27(A), an existing building can be converted to up to three multi-family units by special permit. However, the building had to exist with the conversion bylaw was adopted and the property must be owner-occupied. In addition, the town requires two parking spaces per unit, and there does not appear to be a waiver provision to reduce parking for small (one-bedroom) units.

- **Subsidized Elderly Housing.** By special permit from the Board of Appeals under § 218-27(B), subsidized elderly ("over-55") housing is allowed in buildings with a maximum of twelve units and at a density not exceeding one unit per 5,000 sq. ft.

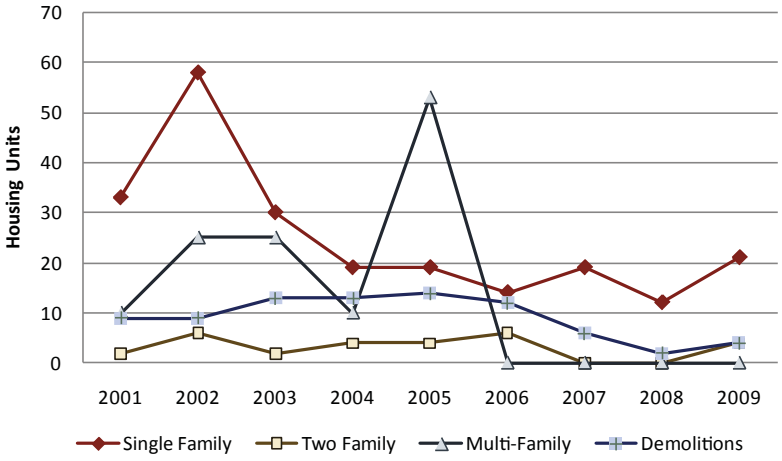
[38] See also, Chapter 7, Land Use.

- **Planned Multi-Family Development.** Groton's "Planned Multi-Family Development" bylaw, § 218-27(C), requires a special permit from the Planning Board. However, a developer may not apply for a Planned Multi-Family Development special permit unless the project first receives Concept Plan Approval from Town Meeting. In effect, the concept plan forms the basis for the zoning that governs development of the site. To utilize this provision of the Zoning Bylaw, a developer must prepare a series of submissions for review by the Planning Board and other town departments before Town Meeting. If the concept plan receives Town Meeting approval, the Planning Board may grant a special permit within twenty-four months. Eligible sites must have at least 80,000 sq. ft. of land and an additional 10,000 sq. ft. per bedroom in the project. It is not clear whether such low density would work in Groton given the town's high land values and the differences in market housing prices between conventional single-family homes and multi-family or townhouse units.

- **Town Center Overlay District.** Established in 2008 as the Station Avenue Overlay District and renamed in 2011, the Town Center Overlay District (TCOD) includes land along Station Avenue, Court Street, and the Nashua River Rail Trail in Groton Center. The TCOD provides for commercial uses, duplexes, and multi-family dwellings. Development in the TCOD is governed by less prescriptive requirements than those which apply in Groton's other zoning districts. Notably, the TCOD has no minimum lot area or frontage regulations. Buildings may not exceed a height of thirty-five feet, and no buildings are permitted within fifteen feet of the district boundary. There is also a maximum site coverage rule (75 percent). Although the TCOD has a residential density cap of ten units per acre, up to fourteen units per acre may be built through the use of TDR lots. The overlay area is the only designated "receiving zone" for TDR lots in town. In all other respects, development in the TCOD is judged for its adherence to the Planning Board's design guidelines.

- **Accessory Apartments.** In 2005, Groton added an accessory apartment provision to the Zoning Bylaw at§ 218-16(D). The Board of Appeals has authority to grant accessory apartment special permits if the principal dwelling is owner-occupied, the accessory unit does not exceed 800 sq. ft. of floor area, and the septic system on the property can support both the house and the apartment. In addition, the Bylaw directs the Board of Appeals to give special consideration to applications for accessory apartments that will be occupied by low- or moderate-income people, provided the unit's affordability is protected by a deed restriction. However, DHCD's current policies and requirements make it very difficult to add accessory apartments to the Subsidized Housing Inventory.

Fig. 8.12. Residential Building Permits
Town of Groton
Source: U-Mass Donohue Institute, State Data Center; Town of Groton



Comprehensive Permits

According to DHCD, the Groton Board of Appeals has granted comprehensive permits for a total of 109 units, including eighty-three rental units. Sixty-six of the comprehensive permit units are subject to expiring use restrictions.

Local Capacity

- **Affordable Housing Trust.** Under a state law that went into effect in 2004, Massachusetts communities have authority to create an affordable housing trust: an entity that can acquire, sell, and lease property for affordable housing and also provide a range of housing services such as downpayment assistance. Groton recently established a housing trust, and since the Town has also adopted the Community Preservation Act (CPA), it is poised to carry out locally controlled affordable housing production.

- **Groton Community Preservation Plan.** Groton's Community Preservation Committee (CPC) considers requests for CPA funding and recommends expenditures to Town Meeting each year. Part of the CPC's charge involves preparing an annual Community Preservation Plan, which outlines eli-

gible uses of CPA funds and potential ways to invest CPA funds in community housing. Groton has about $400,000 set aside for affordable housing purposes and its Affordable Housing Trust has legal authority to invest those funds in developments that include affordable units. The Town is currently considering a plan to invest CPA funding in a mixed-use development on Main Street that may include three affordable units.

- **Housing Consultant Services.** Richard Heaton (H&H Associates) of Bolton has been working with the Board of Selectmen and Groton Housing Trust to identify opportunities for affordable housing development on Town-owned property.

- **Groton Affordable Housing Strategy.** In 2004, DHCD approved an affordable housing plan that Groton had submitted under regulations that existed at the time. However, the regulations changed in 2008 and Groton's plan expired in 2009. The 2004 Housing Strategy promoted the following recommendations:[39]

  - Create a Housing Task Force to help the town continue to work toward the 10 percent statutory minimum under Chapter 40B and track locally approved developments in order to ensure that new affordable units are added to the Subsidized Housing Inventory;

  - Explore options to increase the effectiveness of the affordable housing requirements in Groton's zoning;

  - Purchase existing homes and sell them as deed-restricted affordable units to low-income first-time homebuyers;

  - Adopt an accessory apartment bylaw and provide amnesty for illegal apartments to come into compliance;

  - Investigate ways to use CPA revenue and a variety of state funding sources to create more affordable housing in Groton; and

  - Identify Town-owned properties that would be suitable for affordable housing construction.

- **Groton 2020.** Groton's last master plan, Groton 2020 (2002), devotes considerable attention to housing affordability and diversity. Its over-arching goal: "To guide future housing development and future use of existing homes in a manner that fits within the physical landscape of Groton, meets the needs of people at all stages of their lives, encourages the continuation of Groton's character as a town of individuals and families who feel that they are a part of a community, and complements the attributes of Groton's New England town character." Toward these ends, Groton 2020 recommended providing housing for seniors and retirees, integrating affordable units in new market-rate developments, preserving the affordability of Groton's existing affordable units, and encouraging conversion of large single-family homes to multi-family dwellings with affordable rental units.

Issues

Many residents say that Groton values population diversity, yet available data suggest that Groton has not been a demographically diverse town for quite some time. It is not clear what Groton residents have in mind when they talk about diversity. At the most basic level, diversity means "differences," but in community planning, population diversity is *sociodiversity*: differences in class, race, ethnicity, and ideology. Groton has people with a variety of occupations, backgrounds, and interests, and there is some class mix in Groton, but not much. Overall, Groton's population and household characteristics mirror those of other upper-income suburbs. Communities control the make-up of their populations by the choices they make to control housing growth, and Groton is no exception. It is a major challenge for small towns to attract, include, and retain a mix of people and households, yet without housing development policies that broaden and transform Groton's housing market, it is unlikely that sociodiversity can be attained. If Groton wants to be a sustainable community, it needs to place more emphasis on equitable housing and reduce the barriers that make it difficult for a wider range of households to find housing choices in Groton.

Housing Affordability

Homeownership. Despite falling home prices in the past few years, the cost of housing in Groton remains an enormous barrier for low-income people. While the town offers some relatively inexpensive condominiums and older single-family homes, they make up a small part of Groton's housing inventory. In addition, the absence of deed restrictions means that low-income people may not

[39] The 2004 Housing Strategy was Groton's second affordable housing plan. The first was completed in 1988 as part of the Groton Strategic Planning Project.

have access to units they could afford. This exacerbates the problem of housing cost burden.

The difference between a community's median housing sale price and the price affordable to a low-or moderate-income homebuyer is known as an *affordability gap*. Fig. 8-13 and Fig 8-14 report the affordability gap for single-family homes and condominiums in Groton and the surrounding towns. From a fair housing perspective, the issue is whether homebuyers have choices within a given market area. As shown in Fig. 8-13, moderate-income families seeking a single-family home in Groton's area are more likely to find choices they can afford in just three neighboring towns due to the high cost of housing in the other towns, including Groton. For low-income families, the median single-family sale price exceeds their purchasing power in all nine communities.

Fig. 8-14 shows that most towns in Groton's area have inventories of condominium units that do offer moderate-income affordability. Still, most of these units remain unaffordable to *low-income* homebuyers.

Rental Choices and Affordability. Rental options have decreased in Groton and all of the surrounding communities. The robust and prosperous housing market conditions that existed before 2007 led to the conversion of some former rental units to condominiums, and new rental production is almost non-existent. Groton wants to provide more rental housing, and the Town has taken steps to achieve that end. Good examples include the use of TDR to create nine units of housing for the Groton Housing Authority and the recent adoption of an accessory apartment bylaw. However, creating a rental housing base with a range of choices takes even more work and more resources. There are several challenges:

- The region needs a variety of apartments - in terms of unit sizes and amenities - at all market levels. While very low-income families remain the most unaffordably and unsuitably housed of all renters, the rental housing needs of low- and moderate-income people are often more difficult to meet. Under fairly long-standing federal requirements, local housing authorities and non-profit developers must give priority for subsidized rental units and cash rental assistance to very low-income households. Even though low-income households technically qualify for rental assistance, the shortage of subsidies and the enormity of very low-income need mean there are not enough resources to help low-income renters.

- Median gross rents in Groton and the surrounding towns seem affordable at first glance, but the first glance is deceptive. Excluding Ayer, the towns in Groton's region have very few apartments and what they do have tends to be financially subsidized: owned and managed by local housing authorities or non-profit developers such as RCAP, and restricted for occupancy by very low-income tenants. The composition of the rental inventory itself distorts the mid-point rent, and units rented at the mid-point are not actually available to the general public.

- Rental housing requires strong property management capacity. Many of the problems that communities attribute to apartment developments (and the tenants who occupy them) actually stem from poor property management. The Groton Housing Authority does an outstanding job managing its properties, but by statute its role is limited to low-income rental housing. Even if the Groton Housing Trust decides to become actively involved with rental housing development, its role will be mainly that of an investor or possibly a developer. Municipal housing trusts are not designed or equipped to serve as property managers.

- Groton's existing rental housing inventory is primarily composed of units for seniors, yet statistically, the most critical unmet needs involve rental choices for families - and mainly small families.

Chapter 40B

Groton has been very creative in its approach to producing affordable units with "staying power" - units for which resale prices and future rents have some guarantee of remaining affordable. Since Groton has not met the 10 percent minimum under Chapter 40B, it remains exposed to the possibility of a large, unwanted comprehensive permit - an outcome antithetical to Groton's vision of itself and incompatible with its established development pattern. Nevertheless, at 5.9 percent, Groton has made more progress than many towns of comparable wealth. Often, it has done so with its own regulatory tools, not with comprehensive permits. Considering all 351 cities and towns in the Commonwealth, the median is 5 percent.[40]

Zoning

Few aspects of Groton's zoning do more to oppose sustainability than the large lot area and frontage requirements that apply in the R-A district. However, simply reducing the minimum lot area or modestly decreasing the minimum lot frontage for a conforming lot will

[40] Based on the percentage of affordable units in each community as of December 2010.

not produce a sustainable development pattern. Many (if not most) Massachusetts suburbs have conventional one-acre lot regulations, and the end result is still broadly distributed, low-density, auto-dependent growth that fragments wildlife habitat and depletes the beauty of roadside open space. Still, providing realistic opportunities for mixed residential uses will require some densification that Groton residents may not want. The town has to decide whether the benefits of socio-diversity outweigh the perceived disadvantages of allowing - if not encouraging - more housing development. Some development policies that need to be reassessed in light of Groton's housing goals:

- Groton provides some ways to create multi-family dwellings, but all of the available methods require a special permit. In addition, Flexible Development (which requires inclusion of affordable units) is allowed only in the R-A district. Mechanisms to create small-scale multi-family dwellings by right - subject to design review - would almost enhance the town's prospects of diversifying its housing stock.

- The most likely mechanism for creating multi-family housing in and adjacent to the villages is the multi-family conversion option in § 218-27(A). By limiting conversions to buildings that existed with the bylaw was adopted, Groton has placed significant constraints on multi-family production. Moreover, the potential for incompatibility exists between preserving the historic character of converted buildings and creating units for family occupancy. The issue is that older buildings are quite likely to have lead paint surfaces, the removal of which can be very expensive and also harmful to historic architectural details.

- Groton still has quite a bit of vacant, developable land, so in the near term, most housing development will involve new construction. However, the town appears to be experiencing more demolition/reconstruction activity than may be obvious to a majority of its residents. According to data from the Building Department, eighty-two residential demolition permits were issued between 2001 and 2009. In the same period, permits for residential additions were more than double the number of new construction permits.

Fig. 8.13 Homeownership Affordability Gap: Single-Family Homes

Sources: HUD, DHCD, Community Opportunities Group, Inc.

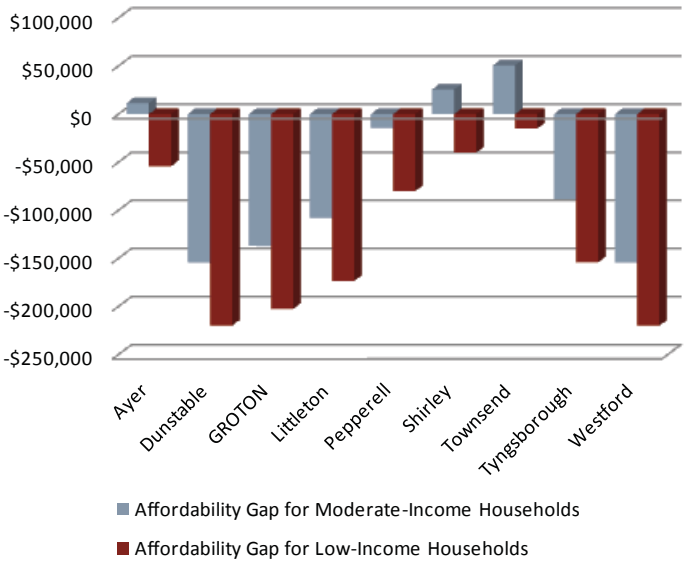


Fig. 8.14. Homeownership Affordability Gap: Condominiums

Sources: HUD, DHCD, Community Opportunities Group, Inc.

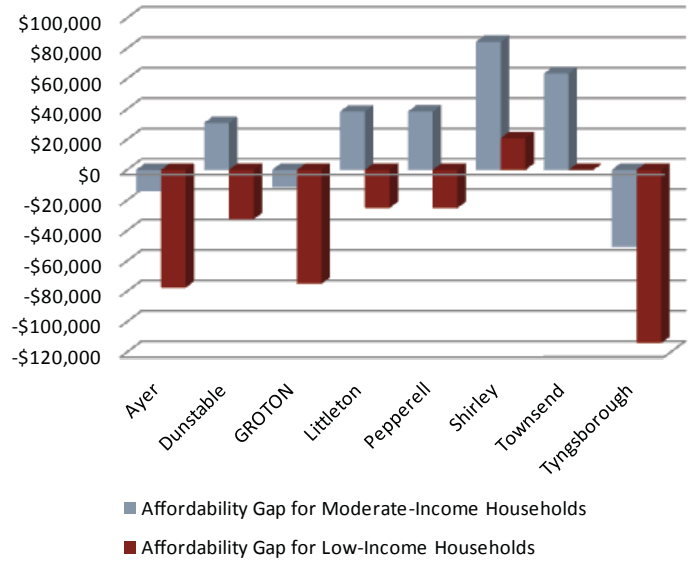
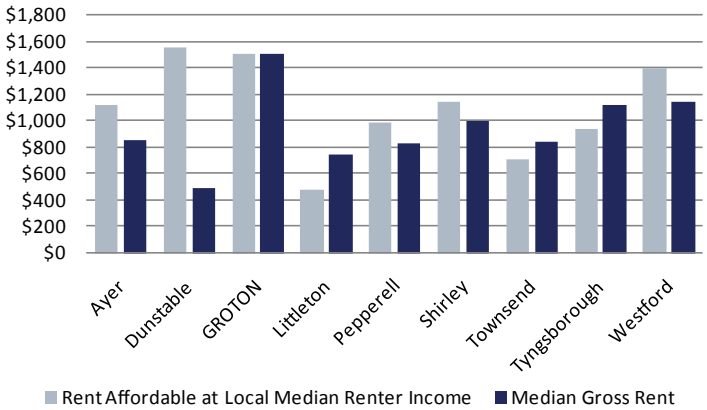


Fig. 8.15. Rental Affordability

Source: ACS 2005-2009



Arguably, some of the demolition permits may have involved partial demolition activity instead of full teardowns, and some additions or alterations permits most likely involved small home improvement projects. Still, it is noteworthy that for 10 percent of Groton's existing single-family properties, the value of the dwelling is less than half the value of the land. When building values differ this much from the value of the lots they occupy, the risk of teardowns increases dramatically. In many cases, these are the houses that have traditionally offered modest prices in Groton.

- Options to create mixed-use buildings in village locations would help to facilitate a more sustainable development pattern in Groton, but under the Town's present zoning, this type of activity is available only in the Town Center Overlay District.

Goals and recommendations

GOAL: ENCOURAGE A DIVERSITY OF HOUSING TYPES FOR A RANGE OF INCOME LEVELS AND AGES.

Recommendations:

- **Prepare a new Affordable Housing Plan.** Groton should consider preparing a new affordable housing plan that meets DHCD's current Housing Production Plan requirements. In February 2008, DHCD adopted new Chapter 40B regulations that include a revised and updated option for housing plans. Under the new rules, Groton could become eligible for housing plan certification and deny comprehensive permits for up to two years if the Town creates at least thirty-three low-income units within a single calendar year.[41]

  The information in this housing element would meet nearly all of DHCD's specifications for a housing needs analysis because the demographic and housing data cover both local and regional housing needs. A fresh look at these needs and the resources available to support them will be critical as Groton continues to work toward increasing its Subsidized Housing Inventory. Some additional steps that should be taken include an analysis of supportive housing needs, done in conjunction with local and regional service providers. The Town also could conduct a community survey, working collaboratively with the Groton Housing Authority, Council on Aging, the staff at River Court Residences, and local churches.

- **Think regionally.** Groton should explore options for working collaboratively with adjacent towns on a regional affordable housing plan. Groton's first master plan consultant, Charles Eliot, cautioned many years ago that "the future of Groton can be planned only in relation to its setting in a larger area or region."[42] His comment applied both to environmental planning and economic planning. The sub-region that includes Groton offers a continuum of housing prices, but the continuum is not equitably distributed.

- **Provide housing for people with disabilities.** Groton needs to consider taking an activist role in planning for and actually creating housing for people with disabilities. The aging of the population means that needs for barrier-free and accessible housing and "aging-in-place" services will increase significantly over the next two decades. The absence of congregate residences and supportive housing services means that disability populations have no choice but to look outside their own communities for a place to call home. Furthermore, each bedroom in a group home counts as one unit on the Subsidized Housing Inventory. As a result, a typical group home for six adults with disabilities would add six units to Groton's Chapter 40B Inventory.

  In addition, the town could consider requiring some accessible units in multi-family dwellings that are otherwise exempt from the Massachusetts Architectural Access Board's accessible dwelling unit requirements (521 CMR 9.00). For example, special permits for single-family to multi-family conversions involving four or more units could be required to provide at least one accessible or adaptable unit as a condition of approval.

- **Encourage the production of more rental housing, both affordable and market rate, for a broad range of people.** Groton's Accessory Apartment bylaw could be modified to address more types of housing needs and provide homeowners with more flexible options. The bylaw currently limits accessory apartments to one-bedroom units contained within the interior of single-family homes. However, Groton

[41] Under the previous regulations, Groton would have been required to create at least fifty low-income units in a single 12-month period in order to qualify for a two-year housing plan certification. However, the thirty-three unit minimum will increase once the Bureau of the Census releases official Census 2010 housing counts.

[42] Charles W. Eliot, *Planning for Groton* (1963), I-37.

could allow accessory apartments in accessory structures on the same lot as the principal dwelling, e.g., an apartment above a garage. Furthermore, the one-bedroom restriction all but guarantees that accessory apartments will not be able to address needs for family rental housing.

- **Use CPA funds to address a broader range of affordable housing needs, even if the CPA-assisted units do not qualify for the Chapter 40B Subsidized Housing Inventory.** Groton is fortunate to have CPA funds available for housing affordable to families with incomes up to 100 percent of area median income (AMI). Whether the CPC retains control over the funding or transfers it to the Affordable Housing Trust, there should be a business plan for the fund so that spending decisions will be guided by transparent, consistent principles, e.g., affordability targets, financing mechanisms, the costs and benefits of investing in housing preservation for expiring use restrictions.

- **Promote racial, ethnic, and cultural diversity.** Groton should ensure that the sale or rental of affordable housing complies with federal and state civil rights laws and regulations.

GOAL: ENCOURAGE AND PROMOTE NEW HOUSING DEVELOPMENTS THAT CREATE A SENSE OF PLACE, PROMOTE SOCIAL INTERACTION, AND A SENSE OF COMMUNITY.

Recommendations:

- **Consider additional zoning techniques to promote neighborhood developments that meet the town's social, economic, and aesthetic objectives.** Groton has opportunities to make its existing zoning even more effective for meeting a variety of housing needs, including but not limited to affordable housing. For example:

  - Offer an as-of-right approach to Flexible Development that includes a higher minimum open space requirement and meaningful density incentives for compact form, mixed residential uses, and percentage of affordable units, and use the special permit process only to consider alternatives to the specifications for a by-right development.

  - Allow single-family to multi-family conversions, up to three units, by right, subject to site plan review and design review, and retain a special permit requirement for conversions involving more than four units;

  - Change the Planned Multi-Family Development bylaw by eliminating the existing Concept Plan Approval process and replacing it with a concept plan special permit granted by the Planning Board; establishing clear inclusionary housing requirements; and establishing unambiguous minimum (or maximum) dimensional requirements and providing for design review.

- **Set clear, realistic guidelines for Chapter 40B developments and provide attractive incentives for developers to comply**. Some communities in Massachusetts have benefited from packaging written review criteria or guidelines for Chapter 40B developments with meaningful incentives for developers to comply. An example is a commitment from the Board of Selectmen to support Local Initiative Program (LIP) comprehensive permits that meet certain expectations, e.g., scale, preferred locations, design standards, affordability targets, and so forth. As Groton already knows, LIP is a DHCD program that offers two ways to increase the number of units on the Subsidized Housing Inventory without a conventional comprehensive permit: a type of "partnership" comprehensive permit that requires local support for a Chapter 40B project eligibility letter, and requesting the addition of low-income units created through means other than a comprehensive permit, such as inclusionary zoning. Groton has already relied upon the latter to add TDR units to its Subsidized Housing Inventory.

  Communities that have partnered with developers for LIP comprehensive permits usually say the process is more advantageous to the town and less corrosive to relationships between town boards, abutters, and developers. It is possible to incentivize the use of LIP over conventional comprehensive permits, but a town has to be realistic or the incentives will not work. The difference between this type of approach and the more common practice of publishing housing partnership guidelines is that it requires a town's elected officials to become active participants in promoting affordable housing development. Most developers yearn for clarity about what a town expects so they can plan their projects and obtain permitting decisions quickly. If offered realistic incentives to build what the community wants, some - perhaps many - developers will be motivated to respond.

GOAL: ENCOURAGE A GREATER VARIETY OF ARCHITECTURAL DESIGN AND DIVERSITY OF HOUSING TYPES.

Recommendations:

- **Encourage construction of "green" energy efficient homes.** Establish local guidelines to encourage use of sustainable building construction materials and sustainable energy systems in new construction and rehabilitation/renovation projects - or ideally, adopt the Stretch Energy Code. Local guidelines should:
  - Encourage water and resource conservation;
  - Reduce waste generated by construction projects;
  - Increase energy efficiency in buildings;
  - Provide buildings that are efficient and economical to own and operate; and
  - Promote the health and welfare of residents.

  The town also should ensure that design review of single-family, two-family, and multi-family dwellings do not conflict with green buildings guidelines, e.g., with respect to siting buildings to maximize solar gain and planting of seasonal trees for cooling.

- **Consider a "large-house review" bylaw to institute for design review of single-family homes exceeding a certain size threshold.** Several Boston-area suburbs have adopted large-house review bylaws in order to ensure that new, large single-family homes are compatible with the surrounding neighborhood, especially older neighborhoods. It will be important to prevent conflicts between design review standards and green buildings guidelines, e.g., with respect to siting buildings to maximize solar gain and planting of seasonal trees for cooling.

- **Provide meaningful alternatives to demolition of older single-family homes.** Groton should consider a special permit provision to allow two detached dwellings on one lot (one being accessory to the other) as an alternative to demolition of existing housing units. This type of approach, coupled with demolition delay, could help to protect the small, older homes that traditionally offered young families an affordable path to residency in Groton.

9

economic development

What is this element about?

Scope

- Develop an economic conditions statistical profile.
- Conduct a review of Groton's Zoning Bylaw for potential impediments to economic development.
- Research and evaluate methods to promote and perpetuate Groton's agricultural businesses.
- Research and evaluate methods to promote locally owned retail and service businesses.
- Identify areas of town for future business activity.
- Identify where and how appropriate federal and state economic incentive programs could be utilized by the Town to encourage economic development.

Key findings

- Groton's major industries include educational services, manufacturing, and healthcare and social assistance. While the educational service sector provides jobs that align well with the skills and occupations of Groton residents, most other local industries do not. For these reasons, the majority of Groton's labor force travels outside of the community for work.
- Groton's zoning and other land use regulations have a major impact on both current and future levels of commercial and industrial activity. The most obvious zoning constraint is the lack of land zoned for commercial uses. The Town Center Overlay District area could provide for a substantial infusion of new commercial activity, which in turn could bolster existing local businesses in Groton Center.
- Groton has a decent foundation of local businesses, with owners interested in increasing their breadth and reach. But local businesses also face challenges, including a perceived lack of support from Town Hall and substantial regional competition.

- Many residents want to see Groton's agriculture continue and expand, and many realize that to do this, agriculture must be a viable economic activity. The Town can develop the agricultural sector of its economy, but doing so will require work at the policy level as well as additional efforts to organize agricultural businesses and increase community support for local agriculture.

Ideas for sustainability

- *Economic development improves the quality of life in a community by improving education, health, social infrastructure, transportation, the environment, and providing employment and housing choices.* Many people think "economic development" involves bringing more businesses into a community and increasing the tax base. However, businesses are only one component of a town's economy, and tax revenue is only one benefit of a strong economy. Tax-exempt land uses also prime the economy of cities and towns, regions, and the state as a whole, and this can be seen in Groton, where educational services comprise a substantial portion of the employment base. In addition, opportunities to work at home have become popular among workers and also contribute to sustainability.
- *Strengthen Groton's local businesses through organizational support at Town Hall and by ensuring that Groton's permitting processes for local businesses are fair and efficient.* A strong local economy is important for sustainability because it allows residents to ob-

tain goods and services close to home, reducing the need to drive long distances and keeping local dollars within the community. In Groton, maintaining and strengthening the local business base will require increased networking among businesses and continued support from Town Hall. Also, permitting processes must be predictable, fair, and efficient to encourage business retention and expansion.

- *Consider buy-local initiatives to promote Groton businesses.* A sustainable local economy needs a consistent consumer base for stability and profitability. Groton will need to make a concerted effort to encourage residents to buy from local businesses consistently. With a loyal customer base, Groton's businesses can sustain their operations and continue to offer goods and services at close distances.

- *Develop agricultural policy and galvanize community support for local agriculture.* An economically sound agricultural sector of the economy is critical to sustainable development. Growing and eating locally-raised agricultural products reduces reliance on fossil fuels to transport foods, and also makes the food supply more secure. Groton can strengthen this sector of its local economy through better local agricultural policy and also by encouraging residents to support and patronize local farms. Because farming in Massachusetts presents a number of challenges, large amounts of support both from local government and the greater community will be important.

Existing conditions and trends

Labor force

Groton's labor force includes more than 5,500 residents.[1] With few exceptions, small towns and residential suburbs tend to have a relatively high labor force participation rate, and this can be seen in Groton where 75 percent of the population sixteen years and older is in the labor force. Similar conditions exist in most of the surrounding towns, too. By contrast, the labor force participation rate for the state as a whole is 66 percent and for the **Boston Metropolitan New England City and Town Area (NECTA)**, 69 percent.[2]

Labor Force Characteristics

Groton's high labor force participation rate reflects the composition and wealth of its households and the educational attainment of its adult population. Most of Groton's 3,600 households are families (78 percent), 70 percent are married-couple families, and about 41 percent are married couples with children: all characteristics that tend to correlate with high labor force participation rates. These traits are not unique to Groton; indeed, several nearby towns have similar qualities. Recent estimates show that about 64 percent of Groton's married-couple families are two-worker households, one of the highest percentages in the region.[3] In addition, 65 percent of Groton residents twenty-five years and over hold college, graduate, or professional degrees, surpassing all of the surrounding towns. Together, these factors contribute to Groton's very high median household income, which ranks second in the region, as shown in Table 9.1.[4]

LABOR FORCE BY INDUSTRY & CLASS OF WORKER

Although situated on the outer edge of the Boston NECTA, Groton is nevertheless firmly integrated within the Eastern Massachusetts economy. This, coupled with Groton's labor force characteristics, is reflected in the types of jobs held by local residents. Over half of Groton's employed residents have jobs in management, business, finance, or other professional services, as shown in Table 9.2. The same applies to Dunstable, Littleton, and Westford, although not to Ayer, Pepperell, Shirley, Townsend, and Tyngsborough.[5] The types of jobs people hold throughout the Boston area differ slightly from Groton and its neighbors, but not dramatically so, reflecting a region of well-educated, mobile workers with access to a diverse labor market.[6] Groton has comparatively small percentages of workers in construction and production and transpor-

[1] Commonwealth of Massachusetts, Executive Office of Labor and Workforce Development (EOLWD), Economic Data Programs, "Local Area Unemployment Statistics, Town of Groton, Annual 2009," Labor Force and Unemployment Data (user-defined query, July 2010), http://www.detma.org/. Note: labor force counts vary seasonally, and not all sources report labor force data the same way. Published estimates for Groton range from 5,500 to 5,800 depending on the source.

[2] A Metropolitan NECTA is very similar to a Metropolitan Statistical Area, the geography traditionally used to describe a cohesive economic region centered around a major city. U.S. Bureau of the Census, American Community Survey (ACS) Five-Year Estimates 2005-2009, B23001, American Fact Finder, http://factfinder.census.gov.

[3] ACS Five-Year Estimates 2005-2009, S2302.

[4] ACS Five-Year Estimates 2005-2009, P19013.

[5] Claritas, Inc., Demographic Snapshot Report, 2009.

[6] U.S. Bureau of the Census, ACS Three-Year Estimates 2006-2008, C24010. Data from Claritas, Inc. and the American Community Survey are not directly comparable because they are not derived from the same methodology nor are they from the same timeframe. The data should be interpreted with this in mind.

Table 9.1: Labor Force Characteristics, Groton and Region

Community	Labor Force	Labor Force Participation Rate	Population 25 Yrs. and Over	College, Graduate, Prof. degrees (Percent)	Median Household Income
Ayer	4,326	69.3%	5,383	30.4%	$55,529
Dunstable	1,823	75.8%	2,126	42.3%	$109,333
GROTON	5,526	74.5%	6,595	65.3%	$118,041
Littleton	4,313	65.2%	6,001	46.5%	$98,555
Pepperell	6,782	78.3%	7,308	38.9%	$88,185
Shirley	3,308	51.4%	5,822	26.0%	$72,530
Townsend	5,377	74.2%	6,130	29.2%	$75,174
Tyngsborough	6,718	74.9%	7,546	40.3%	$98,413
Westford	11,530	71.6%	14,076	61.1%	$119,051

Source: ACS 2005-2009, and Community Opportunities Group, Inc.

Table 9.2: Civilian Employed Population Sixteen and Over by Occupation

Community	Management, Business, and Financial Operations	Professional Occupations	Service	Sales and Office	Farming, Fishing, and Forestry	Construction, Extraction and Maintenance	Production, Transportation and Material Moving
Ayer	12.6%	25.5%	14.6%	22.5%	0.3%	10.0%	14.4%
Dunstable	23.3%	30.5%	8.3%	21.9%	0.2%	8.4%	7.4%
GROTON	23.0%	34.2%	9.0%	22.1%	0.2%	5.9%	5.5%
Littleton	17.4%	38.8%	8.3%	21.9%	0.0%	7.3%	6.3%
Pepperell	18.8%	23.4%	10.1%	24.1%	0.0%	10.3%	13.3%
Shirley	15.9%	20.5%	12.5%	25.2%	0.2%	12.2%	13.5%
Townsend	14.8%	24.2%	13.8%	22.3%	0.0%	12.2%	12.6%
Tyngsborough	19.5%	25.9%	10.4%	22.1%	0.0%	11.2%	11.0%
Westford	25.1%	35.9%	7.6%	19.9%	0.1%	5.1%	6.4%
Groton Region	19.9%	29.8%	10.1%	22.0%	0.1%	8.6%	9.6%

Source: Claritas, Inc, Demographic Snapshot Report, 2009.

tation occupations, which further reflects its highly professional, white-collar labor force.

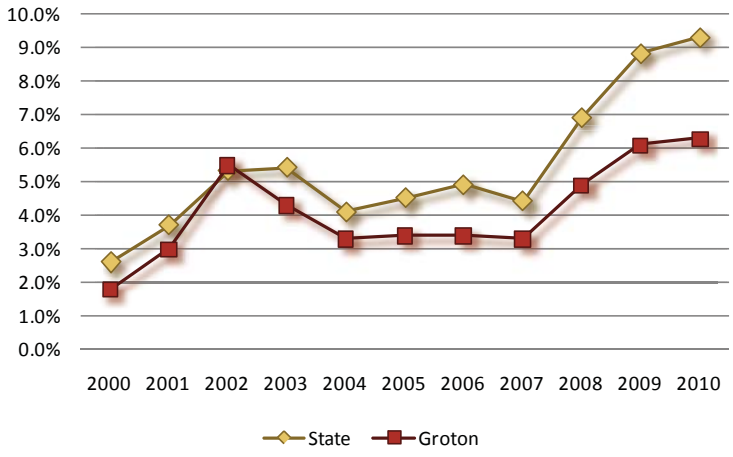
Most people in Groton work for for-profit companies, but recent estimates show that 11 percent of the town's employed residents work for non-profit organizations, more than any other surrounding town. About 7 percent work for local government, and 2 percent each for state and federal agencies, which is about the regional midpoint.[7]

UNEMPLOYMENT

Unemployment rates are at an all-time high due to the economic downturn, that began in December 2007. Across the state and indeed the entire nation, very few communities have been left untouched by rising

Fig. 9.1. Unemployment, 2000-2010

Source: Massachusetts Department of Revenue



unemployment, and Groton is no exception. The most current available statistics put the town's unemployment rate at 6.7 percent, nearly double that of 2005 and over

[7] Claritas Inc., Demographic Snapshot Report, 2009.

Table 9.3. Civilian Employed Population by Class of Employment

	Ayer	Dunstable	GROTON	Littleton	Pepperell
Employment Class					
For-Profit Private Workers	75.7%	68.1%	72.1%	72.3%	78.5%
Non-Profit Private Workers	6.0%	8.0%	11.0%	10.2%	5.9%
Local Government Workers	9.6%	9.3%	7.2%	8.1%	5.1%
State Government Workers	3.4%	2.6%	2.1%	2.1%	2.7%
Federal Government Workers	1.7%	3.9%	2.0%	1.2%	2.0%
Self-Employed Workers	3.6%	7.7%	5.3%	6.1%	5.6%
Unpaid Family Workers	0.0%	0.4%	0.2%	0.0%	0.3%
	Shirley	Townsend	Tyngsborough	Westford	Groton Region
For-Profit Private Workers	69.4%	71.7%	74.4%	76.1%	74.1%
Non-Profit Private Workers	10.3%	5.5%	6.5%	6.3%	7.4%
Local Government Workers	7.0%	8.5%	8.0%	7.9%	7.7%
State Government Workers	1.7%	3.2%	1.9%	1.5%	2.2%
Federal Government Workers	3.8%	2.2%	2.2%	1.4%	2.0%
Self-Employed Workers	7.8%	8.7%	7.0%	6.8%	6.5%
Unpaid Family Workers	0.0%	0.2%	0.0%	0.2%	0.1%

Source: Claritas, Inc., Demographic Snapshot Report, 2009.

three times the rate in 2000. Despite this dramatic uptick in the number of people without jobs, Groton has a lower unemployment rate than both neighboring towns and the Boston metro area as a whole. Over time, Groton has tended to withstand unemployment better than the region and state, largely due to the educational and occupational status of its residents. When recession struck in the early 1990s, Groton's unemployment rate peaked at 7.1 percent in 1991, well below the statewide average that year, 9.1 percent. This was not the case during the last recession, however, for in 2002, the local unemployment rate (5.5 percent) narrowly surpassed that of the state (5.3 percent).[8] Since unemployment rates began to increase sharply for all areas in 2007, however, Groton has been less vulnerable to unemployment than both the state and most of the surrounding towns.

LABOR FORCE BY PLACE OF WORK

Most small towns and suburbs have fairly limited commercial activity, so their residents tend to work elsewhere. For the most part, this applies to Groton. About 21 percent of Groton's residents work in town, which is high for the immediate region but low for the state as a whole.[9] The remaining 79 percent travel to a range of workplace destinations. Current commuting patterns have not been reported by the Bureau of the Census, but in 2000 some 20 percent of Groton's employed residents commuted to Boston, Lowell, and other regional employment centers such as Cambridge, Burlington, Marlborough, and Nashua, and 15 percent worked in neighboring towns. The others traveled to a variety of cities and towns throughout Massachusetts and New Hampshire, comprising a diffuse commute shed for this small town.[10]

Transportation Modes. Given Groton's rural-to-suburban development pattern and lack of public transportation, it is not surprising that most residents commute to work by car. Available estimates indicate that 84 percent of Groton's employed residents drive alone and 4 percent carpool for their daily commutes. Residents who commute by public transportation, walking, biking, or other means account for just over 5 percent of the employed labor force. The commute-to-work statistics for surrounding towns are very similar: regionally, 85 percent of workers drive alone and 6 percent carpool, with the rest commuting by public transportation, walking, or bicycle.[11] While these statistics reflect a pattern of auto-dependency that probably remains true today, they do not fully capture changes the effects of the recession. Increasing fi-

[8] Massachusetts Department of Revenue (DOR), Division of Local Services, "Labor Force and Unemployment Rates, 1990 to Present," Municipal Data Bank (data file), http://www.dls.state.ma.us/mdm.htm,

[9] ACS Five-Year Estimates 2005-2009, B08009.

[10] U.S. Bureau of the Census, 2000 Census, MCD/County-To-MCD/County Worker Flow Files, "Massachusetts, Residence MCD," http://www.census.gov/population/www/cen2000/commuting/mcdworkerflow.html.

[11] ACS Five-Year Estimates 2005-2009, B08301.

nancial constraints may have led more people to carpool or travel by public transportation, or even by bicycle when possible. Still, the fixed nature of land use and transportation in Groton and surrounding towns suggests that such changes, if any, would more likely be small shifts rather than dramatic departures from historic commuting patterns.

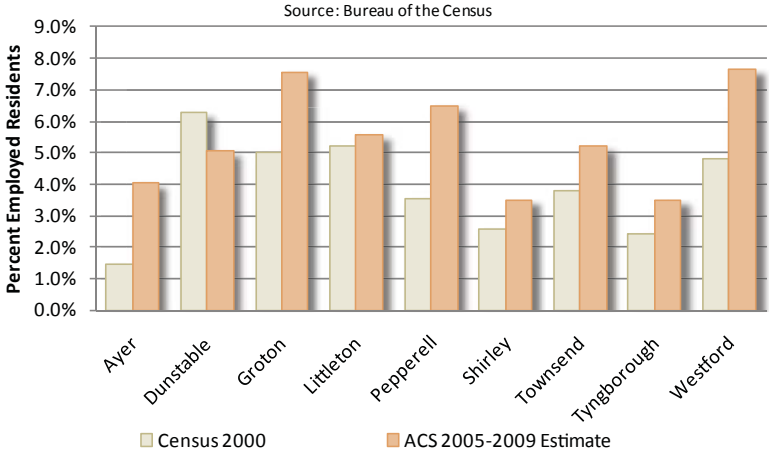
Working at Home. In addition to working for local employer establishments, some Groton residents work at home. Data from the American Community Survey show that 7.5 percent of Groton's employed residents work at home, up from 5 percent ten years ago.[12] However, these figures probably underestimate the amount of work-at-home activity that exists in Groton. For some people, a typical work week combines "telecommuting" with commuting to a regular place of employment. For others, working at home is a part-time pursuit that supplements earnings from a full-time job elsewhere. Still others maintain full-time businesses in a home office, workshop, or studio. The Town of Groton requires some types of home-based businesses to obtain a home occupation certificate, but one-person enterprises and telecommuters are exempt. As a result, Groton almost certainly has more residents working at home than census data or the Town's permit records suggest.

Employment and wages

According to the state Department and Labor and Workforce Development, (EOLWD) Groton has 260 employer establishments and an employment base composed of about 3,200 jobs.[13] These jobs tend to be concentrated in three industries: educational services, health care and social assistance, and manufacturing. Like many suburbs, Groton has more residents in the labor force than the number of jobs in its employment base, so the town exports workers to surrounding communities. In 2008, the most recent year for which full-year employment statistics are currently available, Groton's ratio of local employment to residents in the labor force was 0.60.[14]

Fig. 9.2. Home-Based Employment

Source: Bureau of the Census



Between 2004 and 2008, average monthly employment in Groton increased on net by 156 jobs, or 5 percent. However, Groton's net employment growth masks job losses in local industries such as construction, finance and insurance, information, and administrative and waste services.[15] In fact, Groton's employment base has been somewhat volatile, with some industries growing and creating jobs and others contracting and destroying jobs. The sum of jobs created and destroyed each year represents the amount of job churning that takes place as an economy expands and contracts over time. Job churning statistics shed light on structural changes within industries and the economy as a whole; they illustrate not only job increases or decreases, but also the total amount of employment activity that occurred as jobs entered and left the employment base from year to year. For every net gain of one job in Groton between 2004 and 2008, 3.14 jobs "churned" in the local economy, and sometimes the rate of job churning was higher in industries that provide a fairly small number of jobs, e.g., transportation, administrative and waste services. In educational services, Groton's leading industry, 3.5 jobs churned for every one job gained. This is because job destruction occurred as new jobs were created.

Average weekly wages declined in Groton in the same period, primarily due to wage decreases in two industries:

[12] U.S. Bureau of the Census, ACS Five-Year Estimates 2005-2009, B08301, and Census 2000 Summary File 3, P29 andP30, American Fact Finder, http://factfinder.census.gov.

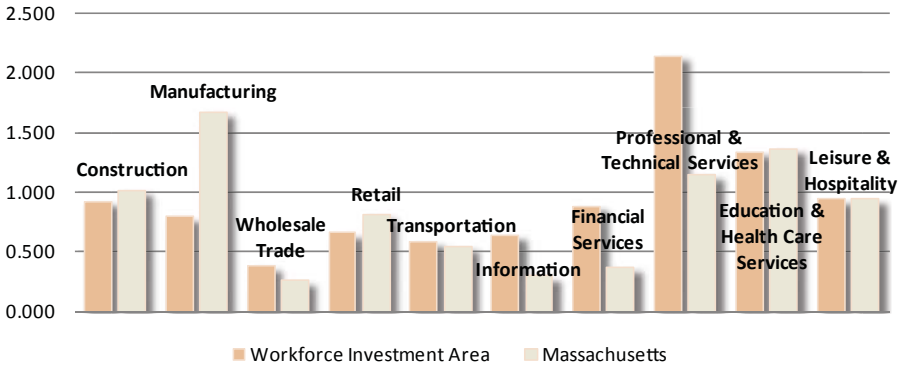
[13] Since the EOLWD figures only reflect certain types of businesses and jobs, these figures underestimate the total number of total Groton businesses and jobs. For more discussion of the difference in data sources for counting local businesses, see types of data on local businesses, see "Business Development," below.

[14] Massachusetts Department of Labor and Workforce Development, Economic Data Programs, Labor Force and Unemployment and Employment and Wages (ES-202), and Community Opportunities Group, Inc.

[15] In fact, data for 2008 show that Groton had lost all agriculture, forestry, fishing, and hunting-related employment establishments and jobs. However, jobs reported through the state's Employment and Wages (ES-202) data program only include those entities that are subject to unemployment compensation laws, and they do not include informal employment. In the agriculture industry especially this type of employment may be more common, and so jobs and wages produced in these types of occupations may be undercounted. Therefore, though ES-202 data indicate that agriculture-related jobs disappeared in Groton in recent years, this is not a comprehensive snapshot of all jobs, activity, and production in this industry

retail trade and other (unclassified) services.[16] Even where overall wage growth occurred between 2004 and 2008, however, average weekly wages fluctuated from year to year, culminating in a four-year drop of $78 per week (or a drop in an annual wages of about $4,000). It is important to note that wages fell in several industries between 2004 and 2005, so in some cases the average wage in 2008 represented modest recovery from a sharp fall that occurred a few years earlier.

Fig. 9.3.
Location Quotients for Groton Employment Base
Source: ES-202, Community Opportunities Group, Inc.



LOCATION QUOTIENTS

Location quotients compare employment by industry in two or more geographic areas. The quotient is a ratio of the percentage of an industry's employment in one area to that of a larger comparison area. If the location quotient for a given industry's employment falls between 0.90 and 1.10, the industry's proportion of jobs is virtually equal in both places. A location quotient of less than 0.90 identifies an industry that is under-represented in the local economy, and one that is more than 1.10 identifies an industry with a disproportionally large percentage of local employment. For planning purposes, location quotients can indicate opportunities for industries to claim a larger share of employment or danger of over-dependence on a single industry. Sometimes a high location quotient signals unique regional conditions, however, such as hospitality and tourism businesses in seasonal resort areas.

Fig. 9.3 shows that a few key industries are well represented in Groton's employment base. With its well-known college preparatory schools, Groton has a very high location quotient in educational services, an industry that generates almost a quarter of all local employment. The location quotient for educational services means the percentage of workers in this industry is larger in Groton than the state as a whole or the Workforce Investment Area that includes Groton.[17] Manufacturing is also strong in Groton compared with the Boston Metropolitan NECTA, employing close to 18 percent of all people working in the town. A closer analysis of the manufacturing industry shows that most of Groton's share comes from *non-durable* goods manufacturing.[18] The health care and social assistance and accommodation and food service industries are fairly strong too, particularly when compared with Middlesex County as a whole.[19]

With the exception of educational services, the industries with the largest number of employees in Groton do not align well with the occupations of most Groton residents. Similarly, jobs in industries that Groton residents would be more likely to work in—professional and technical services, finance and insurance, and information—are conspicuously under-represented in Groton. This mismatch between jobs and skills at the local level may be part of what spurs Groton residents to travel elsewhere for work. A few under-represented industries, though small, have grown during the past five years, including professional services and finance and insurance. Groton may have opportunities to target these industries for new growth.

EMPLOYMENT BASE BY PLACE OF WORK

Since most Groton residents travel out of town for work, it follows that most employees of Groton establishments come from other cities and towns. According

[16] Massachusetts Department of Labor and Workforce Development, Economic Data Programs, Employment and Wages (ES-202), http://lmi2.detma.org/Lmi/lmi_es_a.asp. The 2007 NAICS definition for "Other Services" includes repair and maintenance and personal care services, religious, civic and professional organizations, and employment in private households. U.S. Census Bureau, North American Industry Classification System (NAICS), 2007 NAICS Definition, Sector 81 – Other Services, http://www.census.gov/eos/www/naics/.

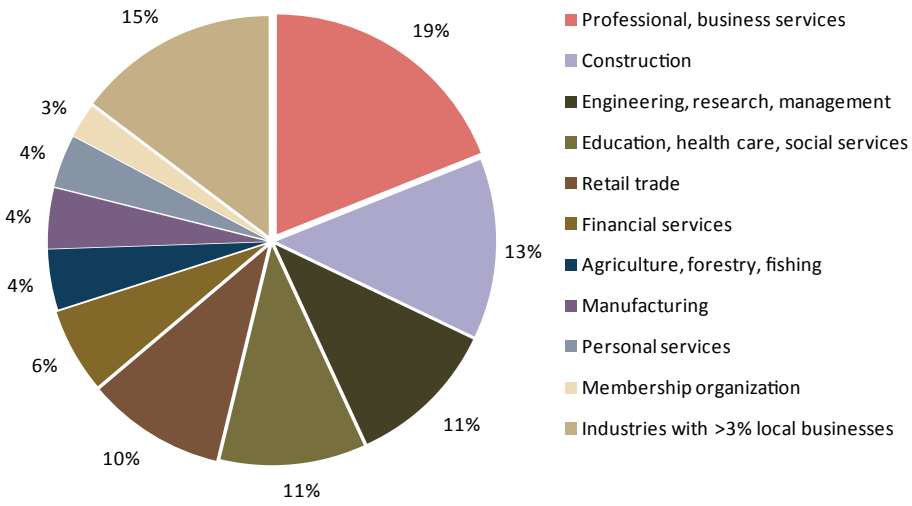
[17] Groton is located in the North-Central Workforce Investment Area (WIA), which includes twenty-three communities north of Worcester. The major cities in the North-Central WIA are Fitchburg, Leominster, and Gardner.

[18] U.S. Bureau of Labor Statistics, Industries at a Glance, "Merchant Wholesalers, Non-Durable Goods, NAICS 424," http://www.bls.gov/iag/tgs/iag424.htm.

[19] Massachusetts Department of Labor and Workforce Development, Economic Data Programs, Employment and Wages (ES-202), http://lmi2.detma.org/Lmi/lmi_es_a.asp.

to the American Community Survey, about 27 percent of Groton workers also lived in Groton.[20] Recent commute-to-work data are unavailable, but as of Census 2000, about 38 percent of Groton's non-local workers commuted from the neighboring towns, with the highest numbers coming from Townsend and Pepperell. About 6 percent traveled from Boston and Lowell, and Nashua, and the rest from other communities in Massachusetts and southern New Hampshire.[21]

Fig. 9.4. Businesses in Groton
Source: Dun & Bradstreet (2009 Data)



Business development

The Nipmuc once lived along the rivers of modern-day Groton, using the waters for fishing and transportation. When English settlers arrived in the early 1600s, Groton served as a trading post and gradually evolved as a farming and fishing community. Industry came to Groton in the form of a brick factory and saw, grist, and pewter mills. Groton also had a soapstone quarry and a hop-growing industry.[22] Today, Groton is a bedroom community with a labor force that works primarily outside of town. While agriculture remains an important component of the local economy and one the town would like to retain, most Groton businesses are in the service industries.

Groton has some advantages for business development, notably its prestige, high household wealth, consumer spending power, and uniform tax rate. However, some perceive Groton as "business-unfriendly," with zoning and permitting requirements that impede business expansion and new business development. Groton's economic development options are also hindered by limited water and sewer infrastructure, high rents, and the unsuitability of existing buildings for commercial use. In addition, Groton's labor force lacks diversity because its housing is expensive, especially relative to the average local wages. However, the most significant deterrent to new business development in Groton is the near-absence of usable land zoned for commercial or manufacturing purposes. This, along with zoning restrictions, severely reduces Groton's regional competitiveness for business growth.

Local business inventory

NUMBER OF BUSINESSES

Quantifying and categorizing the businesses in a community can be a challenging and imprecise task because of inconsistencies in available data. Quarterly data reported by EOLWD give some indication of the number of businesses in Groton: about 260 employer establishments as of June 30, 2009. However, EOLWD tracks establishments that have to comply with state unemployment laws, so its employment statistics do not account for exempt establishments or self-employed individuals.[23] Dun & Bradstreet publishes business lists, and its databases include a much wider range of establishments, including one-person businesses. However, Dun & Bradstreet does not use the same industrial classification system that federal and state agencies use to report the quarterly employment census. In addition, Dun & Bradstreet's methods of obtaining business data are different, and sometimes its databases are outdated.[24] According to Dun & Bradstreet,

[20] ACS Five-Year Estimates 2005-2009, B08009, B08406.

[21] U.S. Bureau of the Census, 2000 Census, MCD/County-To-MCD/County Worker Flow Files, "Massachusetts, Work MCD," http://www.census.gov/population/www/cen2000/commuting/mcdworkerflow.html.

[22] Town of Groton, www.townofgroton.org.

[23] EOLWD reports employment data from the Quarterly Census of Employment and Wages/ES-202, a federal program operated by the Bureau of Labor Statistics (BLS). By ES-202 standards, "employer establishment" does not include self-employed individuals, independent insurance and real estate agents working solely on commission, students in work-study jobs, most railroad workers, unpaid volunteers or family workers, members of the military, services performed for religious organizations, and employees of a farm or non-farm employer with a total payroll or employee count that falls below the minimum thresholds required for unemployment insurance coverage under state law.

[24] Dun & Bradstreet (Strategic Marketing Record, www.zapdata.com) uses Standard Industrial Classification (SIC) codes to categorize and report businesses, but for the Quarterly Census of Employ-

Groton had 504 businesses distributed across more than twenty industries in 2009 (Fig. 9.4). The substantial difference between estimates from Dun & Bradstreet and EOLWD is primarily a function of the types of establishments covered by each organization. Notably, 37 percent (185) of the Groton businesses reported by Dun & Bradstreet are one-person businesses, none of which would be counted as an employer establishment by EOLWD.

Groton also has a local organization that tracks businesses in town. The Groton Board of Trade (GBOT), established in November 2010, promotes the goals of Groton's business community, including farm businesses. The GBOT's online business database currently lists 638 businesses, drawing from several sources such as the Town Clerk's "doing business as" (d/b/a) database, a roadside survey of visible storefronts, businesses listed in the Groton Guide book, and real and personal property tax records.[25] GBOT's database can be searched by business name or category, though the online version displays GBOT members only.

That estimates from EOLWD, Dun & Bradstreet, and GBOT vary so widely helps to explain the difficulty in arriving at an accurate number of businesses in Groton. Still, based on the Dun & Bradstreet and GBOT data, it is likely that Groton's business inventory has about six hundred establishments, including one-person proprietorships. There is no reliable source of information about informal business activity, i.e., legal but unregulated and unmeasured business transactions. While it may seem unimportant, informal business activity is part of every local economy, especially in agriculture, forestry, and some types of personal services. Larger agricultural establishments are most likely captured by public and private data sources, but Groton has a number of "backyard" farms - small and often part-time enterprises - that would not appear in any source of conventional businesses and employment statistics.

TYPES OF BUSINESSES

Most Groton businesses provide some type of business or professional service, so it is not surprising to find that a majority of people working in Groton have service-sector jobs, mainly in education and health care. Other businesses include construction and personal service establishments, and also retail. Because retail businesses are so visible to the general public and can have a significant effect of the quality of life for residents, they tend to be a major focus of local business assessments. In Groton, predominant retailers include food stores (nine) and restaurants (eleven). Less common types of retail include hardware and building materials, apparel, home furnishings, and automobile-related businesses. Together, Groton's retail businesses generate about $61.5 million in sales annually.[26]

Groton's commercial and retail businesses operate primarily along Boston Road and Main Street (Route 119), with some concentration in Groton Center. Many of these establishments were documented in a 2008 business inventory on Route 119 between Boston Road Marketplace and Mill Run Plaza conducted by RKG Associates (Table 9.4).[27] Groton also has pockets of business activity on Old Ayer Road and Townsend Road, and many sole proprietorships operate in commercial areas and frequently, in home offices or workshops.

HOME-BASED BUSINESSES

Home-based businesses are businesses operated from a dwelling by a member of the occupant household, usually as a full- or part-time enterprise. It is difficult to estimate the number of home-based businesses in any community, and Groton is no exception. Of the 185 businesses that Dun & Bradstreet reports as one-person operations, many appear to be home-based businesses because of their locations. The American Community Survey reports that 387 Groton residents work at home, but it is impossible to determine how many of them have home-based businesses or work as telecommuters. Residents with home occupations have to obtain a permit from the Town if their business employs one or more non-household members and their operation generates visible or audible impacts, such as traffic, noise, or exterior storage of equipment or vehicles. From 2001 to 2009, the Building Department issued an average of thirty home occupation permits per year. The number peaked in 2005, with a total of forty-six home occupation permits, but the volume has declined substantially since then.[28] Still, there are many types of home-based businesses that do not require a permit and remain uncounted.

ment and Wages, the U.S. Bureau of Labor Statistics and EOLWD use the new North American Industry Classification System (NAICS) codes. The Bureau of the Census currently uses NAICS codes for most of its data products, too. SIC and NAICS are not identical.

[25] Groton Board of Trade, www.grotonboardoftrade.com.

[26] Bureau of the Census, Economic Census 2007, "Selected Statistics by Economic Sector, Sub-Sector, Industry Group, NAICS Industry, and U.S. Industry: 2007, Town of Groton, Massachusetts," user-defined query, http://www.census.gov/econ/census07/.

[27]

[28] Town of Groton, Building Department, Building Department Annual Reports, 2001-2009. Town of Groton, Zoning Bylaws, § 218-16.

Table 9.4. Street Walk Use Inventory, Groton, MA

Use	Count	Use	Count
Town offices/uses/library	3	Kitchen goods	2
Office space for rent	2	Package store/wine shop	2
Day care center	1	Hardware	1
Realtors	3	Lawyers and insurance offices	Multiple
Schools	3	Health related uses/office	Multiple
Art/gift gallery	2	Dry cleaners	2
		Drug store	1
Service stations	2	Convenience shop	1
Other restaurants	12	Personal care	2
Groceries	2	Banks	5

Source: RKG Associates, Inc., Chapter 43D Market Analysis for Station Avenue, Groton, Massachusetts, July 2008, (July, 2008), 20; and Groton Master Plan Economic Development Working Group,

Retail market environment

In some ways, Groton's small-town ambience is an asset to local businesses. Groton has a distinct town center and villages, and while traffic has increased in recent years, local and regional growth have not compromised the town's quiet look and feel. But these same qualities create challenges for local businesses. Since Groton has evolved as a bedroom community and people typically purchase goods and services near their place of work, the town loses much of its own consumer spending power to non-local business. Groton's proximity to major retail centers in Littleton, Acton, and Westford, and in Nashua, NH draw people from many cities and towns. While Groton has two shopping centers on Route 119 (Boston Road Marketplace on the eastern end and Mill Run Plaza to the west), and while the town center and West Groton have some retail and services too, none of Groton's business areas offer the range of retail and services found in nearby regional shopping areas. A third challenge is the growing popularity of online commerce, which affect store retailers in all communities.

RETAIL GAP ANALYSIS

One way to strengthen a local economy is to promote businesses that can capture a larger share of local consumer spending. A retail gap analysis highlights the difference between what a community's residents spend and how much of their spending occurs locally. A "surplus" in sales means that people come from outside the community to shop, and a gap means that local residents leave the community to shop elsewhere, i.e., "sales leakage." Not surprisingly, there is considerable sales leakage in Groton. Though largely attributable to the town's limited retail base, Groton's rate of leaked sales also reflects the large percentage of residents commuting to non-local jobs.

Table 9.5 reports the percentage of household spending leaked to non-local retailers by class of retail within one, three, and five miles of Groton Center. The five-mile radius captures nearly all of Groton and portions of the adjacent towns. Under existing conditions, nearly 46 percent of the consumer expenditures made by households living within the five-mile radius area are "lost" to stores in other communities. The retail "gap" is approximately $201 million, or the difference between gross retail sales ($238 million) and household expenditures ($439 million). Only two types of retail generate gross sales in excess of consumer spending by local residents: building materials and garden supplies, and gasoline stations. However, gross retail sales within one mile of Groton Center exceed consumer spending by households living in the same area. Businesses in and around the center of town capture 36 percent of their total sales ($46 million) from customers who come from more than one mile away.[29] Restaurants, specialty stores, food and beverage stores, and gasoline stations capture most of the consumer spending imported from outside the one-mile radius area. This is fairly consistent with RKG's findings in the Station Avenue Market Analysis (2008), which notes that Groton Center restaurants and natural food and beverage shops draw customers from surrounding communities. Accordingly, RKG recommended developing 22,500 sq. ft. of retail and commercial space at Station Avenue and targeting the space for destination shopping establishments.[30]

Business organizations

Groton businesses have access to two business organizations: GBOT and the Nashoba Valley Chamber of Commerce (NVCC).

[29] The Nielsen Company, "RMP Opportunity Gap," 2009.

[30] RKG Associates, Inc., 4.

Table 9.5. Retail Sales Leakage, Groton (2009)

	Distance from Groton Center					
	1-Mile Radius		3-Mile Radius		5-Mile Radius	
Type of Retail Store	Gross Retail Sales $	% Sales Imported/ (Leaked)	Gross Retail Sales $	% Sales Imported/ (Leaked)	Gross Retail Sales $	% Sales Imported/ (Leaked)
Total Retail Sales	46,344,039	31.8%	75,479,168	-48.4%	237,775,824	-45.8%
Motor Vehicle, Parts	216,716	-96.0%	1,265,412	-94.6%	55,776,590	-18.4%
Furniture, Home Furnishings	1,052,286	22.7%	2,315,521	-37.0%	3,430,013	-66.4%
Electronics, Appliances	1,177,829	31.5%	502,594	-86.5%	3,968,976	-63.3%
Building, Garden Materials	3,664,563	-7.3%	16,718,484	-2.1%	49,371,868	1.6%
Food, Beverages	11,824,239	173.9%	43,675,978	149.6%	22,841,073	-58.6%
Health and Personal Care	1,937,739	22.0%	3,993,893	-37.3%	11,965,941	-39.1%
Gasoline Stations	16,862,699	362.1%	2,724,206	-81.7%	51,468,566	7.8%
Clothing, Accessories	0	-100.0%	94,391	-98.8%	1,031,772	-95.3%
Sporting Goods, Books, Music	6,449	-99.2%	65,166	-98.0%	2,050,706	-77.1%
General Merchandise Stores	0	-100.0%	0	-100.0%	536,429	-99.1%
Miscellaneous Retail	569,823	-31.8%	402,980	-88.4%	2,511,352	-75.6%
Non-Store Retailers	1,979,078	-25.0%	0	-100.0%	8,920,897	-72.6%
Restaurants	7,052,619	87.1%	3,720,543	-75.4%	23,901,641	-48.5%
GAFO	2,311,927	-75.4%	3,101,693	-92.1%	11,452,511	-90.0%

Sources: Claritas, Inc., and Community Opportunities Group, Inc.

Notes:

(1) "$ Consumer Spending" represents total consumer expenditures by households living within each radius area.

(2) "GAFO" includes of sales of merchandise normally sold in department stores and not included in the other retail categories.

Groton Board of Trade. The newly formed GBOT seeks to promote the goals of Groton's business community. It has identified three ways to do this: working closely with Town government to create a business-friendly climate in Groton, creating a venue for communicating business-related interests in Groton, and encouraging businesses to locate in Groton. Though GBOT is clearly focused on Groton businesses, its interests extend to greater quality of life and sustainability issues for the town. For example, the organization recognizes that a strong local business base brings goods and services closer to where people live, creating a more livable, walkable, and sustainable community. GBOT's website also points out that successful businesses need supportive zoning regulations and permitting procedures, and possibly tax incentives as well.[31] A four-member Executive Committee and a nine-member Board of Directors oversee GBOT. Though a newly established organization, GBOT has initiated several programs including a Membership Committee, a Business Development Committee, a holiday lights and decorations campaign, and a farm-to-table program to connect local farms (including non-Groton farms) with restaurants that will use locally grown produce. As of March of 2011, thirty-one local businesses had joined GBOT. The group aims to enlist fifty members by June 2011 and one hundred by June 2012. Although anyone is eligible for GBOT membership, the organization has primarily attracted non-home-based businesses with a physical presence in town.[32]

Nashoba Valley Chamber of Commerce. The NVCC is a regional non-profit business association serving Ayer, Devens, Groton, Harvard, Littleton, Shirley, Townsend, and Westford. It offers services ranging from business counseling and health insurance coverage to networking and shared advertising. The NVCC and GBOT have held at least one joint meeting, and both groups have reciprocal memberships, meaning that members of one group are also members of the other.

Local business organizations support some of Groton's promotional events, especially Grotonfest. Other events include a weekly farmers market, the Fireman's Muster, equestrian events, and parents' weekends at Lawrence Academy and the Groton School. These events occur for

[31] Groton Board of Trade, www.grotonboardoftrade.com.

[32] Michael Rasmussen (President, Groton Board of Trade, Groton, MA), email to Community Opportunities Group, Inc., April 1, 2011.

only a few days during the year and they do not draw people to Groton on a steady basis. In meetings conducted for this Master Plan, business owners and others said one of Groton's business development goals should be to improve promotional efforts and spur interest in Groton as a shopping destination.

Commercial and industrial land use

Existing Commercial and Industrial Development. Groton's inventory of land used for commercial or manufacturing purposes is extremely small, accounting for about 2 percent of all land uses.[33] Retail and restaurant uses exist on twenty-two properties with a combined total of about fifty acres. Manufacturing and accessory industrial uses (the town's only industrial uses) also occupy about fifty acres on just four properties. A non-conforming warehouse use (storage garage for heavy equipment) makes up the largest nonresidential land use by lot area, with eighty-four acres located almost entirely on one property on Chicopee Row.

Vacant Land. There is very little vacant commercial land in Groton today. According to data from the Town, Groton has just under 23 acres of vacant developable commercial land, and most of it is around the intersection of Boston Road/Route 119 and Sandy Pond Road.[34] While these numbers help to indicate some of Groton's development potential under current conditions, they do not take into account future land use changes or redevelopment potential.

Land Use Change and New Growth. Overall, commercial and industrial development has increased in Groton over the past few decades, but since the proportion of land devoted commercial and industrial uses remains very small, the land use increases are small, too. A commonly cited source of information about long-term land use change is the Massachusetts Office of Geographic and Environmental Information (MassGIS), which publishes land use statistics from aerial photography. For most of the Commonwealth, the available data sets cover aerial flyovers from 1971, 1985, 1999, and 2005. They show that between 1971 and 1999, land used for commercial purposes in Groton more than doubled and industrial uses increased by about forty-four percent. In absolute terms, however, only about forty-five acres were converted to commercial uses and about twenty for industrial (or manufacturing) uses during this period.[35] By comparison, nearly twenty-five hundred acres of land were converted to residential uses. For commercial uses, the highest rate of growth occurred between 1971 and 1985, whereas industrial uses increased more between 1985 and 1999. By the end of the 1990s, commercial and industrial development still made up less than one percent of Groton's total land area.[36]

Land use changes since 1999 are more difficult to ascertain with MassGIS data. In 2005, both the methodology and land use codes changed somewhat, and in some cases the new codes do not align with those used in the earlier series. According to data from the Town, five commercial properties have been developed or redeveloped since 1999, and Groton has not seen any development of new manufacturing uses. The new commercial projects include medical offices at 100 Boston Road, the Groton Exchange convenience stores and gas station on Main Street (redevelopment of a former gas station), Mill Run Plaza, Gibbet Hill Grill, and parcel assembly for the Boston Road Marketplace development at the intersection of Boston and Sandy Pond Roads.[37] However, between 2001 and 2009 Groton issued twenty-five building permits for new commercial construction.[38] Discrepancies between the assessor's data and building permit data could reflect delayed construction starts, different criteria for what constitutes a commercial property, multiple buildings on a single parcel, or simply errors.

Since 1950, most new commercial and industrial development in Groton has occurred along the Route 119 corridor, the town's major east-west route. Older properties such as the manufacturing facility in West Groton and the Groton transfer station are located at the edges of town, which is typical of many older industrial and less desirable uses. One notable exception is the property facing the Boston Road Marketplace at Boston and Sandy Pond Roads. This older commercial property, now largely vacant, is located along a major roadway across from what is now a large commercial center. Aside from *new* commercial and industrial development, the town has seen the sale of about fourteen properties in the past decade. Most have been small retail and office developments, with

[33] Town of Groton, Assessor's Database, 2009. Note: *existing land use* is not the same as *zoning*. In many cases, a parcel used for commercial or industrial purposes may be in a residential zoning district.

[34] Town of Groton, Assessor's Database (2009); Town of Groton, GIS Database, Parcel Map.

[35] Industrial uses include mining.

[36] MassGIS, Datalayers/GIS Database, "Land Use Summary Statistics" (2007), http://www.mass.gov/mgis/.

[37] Town of Groton, Assessor's Database, 2009; Town of Groton, GIS Database, Parcel Map, and Groton Planning Department.

[38] Town of Groton, Building Department, "Building Department Annual Reports 2001-2009."

Table 9.6. Commercial and Industrial Property Transactions, 2000-2010

Address	Year Sold	Land Use	Area (Acres)	No. of Buildings or Structures
6 West Main Street	2000	Office Building	0.18	1
9 West Main Street	2007	Retail Store & Office	0.13	1
116 Boston Road	2000	Office Building	0.65	1
127 Main Street	2001	Small Retail (<10,000sf)	0.80	1
55 Lowell Road	2002	Restaurant, Bar	6.44	3
24 Town Line Road	2002	Small Retail (<10,000sf)	0.21	1
6 Boston Road	2003	Small Retail (<10,000sf)	1.43	1
48 Boston Road	2003	Office Building	0.30	1
318 Main Street	2003	Small Retail (<10,000sf)	0.58	1
1 Forge Village Road	2003	Office Building	1.70	2
14 Town Line Road	2003	Small Retail (<10,000sf)	0.62	1
Main Street	2003	Office Building	0.37	1
871 Boston Road	2004	Small Retail (<10,000sf)	0.61	1
149 Lowell Road	2005	Cell Tower	5.28	1
9 West Main Street	2007	Small Retail (<10,000sf)	0.13	1
370 Chicopee Row	2007	Heavy equipment garage	1.90	1

Source: Town of Groton, Assessor's Database, 2009, and Groton Planning Department.

the exception of the sale of a warehouse facility at 370 Chicopee Row in 2007.[39]

Agriculture

Groton's history of farming extends back more than three centuries. While the town has changed, its remaining farms contribute to a rural quality that solidifies Groton's remarkable sense of place. The existing farms contribute more than just a visual reminder of Groton's agrarian past, however. They are *businesses* that play an important part in Groton's economy. In any discussion about the role of agriculture in economic development, open space, land use, and other planning interests, it is important to remember that active working farms are a unique enterprise. They are not simply open fields that provide bucolic imagery and scenic views from the road. Farming differs significantly from other businesses, with seasonal work schedules and long hours during the growing season. Many aspects of operating a farm, such as the use of machinery and application of fertilizers, can cause conflicts between farm businesses and nearby residents. These and other issues have prompted communities throughout Massachusetts, including Groton, to create local Agricultural Commissions in order to mediate disputes. As Groton seeks to strengthen the role of agriculture in the local economy, understanding and providing ways to mediate potential conflicts will only grow in importance.

Farms, Farm Stands, and Farm Business Products and Sales

TYPES OF FARMS

The U.S. Department of Agriculture defines a farm as "any operation that sells at least one thousand dollars of agricultural commodities or that would have sold that amount of produce under normal circumstances."[40] An internet search for Groton farms returned sixteen establishments, which most likely meet the USDA definition of a farm. According to Groton farmers and other residents, the inventory of local farms has remained relatively consistent for the past few decades, with the exception of Hillbrook Orchards on Old Ayer Road, which closed within the past five years. Some of the farms also have farm stands from which they sell produce and other goods directly to customers.

While it is easy to identify agricultural businesses that meet the conventional definition of a farm, Groton has a number of "backyard" farms that contribute to the local economy as well. A backyard farm could be a part-time endeavor for a resident and may not even be listed as

[39] Town of Groton, Assessor's Database, 2009; Town of Groton, GIS Database, Parcel Map.

[40] U.S. Department of Agriculture, Economic Research Service, Data Sets, "Farm Income: Partitioning the Definition of a Farm," http://www.ers.usda.gov/data/farmincome/Sizedefinition.htm.

Table 9.7. Groton Farms and Farm Products

Name	Location	Products	Community Supported Agriculture Program
Autumn Hill Orchards	495 Chicopee Row	Apples, pears, plums, pumpkins, pick your own	No
Blood Farm	94 West Main Street	Livestock	No
Brooks Orchard	48 Hemlock Part Drive	Former orchard being converted to hay fields and pasture; partly leased to Groton Water Dept.	No
Common View Farm	13 Common Street	Flowers and vegetables	No
Excaliber Farm	150 Mill Street	Hay	No
Fantasy Acres Farm	186 West Main Street	Turkeys	No
Gibbet Hill	57 Lowell Road	Angus cattle, produce for restaurant and catering service.	Yes
Gilson Farm	368 Main Street	Herbs, functions, classes, restaurant	Yes
Groton Center Farm	16 Mayfield Road	Farm stand, produce, Livestock	No
Helene's Stables	435 Martin Ponds Road	Equestrian	No
J. P. Sullivan & Company	Orchards in Groton; business office in Ayer	Wholesale apples	No
Kirk Farm (formerly Kemp Farm)	21 Wyman Street	Produce, eggs	Yes
Mapleside Farm	128 Longley Road	Tree farm	No
Puritan Hill Farm	122 Old Ayer Road	Equestrian	No
Riverdale Farm	601 Main Street	Garden center	No
Scarlet Hill Farm	245 Lowell Road	Equestrian	No
Seven Pines Farm	518 Farmers Row	Livestock and vegetables	Yes

Source: Community Opportunities Group, Inc.

an official business. For example, some residents set up small tables in front of their homes to sell home-grown products such as vegetables, eggs, and honey. The largely non-commercial operation of backyard farms makes it difficult to estimate how many exist in Groton. Several years ago, the Groton Grange published a map of local farms and backyard farms as well as cultural institutions. Unfortunately, the Grange was unable to provide a copy of the map for this Master Plan.

The informal nature of so many agricultural businesses, especially the smaller ones, means that local knowledge is probably the best source of information about the number of active farms. It is useful to look at other sources, but they paint an incomplete picture of Groton agriculture. For example, Dun & Bradstreet's business inventory lists twenty agricultural businesses in Groton, including four involved in agricultural crop production, two in livestock production, sixteen in agricultural services, and one in fishing, trapping, and hunting. However, the inventory omits some (perhaps many) of Groton's backyard farms. The Employment and Wages (ES-202) series published by EOLWD hints at the role of agriculture in a local economy, but it excludes very small farm businesses due to their size and limited number of employees. In fact, the most recent ES-202 data identifies only four agricultural establishments in Groton, far less than reported by Dun & Bradstreet and local sources.[41] These data discrepancies demonstrate the importance of maintaining a *local* agricultural business inventory.

SALES AND MARKETING METHODS

Groton's farms sell their products in a variety of ways. Some sell their products at on-site farm stands, such as Autumn Hill Orchards. Groton Center Farm has a farm

[41] Massachusetts Department of Labor and Workforce Development, Economic Data Programs, Employment and Wages (ES-202), http://lmi2.detma.org/Lmi/lmi_es_a.asp.

Table 9.8. Area Farmers Markets

Town	Day	Time	Notes
Acton/Boxborough	Sunday	10 to 2 pm	www.abfarmersmarket.org
Ayer	Saturday	8 to 1 pm	
Chelmsford	Thursday	2 to 6 pm	www.chelmsfordfarmersmarket.blogspot.com
Groton	Friday	3 to 7 pm	www.williamsbarn.org
Harvard	Saturday	9 to 12 pm	www.harvardfarmersmarket.org
Pepperell	Saturday	9 to 1 pm	www.pepperellfarmersmarket.com
Westford	Tuesday	3 to 7 pm	www.westfordfarmersmarket.com

Source: Community Opportunities Group, Inc.

stand for produce as well as honey, eggs, and other products. Common View Farm sells flowers and vegetables directly from a small building at the front of the property. Others have initiated community supported agriculture (CSA) programs to sell their products. In a CSA program, consumers buy "shares" of the farm (usually for a season) and receive weekly allotments of produce and other products either directly from the farm from coordinated drop-off areas. Several Groton farms sell their products at the Groton Farmers Market at the Williams Barn and at farmers markets in other communities.

There are also farm sales to wholesale distributors. Gibbet Hill Farm initially grew vegetables for use at its adjacent restaurant, Gibbet Hill Grill, and for private functions at the Barn at Gibbet Hill. The farm also sold produce directly to several restaurants outside of town. This year, Gibbet Hill hired a farm manager to begin operating a CSA program, offering fifty individual shares to participating members.[42]

Access to the internet has significantly expanded marketing opportunities for farmers. Of Groton's sixteen documented farms, nine operate websites to advertise their products and activities. However, all of the farms are represented in some fashion on the internet through other agriculture-related websites, including the Local Harvest, the Massachusetts Association of Roadside Stands, the Massachusetts Christmas Tree Association, the websites of individual farmers markets, and through local search sites. Most local farms also identify their businesses with signage. Only one farm, Autumn Hill Orchards, participates in the state's tourism signage program with a promotional sign on Route 495.

It appears that no Groton farms produce and disseminate marketing brochures for their businesses, although many were represented on the Groton Grange map. Few farms advertise in area newspapers or on the radio and television, and there are no organized marketing initiatives for Groton farms, farm stands, or any other agricultural enterprises. Organizers promote the Groton Farmers Market through the town's email list, signs, local newspaper articles, the Town website, and the Williams Barn website.

Existing support for agricultural businesses

LOCAL INITIATIVES

While Groton farmers focus primarily on their own business enterprises, they also cooperate through land sharing and customer referrals, particularly between operators of similar businesses. There are markets for Groton agricultural products, as demonstrated by the presence and longevity of the town's farms and farm stands. Although Groton does not have a local or regional association of farms or an organized agricultural constituency, the town supports local agriculture through the farmers' market and several community groups.

The Groton Agricultural Commission, a five-member board of area farmers established in 2007, played an instrumental role in Groton's adoption of a Right-to-Farm Bylaw. The Commission mediates several disputes each year between local farmers and abutting property owners, and it has generally been successful.[43] It also could play a larger role in promoting local agriculture, especially as it relates to Town policies, regulation, and process.

The Groton Board of Trade (GBOT) includes agricultural businesses. As GBOT grows and develops, it could serve as an organizing agent for agricultural enterprises in Groton.

Groton Local is a non-profit organization that provides support for local farms, farmers markets, the Groton

[42] Gibbet Hill Grill, The Barn at Gibbet Hill, www.gibbethill.com/barn.

[43] George Moore, Groton Agricultural Commission, telephone interview by Community Opportunities Group, Inc, June 2010.

Grange, local markets and co-operatives, and other sustainable farming initiatives. For example, Groton Local connects local institutions (such as schools, hospitals, businesses) with local farms to supply their cafeterias and meal programs with local food. It also connects farmers with residents who are interested in purchasing locally grown food. Groton Local's Farm-to-School Subcommittee works to create relationships between growers and Groton's schools and school children. The Food/Agriculture Subcommittee hosts workshops, demonstrations, discussions, and films on topics such as food canning, permaculture, and victory gardens. These efforts may help agricultural businesses by generating more demand for their products and increasing the level of support for local food production in Groton.

Groton Grange. The National Grange of the Order of Patrons of Husbandry (simply known as the Grange) is a fraternal organization for American farmers. Founded in 1867, the Grange is the oldest surviving agricultural organization in the United States. Today, the Grange functions provides support for many facets of community life in Groton and actively promotes local agriculture. It worked to organize the Groton Agricultural Commission and encouraged passage of the Right-to-Farm bylaw. The Grange also provides financial support for the Groton Farmers Market, hosts events to promote agriculture, and typically sponsors "By Farm/By Hand," a town-wide cultural event that combines art and agriculture in Groton. In the past, the Grange produced a brochure with a map of Groton's farms, cultural organizations, and historic landmarks, but the brochure is no longer available.[44]

The **Groton Farmers' Market** at the Williams Barn on Chicopee Row operates every Friday afternoon between early July to early October, with a special market day held the week before Thanksgiving. Participants sell vegetables, flowers, baked goods, eggs, honey, fruit, and meat.

The **Williams Barn Committee** operates the Williams Barn, a mid-nineteenth century timber-framed barn on ninety-three acres of Town-owned conservation land on Chicopee Road. In the late 1990s, the Barn was rescued from abandonment and near collapse by local volunteers, including three generations of the Williams (Wyatt) family, who restored the structure for a living history museum to honor Groton's agricultural heritage. The Committee conducts educational outreach on topics including agriculture, local history, conservation, and the environment through lectures, hands-on demonstrations by local craftspeople and farmers, events, and festivals throughout the year. The barn also hosts the Groton Farmers Market.

REGIONAL, STATE, AND NATIONAL INITIATIVES

Northeast Harvest is a collaborative effort between Essex National Heritage Area and the Topsfield Fair to promote farming operations in Essex and Middlesex Counties. The group operates an extensive website that identifies farms, farmers markets, farm stands, CSAs, pick-your-own farms, farms with children's activities (Fun on the Farm), and food directories in both counties. Currently, the Northeast Harvest website lists 313 farms in Essex and Middlesex counties, including nine in Groton (Autumn Hill, Common View, Gilson's, Groton Farmers Market, Kirk, Riverdale, Seven Pines, Blood Farm, and Fantasy Acres). Northeast Harvest offers technical assistance to local farmers through its newsletter, which highlights two local farms each month, and its website. The Groton Agricultural Commission attends Northeast Harvest's regional meetings.[45]

The **Massachusetts Department of Agricultural Resources (DAR)** is the state agency responsible for promoting the long-term viability of agriculture in Massachusetts. The department has four divisions: Agricultural Development, Animal Health, Crop and Pest Services, and Technical Assistance. Together with the Massachusetts Department of Transportation's

[44] Sally Smith, Groton Grange, interview by Community Opportunities Group, Inc., June 17, 2010.

[45] Joy Nowak, Northeast Harvest, telephone interview by Community Opportunities Group, Inc, May 24, 2010.

Highway Division, DAR offers an Agricultural Signage Program for local farms on state roadways. Currently, there are about one hundred signs throughout the Commonwealth.[46]

The **Massachusetts Association of Roadside Stands and Pick Your Own (MARS)** was created in 1986 to support farm direct marketing for its members. Farm direct marketing refers to buying and selling based on a personal, one-to-one relationship, e.g., relationships established at farmers markets, farm stands, or pick-your-own operations. Of the thirty-eight member farm stands in the eastern region, none are in Groton. MARS publishes a biennial "Guide to Massachusetts Farm Stands and Pick Your Own," as well as a newsletter, hosts networking events and workshops, and provides support to farmers through the Extension Service.[47]

Agricultural development goals and policies

The Agricultural Commission has not set particular goals for agricultural development. However, the 2002 Master Plan called for several strategies to enhance farming in Groton,[48] and the town has successfully implemented some of them. Examples include the Groton Farmers Market and adoption of the Community Preservation Act (CPA) in 2005. Groton's Community Preservation Plan, which outlines priorities for distributing CPA funds, reinforces the farm-related goals and policies of the 2002 Master Plan and addresses agricultural preservation by setting a specific CPA goal "to maintain the working farmlands and forests of today and to increase the use of land for agriculture, horticulture and forestry in the future."[49] At public meetings for this Master Plan, residents said Groton needs to secure additional land for agriculture, especially Town-owned lands that were historically farmed.

Groton's Right-to-Farm bylaw affirms that the town accepts, encourages, and protects agricultural activities. One of the bylaw's features is a mandatory notice to all new property owners that Groton is an agricultural community and that agriculture-related activities may occur near other private property.[50] In addition, the Agricultural Commission periodically distributes informational notices to property owners about the town's tolerance for agricultural practices.

Agritourism

Agritourism refers to a farm that is both an agricultural business and a tourist destination, with educational, entertainment, and social opportunities for visitors to interact directly with farm owners and workers. Farms with agritourism components offer a range of activities such as accommodations and food service, farm festivals, workshops, special events, retail sales, and petting zoos. In addition, agritourism operators typically provide amenities such as parking, restrooms, and facilities for people with disabilities. Groton has had some success with smaller-scale agritourism, e.g., pick-your-own activities and festivals, but there do not appear to be formal policies in support of agritourism and no organized approach to this type of rural economic development.

Zoning for business development

Zoning determines where land uses may occur, how much development will be allowed on a given parcel of land, and the procedures that must be followed in order to obtain development permits and approvals. Groton has three use districts - Business (B-1), Manufacturing (M-1), and Residential-Business (R-B) - that provide for commercial and industrial development. The districts occur in small, scattered-site locations along Route 119, West Main

[46] Rick LeBlanc, Department of Agricultural Resources, telephone interview by Community Opportunities Group, Inc, May 24, 2010.

[47] Massachusetts Association of Roadside Stands and Pick Your Own, http://www.massfarmstands.com.

[48] Town of Groton, *Groton 2020 Update, Planning Directions* (April 2002), 19-20.

[49] Town of Groton, Community Preservation Committee, *Groton Community Preservation Plan 2009,* (2009), 19.

[50] Town of Groton, General Bylaws, Chapter 137 (2009).

Street, and Townsend Road, and together they account for less than 2 percent of the town's total area.

- The **B-1 district**, which includes about 227 acres, provides for retail and local neighborhood shopping establishments, offices, and other types of businesses through a special permit.
- The **M-1 district**, with 156 acres, is an industrial district for manufacturing and accessory uses.[51]
- The **R-B district**, with just five acres of land in Groton Center, is a residential district that provides for limited business uses commonly associated with residential uses. Most of the allowed business uses require a special permit.
- In 2007, Groton also established the Station Avenue Overlay District, renamed the **Town Center Overlay District (TCOD)** in 2011, which provides for civic, residential, and commercial uses (or a mix thereof).[52] As an overlay district, the TCOD operates in addition to regulations of the underlying districts. The additional uses allowed in the TCOD require a special permit from the Planning Board. Since Groton also adopted Chapter 43D, the Expedited Permitting Law, and designated the Station Avenue area as a Priority Development Site (PDS), special administrative regulations apply to permits and approvals applied for in this part of town.

Use regulations

Business (B-1). The B-1 district is the only district in Groton that allows retail, restaurant, and service establishments as of right. The Zoning Bylaw does not articulate the types of retail and services uses beyond the following general categories:

- Retail store or service establishment
- Business or professional office building or bank
- Restaurant or other place for serving food

There is no provision for mixed-use buildings in the B-1 district, though the portion of B-1 that lies within the TCOD allows mixed uses by special permit. By contrast, the B-1 district allows a range of agricultural uses (without regard to land area),[53] which is somewhat unusual for a commercial district. In addition, the B-1 district has residential use regulations that are virtually identical to those of the R-A district. Another noteworthy feature of the B-1 district is the variety of locations in which it applies: the town center, along Route 119, the Four Corners area, and West Groton. Despite how different these areas actually are, they fall within the same zoning district and are therefore subject to the same use regulations and other requirements.

Residential Business (R-B). The R-B district offers some flexibility for businesses, mostly through special permits, for uses that are associated with residential uses. This includes office buildings and banks, restaurants and eateries, commercial greenhouses, funeral homes, and parking areas. Craft shops (employing no more than five people), small-scale wind conversion facilities, windmills, and meteorological towers (which the Town classifies as business uses) are allowed by right.

Manufacturing (M-1). Groton's M-1 district allows some business uses, both by right and special permit, and also provides for manufacturing enterprises. Like Groton's other nonresidential districts, the M-1 district is very small. Besides its small size, the M-1 district's lack of allowed industrial uses and the vagueness of the term "manufacturing enterprise" do not present a coherent picture of the town's intent. The M-1 district does allow "research facilities with incidental processing or pilot manufacture," but only by special permit.

Town Center Overlay District (TCOD). The TCOD was established to provide for new and mixed uses in one portion of the town center. In addition to uses permitted in underlying zoning districts (R-A, R-B, B-1, and P), the following uses are also permitted in the TCOD:

- Small-scale retail store or service establishments.
- Business or professional offices.
- Restaurant or other places for serving food, but not including drive-through service windows.
- Mixed-use development consisting of two or more of the above-listed uses.

[51] Town of Groton, Town Bylaws, Chapter 218, Zoning, s. 218-12, and GIS Database, Zoning.

[52] Town of Groton, Town Bylaws, Chapter 218, Zoning, s.218-12.

[53] See G.L. c. 40A, § 3.

- Mixed-use/residential development consisting of one or more of the above-listed uses together with duplex dwellings and/or multifamily dwellings.[54]

The TCOD is a new provision, and to date it has not triggered new development activity.

Dimensional regulations

The B-1, M-1, and R-B districts have identical dimensional requirements:

- Minimum lot size: No minimum for nonresidential uses; otherwise, 40,000 sq. ft.
- Frontage: No minimum for nonresidential uses; otherwise, 175 feet
- Maximum height: 35 feet and 3 stories
- Maximum lot coverage: 25 percent
- Front setback: 50 feet
- Side and rear setbacks: 15 feet

The appropriateness of these regulations depends on where Groton wants more business activity and the types of businesses it wants to attract. This is especially true for smaller businesses in village or partially residential areas. Groton Center, Four Corners, Lost Lake, and West Groton are strikingly different places. By not imposing a minimum lot area or frontage requirement on nonresidential uses, Groton provides some protection for small business development. However, the 50-foot front setback requirement is not consistent with the compact, pedestrian-oriented development pattern in some of the village centers.

Other requirements

Concept Plan Approval. Groton's Zoning Bylaw defines a Major Project as a development used for business or manufacturing which results in a building with a footprint of more than five thousand sq. ft. or fifteen thousand sq. ft. or more of aggregate floor area. A Major Project may be either new construction or an addition to existing construction that increases the existing building's floor area by five thousand sq. ft. or more. For business or manufacturing uses that qualify as Major Projects, the Town requires Concept Plan Approval by a two-thirds vote of Town Meeting before the Planning Board can accept or act on a special permit application. The concept plan is an extensive submittal that includes a schematic development plan, floor plans for proposed structures, development program, market analysis, project schedule, and impact analysis. It becomes the basis for granting special permits or other approvals after Town Meeting has taken action.

Issues

Business development

Lack of support, assistance, and guidance for local business. Groton has many attributes that contribute to a business-friendly climate, including high local consumer spending capacity and a uniform tax rate. However, local business owners and the Planning Board's Economic Development Advisory Group report concerns about business un-friendly aspects of the town. They say Groton's permitting process is at best confusing and at worst obstructionist, and they also have identified a general lack of support and guidance for business owners and developers. As a result, business owners, commercial property owners, and developers not only feel unwelcome, but also face a needlessly confusing development review and permitting process for which there is little guidance. These practices have contributed to an overall perception that Groton does not welcome businesses and some tension between business owners and town government. Easing this perception will be important for Groton if it wishes to develop and nurture more local businesses.

Developing a business inventory and organization. The recently formed Groton Board of Trade (GBOT) has filled a role that for too long was vacant in Groton: a functional business organization to address common concerns, initiate programs and events, and coordinate with the Town. GBOT has also initiated an important "baseline" task for any local business group by building and maintaining a business inventory. Though GBOT has undertaken key steps for a business organization, the Town needs to ensure they continue and develop, and this will require ongoing support and cooperation.

Business marketing and promotions. GBOT is working to fill a void by spearheading or helping to manage key promotional events such as Grotonfest. Though such efforts are significant and laudable, they are not far-reaching or consistent enough to provide a continuous market for Groton's local businesses. Without increased marketing and promotion efforts, Groton's local businesses may not be visible enough to local shoppers to sustain and expand their enterprises.

[54] Town of Groton, Town Bylaws, Chapter 218, Zoning, s.218-18.D.

Regional competition. Retail gap analysis and sales leakage figures show what many in Groton already know: with limited shopping opportunities, Groton residents tend to travel outside the town to larger regional retail destinations to meet their shopping and service needs. While Groton's preference for small, local businesses means that residents will always need to travel for certain things to some extent, there are opportunities to capture more local dollars and minimize sales leakage, such as development of the Station Avenue area.

Zoning. Groton's greatest zoning impediment to business and industry may not be use or dimensional regulations but the zoning map itself. The very limited amount of land zoned for business purposes, coupled with the fragmented geography of existing commercial and manufacturing districts suggests that Groton does not want to encourage more business development. This is in sharp contrast to what many town officials in Groton say about the town's goals. In addition, the existing districts seem to invite land use conflicts, first because the districts are so small that buffering businesses from adjacent neighborhoods could be very difficult, and second because in some cases, the use regulations are inherently incompatible. Furthermore, the low size thresholds and uncertainties associated with the Concept Plan Approval process make the Major Project/Concept Plan approval provisions an enormous barrier to commercial development. There are also concerns about the legality of this practice.

Use of state incentives for economic growth. Groton has expressed some interest in incentives for economic development, but in most cases, the incentives authorized by state law would be very difficult to implement under existing conditions. For example:

- Groton is a member of the Fort Devens, Ayer, and Groton Economic Target Area (ETA) under the Massachusetts Economic Development Incentive Program (EDIP). However, Groton has very little land zoned for manufacturing uses, and the M-1 district is fragmented. The town has not positioned itself to attract companies that would create enough new jobs to qualify for EDIP assistance.

- Groton has adopted Chapter 43D, the Expedited Permitting Law, but only the Station Avenue area has been designated as a PDS. The Station Avenue area is a difficult-to-develop location because it consists of existing built assets and the properties there are under more than one ownership. A preference for redevelopment and intensification in established areas is an appropriate sustainability policy, but it also makes the pursuit of economic growth more difficult.

- Groton Center (and possibly other village business areas as well) may be appropriate for a Business Improvement District (BID), which allows commercial property owners within a defined geographic area to impose a surcharge on their real estate tax bills for the exclusive purpose of funding the BID. The revenue is restricted for activities that would benefit the area, from business promotions and marketing to public realm enhancements and assistance to private property owners to improve their buildings. Decisions about the actual use of BID funds are made by participating property owners, not Town Meeting. Since Groton has so few businesses and most of them are small, the Town would have to consider exempting commercial properties from the CPA surcharge in order to make a BID attractive to local businesses.

Existing zoning and permitting procedures seem to conflict wiht Groton's economic development goals.

Business owners, commercial property owners, and developers not only feel unwelcome, but also face a needlessly confusing development review and permitting process for which there is little guidance. These practices have contributed to an overall perception that Groton does not welcome businesses as well as tension between business owners and town government. Easing this perception will be important if Groton wants to develop and nurture more local businesses.

Agriculture

Agriculture Policy. Groton residents, officials, and farmers seem to support the generation of more farming opportunities in Groton, including the expansion of existing farms and the introduction of new farms. Beyond this general goal, however, the Town will need to refine and formally adopt a complete set of agricultural goals and policies, considering issues such as these:

- There are different types of agriculture, and each has a different impact on surrounding land uses. It is important to be clear about what it means to "promote agriculture." Does the town want to promote small, backyard farming activities? Equestrian facilities? Larger farms with livestock, large machinery, and extensive fertilizer storage and use that generate noise and odor impacts?

- Expanding agriculture to any measurable degree will almost certainly require Groton to maintain an activist role, e.g., by continuing to purchase farmland and keeping it in agricultural use. Who will pay - and who will operate?

- Although agritourism has had some success in Groton, it is unclear whether the interest, facilities, and infrastructure exist to support a more extensive agritourism program.

Agricultural Business Organization. GBOT includes agricultural establishments in its business inventory, and it could serve as the organizing arm for local agricultural businesses in Groton. However, organizing Groton's agricultural sector may require specific, tailored outreach. Farmers, especially those that work part-time or seasonally, may not consider themselves business owners or seek membership in a business organization. Also, agricultural business owners face unique challenges with regard to finance, land use, and zoning - issues that are fundamentally different for intensive business uses.

Community Support. Agricultural business owners want more support for agriculture in Groton. However, beyond wanting more people to buy their products, few owners have specific ideas in mind about the types of support they need. The types of agriculture the community is willing to support are not clear. Though working landscapes are aesthetically pleasing, sometimes use conflicts occur between farms and nearby neighborhoods, notably odor and noise. A large farm that uses natural fertilizer may not be as welcome as a backyard blueberry patch or hayfield.

Impediments to Successful Farms. Most farmers hesitate to discuss their businesses. Generally, they report a need to improve municipal and resident support of local farms, both in terms of sales and local government policies. Farmers still struggle to sell their products locally, despite the presence of the weekly farmers market and on-site farm stands. Some farmers say local policies are at odds with agricultural operations and hinder their ability to realize the full economic potential of their businesses, but they stop short of specifying the policies they find troublesome.

In addition, Groton farmers say that while many farms have been improved with new or renovated facilities, keeping up with equipment maintenance remains difficult for those with operations large enough to require machinery. Introducing more sustainable farming methods, such as crop and field rotation and organic farming practices, while beneficial for the environment, can be economically challenging for farmers. Another challenge is continuously reviewing their crops in relation to market demand and labor costs.[55] Finally, though not unique to Groton, it is difficult to pass family farms from one generation to the next. For inheritance purposes, the value of the land is based on its highest and best use, which usually exceeds that of its agricultural use, and the taxes are very high. In most cases, it does not pay to maintain family farms.

Goals & recommendations

GOAL: MAKE CERTAIN THAT GROTON IS, AND IS RECOGNIZED AS, A BUSINESS-FRIENDLY TOWN.

Recommendations:

- **Establish a liaison for Groton local businesses.** Given the negative perceptions of Groton's permitting process, the Town should designate either a staff person or committee (such as the Economic Development Committee) to serve as liaison to new and existing business owners. The role of the liaison would be to answer questions and provide informational materials to proponents to help them navigate the permitting process.

- **Develop business owners and developer guidance materials.** Create informational materials on the development and permitting process. These materials could take the form of handouts, brochures, or booklets, and should be available both in hard copy from Town Hall and also as downloadable documents on the Town website.

- **Support the development of GBOT.** As the first functional business organization Groton has had in a while, supporting GBOT is one of the most important ways Groton can encourage the development of

[55] Meredith Scarlet (Owner, Scarlet Hill Farm), Sally Smith (Owner, Common View Farm), and John Smeilgeski (Owner, Excaliber Farm), interviewed by Community Opportunities Group, Inc., June 22, 2010.

its local businesses. The organization has already successfully reached out and involved key players in Town government, and these sorts of partnerships need to continue. If Groton chooses to establish a Town Hall liaison for local businesses, that person should work closely with GBOT on events, programs, and projects. Other ways the Town could support GBOT include providing a link to the organization's website on the Town website, and working to ensure necessary partnerships with other relevant Town boards and committees including the Agricultural Commission and the Economic Development Committee.

GOAL: EXPLORE AND RECOMMEND REGULATORY CHANGES THAT ENABLE BUSINESS GROWTH WITHIN IDENTIFIED AREAS OF GROTON.

Recommendations:

- **Provide more land for business development and mixed uses contiguous to the existing B-1 and M-1 districts.** Groton can provide for some business growth by modifying its use and dimensional regulations, but the lack of suitable, available land for commercial and manufacturing uses is a substantial impediment to business development. A modest expansion of some existing B-1 and M-1 areas needs to be considered. Establishing neighborhood transition districts (similar to R-B) adjacent to the B-1 districts would also create opportunities for "neighborhood-friendly" businesses and more variety in housing types.

- **Revise and update the B-1 district's use and dimensional regulations:**

  - *Divide the B-1 district into distinctive village business districts.* The established development patterns and visual character of Groton Center, West Groton, Lost Lake, and the Four Corners area are quite different, yet Groton's zoning regulations treat them as one. A more strategic approach, sensitive to the context of each village center, would allow the Town to ask for uses where it actually wants and is more likely to approve them. Moreover, dimensional regulations should be tailored to the form of each village. The importance of carefully crafted dimensional regulations cannot be overlooked because in some cases they will have a direct impact on the effectiveness of business development design guidelines.[56]

  - *Provide for mixed uses, both vertical (within a building) and horizontal (more than one building on a lot,* with uses distributed among the buildings), in each village business center. The allowed mix and scale need to be tailored to each area.

  - *Reduce the potential for land use conflicts in the B-1 district* by discouraging single-family home development and limiting agricultural uses to properties exempt under the Zoning Act (commercial agriculture on parcels of five or more acres).

  - *Eliminate the minimum front yard setback of fifty feet,* which discourages compact, pedestrian-oriented development, and consider establishing a maximum front yard setback instead.

- **Establish a study committee to evaluate and make recommendations for the future of the M-1 district.** Like the business districts, the M-1 district is very small. Its size, the configuration and shape of M-1 locations, and the lack of allowed industrial uses present significant barriers to the development of manufacturing uses in Groton. "Manufacturing enterprise" is a vague, catch-all term that could mean a wide range of uses. Currently the M-1 district allows research facilities only by special permit. It may be that Groton wants to retain discretion with respect to research and development establishments, but subjecting them to a special permit while allowing "manufacturing enterprises" by right sends a mixed message about what kind of district the Town wants M-1 to be. If Groton wants to provide for some relatively clean, lower-nuisance industrial establishments, it needs to reassess the present list of allowed uses and make sure they are aligned well with local planning and economic development objectives.

- **Replace the existing Concept Plan Approval process with a Concept Plan submission directly to the Planning Board.** Business or manufacturing uses that qualify as Major Projects are required to submit a Concept Plan that must be approved by a two-thirds vote at Town Meeting. The concept plan

[56] See Chapter 7, Goals and Recommendations, for additional discussion of design guidelines.

is an extensive and costly submission, one that conflicts with the hoped-for impression of Groton as a "business-friendly" town. It also raises significant legal questions in light of recent Massachusetts court decisions.

- **Reduce off-street parking requirements.** Some of Groton's commercial parking requirements are high. Reducing them would lessen the burden on business owners and developers and reduce land consumption and impervious surfaces.[57]

GOAL: PROVIDE EFFECTIVE INCENTIVES TO ENCOURAGE NEW BUSINESS DEVELOPMENT AND TO RETAIN EXISTING BUSINESSES.

Recommendations:

- **Institute and aggressively promote "buy local" initiatives.** Groton should work to boost consumer demand and support for local businesses by instituting "buy local" initiatives. The type of program would depend on the capacity of the Town or other implementing organization but could include "made in Groton" stickers for local goods, a "stay local" website, and new media opportunities. There could also be more promotional events to boost interest in Groton businesses. These activities could be undertaken by GBOT, a designated Town staff person, or another interested community organization. Additionally, such initiatives could be integrated with buy/shop local efforts for agricultural businesses, described below.

- **Open discussions with GBOT and Groton Center businesses in particular about the possibility of establishing a BID.** Empowering the business community to "take charge" of commercial areas through advocacy, promotions, capital improvements, and other activities would help to reinforce that Groton cares about local businesses. A successful BID requires an active partnership with and substantial cooperation from local government.

- **Approach the regional planning commission about options to forge a North-Central regional economic development partnership or investigate the possibility of joining the 495/MetroWest Corridor Partnership.** The Montachusett Regional Planning Commission (MRPC) prepares and periodically updates the regional Comprehensive Economic Development Strategy (CEDS), which qualifies the North-Central area for financial and other assistance from the federal Economic Development Administration (EDA). Groton is part of the regional CEDS. The Town could approach MRPC about using the CEDS process as the umbrella for a region-wide economic development organization to serve small-town interests in addition to those of the central cities (Fitchburg and Leominster) and Devens.

  Alternatively, it is important to note that Groton lies just outside the boundaries of the 495/MetroWest Corridor Partnership, which includes thirty-seven communities located along or near I-495. In Groton's area, the Partnership includes Westford, Littleton, and Harvard. The westernmost community is Worcester. It may be possible to amend the Partnership's existing boundaries to add Groton, though doing so would most likely require adding Ayer as well in order to establish a logical northwestern border.

GOAL: DETERMINE WHAT ECONOMIC DEVELOPMENT MEANS FOR GROTON RESIDENTS AND EDUCATE THE COMMUNITY ON THE IMPACT OF ECONOMIC DEVELOPMENT TO GROTON.

Recommendations:

- **Create and conduct an educational outreach program on economic development for Groton residents.** Economic development means different things for different people, so it would be helpful for the Town to facilitate a collective understanding of this term. That way, residents would be more likely to support economic development initiatives. To do this, the Town's Economic Development Committee should lead a series of workshops to establish an economic development framework for Groton. Though the purpose of these workshops would be, in part, to educate residents, they should also serve as an opportunity to listen to resident priorities and concerns regarding various aspects of economic development. To this end, the workshops should cover the following two areas:

  - *Economic Development Impressions.* At these workshops, residents would share their impressions of what economic development is (and what it is not), and what they see as the town's economic development priorities. From this, the Economic Development Committee should generate a set of defining principles on what economic development means in Groton.

  - *Economic Development Effects.* Based on the community's economic development principles, the

[57] See Chapter 7 for specific off-street parking recommendations.

Economic Development Committee should create an educational program on potential effects of economic development actions in Groton. For example, if business expansion is one of the community-defined principles for economic development, the Economic Development Committee should create a presentation on how new businesses could benefit Groton (jobs, increased tax revenue, nearby access to goods and services), and also its other impacts (possible additional vehicular and pedestrian traffic, competition for existing businesses) and ways to deal with those impacts.

The Economic Development Committee will need to conduct thorough outreach for the workshops that includes not only representatives from related groups (GBOT, Groton Local, and NVCC), but also engages as many at-large community members as possible. To accommodate a range of schedules and resident locations, the Committee should hold more than one meeting for each topic at different locations. Finally, a record of these meetings must be made available on the Town website, and ideally there should be an online mechanism for community feedback.

GOAL: ENCOURAGE MEASURES SO THE LOCAL AGRICULTURAL COMMUNITY WILL BE ABLE TO PRODUCE ENOUGH AFFORDABLE, HIGH-QUALITY FOOD TO MEET A GREATER PERCENTAGE OF THE TOWN'S FUTURE NEEDS.

Recommendations:

- **Support GBOT in its efforts to organize local agricultural businesses.** As a functional business organization that includes agricultural establishments, GBOT should play a leading role in Groton's support of local agriculture. In addition to a liaison from Town Hall to support general business organization and development efforts, Groton's agricultural groups such as the Agricultural Commission and the Groton Grange also need to affiliate with GBOT to ensure their agendas and efforts are coordinated. There is also potential for information sharing between GBOT and agricultural groups. For example, the Groton Grange has a map of farms and farm stands which could inform GBOT's fledgling business database. Finally, GBOT should consider creating a separate committee for agricultural business issues. This committee could attend to the particular needs of agricultural businesses and also undertake targeted marketing efforts on behalf of Groton's farms.[58]

- **Galvanize support for local agriculture.** While some town residents do not need convincing that supporting local agriculture is important, others may not be as aware of the issue or may not know what they can do about it. The Town should identify and develop ways for residents to support local agricultural businesses. Some possibilities include:

  - *Increase participation in CSA programs*. Currently, there are four Groton farms with CSA programs, and there may be others in surrounding towns. Continued and increased support of these programs would provide farms with a stable consumer base and would perhaps encourage other farms to establish CSA programs if appropriate.

  - *Strengthen ties between local farms and schools*. Groton Local has already identified this as a potential action area by creating a Farm-to-School subgroup. Establishing connections between farms and institutional partners such as school would go far to strengthen and stabilize agriculture in Groton. In addition, educational programming in local schools around the importance of local/regional farming and the connection between local food production and ecological and personal health would be an important contribution to support and advocacy for local farming, both in Groton and beyond.

  - *Promote "buy local" initiatives for local agricultural products*.

  - *Promote agritourism*. One possible avenue for expansion would be for agricultural establishments to promote other outdoor recreational activities in Groton. For example, a farm could provide brochures with maps of nearby hiking trails or other recreational destinations to showcase other aspects of Groton to visitors.

[58] See also, Appendix H.

GOAL: DEVELOP POLICIES AND PROGRAMS THAT CREATE A NETWORK OF LOCAL AGRICULTURAL BUSINESSES INCLUDING CAREER FARMERS, ORCHARDS, SMALLER "BACKYARD" FARMS, ROADSIDE STANDS, AND RESTAURANTS.

Recommendations:

- **Review the Agricultural Commission's roles and responsibilities.** Groton took an important first step toward further securing the presence of farming in the local economy and culture when it established its Agricultural Commission. However, the Commission could play a much larger role in strengthening the role of agriculture in the town's local economy. To begin, the Town could review and update the Agricultural Commission's role and responsibilities. One obvious role would be for the Commission to take on more outreach and advocacy activities and become a true liaison and mediator between the Town, residents, and local farmers. The Commission could improve these relationships by identifying issues, working through disagreements, and easing miscommunication. For example, the Agricultural Commission could review the Town's existing policies and regulations, including building permit, board of health, and land conservation regulations, and identify those that place an undue burden on agricultural business owners. Other possible additional activities of the Commission could involve policy development, business organization, and advocacy..

10

community services & facilities

Wha is this element about?

Key Ideas

- Groton provides basic municipal services for its residents. Changing economic and fiscal conditions, community desires, and opportunities for regional partnerships mean that Groton should continually review and assess the services it offers and how it delivers them.

- Changing information technology (IT) requirements present a significant challenge for Groton. Keeping pace with these requirements and exploring IT opportunities will allow the Town to increase its internal efficiency and offer new and more convenient ways to provide services for residents.

- Groton has consistently employed a capital planning process, but it does not incorporate the full breadth of Groton's facilities and infrastructure needs. To effectively plan for the future, the Town needs to think more broadly about the future of its municipal facilities, expand the planning time horizon, and prioritize critical projects, such as a new central fire station.

- Groton has critical wastewater infrastructure needs, some of which are being addressed and others which require increased attention. This is a key area of focus for the town, for it affects environmental health, as well as land use and economic development consequences for different areas of town.

Scope

The scope of the Community Services and Facilities Element is to:

- Inventory Groton's municipal facilities and services;

- Document needs identified by local officials and residents; and

- Anticipate future service demands and suggest possibilities for addressing them.

Sustainability

Some of the key Community Services and Facilities recommendations that will increase Groton's sustainability include:

- *Complete remaining energy audits for all public buildings and work with local officials to develop an implementation plan.* Reducing energy use in buildings is one of the most important actions Groton can take to promote sustainability. Making these types of improvements will not only reduce pollution but also reduce costs for the Town over the long term. Although the Town must take on higher upfront costs for efficiency upgrades in public buildings, the investment will pay off over the long term.

- *Continue to pursue funding and implementation for a Lost Lake wastewater treatment facility, and study the potential for wastewater treatment in West Groton.* Evaluating the suitability of public or private wastewater treatment facilities for different areas of town and providing the appropriate infrastructure reduces groundwater pollution in vulnerable areas while allowing adequate groundwater recharge in others.

- *Continue to explore options for reuse of vacant and underutilized municipal facilities.* Finding appropriate ways to reuse and "recycle" buildings is a powerful way to promote sustainability. Reusing vacant or underutilized municipal buildings and avoiding new construction saves large amounts of materials and energy, and can be more cost-effective too. By continuing to consider reusing and re-purposing municipal buildings, Groton is making environmental, cultural, and financial sustainability a priority with regard to its facilities.

Existing conditions and trends

Municipal Facilities[1]

Town Hall. Groton Town Hall occupies a 0.6-acre corner lot at Main Street and Station Avenue in Groton Center. Built in 1859 in the Victorian Eclectic style, Town Hall is Groton's primary municipal facility. Most Town departments are located there, including the Town Manager, Town Clerk, Town Accountant, Treasurer/Collector, Assessors, the Water and Sewer Departments, and the Land Use Department. This two-story building includes 22,140 sq. ft. of gross floor area, with offices and meeting rooms on the first floor and additional offices and meeting rooms located on the second floor. A small parking area is located at the rear of the property. In 1999, Groton completed a $2 million renovation of Town Hall, including removal of a third-floor balcony addition and restoration of the original auditorium.

Groton Public Library. The Groton Public Library, also on Main Street, is a one-story yellow brick Colonial Revival style building constructed in 1893. The building is well preserved, with decorative details including masonry corbel, string, and belt courses across the building façade, tripartite arch windows, and a gabled entry porch with Ionic fluted columns. The library has three usable levels. The ground floor houses the Children's Room, a small community room, restrooms, and several public computers. The middle level contains the main circulation desk, the adult and young adult books and media collection, a small conference room, several meeting rooms, restrooms, and Sibley Hall and Art Gallery. The upper level, which has access through the library's historic entrance on Main Street, contains the main reference area with nonfiction books, biographies, periodicals, a large computer area, administrative offices, and local history room. The rear entrance of the building provides a designated accessible entrance and access to a large parking area at the rear of the site. Groton expanded the library in 1999 with a two-story rear addition. This $2.6 million renovation project was completed with local funds and a $1.2 million library construction grant from the state. Today, the building contains 19,331 sq. ft. of gross floor area (17,357 sq. ft. net).[2]

Public Safety Building. The Groton Public Safety Building on Pleasant Street houses the Police Department, Emergency Medical Services (EMS), and the Fire Department's administration offices. This two-story wood building was constructed in 1991 and contains a total of 22,877 sq. ft. of gross floor area (14,058 sq. ft. net), including garage space. Although the building is less than twenty years old and in good condition, it is undersized for its current use. Presently, only one bay is available for police vehicles because existing space is reserved for EMS vehicles. The building's four-acre triangular site includes extensive wetlands, which limit expansion possibilities.[3]

Fire Stations. Groton has three fire stations at various locations in town. They include:

- Fire Station #1 - Groton Center on Station Avenue is a former Odd Fellows Hall constructed in 1915. This brick and limestone building was converted to a fire station in 1940, when three garage doors and a truck bay were added. It contains a total of 5,005 sq. ft. of gross floor area on a 11,761 sq. ft. lot. Today, the facility can accommodate only one ladder truck due to the narrow configuration of the garage bays and onsite parking available for call firefighters is limited. While the building's second floor contains meeting space, the rooms are underutilized due to architectural ac-

[1] Unless otherwise noted, all building information in this section was retrieved from the Town Assessor's Database. Historical data were retrieved from the Massachusetts Historical Commission's Inventory of Historic and Archaeological Assets of the Commonwealth (MACRIS), http://mhc-macris.net/. See also, Appendix I, Municipal Facilities Inventory.

[2] Groton Public Library, http://www.gpl.org.

[3] John Giger (Groton Planning Board and Master Plan Community Services and Facilities Working Group), interview by Community Opportunities Group, Inc., September 16, 2010.

cess barriers and deferred maintenance. The Town has undertaken minor renovations on the building over the past twenty years, but the building exhibits visible signs of exterior and interior deterioration, including missing mortar and broken bricks.

- Fire Station #2 – Squannacook is located in West Groton on West Main Street. This one-story brick building contains two garage bays and a combination training and community room. The Town constructed a rear addition to the building in 1995 to increase the structure's gross floor area to 5,752 sq. ft., with 3,643 sq. ft. of net floor area.

- Fire Station #3 - Lost Lake is Groton's newest facility, constructed in 2004. Located on a 1.68-acre lot on Lost Lake Drive, the building includes four garage bays and a large combination training and community room for a total of 11,286 sq. ft. of gross floor area and 6,643 sq. ft. of usable space. The building serves as an alternative site for the Police Department in case of an emergency. This facility is accessible and has been identified as a potential polling station. The Town used Community Preservation Act (CPA) funds to construct a basketball court at the rear of the property.

Public Works Facility. The Public Works Facility on Cow Pond Brook Road houses some functions of Groton's recently consolidated Department of Public Works (DPW), including the Highway Department garage, the transfer station, and the dog pound. The Highway Department complex consists of multiple single-story buildings with garage bays for storing equipment and vehicles, but only one bay is heated. The transfer station provides solid waste disposal and recycling facilities. For solid waste, Groton operates a "pay-as-you-throw" program, where residents must purchase special trash bags to transport household solid waste to the transfer station.

For recyclable materials, Groton does not charge for normal household products such as plastic, metal, cardboard, paper, glass, and yard waste. However, residents do pay fees to dispose of larger items and construction debris. Groton's recycling service is provided by the North Central Regional Solid Waste Cooperative, an association of twelve towns that share a recycling coordinator through a Massachusetts Department of Environmental Protection (DEP) grant. The Cooperative - known as "MassToss" - provides group buying power and technical assistance for many aspects of solid waste handling. For example, the cooperative helps its member towns negotiate waste-related contracts, such as hauling, recycling, and hazardous waste removal. Each member community pays an annual administrative assessment to fund the cooperative.[4]

Groton's transfer station accepts some household hazardous waste, and the town expects to participate in a regional household hazardous waste collection program with collection days several times a month at Devens.[5]

West Groton Annex. The DPW's second facility, the West Groton Annex, is located at 163 West Main Street. This masonry one-story former gas station was purchased by the Town for storing materials and equipment for use in West Groton. The building contains 4,800 sq. ft. of gross floor area on a 1.3 acre site. In 2004, Groton constructed a sand and salt shed on the property.

The **Groton Electric Light Department (GELD)** is located on a four-acre site on Station Avenue and Broadmeadow Road adjacent to the Nashua River Rail Trail in Groton Center. The property includes a 984 sq. ft. administration building, a 925 sq. ft. training facility, and a 7,308 sq. ft. vehicle/maintenance garage. It also contains storage areas and a large parking area. GELD's electrical substation is located offsite at 444 Lowell Road (Route 40). GELD plans to build a new facility on Station Avenue.

Parks and Recreation Facilities. Groton has several recreation areas in addition to those provided by the public schools. The Groton Park Commission, a five-member

[4] North Central Regional Solid Waste Cooperative, http://www.masstoss.com.

[5] Tess David (Recycling Coordinator, North Central Regional Solid Waste Cooperative), interview by Community Opportunities Group, Inc., November 12, 2010.

elected board, oversees the use of Town playgrounds and playing fields, including Lawrence Memorial Playground, the Cow Pond Brook Fields, Cutler Field, Rider Park, Stonebridge Farm Fields, and Sargisson Beach. The private sports organizations using these facilities help to maintain them. In addition to the playing fields, Groton has several small public parks, including Badger, Firemen's, Legion, Minuteman, New Town, Prescott, Orchard, and Sawyer. Ranging in size from a quarter acre to a little more than one acre, many of these grassed parks are located at the junction of several roadways. Other parks in Groton include the Carole Wheeler Memorial Park, the Smith Social Pavilion, and the Christine Hanson Memorial Playground. Groton is exploring opportunities to expand its recreational facilities. Properties under consideration include land adjacent to the Highway Department on Cow Pond Brook Road, which could supplement the existing recreation fields across the street. The Town also has reserved a portion of the Surrenden Farm for potential use as recreational fields.[6]

Cemeteries. Groton has one public cemetery, the **Old Burying Ground,** located on Hollis and School Streets in Groton Center. Dedicated in 1704, this four-acre cemetery includes some of the area's most notable eighteenth-century slate headstone designs. The site is maintained by the DPW and overseen by the Old Burying Ground Commission, an appointed five-member board. The Groton Cemetery on Chicopee Row is privately owned.

Groton Senior Center. The Groton Senior Center is located in a former VFW building at 163 West Main Street in West Groton. The Town acquired the property in 1996. The property consists of a 5,792 sq. ft. building (5,040 sq. ft. net) with a large meeting space, offices, and a kitchen on five acres.

The Groton Golf and Pool Center (GG&PC) is a 113-acre, Town-owned property that includes a nine-hole golf course, driving range, small pro-shop, covered pavilion, outdoor pool, a function hall with 8,120 sq. ft. of usable floor space, and tennis courts. Previously operated as the members-only Groton Country Club, this facility is open to the public with membership and per diem rates for all activities. Groton hopes the GG&PC will become self-supporting from user fees, with no subsidy from the Town other than capital expenditures. Deferred maintenance has led to some deterioration, especially for the tennis courts and pool area. The community room is accessible to people with disabilities.

Groton Fairgrounds. The Groton Fairgrounds (also known as Hazel Grove Park) is a twenty-eight acre historic fairground on Jenkins Road, abutting the Nashua River. Donated to the town in 1940, the property is currently used and managed by two private organizations - the Groton Riding and Driving Club and the Groton Pony Club - under an informal annual arrangement with the Park Commission. The Fairgrounds contains three stable buildings, including an original exhibition hall, and a dirt racetrack.

Legion Hall is a historic building located on the corner of Hollis and School Streets in Groton Center. Constructed in 1869, the Victorian Eclectic two-story brick building originally served as the Chaplin School and later became home to the American Legion in 1919. The 4,090 sq. ft. structure houses the Park Commission's administrative offices as well as meeting and storage space. The American Legion has exclusive use of the second floor.

Williams Barn. Located on Chicopee Row, the Williams Barn (ca. 1840) is a large historic wood structure restored by the Town in the late 1990s as part of a larger conservation project. The building hosts an educational center and the town's seasonal Farmers Market and other cultural events. A seven-member appointed committee oversees management of the property, which is protected by a preservation restriction.

Sawtell School. Also on Chicopee Row, the Sawtell School (1833) is a historic one-room schoolhouse used for educational tours. The Town recently allocated CPA funds to restore an outhouse on the property.

[6] For additional information about the Surrenden Farm, see Chapter 5: Open Space and Recreation.

The Tarbell School. Located on Pepperell Road in West Groton, the Tarbell School is a vacant former elementary school constructed in 1915 built in the Colonial Revival/Prairie architectural style. This one-story brick building contains 8,240 sq. ft. of gross floor area on 1.44 acres. Leased by the Groton-Dunstable Regional School District (GDRSD), the building includes ten rooms, an open lobby area, and a small kitchen on the main floor, and restrooms, a kitchen, two offices, and several small rooms for storage in the basement. Groton has replaced some windows and doors, but the building is deteriorating and the septic system needs to be upgraded. The lot also includes a playground and field in the rear of the site used by nearby residents and maintained by the Park Commission. A study committee completed an assessment of the building in 2009.[7] The Town recently issued a Request for Proposals (RFP) for disposition of the site.

Squannacook Hall. Also in West Groton, the Town-owned Squannacook Hall on West Main Street is a vacant, nineteenth-century two-story wood frame building originally constructed as the town's first fire station. A recently completed CPA-funded feasibility study determined that it would cost approximately $1.7 million to renovate the building, but the estimate did not include replacing the property's failed septic system. The feasibility study considered the property's lack of on-site parking and identified the potential of a combined parking area behind Fire Station #2 across the street.[8]

Facilities Planning

Groton's last comprehensive facility study pre-dates the 2002 Master Plan, though the town has looked at individual facility needs more recently. The *Municipal Space Needs and Site Analysis* (1988) reviewed eight Town-owned properties: Town Hall, Prescott School, the Highway Department Facility on Willowdale Road, the GELD facility on Station Avenue, undeveloped properties on Pleasant Street and Nashua Road, and the Town's landfill site on Nod Road. The study presented existing conditions and evaluated each site for potential use as a centralized government facility, a new public safety building, elderly housing, and a new highway department/resource recovery facility. The study also made recommendations for consolidating several municipal functions and activities. Under the 1988 plan, the DPW would consolidate the Highway, Water, and Wastewater Departments and the Solid Waste/Transfer Station Task Force. The Park and Recreation Department would consolidate the individual Park and Recreation Commissions into one department. The study also included a space needs forecast for each Town department through 2007.

Since 1988, Groton has carried out some construction projects to address the needs identified in the study. For example, the Town Hall was restored and a new Public Safety Building was constructed on Pleasant Street, allowing for consolidation of general government services in the historic Town Hall. In addition, the Highway Department relocated to Cow Pond Brook Road, consolidating services with the transfer station. Other approaches to consolidation identified in the 1988 plan have not been followed, however.

Energy Conservation

Groton has taken steps to encourage energy conservation in its public facilities.[9] In 2008, Groton joined the EPA's Community Energy Challenge and completed energy audits for its municipal and school buildings. The audits provided a priority list of improvement projects to increase energy efficiency. Lack of funding has hindered Groton's ability to implement some of these improvements, but the Town has reduced energy use in its facilities by installing efficient light bulbs and programmable thermostats and replacing older furnaces with high-efficiency gas furnaces in some buildings.

Municipal Services

Under Groton's present charter (2007), a town manager directs the day-to-day operation of local government, oversees the administration of town services, and appoints most town employees. The town manager is appointed by and reports to the Board of Selectmen.[10] The town payroll includes 107 full- and part-time employees in permanent positions and 116 part-time employees in intermittent or seasonal positions (Table 10.1). Town employees and elected and appointed boards, commissions, and individual officers provide a variety of local government services to residents and business.

Town Departments

ADMINISTRATION AND FINANCE

Groton's **Town Manager** serves as the chief administrative officer of the Town. He performs both executive and financial management duties and is responsible for pre-

[7] Tarbell Study Committee, Final Report, February 26, 2009.

[8] John Giger (Groton Master Plan Community Services and Facilities Subcommittee member, Town of Groton, MA), interview by Community Opportunities Group, Inc., October 16, 2010.

[9] For additional information, see Chapter 3.

[10] See Appendix J for an organizational chart of Groton's form of government.

Table 10.1. Town of Groton Municipal Employees

Department	Permanent Employees	Non-Permanent Employees	Department	Permanent Employees	Non-Permanent Employees
Selectman's Office	2		Information Technology	1	
Groton Pool & Golf Center	2	1	Council on Aging	4	4
Cable	2		Human Resources	1	
Tax Collector/Treasurer	3	1	Assessor	3	
DPW	23		Dispatch	10	
Police	18	10	Water Trust Fund	1	
Fire	6	49	Accountant	2	
Library	18		Land Use Department	6	3
Town Clerk	3		Trust Funds and Parks	1	
Community Preservation	2				
			Total	107	116

Source: Kathleen LeBlanc, (Human Resource Department, Town of Groton, MA).

paring the Town's annual operating and capital budgets. The Town Manager's office includes a full-time executive assistant.[11]

The **Town Clerk** is elected by the voters and serves as the chief election officer, public information and legislative administrator, and local registrar of vital records and statistics. In addition, the Town Clerk issues various licenses, prepares the annual town census, and submits bylaws adopted by Town Meeting to the state Attorney General for approval.[12]

Groton's financial operations are handled by several officials who comprise the Finance Department. The three-member elected **Board of Assessors** determines the valuation of all real and personal property within the Town, prepares annual tax rate recommendations to the Board of Selectmen, grants property tax abatements and exemptions, assesses betterments for public improvements, and maintains maps and records on all property in the Town. The Board is supported by the **Principal Assessor** and staff, and an outside firm provides some revaluation services. The **Town Accountant** works with the Town Manager, Finance Committee, and other officials during the budget process, prepares warrants for payments to be processed by the Town Treasurer, compiles the Town's financial records, and oversees the annual audit. The Town Accountant is assisted by a part-time hourly office employee.[13] Groton, like most towns, has combined the positions of **Tax Collector & Treasurer.** This position is responsible for collecting all taxes levied by the Town, managing the Town's investments and depository accounts, preparing the documentation required for the issuance of bonds, and managing the Town's debt schedule.

Other officers with finance-related responsibilities in Groton include the **Finance Committee,** a seven-member committee appointed by the Board of Selectmen to make recommendations to Town Meeting on all spending proposals. The three-member elected **Commissioners of Trust Funds** manages and controls all trust funds given to the Town.

Groton also has an **Information Technology (IT) Department.** The Town hired an IT manager in January 2010 and continues to receive support from volunteer members of the former IT Committee.

PUBLIC SAFETY

The **Groton Police Department** employs twenty-one officers, including the chief of police, a lieutenant, two sergeants, a detective, ten patrolmen, and six reserve officers. In addition, the Police Department employs and oversees the town's six civilian dispatchers.[14] The **Fire Department** is responsible for fire suppression and prevention services, emergency medical services (EMS), and various inspections and licensing functions. The department operates

[11] Mark Haddad (Town Manager, Town of Groton, MA), telephone interview by Community Opportunities Group, Inc., November 1, 2010.

[12] Town of Groton, Directory, http://www.townofgroton.org/main?cmd=town-dir.

[13] Ibid, Town Accountant.

[14] Town of Groton, *Annual Town Report 2009*, 52; Groton Police Department, http://www.grotonpd.org.

with a combination of career and call firefighters and emergency medical technicians (EMT).

Three part-time officials are responsible for animal-related public health and safety issues. Groton's **Animal Inspector** is appointed to conduct animal inspections and annual domestic animal surveys, and to issue quarantine orders in animal bite cases. The **Animal Control Officer** is responsible for removing and destroying animals that threaten public safety (usually rabid animals). Finally, the Groton **Dog Officer** investigates dog complaints, enforces the Town's dog control bylaw, and provides food and shelter for stray dogs at the town pound.

PUBLIC WORKS

Responsibility for Groton's infrastructure lies with the **Department of Public Works (DPW).** The DPW consists of four divisions: Highway, Transfer Station, Building Maintenance, and Tree Warden - which are overseen by the Director of Public Works. The **Highway Department** maintains Groton's roadways and public property, including parks, commons, and recreation facilities. The **Transfer Station** division provides refuse disposal and recycling services, and the **Building Maintenance** division maintains most of Groton's public buildings—Town Hall, the Public Safety Building, the three fire stations, Legion Hall, and the Senior Center. The **Tree Warden** is responsible for the removal and planting of public shade trees in Groton.

Groton recently consolidated its water and sewer operations under the DPW. The employees are appointed by the Town Manager. The **Groton Water Department** employs a Water Superintendent and operations personnel, with administrative offices in Town Hall, and is overseen by an elected Board of Water Commissioners. In addition to servicing the town's water supply system, the Department also provides incentives to reduce water consumption, issues mandatory water conservation measures, and provides public education.[15] The **Groton Sewer Commission** has responsibility for the town's limited sewer system and is supported by a part-time office assistant. Water and sewer fees are accounted for and reported as enterprise funds.

The **Groton Electric Light Department (GELD)** is one of approximately forty municipal electric utilities in the Commonwealth. It purchases energy from a variety of wholesale suppliers and sells electrical power at retail to local residents and businesses.[16] The GELD employs a full-time manager, an assistant manager, and office and operations staff. The operations personnel are responsible for maintaining the electrical distribution lines in Groton and responding to power outages and other emergencies. GELD offers information on energy use and efficiency through its website, newsletter, and sale of energy efficient products. It also provides energy-conservation services, including energy audits and assisting customers with converting to solar energy.[17]

LAND USE DEPARTMENT

In 2009, Groton's planning, development review, and permitting departments were consolidated into a single **Land Use Department.** Administrative staff for the Planning Board, the Zoning Board of Appeals, and the Conservation Commission, as well the Building Department are now overseen by the **Land Use Director/ Town Planner.**

Building inspection and code enforcement services are handled by the **Building Department,** which oversees building, electrical, plumbing, and gas inspectional services as well as zoning and building code enforcement. Headed by the **Building Commissioner/Zoning Enforcement Officer,** a position shared with the Town of Boxborough, the Building Department employs a total of four employees.

The **Planning Board** is a seven-member elected board with statutory authority for preparing the Town's master plan, holding public hearings and making recommendations to Town Meeting on proposed zoning changes, and administering the Subdivision Control Law. Under the Groton Zoning Bylaw, the Planning Board also administers site plan review and serves as issuing authority for various special permits. The **Zoning Board of Appeals** (ZBA) has statutory authority for variances, comprehensive permits, and appeals of decisions by the Building Inspector. It also has authority under the Zoning Bylaw for some types of special permits. The ZBA consists of five regular members and four associate members, and it receives administrative support from an office assistant.

The **Conservation Commission** reviews projects for compliance with G.L. c. 131, § 40, the Massachusetts Wetland Protection Act, and the Groton Wetlands Bylaw. The seven-member appointed board is supported

[15] For more on the Groton Water Department, see the Natural Resources, Water, and Energy element of this Master Plan.

[16] Groton Electric Light Department, http://www.grotonelectric.org.

[17] For more on GELD, see the Natural Resources, Water, and Energy element of this Master Plan.

by a full-time Conservation Administrator. In addition to its permitting role, the Commission is also responsible for conservation land acquisitions and management.

The **Groton Historic Districts Commission** is a five-member appointed board responsible for protecting the Groton Center and Farmers Row Historic Districts. It has authority within these districts to determine the appropriateness of any change to the exterior of a building visible from a public way. The Land Use Department provides administrative support to the Commission.

The **Board of Health** is a three-member elected board with broad responsibility for protecting public health. Its authority includes enforcement of local and state health laws, public education, prevention of communicable disease, and environmental protection. The Land Use Department provides administrative support, and the **Nashoba Associated Boards of Health** provides Title V permitting and code enforcement support, as well as a range of other services.

HUMAN SERVICES

At the local level in Massachusetts, human services generally include some forms of health care assistance, social services for the elderly and youth, and financial assistance for veterans. Since Groton does not have its own professional staff in the health department, the **Nashoba Associated Boards of Health** provides visiting nurse services, immunization clinics, communicable disease programs and public education, and at-home support, education, and services for families with high-risk infants.

The nine-member appointed **Council on Aging (COA)** provides educational and leisure programs and social services for Groton residents over the age of sixty. Toward these ends, the COA conducts outreach, makes referrals to other agencies and programs, operates a senior van service (which was recently expanded to meet increasing needs), and offers meals, special activities, and programs at the Senior Center. It has a staff of five, including the director, an outreach coordinator, an administrative assistant, maintenance staff, and two van drivers.[18] In addition, Groton veterans have access to veteran's assistance programs through the **Veteran's Service Officer,** who maintains regular office hours at the Legion Hall on Hollis Street and conducts monthly visits to the COA.[19]

CULTURE AND RECREATION

The **Groton Public Library (GPL)** is open five days a week, with extended hours some days, and offers a wide variety of services: book circulation, educational and cultural programs, book groups, young adult programs, children's services, a digital library project with two online historical collections, and an art gallery with rotating exhibits. The library has 61,246 books as well as 6,614 DVDs and videos, 5,530 audiobooks and CDs, and 99 magazine and newspaper subscriptions. GPL has a computerized catalog system and access to the services and resources of the Central Massachusetts Regional Library System (CMRLS). In addition, GPL has one of the highest utilization rates per capita in Massachusetts with approximately twenty-three check-outs per person annually (245,051 total circulation).[20] Overseen by the six-member **Trustees of the Groton Public Library,** the GPL employs eight full-time personnel, including a director, librarians, and support staff as well as additional part-time employees. The library receives financial support both from Town's operating budget and the Groton Public Library Endowment Trust, a 501(c)3 non-profit organization.[21]

The **Groton Park Commission** is a five-member elected board that oversees the Town's parks, commons, and recreational facilities and shares responsibility for the Old Burial Ground with the Old Burial Ground Committee. The Commission coordinates use of Groton's facilities by local sports leagues and issues permits for the use of all parks, commons, and playing fields.[22] Groton had a Recreation Commission with staff that provided recreation programs but eliminated the department approximately five years ago.

The **Groton Historical Commission** (GHC) is responsible for community-wide historic preservation planning. It also manages Groton's historic resource inventory, which includes documentation of historic areas, buildings, monuments, sites, and burial grounds. Further, the GHC conducts educational and outreach activities, such as publishing informational brochures and organizing walking tours.

18 Town of Groton, *Annual Town Report 2009*, 42.

19 Town of Groton, *Annual Town Report 2009*, 57.

20 Groton Public Library, http://www.gpl.org.

21 Groton Public Library, Groton Public Library Endowment Trust Newsletter, November 2009, http://gpl.org/documents/GPLTRUSTNEWS2009.pdf.

22 Previously, Groton had a separate Recreation Commission with staff that provided municipal recreation programs. However, it eliminated the department five years ago.

The **Groton Community Preservation Committee** is responsible for recommending distribution of the Town's CPA funds. This seven member appointed committee is comprised of members from various Town boards.

The **Sustainability Commission** is a nine-member appointed board responsible for recommending and undertaking sustainability initiatives in Groton, with a particular emphasis on energy conservation and cost control. The Commission has hosted several successful "sustainability cafes" to promote sustainability initiatives and encourage dialogue in the community.[23]

The **Commissioner of Trust Funds** is a three-member board that manages and controls all trust funds given or bequeathed for the benefit of the Town or its residents. Commissioners have used appropriate funds for cultural, educational, and recreational activities, including free lectures, shows and presentations to Groton residents; scholarships to graduating high school seniors and adults; and funding for the Groton Public Library. The Commissioners also administer the Community Children's Fund, which offers assistance to families with school-age children. The Give and Take Shop located at 38 Court Street in Groton also falls under the supervision of the Commissioners of Trust Funds.

Public Schools

Groton is a member of the Groton-Dunstable Regional School District (GDRSD), which operates the K-12 public school system in Groton and Dunstable. GDRSD has consolidated its educational facilities on two campuses in Groton: the high school campus on Chicopee Row and the middle and elementary school campus on Main Street. An additional elementary school, Swallow Union, is located in Dunstable.

The **Groton-Dunstable Regional High School** was constructed eight years ago on a 186-acre campus on Chicopee Row. In addition to the multi-story high school building, the campus includes football, baseball, softball, and soccer fields as well as tennis courts and a track.

The **Groton-Dunstable Regional Middle School** campus at 344 Main Street consists of two buildings: the South Building for grades 5 and 6, and the North Building for grades 7 and 8.

The **Florence Roche Elementary School** at 342 Main Street, adjacent to the Middle School, serves District children in grades K through 4.

The **Swallow Union Elementary School** at 522 Main Street in Dunstable serves District children in grades K though 4.

The **Peter Twomey Youth Center** is located behind the Middle School North Building. It hosts the School District's extended day program as well as social events for middle school students and Groton-Dunstable Community Education Programs for children and adults. The Center is a self-supporting facility, funded by tuitions, community donations, and an annual fundraiser.

Prescott School. The former Prescott School at 145 Main Street in Groton Center was constructed in 1928 as Groton's high school. Today, GDRSD leases it from the Town for administration offices, records and materials storage, a Parent Resource Center, and offices for the Special Education Parent Advisory Council (SEPAC). Despite visible signs of deterioration, this two-story building is in relatively good condition. However, it needs system upgrades, asbestos and lead paint removal, and accessibility improvements. The building has a fairly new roof and its windows were replaced in 2006. Prescott School contains approximately 26,000 sq. ft. of floor space, with utility rooms, storage space, and classrooms on the basement level; classrooms, offices, and a gymnasium with stage on the first floor; and additional classrooms on the second floor. The three-and-a-half acre site contains a playground and backstop in the rear of the property adjacent to wetlands. The Town has appointed a study committee to explore reuse options for the property.

The **Boutwell Early Childhood Center** is located in a 1914-15 Spanish Revival single-story brick former school on Hollis street in Groton Center. The 17,132 sq. ft. building became a pre-school in 1996 after the Town completed extensive renovations.

Educational Services

Groton-Dunstable Regional High School is considered one of the top fifty high schools in Massachusetts.[24] In 2009, 98 percent of the district's tenth grade students achieved Advanced or Proficient ratings in the Massachusetts Comprehensive Assessment System (MCAS) tests, placing GDRSD in the top five percent

[23] For more on the Sustainability Committee, see the Introduction to this Master Plan.

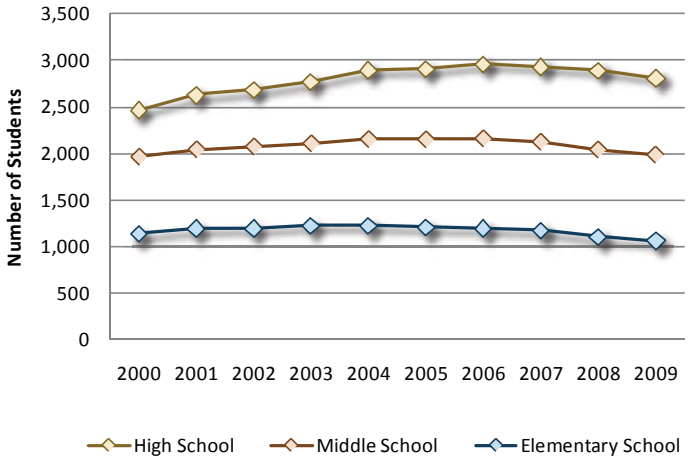
[24] "Best Schools 2010: The Rankings," *Boston Magazine*, September 2010, http://www.bostonmagazine.com/articles/best_schools_2010_the_rankings.

statewide.[25] The district is overseen by a seven-member School Committee, with five members elected from Groton and two from Dunstable, and it employs approximately 170 teachers.[26]

For the 2009-2010 school year (FY 2010), GDRSD's pre-kindergarten through grade 12 enrollment included 2,814 students. Over the past few years, the district's enrollments have declined slightly in a pattern consistent with many school systems across the state. Fig. 10.1 shows that from FY 2001 to 2010, enrollments rose at a fairly steady pace and peaked in 2007, with 2,966 students. As a percentage of total school spending, state aid to the GDRSD has declined in the past few years, and a Proposition 2½ override for the schools failed in 2010. However, by revising vendor contracts, implementing an energy savings plan, and coordinating collective bargaining contracts, the GDRSD administration was able to control operating costs for the upcoming fiscal year.[27]

Fig. 10.1. K-12 Enrollment Trends

Source: Mass. Department of Elementary and Secondary Education



Infrastructure

Beyond Groton's buildings, parks, and other facilities, its infrastructure - including roads, sidewalks, its public water supply, and sewerage - contributes substantially to the look, feel, and function of the town.

Roads. See Chapter 6, Transportation.

Public Water. The Groton Water Department oversees a public water system that includes fifty-one miles of water mains, 1,807 water service connections, 371 hydrants, and three active wells: Baddacook Well, Whitney Well #1, and Whitney Well #2 (a redundant back-up well for the main Whitney Well #1). A fourth well, the Shattuck Well, is inactive and serves only as an emergency water source. In 2005, the Town constructed a one million-gallon water storage tank at Chestnut Hill.[28] Groton is currently considering an investment in two additional wells, Shattuck and Unkety Brook.[29] The Groton Water Department is not affiliated with the West Groton Water Supply District.[30]

Wastewater Disposal. The Groton Sewer District is a small municipal sewer system servicing 584 buildings in Groton Center. All other areas of town rely on private septic systems. Under a 1987 agreement, Groton purchases capacity at the Pepperell Wastewater Treatment Plant for disposal of sewage produced in the Groton Sewer District. Groton also contracts with Pepperell to provide operations and maintenance support for the system's two pump stations, force main, manholes, laterals, and interceptors.[31]

The Groton Sewer Commission has the right to require private property owners to remove sources of inflow or infiltration (I/I), much like a policy that exists in Pepperell. The process for verifying the removal of I/I sources is defined in the Sewer Commission's regulations, which call for an expert in flow measurement to determine flows before and after mitigation. Failure of a property owner to comply with the Commission's requirements may result in the Commission hiring its own experts and carrying out a mitigation plan at the owner's expense. In addition, the Sewer Commission has a "sewer bank" policy that allows the Town to allocate sewer "credits" from recovered flow capacity to current and future ratepayers seeking low-flow permits. In 2001, Groton imposed a moratorium on sewer connections because the Town had reached the limit of its contract with Pepperell. The purpose of the sewer bank is

[25] Town of Groton, Comprehensive Master Plan, Policy Questions Response – Community Services and Facilities.

[26] Groton-Dunstable Regional School District, http://www.gdrsd.org.

[27] Pierre Comtois, "School Budget for New Fiscal Year Seeking Less Money," *Nashoba Publishing*, February 18, 2011, http://www.nashobapublishing.com/ci_17421993?source=rss_viewed#ixzz1GDG42oMM.

[28] Town of Groton, *Groton Water Department Consumer Confidence Report*, June 2010, http://www.grotonwater.org/groton2009CCR.pdf.

[29] Town of Groton, "Draft FY2011-2015 Capital Plan," November, 2010.

[30] See Chapter 3 for additional information about the Groton Water Department and the West Groton Water Supply District.

[31] Town of Groton, *Annual Town Report 2009*, 33.

to help the Sewer Commission eliminate overflows and manage the sewer capacity available to Groton under its agreement with Pepperell.[32]

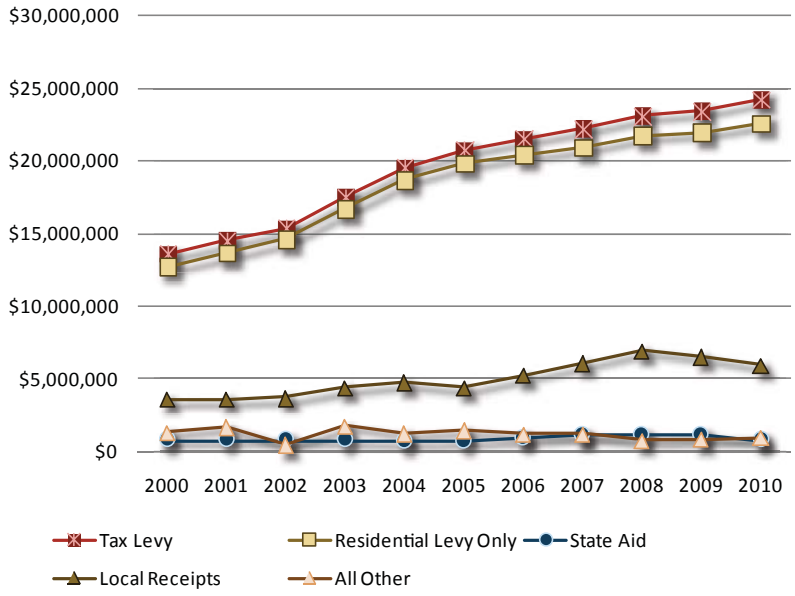
In 2002, Groton completed a twenty-year wastewater management plan that identifies Lost Lake/Knops Pond as a priority area for intervention due to the prevalence of small lots with individual septic systems. In 2005, the Board of Selectmen and Sewer Commissioners issued a report that recommends a comprehensive watershed management program for this area. To guide the program, Groton established the Lost Lake Sewer Committee in 2008 and commissioned a feasibility study shortly thereafter. The study revealed high nutrient concentrations, including phosphorus and fecal coliform, in the Lost Lake/Knops Pond watershed. The 2010 Fall Town Meeting approved funds to apply for two grants that could pay for the project: a grant from the Massachusetts Water Pollution Abatement Trust (a component of the State Revolving Loan Fund), and a U.S. Department of Agriculture (USDA) Rural Development Grant. At the time of this writing, the Committee had submitted its application for the USDA grant, and the Town's consulting engineering have completed a draft plan for the facility.[33]

At the same time that Groton established the Lost Lake Sewer Committee, it also created the West Groton Sewer Committee. Previous studies show that West Groton should also be considered for municipal sewer service. While the area's septic systems do not pose the same critical environmental concern as those located in Lost Lake, lack of public sewer greatly reduces West Groton's economic potential.

Town Finances

Groton is a $32 million organization that relies primarily on the residential tax levy to pay for municipal services.

Fig. 10.2. Sources of Revenue, FY2000-2010
Source: Massachusetts Department of Revenue



Like other towns, Groton obtains operating revenues from a limited number of sources: the tax levy, local receipts generated by various departmental services, local aid from the state, and uncommitted revenues from previous years (so-called "free cash"). Fig. 10.2 traces Groton's total revenue sources from Fiscal Year (FY) 2000 to 2010. It highlights the importance of residential taxes to the town's total revenue stream.

The General Fund, or the fund used by cities and towns to account for and report the vast majority of local revenues and expenditures, is composed of primarily of real and personal property taxes (the tax levy). In Groton, residential property taxes provide approximately 78 percent of all General Fund revenues and 93 percent of the entire tax levy.[34] Other General Fund revenues appropriated by Town Meeting come from commercial taxpayers, motor vehicle excise taxes, user fees, licenses and permits, and miscellaneous sources. By contrast, local aid accounts for less than 4 percent of all General Fund revenue in Groton. The small revenue share from local aid reflects Groton's participation in a regional school district, for the state disburses education aid directly to the school district, not through the Town. The Town has received very little from federal grant sources in the past decade, and none in the past five years.[35]

[32] See Groton Town Code, Chapter 396, Sewer Commission, Parts 3 and 4.

[33] Carol Quinn (Chair, Lost Lake Sewer Committee, Town of Groton, MA), interview with Community Opportunities Group, Inc., February 11, 2010. Town of Groton, Lost Lake Sewer Committee, "LLSC Town Meeting PowerPoint Fall 2010cf", http://www.townofgroton.org/xml/town/lost_lake_sewer_committee/LLSC_Town_Meeting_PowerPoint_Fall_2010cf.pdf. Thomas Orcutt (Water Superintendent, Town of Groton, MA), interview with Community Opportunities Group, Inc., November 10, 2010.

[34] Commonwealth of Massachusetts, Department of Revenue, Division of Local Services, Municipal Data Bank. Data based on FY 2010 conditions.

[35] Massachusetts Department of Revenue, Municipal Data Bank, Municipal Actual Revenues and Expenditures, http://www.mass.gov/?pageID=dorhomepage&L=1&L0=Home&sid=Ador.

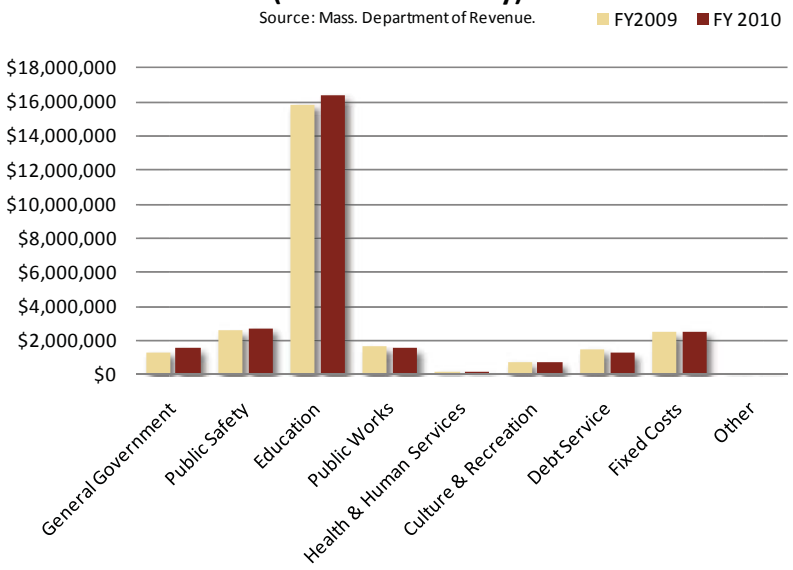
Groton's water and sewer services operate as self-supporting **municipal enterprises,** which means they are funded by ratepayers. Groton also is one of about forty communities in Massachusetts that operates its own light department as a municipal electric utility. The light department is funded by ratepayers, too, but operated as a semi-autonomous public service.

Expenditures

In FY 2010, Groton spent about $2,600 per capita on town and school services, excluding the municipal enterprises and GELD. Fig. 10.3 compares General Fund expenditures in FY 2009 and FY 2010. In many cases, expenditures for town services decreased while school spending increased slightly. This pattern is not unique to Groton, for most of the Commonwealth's towns - especially towns that place high value on the quality of their public schools - have sacrificed municipal spending in order to preserve school personnel and programs.

Fig. 10.3 Community Service Expenditures (General Fund Only)

Source: Mass. Department of Revenue.



Over the past ten years, Groton has tended to restrict growth in municipal spending from year to year. Adjusted for inflation, spending per capita on town services has increased 1-1.2 percent per year, on average, while school spending per capita has increased about 5 percent. However, the very slow rate of municipal spending growth masks what has sometimes been dramatic growth "fixed costs," or expenditures not allocated to individual Town departments, e.g., employee health insurance, and debt service, including Groton's share of school construction debt service for GDRSD facilities. Groton's debt service payments are modest: in FY2010, the Town paid approximately $1.3 million in total debt service, although this does not include debt service for GRGSD.[36]

Regional Services

Groton handles most local government services on its own, but the Town does participate in several regional partnerships and inter-local agreements, including:[37]

- The Groton-Dunstable Regional School District.
- The Nashoba Associated Boards of Health.
- Sewage treatment through a contract with the Town of Pepperell's Wastewater Treatment Plant.
- Advanced Life Support (ALS) services through an agreement with the Town of Townsend.
- Police dispatch services with the Town of Dunstable.
- Agreements with surrounding towns for police and firefighting mutual aid.
- Shared police services such as computer crime, motorcycle units, regional communications, specialized incident response units, crime scene services, dive team, and regional detectives through participation in the North Eastern Massachusetts Law Enforcement Council (NEMLEC).
- Shared Building Commissioner/Inspector services through an inter-local agreement with Boxborough.
- The North Central Regional Solid Waste Cooperative.

Issues

Groton community services are under strain. Groton (like most towns) is having trouble maintaining desired levels of service due in part to the near-collapse of the housing market and the recession, which have impeded revenue growth. According to the Town Collector-Treasurer, Groton is experiencing a diminished level of tax payments for the first time in thirteen years. It will be

[36] Town of Groton, *Annual Report*, 2010, 51.

[37] Town of Groton, Comprehensive Master Plan, Policy Questions Response – Community Services and Facilities.

very difficult for Groton to support the services to which its residents have become accustomed, and expanding services in the near future is unlikely. However, residents and businesses expect public services and they do not seem to have much appetite for sacrificing service delivery. The Town has reduced the library budget each year for the past several years, yet residents still want more library services and expanded library hours. In addition, Groton may have other service needs that have not yet been identified. Without a process for reviewing and evaluating community needs and services, it will be difficult to determine the adequacy of existing services or whether to reduce, eliminate, or introduce services in response to changing local needs.

There is growing interest in re-establishing the Recreation Department to provide municipal recreation programs for all ages and activity levels. Groton's municipal recreation programs are provided by private organizations. Most of them focus on competitive sports for youth, which excludes a large section of the town's population and may be cost-prohibitive for those it does serve. A municipal recreation program could provide non-competitive youth and adult programs similar to those offered in surrounding towns such as Littleton and Westford.

Groton's technological infrastructure is limited. Groton's dependency on technology is growing, but the town's existing information technology (IT) infrastructure has not been upgraded. Without infrastructure improvements, the Town will be hard pressed to increase efficiency and convenience both for residents and Town staff. For example:

- Operating rooms for centralized computer and network equipment in Town Hall and the Police Station are inadequate, and the Town has limited ability to maintain its information systems, particularly during power outages.
- All electronic data storage is kept onsite at the Town Hall, with limited redundancy across at least two non-contiguous locations. There is no equipped back-up system or alternate computing area where information would be readily available in the case of an emergency.
- Each municipal facility operates as an independent system, making information-sharing difficult and inefficient.
- Town departments are not integrated, allowing minimal data sharing and coordination.
- Groton does not have permitting software that would track the status of permits handled by the Town's regulatory officials.
- The Town's website needs updating to allow individual departments to maintain current information online and continue to accept electronic payment transactions and permit applications. Implementing these types of improvements will require substantial capital investment and may require additional staff.

Many of Groton's facilities are not energy efficient. Groton has made substantial effort to address energy efficiency of its municipal buildings, but many challenges remain. GDRSD continues to seek energy efficiency improvements for its buildings. In February 2010, the school system received a grant from the Massachusetts Department of Energy Resources to make energy efficiency improvements at the Swallow Union School in Dunstable. However, the school buildings in Groton also need energy efficiency improvements as well as maintenance procedures to reduce overall energy use.[38] Also, many of Groton's historic municipal buildings have inefficient heating systems, as well as other energy inefficiencies.[39]

Archival space is near capacity. Many Town departments, including the Police and Water Departments as well as GDRSD, need more storage space for permanent and semi-permanent records. Town Hall has only limited storage space for department records. Currently, records are stored in the attic, but this space is so full that it is becoming a safety concern. In addition, stored records are potentially subject to water damage if the sprinklers are activated. Groton does not have records retention and management policies or guidelines. Per state requirements, the Town Clerk must still retain hard copies of all records even after electronic versions become publicly available. The retention of hard copies will eventually exceed the capacity of the Town Clerk's existing vault, which is nearing capacity. While other Town departments also have vaults, including the Assessor's Department, there is no central index of the records kept in these locations.[40]

Several Town buildings are underutilized or vacant. Groton has underutilized facilities and others

[38] Gary Hoglund (Groton Dunstable Regional School District Think Tank member, Town of Groton, MA), email to Community Opportunities Group, Inc., November 10, 2010.

[39] See Chapter 3 for recommendations on energy efficiency in town buildings.

[40] Michael Bouchard (Town Clerk, Town of Groton, MA), interview by Community Opportunities Group, Inc., May 21, 2010.

that need major renovations. These include the Groton Fairgrounds, the former Town dump on Nod Road, the Prescott School, Squannacook Hall, the Tarbell School, and Legion Hall. Renovation and reuse of many of these properties will be complicated because of significant physical and site issues. Moreover, budget constraints limit Groton's ability to carry out facility improvements. To develop long-term plans for several of these facilities, Groton recently appointed reuse study committees for each site. While it is important to study each facility individually, a holistic review of all buildings would allow the town to identify ways for future uses to work together.

Groton has planned for, but not funded, improvements to critical infrastructure. Despite many well-laid plans for infrastructure improvements in Groton, little investment has occurred. This is particularly true for the Lost Lake area where new sewerage is required to prevent further disruption and pollution to the lake and the Town's water supply. While Groton seeks funding for a wastewater treatment facility for this area, the Town should also consider similar improvements for West Groton to support the area's economic development potential and prevent future environmental problems.

Groton's capital planning process is limited in time horizon and in scope. Groton's current method for capital planning typically addresses equipment needs, not building or facility needs. Despite Groton's past efforts to take care of its facilities, such as renovating Town Hall and the Public Library and constructing a new Public Safety Building, the Town has significant capital improvement needs. Many facilities are deteriorating and others do not comply with the Americans with Disabilities Act of 1990, as amended (ADA). Ongoing budget constraints have made it difficult for Groton to develop a long-range capital improvements plan and set priorities for future facility needs. Additionally, the Town has not conducted a comprehensive assessment of all of its municipal properties to determine exactly what those needs are.[41] A comprehensive capital improvements plan (CIP) would help Groton prepare for major projects and take advantage of potential funding opportunities. The plan should address the urgency of needed repairs, ADA requirements, and consider improvements in energy efficiency and conservation.

The central fire station is substantially undersized, and its Groton Center location makes access difficult. Groton has long recognized the need for a new central fire station. The current facility on Station Avenue is undersized for modern fire apparatus. A new facility would provide space for the Fire Department's administrative offices, which are currently housed in the Public Safety Building, creating additional space for the Police Department. Identifying a location and funding for this facility will continue to be a major challenge for the town over the next few years.

Groton needs a comprehensive Capital Improvements Plan

Groton's current method for capital planning typically addresses equipment needs, not building or facility needs. Despite Groton's past efforts to take care of its facilities, such as renovating Town Hall and the Public Library and constructing a new Public Safety Building, the Town has significant capital improvement needs. Many facilities are deteriorating and others do not comply with the Americans with Disabilities Act.

Groton's public safety departments face personnel constraints. Despite growing service demands, staffing in the Police Department has remained static, which has made it more difficult for the department to ensure a prompt response to emergencies. The Fire Department faces growing pressures, too, operating on a "call" model, with firefighters and EMTs employed on an as-needed basis. People who move to Groton from larger communities are not accustomed to the call system and expect fire personnel to be available around the clock. Finding qualified people to serve as call firefighters is becoming more difficult because Groton has fewer personnel available during the day.

Groton may need to consider new opportunities for regionalization of services. With increasing pressure on local governments to provide and delivery services efficiently, many communities are looking to new regional partnerships. Groton provides some services through regional efforts (listed on page **XX**). Going forward, the Town should identify other opportunities for regional partnerships, while taking care to consider benefits beyond initial cost savings.

[41] Mark Haddad (Town Manager, Town of Groton), email to Community Opportunities Group, Inc., November 10, 2010.

Goals and Recommendations

GOAL: CONTINUE TO ASSESS MUNICIPAL SERVICES TO ENSURE THAT LOCAL NEEDS ARE MET.

Recommendations:

- **Consider opportunities to consolidate additional Town departments and improve interdepartmental communication.** While Groton recently consolidated several departments to increase efficiency and ease of service, there still may be other Town services that could benefit from consolidation. The Town should continue to review its departmental structure to identify additional opportunities for departmental consolidation.

- **Consider establishing a Parks, Recreation, and Community Education Department to provide a range of affordable recreation opportunities for all ages.** Groton has not had a municipal recreation department in more than five years and relies solely on private organizations to provide recreational opportunities. During this master planning process, many residents expressed a strong interest in re-establishing municipal recreation options. If established, the new recreation department should program activities for all ages and ability levels so that the service is truly inclusive of the entire town population.

GOAL: IMPROVE GROTON'S MUNICIPAL FACILITIES AND INFRASTRUCTURE, CONSIDERING ENERGY CONSERVATION, TECHNOLOGY, AND UNIVERSAL ACCESSIBILITY (ADA COMPLIANCE).

Recommendations:

- **Review, plan, and provide for Groton's IT infrastructure needs.** Groton's technology issues affect government efficiency and security of information resources. The Town should upgrade its technological capacity by undertaking the following improvements:

  - *Install a fiber optic network that would allow Town-owned facilities located within certain proximity to Town Hall - including the Police Station, GELD, the Public Library, the Legion Hall and the Center Fire Station - to share a central system.* Virtual private networks (VPNs) could be used to connect all outlying facilities such as the Department of Public Works, West Groton Fire Station, Lost Lake Fire Station, and the Senior Center. However, to develop a shared information system the Town would need to invest in primary and secondary, environmentally-controlled IT rooms in which operate and maintain the shared servers, as well as storage devices and associated network equipment. These designated rooms would require uninterrupted power supplies with access to locally generated emergency electrical service.

  - *Install a permitting software system to integrate Town's regulatory departments.* Introducing a shared permitting software system would increase communication between Groton's permitting departments and encourage service efficiency.

  - *Update the Town website to allow easier maintenance by individual departments, and continue to accept electronic payment transactions and permit applications.* Undertaking these e-governance improvements would allow the Town to become more efficient and transparent in its operations.

- **Continue to pursue development of a central archival facility to store and manage municipal records and a central index to track and access them.** Groton needs a central archival facility because its current municipal record storage exceeds capacity and is not secure. Other records are stored in individual departments with no central record of their location. The Town should also create a central index to document the location of its records and improve public accessibility.

- **Complete remaining energy audits for all public buildings and work with local officials to develop an implementation plan.** In 2008, Groton completed energy audits for several of its municipal and school buildings but has not implemented the recommended improvements. The Town should complete energy audits for any remaining buildings, implement low cost recommendations, and develop a plan for completing larger improvement projects.[42]

GOAL: PROVIDE PUBLIC SAFETY FACILITIES AND RESOURCES TO MEET DESIRED READINESS AND RESPONSE TIMES.

Recommendations:

- **Complete an assessment of town's public safety operational needs and plan for expansion of personnel when the municipal budget allows.** Groton's police and fire safety departments have operated at level personnel despite increasing demands for services. In addition, Groton's Fire Department's is find-

[42] See also, Chapter 3.

ing it increasingly difficult to rely on call personnel to respond to emergencies as firefighters seek full-time, permanent positions elsewhere. Groton should undertake an assessment of its public safety operational needs to determine optimal increases in personnel. That way, public safety departments will be in a good position to request funds for additional staff when the Town budget allows it.

- **Continue to pursue opportunities for development of a new central fire station.** Groton should continue to pursue the development of a new central fire station. The existing committee that is currently investigating options should continue to do so. If the Town develops a long-term capital improvements plan (see below), funding for a central fire station should be listed as a priority.

GOAL: ENSURE THAT GROTON'S WASTEWATER INFRASTRUCTURE CAN MEET CURRENT AND FUTURE NEEDS.[43]

Recommendations:

- **Continue to pursue funding and implementation for a Lost Lake wastewater treatment facility, and study the potential for wastewater treatment in West Groton.** Groton needs to continue to support and pursue funding for a wastewater treatment facility in the Lost Lake area. In addition, the Town should undertake a study of the potential costs and benefits to establishing wastewater treatment infrastructure in West Groton with particular attention to economic development consequences.

GOAL: DEVELOP A COMPREHENSIVE, LONG-RANGE CAPITAL IMPROVEMENTS PLAN (CIP).

Recommendations:

- **Develop a comprehensive, long-range CIP that addresses urgent repairs, ADA accessibility requirements, and energy efficiency improvements.** Groton's existing capital improvements planning addresses short-term facility and equipment needs. A complete long-range capital plan needs to identify and prioritize all resource needs, including new facilities, renovations and extraordinary maintenance, urgent repairs, accessibility requirements, and energy efficiency. It also should provide a cost-benefit analysis of each proposed project and funding source (or financial plan) recommendations based on written financial policies.

- **Conduct a thorough assessment of all municipal properties to determine building needs and identify possibilities for shared facility use.** Groton should review the needs of each municipal building, including repairs to address ADA requirements and energy efficiency and conservation needs. The Town should also identify any opportunities for departments to share facilities, which could substantially reduce both capital and operating costs while maintaining (or even improving) current levels of service.

- **Continue to explore options for reuse of vacant and underutilized municipal facilities.** Groton has established committees to facilitate the reuse and disposition of vacant properties. Also, the Town recently created a committee to review the Groton Fairgrounds. Groton should continue to support the work and recommendations of these committees.

GOAL: CONTINUE TO PURSUE REGIONALIZATION OF COMMUNITY SERVICES WHERE APPROPRIATE.

Recommendations:

- **Develop criteria for evaluating opportunities to regionalize town services.** Additional regionalization of services could provide fiscal and other benefits to Groton without compromising on quality. To determine appropriate opportunities for regional services, Groton should consider the following criteria:

  - Is the level of service provided equal to or better than the level of service the Town can provide on its own?
  - Is the regional service governed by the participating municipalities?
  - Is the initial cost equal to or less than what the Town currently spends to provide the service?
  - Can the Town elect to pay only for those services it requires and can afford?
  - Can the Town withdraw from the regional arrangement without incurring penalties?
  - Can the Town opt for a non-automatically renewable contract?

[43] See also, Chapter 3.

appendix

Appendix A: Definitions

Natural Resources, Water, & Energy

Natural resources: ecology, soils, and water, and the relationship between them.

Water resources: surface water resources, including lakes, ponds, rivers, streams, wetlands, and groundwater, which Groton depends upon for its drinking water supply.

Cultural and Historic Resources

Local Historic District (LHD): a locally designated district that requires review for building alterations, construction, or demolition affecting exterior architectural features visible from a public way.

National Register of Historic Places (NR): a federal listing of historic resources with national, state, or local significance.

State Register of Historic Places: a list of all Massachusetts properties with local or federal historic designation or that are protected through preservation restrictions.

Transportation

Access: the ability to get in or out of a particular place.

Arterials: roadways that typically serve through traffic; primary function is to provide mobility over a long distance rather than access.

Collectors: roadways that typically carry 25 to 75 percent through traffic and have lower volumes and speeds than arterials.

Complete streets: streets that accommodate many modes of travel including motorized vehicles, bicycles, pedestrians, and the mobility needs of people with disabilities.

Functional classification: a system for identifying different types of roadways by the level of *mobility* or *access* they provide.

Jurisdiction: the entity responsible for roadway design and maintenance, for example, a local municipality, the state, or a private owner.

Local roads: roadways that primarily provide access rather than mobility and accommodate only 25 percent or less through traffic.

Mobility: the ability to travel from place to place.

Multi-use trails: pedestrian or off-road vehicle corridors, paved or unpaved, that function primarily as a recreational resource rather than a transportation resource.

Paratransit: an alternative mode of flexible transportation that does not follow fixed routes or schedules, for example, mini-busses.

Transportation modes: means by which people move themselves or freight and achieve mobility. Common modes include auto, air travel, rail, bus, bicycle, boat, walking, and wheelchair transport.

Urban and Rural Areas: census-defined geographies used in the Federal Highway Administration's surface transportation program. Urban/Rural designation affects the distribution of some funding programs and is also reported as part of the roadway functional classification system.

Land Use

Ground coverage or **impervious coverage:** the portion of a parcel covered by principal and accessory buildings and any other surfaces that prevent water from penetrating the soil.

Land Coverage: the amount of land physically occupied by buildings, structures, driveways, and other impervious surfaces. In a land use analysis, land coverage also includes the local roads that serve existing development. The area covered by local roads is assigned to the class of use they serve. For example, land used for a neighborhood street

that serves single-family homes is added to the calculation of land coverage for single-family homes. Similarly, access roads to commercial or industrial development are counted within the land area calculation for commercial or industrial uses. This is important because land coverage in a land use analysis is not the same as lot coverage and ground coverage in the Groton Zoning Bylaw.

Lot coverage: the portion of a parcel covered by principal and accessory buildings.

Mixed uses: the practice of co-locating business, residential, and other uses on a single lot or contiguous lots that constitute a single development site. Uses may be mixed vertically, i.e., more than one use in a multi-story building, or horizontally, with multiple uses in more than one building on a single lot.

Overlay district: a mapped zoning district laid over all or portions of an existing use district ("underlying district") in order to supplement the use district's regulations with additional development restrictions or opportunities, depending on the overlay district's purposes. Groton has two protective overlay districts and two overlay districts that create additional land use opportunities.

Use district: a zoning district intended for a primary class of land use. Groton has eight use districts, though only seven have defined boundaries on the Zoning Map.

Housing

Affordable housing: a housing unit occupied or reserved for occupancy by a low- or moderate-income household, with monthly housing costs not exceeding one-third of the household's monthly gross income and affordability controlled by a legally enforceable long-term deed restriction.

Below-market housing: a housing unit that is currently affordable to a low- or moderate-income household because of the unit's size, age, condition, location, or other factors, but without a legally enforceable means to preserve affordability in the long run.

Congregate or group housing: a residential building containing shared cooking, living facilities, and sanitation facilities and private sleeping facilities for two or more unrelated people.

Family: a household composed of two or more people related by blood, marriage, or adoption.

Green housing: housing units designed, constructed, and operated for maximum energy efficiency and water conservation, with compact interiors and composed of reusable or biodegradable materials.

Household: one or more people occupying a single housing unit. In all communities, the total number of households matches the total number of occupied housing units.

Housing cost burden: condition that exists when low- or moderate-income households spend more than 30 percent of their monthly gross income on housing costs (principal, interest, insurance, and taxes for homeowners, and rent and basic utilities for renters).

Low- or moderate- income household: a low-income household has income at or below 80 percent of area median income (AMI), adjusted for household size. For Groton, "area" means the Lowell metropolitan area. Example: for a three-person household, "low income" is an annual income that does not exceed $58,000. A moderate-income household has an annual income between 81 and 100 percent AMI, adjusted for household size. The Lowell metro area median income is currently $88,600.

Sustainable housing: housing that integrates the environmental, social, and economic principles of sustainability and provides equitable choices to current and future generations.

Economic Development

Employer establishment: a public, non-profit, or private for-profit establishment with payroll employees.

Home-based business: a business, typically owned and operated by the resident of the dwelling, with few if any payroll employees. **Home occupation** usually has the same meaning as home-based business.

Job churning: the process by which jobs are created and destroyed as the structure of an economy changes.

Labor force participation rate: the labor force as a percentage of the total population 16 years of age and older.

Labor force: the non-institutionalized population 16 years of age and older with a job or unemployed and looking for work.

Telecommuter: a wage or salary employee of a non-local employer establishment, working at home for all or a portion of the work week.

Appendix B: Policy Questions for Advisory Groups

Land Use

1) What does a "village" mean in Groton? What is the role of the town's villages? Should their role change or stay substantially the same as the town continues to evolve?

2) How do you define the boundaries or limits of Groton's existing villages? Do you think these boundaries are commonly recognized by most residents of Groton?

3) What are the ingredients or components of Groton's community character? What are the primary threats to its community character?

4) What are Groton's critical planning areas? (By "critical planning areas," we mean neighborhoods or other areas that warrant a special focus in the Comprehensive Plan.)

5) The Groton 2020 Master Plan's major goals are summarized in the 2002 Update as follows: "Protect small-town character, strengthen environmental protection efforts, preserve open space, provide housing opportunities for a range of people, support existing businesses, provide for appropriate expansion of the business base, and protect the villages." If you were to rate the town's accomplishments in addressing these goals, what criteria or standards would you use?

6) Does Groton have areas that are currently underserved by amenities such as open space or community facilities? If so, where are they?

7) In general, is Groton's approach to land use regulation fair, administered consistently by town boards, and broadly understood by applicants and residents?

8) How far should Groton go to take regional planning considerations into account in planning for its future?

9) To what extent do factors such as transportation infrastructure, traffic, water, or sewer service create opportunities or constraints for managing Groton's development?

10) How should local government balance public interests with private property rights?

11) What policies should guide the town toward a sustainable use of land resources? What would be the component parts of a sustainable land use policy?

Transportation

1) What are the distinctive features of Groton's transportation system? (Thinking broadly here; a transportation system includes more than roads.)

2) To what extent have local and regional growth and change affected the demands placed on Groton's transportation facilities?

3) Viewed in its entirety, is the town's transportation network safe and accessible for all users?

4) What are Groton's critical traffic areas, and are existing policies adequate and effective for maximizing public safety in these locations?

5) Does Groton do enough to maintain its transportation infrastructure? Are the town's management and maintenance policies adequate to protect the transportation facilities for which it is legally responsible?

6) What opportunities exist for the town to improve its circulation and transportation systems and address the needs of all users? How should the town evaluate or prioritize these opportunities?

7) What opportunities exist for the town to address the traffic impacts of growth beyond its own boundaries? How should the town evaluate and prioritize these opportunities, and does it have the capacity to pursue them?

8) To what extent does the established transportation network support or impede Groton's growth and development needs?

9) What is local government's responsibility for providing, managing, and maintaining a variety of transportation facilities and accommodating a variety of mobility needs?

10) How should the concept of sustainability be applied to transportation planning in Groton? What would be the component parts of a sustainable transportation policy?

Natural Resources, Water, & Energy

1) Overall, how effective are Groton's existing water resource protection policies, regulations, and public education programs? Are effective mechanisms for regional collaboration in place?

12) What steps should Groton take – in addition to existing policies and regulations – to increase water conservation and protect the quantity and quality of its drinking water supplies?

13) Does the town have baseline inventories, land management, and biodiversity monitoring programs in place for its publicly owned conservation land?

14) In general, do Groton residents think of pollution as a public policy priority? Does there seem to be a shared sense of personal or individual responsibility for protecting environmental resources?

15) How would you rate the town's accomplishments in reducing solid waste and increasing recycling and reuse? If you think the town could do more, what possibilities do you see?

16) Should Groton take steps such as promoting renewable or alternative energy, R&D, and manufacturing? What could the town do to integrate its interest in economic growth with sustainability?

17) In general, have adequate and appropriate steps been taken by local government and the regional school district to "lead by example" to reduce energy consumption and reduce greenhouse gases? If not, what do you suggest?

18) Considering staff and volunteer capacity (time and skills), cost, and relative priorities, what measures do you think the town should focus on to track the effectiveness of its own efforts toward environmental sustainability?

19) To what extent is human diversity important for a community's sustainability? Viewed in their entirety, do Groton's policies and/or regulations for land development, citizen participation, and community services promote human diversity?

20) How should the principles of sustainability serve as an umbrella for the master plan update?

Housing

1) If teardowns increase in Groton, many of the town's smaller, more modestly-priced houses may be at risk. How important is it to protect this type of housing?

21) What are the long-term implications of re-building Groton's modestly priced houses with larger homes?

22) Should Groton strive to provide low and moderate-income housing regardless of what happens with Chapter 40B in the future?

23) Should Groton strive to diversify its housing stock for reasons other than the provision of affordable housing?

24) Are the needs of all segments of the population, including those of low or moderate income, with disabilities, or the aging, being served by existing housing stock? If not, what housing types are needed?

25) Groton has provided some multi-family housing through conversion of existing single-family homes. Is this a successful, sustainable method of producing lower-cost housing?

26) Should Groton encourage higher-density housing in some areas and preserve existing low-density residential development in other areas?

27) Have accessory apartments addressed any housing needs in Groton? Is there a known or measurable demand for more accessory units?

28) What is local government's responsibility for the diversity or demographic make-up of a community's population – generally – and then specifically, what should Groton do to meet this responsibility?

29) How should the concept of sustainability be applied to housing planning in Groton? What would be the component parts of a sustainable housing policy?

Economic Development

1) What makes a community a "business-friendly" town, and is Groton "business-friendly"?

2) How does Groton's existing commercial, institutional (non-profit, educational, cultural, etc.) municipal, and home-based employment contribute to the character and vitality of the town?

30) Is there a clear, commonly understood vision or image for the Town Center? If so, what is it? If not, does one need to be created?

31) Should the town actively organize and promote agricultural activities and products in Groton, or is the current level of local support sufficient?

32) Does Groton want more businesses in town? A different mix of businesses? To retain the businesses it already has?

33) What economic development opportunities seem realistic for Groton, given its location, infrastructure, land use policies, and political culture?

34) Does Groton wish to promote "eco-tourism" as part of its economic development efforts? Have any ecotourism efforts or initiatives been proposed in the past and if so, what become of those efforts?

35) Does the town want to favor/encourage local business and discourage non-local business? If so, does Groton have the capacity to support a base of predominantly local business?

36) Among the potential benefits and drawbacks of economic growth, how important is tax revenue?

37) Does the potential for tax revenue growth from expanded commercial development outweigh potential impacts on town character, town services, and quality of life? What trade-offs should the town consider when evaluating commercial development proposals?

38) Should Groton promote business development for reasons other than tax revenue (e.g. access to good and services, opportunity for local employment)?

39) To what extent is economic growth in Groton's region an advantage or disadvantage to the town?

40) What should be the *primary* goal of an economic development plan? To provide jobs? Goods and services? Property taxes? Preserve agriculture? Other?

41) What is the role of the local economy in a planning for sustainability? What would be the component parts of a sustainable economic development policy?

Cultural & Historic Resources

1) How effective are Groton's existing historic preservation tools, e.g., demolition delay, local historic districts, or preservation restrictions, for protecting the town's historic structures and settings?

42) Are there threats to important historic or cultural assets that are not adequately addressed by the town's existing preservation efforts?

43) How much community support is there for preserving the town's historic resources? Is there community support for expanding the town's regulatory authority for resource protection?

44) How far should Groton go to reduce the risk of, or simply prevent, demolition and mansionization? What is the responsibility of local government to address this issue?

45) Has the town's approach to scenic roads protection been effective? Have there been conflicts between scenic roads protection and public safety, and if so, has Groton been successful at resolving them?

46) How well are cultural and historic resource interests accounted for in Groton's existing development review and permitting procedures? Is communication between the Historical Commission, the Historic District Commission, the Planning Board, and other boards adequate to consider the impacts of development proposals on historic structures and landscapes?

47) What is local government's responsibility for protecting cultural and historic assets?

48) Is town government able to be a successful/effective steward for its municipally-owned historic resources? Why or why not?

49) How would you characterize the relationship between town government and Groton's cultural organizations, educational institutions, and other non-profits? Do they work well together to achieve common goals and/or resolve conflicts?

50) What is the role of historic preservation in planning for sustainability? What would be the component parts of a sustainable cultural and historic resources policy?

Open Space & Recreation

1) Given that Groton has preserved substantial amounts of open space, what should be its open space priorities for the next five to ten years? How should these priorities be determined?

2) Overall, how well has Groton approached stewardship of its conservation land and open space? Does stewardship need more attention?

3) Some communities have found it difficult to respond within 120 days when Chapter 61/61A property owners notify the town of their intent to sell their land for development. Does Groton have an effective response system in place? Has the town ever missed out on an opportunity to acquire (or protect through other means) Chapter 61/61A land?

4) Does Groton have untapped opportunities to promote sustainable agriculture and sustainable forestry programs on conservation land? If so, what are they?

5) Overall, are existing conservation trails and paths maintained well? Used by residents? Are there conflicts between various users of the trails and if so, does the town have effective mechanisms in place to resolve those conflicts?

6) Should Groton establish publicly-owned community gardens, even though most residents have yard space for gardening? If so, who should maintain these spaces?

7) What should be the future of the Groton Fairgrounds?

8) Overall, how well do Groton's existing outdoor recreation facilities meet local needs? Is there more demand for some types of facilities than the town can currently accommodate?

9) In general, are needs for "active" or developed outdoor recreation facilities addressed as well as needs for conservation and passive recreation? Better? Not as well?

10) Overall, does Groton work effectively with neighboring communities to address shared or overlapping open space and recreation needs? Is regional collaboration in place, and if so, does it work?

11) What is the role of open space and recreation in planning for sustainability? What would be the component parts of a sustainable open space and recreation policy?

Community Services and Facilities

1) Does Groton have adequate facilities and technology to accommodate existing and future service demands, given (a) resident expectations for services, (b) demographic change, (c) operating and storage space for departmental use, and (d) the needs of a government with many boards and committees?

51) Should Groton strive to provide more e-governance, i.e., opportunities for residents to obtain services (permits, licenses) and conduct other business with Town Hall over the internet?

52) Are the town's existing facilities in the most appropriate locations for the functions they serve?

53) Does Groton make the best use of its existing property and facilities? If not, what should the town do improve the utilization and management of these assets?

54) Does the town have adequate, effective systems in place to control energy and water use in its public facilities?

55) Overall, how well does the regional school district meet Groton's needs?

56) Do Groton's existing procedures for setting municipal and school service priorities meet the town's needs? Does the general public understand how priorities are set?

57) Does the town have enough personnel, and the right mix of personnel, to deliver the services that residents expect?

58) Should the town consider additional organizational changes to increase coordination and efficiency of municipal services – and if so, what should those changes be?

59) Does the town have adequate capacity and effective systems in place to coordinate the work of its elected and appointed boards and committees?

60) Does the town make the best possible use of regional services? What criteria should the town use to evaluate the potential benefits and drawbacks of regional service delivery, e.g., public safety and emergency medical services, recreation programs, other?

61) What is the role of community services in planning for sustainability? What would be the component parts of a sustainable community services policy?

Appendix C: May 13, 2010 Community Forum Small-Group Activity Plan

Your Team

Before you begin, introduce yourselves and identify where each person lives on your map. Pick a group representative. This person will present your group's map to the larger group at the end of the activity.

Your Task

With your base map, markers, and expert knowledge of Groton, create a framework for *preservation*, *conservation*, and *change* for the town over the next ten years. Using three different colors, identify three distinct systems or areas on your map:

- **Area 1,** should include areas for protection and preservation.
- **Area 2,** should include areas for conservation that could be changed but should also have some degree of protection to conserve their special features or value.
- **Area 3,** should identify growth areas that present opportunities for change in Groton.

When considering each system, your team should discuss the following questions:

- For Area 1: What are the critical features in town that should be preserved (i.e. not changed)? If these features are disconnected, could the pieces be connected to enhance or make them more functional? (If so, show these connections on your map.)
- For Area 2: What elements have a particular function or some special value but could be changed if necessary? For example, a historic building that should be preserved may have redevelopment possibilities. Groton may have areas that could accommodate more businesses, provided the appearance and scale of development is appropriate. Please identify and label not only the places that could change, but what *kind* of changes you would want (or not want) to see.
- For Area 3: What are the areas that should change to accommodate necessary change and growth in Groton over the next ten years? (Remember, your answer cannot be,"no change"!) Identify and label the different opportunities for change and growth (for example, local businesses, housing, a necessary community facility).

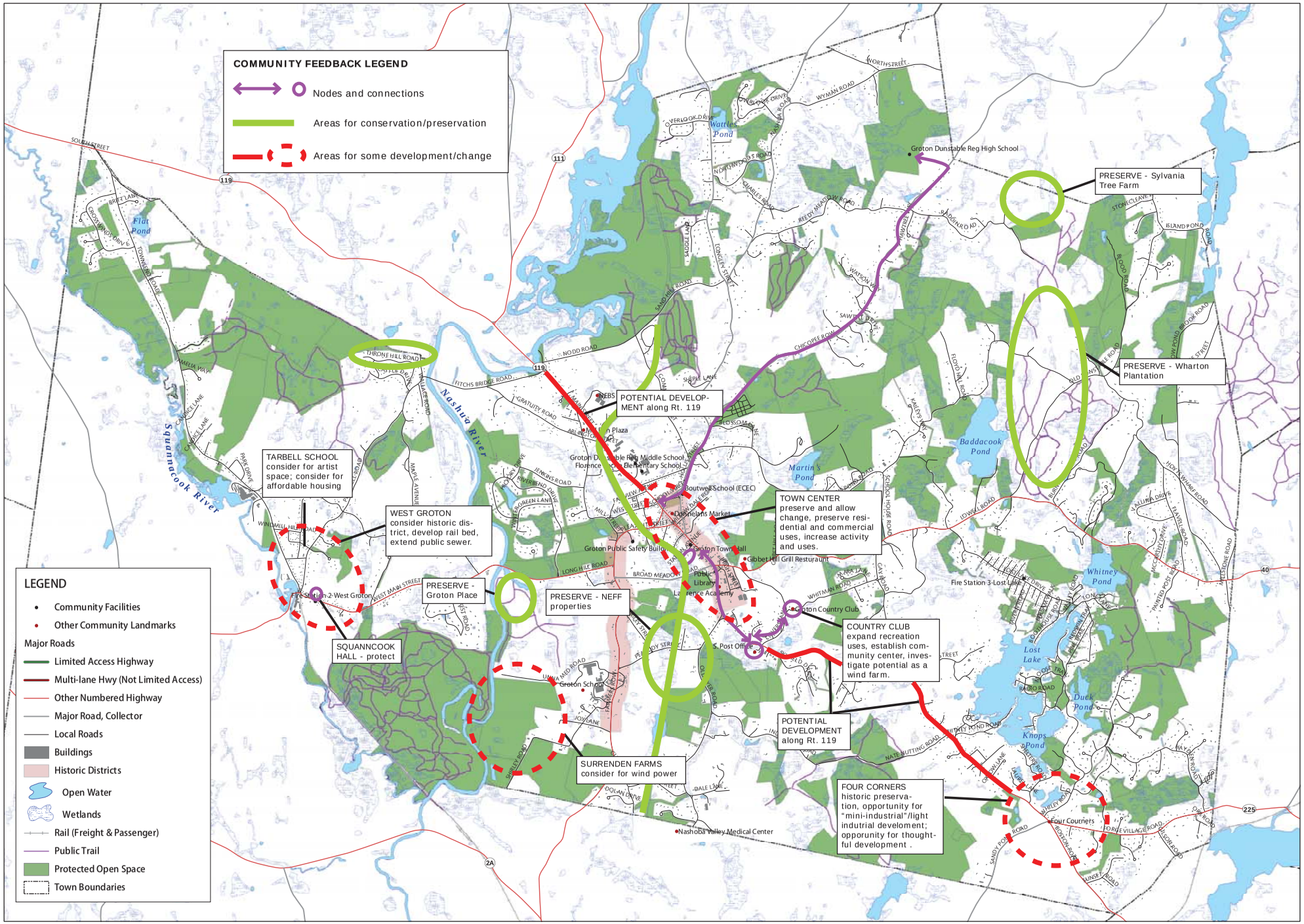
Remember

Together, the three systems *must* address the town's environmental, economic, social, and cultural needs. A map that only considers ways to preserve and improve the natural environmental, for example, is *not* a complete Master Plan map! In addition to areas for preservation and conservation, your team needs to consider areas for future housing, commercial/business, and community facilities development, and show them on your map. If different members of your team strongly disagree on an area of your map, just note this with a different color or label, and bring it up during the discussion.

Finally … have fun!

Appendix D: May 13, 2011 Community Forum Feedback Map

GROTON MASTER PLAN | May 13 Community Forum, Small Group Activity Composite Map



This map is for planning purposes only. The GIS data used to create the map are not adequate for making legal or zoning boundary determinations or delineating resource areas. Exercise caution when interpreting the information on this map.
Sources: MassGIS, Town of Groton, Applied Geographics, Inc.

0 0.25 0.5 1 Miles

Appendix E: May 13 Community Forum Notes by Group and Theme

By Group

RED GROUP

- Conserve Groton's waterways while ensuring public access and recreation use
- Conserve large areas such as Lost Lake, Whitney Pond Wells, and James Brook Watershed
- For the town's larger conservation parcels, look at agricultural potential
- Restore Fitch's Bridge
- Cluster facilities/services/mixed-uses to limit travel needs
- Increase pedestrian linkages – to Post Office, Station Avenue
- Develop walking path around Broad Meadow parcel
- Ensure connections between development in Groton ¾ prohibit cul-de-sacs, include connections to rail trails
- Areas for development include areas that could accommodate mini-industrial development, for instance, in Four Corners
- Develop park and ride locations

BLUE GROUP

- Look at Groton open space - how to make ecosystems function? What are missing links to recreation options?
- Town Center – provide continued protection, preserve residential and commercial uses, increase activity and services
- Additional bike paths and sidewalks needed to improved pedestrian access
- Need for Design Review Bylaw
- Need for affordable housing – protect existing modest housing which is located throughout town. Look at options such as co-housing.
- Need areas for small businesses, need to keep existing small businesses in town, such as home-based occupations
- Maintain Groton's villages
- NEFF lands – need to protect since many are not permanently protected
- Conservation lands – look at ways to connect existing parcels
- Consider establishing a historic district in West Groton
- Four Corners – preserve historic buildings
- Explore options for eco-tourism

- Consider reuse of school buildings for artists and other uses that may promote tourism

YELLOW GROUP

- Conserve greenways, rivers
- Expand bike trails
- Williams Barn – look at as a site for potential community garden
- Country Club – look at for green energy potential such as wind farm
- Prescott and Tarbell Schools – consider for affordable housing
- Need for a Housing Trust Fund in Groton
- Rail trail access
- Consider light industrial uses at Four Corners

GREY GROUP

- Conserve:
  - Historic roadways
  - Archaeological sites throughout town
  - Waterways
- Establish good and manageable practices for existing farmland
- Reclaim former farmland
- Consider existing conservation lands for agricultural use
- Develop rail bed in West Groton
- Expand recreation uses at Country Club
- Identify sites for wind power

BLACK GROUP

- Identify and establish open space connections
- Develop a local farmers' diner for utilizing local produce
- Create and preserve village life – promote social opportunities
- Preserve Lost Lake and West Groton
- Opportunity for thoughtful development at Four Corners and Cow Pond
- Link Town Center to Country Club

- Establish community center at Country Club

MAROON GROUP

- Protect all conservation lands – Gibbett Hill, Surrenden Farm, etc.
- Town Center – opportunities to conserve, preserve and allow change
- Country Club – develop recreation and social community center
- Develop sidewalks, trails at villages and use to link together sites such as at Post Office and High School
- Protect rail trails – Squannacook Rail Trail, Nashua River Rail Trail
- Protect historic districts

PURPLE GROUP

- Protect existing open space lands that aren't already protected
- Protect resources such as Squannacook Hall in West Groton
- Consider Tarbell School for artist space
- Extend public sewer/septic to West Groton
- Establish additional wi-fi areas for stay-at-home workers
- Consider Surrenden Farm for wind power
- Areas where change could be considered:
  - Sylvania Tree Farm
  - Country Club
  - Station Avenue
- Need for sidewalks on Route 225

GREEN GROUP

- Protect and preserve areas as shown on map (Vistas on Throne Hill Road, Groton Place, NEFF properties, Wharton Plantation, and Sylvia Tree Farm)
- Potential for development along Route 119 and West Groton
- Establish more housing diversity in Groton
- Encourage/require underground utilities

GENERAL COMMENTS

- Needs in Groton:
  - Middle-class seniors

- Less cars
- Performing arts center
- Universal access
- Reclaim Groton Place for passive recreational uses
- Additional municipal financial resources

- "The most positive aspect of Groton – its citizens"

By Theme

PRESERVATION/CONSERVATION/OPEN SPACE/ECOLOGY

Land Preservation

- NEFF lands – need to protect since many are not permanently protected
- Protect all conservation lands – Gibbett Hill, Surrenden Farm, etc.
- Protect existing open space lands that aren't already protected
- Protect and preserve vistas on Throne Hill Road, Groton Place, NEFF properties, Wharton Plantation, and Sylvania Tree Farm

Water

- Conserve Groton's waterways
- Conserve Groton's waterways while ensuring public access and recreation use
- Conserve greenways, rivers
- Conserve large areas such as Lost Lake, Whitney Pond Wells, and James Brook Watershed
- Preserve Lost Lake and West Groton

Agriculture

- Reclaim former farmland
- Establish good and manageable practices for existing farmland
- Consider existing conservation lands for agricultural use
- For the town's larger conservation parcels, look at agricultural potential

Open Space Connections

- Look at Groton open space - how to make ecosystems function? What are missing links to recreation options?
- Conservation lands – look at ways to connect existing parcels

- Identify and establish open space connections

Historic Preservation

- Protect historic districts
- Protect historic roadways
- Archaeological sites throughout town

Linkages/Connections

- Increase pedestrian linkages – to Post Office, Station Avenue
- Link Town Center to Country Club
- Develop sidewalks, trails at villages and use to link together sites such as at Post Office and High School
- Ensure connections between development in Groton – prohibit cul-de-sacs, include connections to rail trails
- Additional bike paths and sidewalks needed to improve pedestrian access
- Rail trail access

Development Areas/Place-Specific Improvements

- Cluster facilities/services/mixed-uses to limit travel needs
- Town Center – opportunities to conserve, preserve and allow change
- Town Center – provide continued protection, preserve residential and commercial uses, increase activity and services
- Areas for development include areas that could accommodate mini-industrial development, for instance, Four Corners
- Four Corners – preserve historic buildings
- Opportunity for thoughtful development at Four Corners and Cow Pond
- Maintain Groton's villages
- Consider establishing a historic district in West Groton
- Develop rail bed in West Groton
- Williams Barn – look at as a site for potential community garden
- Expand recreation uses at Country Club
- Establish community center at Country Club
- Country Club – develop recreation and social community center
- Country Club – look at for green energy potential such as wind farm

- Consider reuse of school buildings for artists and other uses that may promote tourism
- Prescott and Tarbell Schools – consider for affordable housing
- Consider Tarbell School for artist space
- Protect resources such as Squannacook Hall in West Groton
- Consider Surrenden Farm for wind power
- Potential for development along Route 119 and West Groton
- Reclaim Groton Place for passive recreational uses
- Areas where change could be considered:
  - Sylvania Tree Farm
  - Country Club
  - Station Avenue

Transportation/Infrastructure

- Expand bike trails
- Protect rail trails – Squannacook Rail Trail, Nashua River Rail Trail
- Develop walking path around Broad Meadow parcel
- Need for sidewalks on Route 225
- Develop park and ride locations
- Restore Fitch's Bridge
- Extend public sewer/septic to West Groton
- Establish additional wi-fi areas for stay-at-home workers
- Encourage/require underground utilities
- Identify sites for wind power
- Reduce the number of cars in Groton

Housing

- Establish more housing diversity in Groton
- Need for affordable housing – protect existing modest housing which is located throughout town.
- Look at options such as co-housing

- Need for a Housing Trust Fund in Groton

Economic Development

- Need areas for small businesses, need to keep existing small businesses in town, such as home-based occupations
- Explore options for eco-tourism
- Consider light industrial uses at Four Corners
- Develop a local farmers' diner for utilizing local produce

Miscellaneous

- Need for Design Review Bylaw
- Create and preserve village life – promote social opportunities
- Provide for the needs of middle-class seniors
- Provide universal access
- Need for additional municipal financial resources
- Need for a performing arts center
- "The most positive aspect of Groton – its citizens"

Appendix F: November 16, 2010 Community Forum Meeting Results

Synopsis of Interpretive Structural Modeling (ISM) Exercise

LEVEL 1

- Lost Lake and West Groton sewer systems

LEVEL 2

- Apartment developments
- Database to prioritize land acquisition
- Adaptive reuse of historical public and private structures
- Town-wide design guidelines
- Adopt Complete Streets as a planning policy; join Complete Streets Coalition

LEVEL 3

- New fire station

LEVEL 4

- Contemplative parks
- Re-establish Recreation Department

LEVEL 5

- Use of historical and archaeological resources as tools for economic development, education, and tourism
- Devise a comprehensive marketing strategy to promote Groton

Appendix G: Green Infrastructure Map Metadata

Map 3.1: Ecological Resources and Biodiversity

- **NHESP Certified Vernal Pools:** Vernal pools are isolated, shallow ponds that typically undergo periods of dryness. These pools are critical to a variety of wildlife species, especially those which breed exclusively in vernal pools or those that spend their entire life cycle in the pools. The Massachusetts Natural Heritage and Endangered Species Program (NHESP) certifies vernal pools, but the pools are only protected if they fall within the jurisdiction of the state Wetlands Protect Act Regulations. They may also have protection under the state Water Quality Certification regulations, Title 5 regulations, and the Forest Cutting Practices Act regulations. This datalayer was generated by digitizing the MassGIS 2005 Digital Orthophotos (1:25,000).

- **NHESP Potential Vernal Pools:** This datalayer includes vernal pools (described above) visible on aerial photographs but not certified. It does not include all vernal pools in Massachusetts. Potential pools do not receive protection under the environmental laws and regulations mentioned above.

- **Priority Habitats of Rare Species:** This datalayer shows polygons representing the geographic extent of state-listed rare species in Massachusetts based on observations documented within the last twenty-five years in the NHESP database.

- **NHESP BioMap2:** Prepared by the NHESP and the Nature Conservancy's Massachusetts Program, Biomap2 is a conservation plan to guide biodiversity conservation for the entire state over the next ten years. It focuses on land protection and stewardship for areas that are most critical to ensure the survival of rare and other native species and their supporting habitats. Biomap2 contains the following areas:

    - **Core Habitat:** areas critical to the long-term persistence of rare species and other Species of Conservation Concern, and also a range of natural communities and intact ecosytems across the state.

    - **Critical Natural Landscape:** includes large natural Landscape Blocks that provide habitat for wide-ranging native species, support intact ecological processes, maintain connectivity among habitats, and enhance ecological resilience. It includes buffering uplands around wetland and other aquatic Core Habitats.

    - **Forest Core:** areas that are the best examples of large, intact forests least impacted by development that provide critical habitat for woodland species.

    - **Priority Natural Communities:** areas that represent the extent of various key natural communities in the state. The areas are based on records of natural communities maintained in the NHESP database.

    - **Vernal Pool Core Habitat:** identifies the top 5 percent most interconnected clusters of Potential Vernal Pools within each ecoregion in the state. The clusters of pools were buffered to create the vernal pool core habitat areas.

    - Species of Conservation Concern: contains the combined Biomap2 footprint of all species listed in the Massachusetts Endangered Species Act and also all mapped non-listed species in the State Wildlife Action Plan.

- **DCR Areas of Critical Environmental Concern (ACEC):** areas of the state designated for special recognition because of the quality, uniqueness, and significance of their natural and cultural resources. They are intended to create a structure for local and regional stewardship of critical natural resource areas, and they require stricter environmental review for certain kinds of development under state jurisdiction. ACECs are identified and nominated at the local level and reviewed by the state Secretary of Energy and Environmental Affairs. The ACEC Program and newer ACEC datalayers are administered by the state Department of Conservation and Recreation (DCR).

Map 3.2: Water Resources

- **FEMA 100- and 500-Year Flood Zones:** areas based on the FEMA Q3 Flood maps, which show a subset of the data available on the paper Flood Insurance Rate Maps (FIRM) provided by the Federal Emergency Management Agency (FEMA).

- **Aquifers:** areas based on the boundaries of major drainage basins delineated in the USGS 1:48,000 hydrologic atlas series on groundwater favorability for Massachusetts. The datalayer distinguishes between high- and medium-yield aquifers.

- **Living Waters Core Habitat:** represents lakes, ponds, rivers, and streams important to sustaining freshwater biodiversity. Habitats were digitized onscreen at 1:25,000 scale or larger using MassGIS digital topographic quadrangles or 1:5,000 black-and-white orthopohtos as a base map. GPS site data were integrated into the datalayers when available.

- **Living Water Critical Supporting Watersheds:** shows areas with the highest potential to sustain or degrade Living Waters Core Habitats.

- **Public Water Supply:** shows the locations of public community surface and groundwater supply sources and public non-community supply sources. A community water system is a public water system which serves at least fifteen service connections used by year-round residents or regularly serves at least twenty-five year-round residents. A non-community water system is not a public water supply system. The source data is a combination of USGS topographic quadrangles and GPS data.

- **DEP Approved Wellhead Protection Areas:** Wellhead Protection Areas (WPAs) protect the recharge area around public water supply sources. There are several types of WPAs:

  - **Zone I** is a protective radius around a public well or wellfield, and it typically includes a radius of four hundred feet.

  - **Zone II** represents the area that provides the most direct supply of water to the well.

  - **Interim Wellhead Protection Areas (IWPA)** are established when there is no data to support a Zone II designation.

  The DEP generates and maintains this datalayer.

Map 3.3: Agricultural Resources

- **Prime farmlands soils:** This data comes from the NRCS SSURGO-Certified Soils datalayer provided by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). The data is based on the most detailed level of soil geographic data developed by the national Cooperate Soil Survey and was produced by both digitizing maps and correcting when necessary through remote sensing and other methods. The datalayer provides three categories of prime farmland:

  - **Prime farmland:** Land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses (the land could be cropland, pastureland, rangeland, forest land, or other land, but not urban built-up land or water).

  - **Farmland of statewide importance:** Land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, fruit, and vegetables.

  - **Farmland of unique importance:** Land that is important for the production of food, feed, fiber, forage, and oil seed crops, as determined by the appropriate state agency or agencies. Generally, these include lands that

are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods.

- **Land Use (2005):** This datalayer is based on 0.5 meter resolution digital ortho-imagery captured in April 2005. Select land use categories are shown on Map 3. The land use classification scheme is based on those used for previous state-wide land use datasets. The datasets were captured and coded by Sanborn, and edited by MassGIS.

- **Agricultural Land**: This layer shows areas that have been permanently protected for agriculture with a conservation restriction (CR) or under the state's Agricultural Preservation Restriction (APR) program. The map also shows lands owned by the New England Forestry Foundation, since tree farming and other productive forest management techniques can be considered a form of agriculture. The data is based in the Town of Groton's Open Space datalayer from its GIS database.

Map 3.4: Natural Resource Assessment

Data for this map were generated through analysis of the previous three natural resource maps.

- **Preservation Areas:** areas that represent multiple resource values, including wildlife habitat, surface waters, and the aquifers that feed Groton's water supply wells. The layer includes a 300-foot buffer along rivers, streams and ponds, which has been shown to have the most importance for both water quality and wildlife habitat. It also includes large wetland complexes and upland forest blocks that are immediately adjacent to riparian corridors or which overlap with approved Wellhead Protection Areas.

- **Conservation Design Areas:** areas that are important for one or two resources (for example, wetlands and floodplains or vernal pools and large forest blocks) but are not critical for sustaining the underlying ecological or water supply system. They provide important habitat for plants and animals, especially by incorporating large areas of forest on hillsides dotted by isolated wetlands and vernal pools. They are also significant sources of water that ultimately feeds the town's aquifers. What distinguishes them from the Primary Resource Areas is that their loss would affect, but not destroy, the underlying systems.

- **Growth Areas:** areas that are least important to maintaining functioning natural systems. Many of these are already developed or otherwise disturbed, or are actively managed for agriculture or recreation in a way that largely precludes any contribution to the ecosystem as a whole. This does not mean that these areas are not important as open space for other reasons, such as historic, visual or cultural value. Their designation signifies that losing them would not significantly impair water supplies or ecosystems.

Map 3.5: Gaps in Natural Resource Protection

This map shows the Preservation and Conservation Design Areas in Map 3.4 (above) overlaid with parcels from the Town of Groton's open space GIS datalayer to illustrate important ecological areas that are not protected.

- **Levels of Open Space Protection**: areas based on the Town of Groton's GIS open space data, mapped to show the level of protection for each open space parcel. Town conservation land, state forest, and private properties with conservation restrictions are protected in perpetuitiy. Limited or no protection applies to New England Forestry Foundation (NEFF) lands, for example, as well as a parcels owned by MIT. Other municipal land includes recreation land such as ballfields and the Groton County Club, as well as lands owned by the Town where future use has not been determined. There are a number of parcels whose open space protection status is undocumented.

Appendix H: Economic Development Case Studies

Collaborative Marketing and Promotions Programs

Ashland Business Association. The Town of Ashland (2008 population 15,807) is located approximately twenty-five miles West of Boston, just inside the I-495 beltway and south of I-90. Most recently, there were 829 businesses listed in the town ranging from small home-based sole proprietorships to large corporations.

The Ashland Business Association (ABA) was formed in 2004 to unite local small businesses in an effort to tie the community and businesses together. The ABA aims to build create a healthy business environment in town, to increase the visibility and profitability of its members. The organization focuses on the following four goals:

- Generate more business for members.
- Encourage residents, organizations, and businesses to shop in Ashland.
- Reach out to the community through scholarships and charitable donations.
- Help Ashland prosper by becoming more attractive.

The ABA meets monthly in the center of town, with business networking sessions held prior to the meetings. The meetings are free of charge and open to all local business owners, executives, and managers. ABA Membership is fifty dollars per year and eighty dollars for two years. Currently, there are approximately two hundred members on the ABA. Beyond the free, open meetings, members receive additional benefits from the ABA, including (but not limited to) a monthly newsletter, discounted products and services from local businesses, the advertising and listing opportunities in a local businesses street map, participation in "monthly spotlight" publicity in print and local television, access to guest lecturers highlighting business trends and current issues, and the promise of better access to town government personnel through the ABA's ongoing partnership efforts.

Anecdotal data gathered through in-person interviews with local business owners revealed mixed impressions of the ABA's effectiveness. Approximately 30 percent of downtown businesses maintain an active membership in the ABA. Many of the businesses who were not currently members had joined the association in the past but did not consider the benefits offered by the organization worth the annual dues or felt the organization was not delivering on the promise of fostering a positive relationship with the town.

Contact: David Teller, President; 508-380-0555, President@AshlandBusinessAssociation.com.

Arlington Chamber of Commerce (ARLCC)/Shop Arlington First. Arlington (2008 population 40,993) is located approximately eight miles northwest of Boston. Currently, the town has 1,826 listed businesses ranging from small home-based sole proprietorships to large corporations.

In 2005, the Arlington Chamber of Commerce (ARLCC) initiated the Shop Arlington First program (SA1). The shop-local program uses gift certificate sales that are redeemable at participating local businesses. Since the program began, more than $100,000 in gift certificates have been sold, over 67 percent of which have been redeemed to date. A nationwide study commissioned by the Andersonville, MI Chamber of Commerce shows that when people shop at local businesses, $68 out of $100 remain in the town, while only $43 out of $100 stay in town when non-local businesses are patronized.

Gift certificates can be purchased at two local banks or online in denominations of $10, $25, and $50. The certificates are good for seven years and do not have any fees assessed at time of purchase or in the form of monthly service charges. Collaboration with one of the local banks has allowed the businesses to treat the gift certificates like they would regular checks and not need to wait for reimbursement from the ARLCC. Member dues in the Chamber of Commerce are $50 per year. Currently, there are approximately eighty local businesses enrolled in SA1. These businesses also benefit from increased advertising presence in town and on the internet.

Contact: Arlington Chamber of Commerce, One Whittemore Park, Arlington, MA 02474; 781-643-4600, www.arlcc.org/sa1/index.htm

Hudson Business Association (HBA)/Support Hudson, Buy Local. Hudson (2008 population 19,597) is located approximately thirty-two miles west of Boston, just inside the I-495 beltway and north of I-90. Currently, there are 969 businesses listed within Hudson.

Formed in 2008, the Hudson Business Association (HBA) is a relatively new group of local officials and business people whose primary goal is to revitalize the

downtown business district. Previously, Hudson's downtown was littered with empty storefronts and the area had difficulty attracting patrons and potential investors. A secondary, long-term goal is to organize the HBA is such a way so it may serve as an ongoing resource to local businesses, providing services such as professional development, technical assistance, and continued downtown revitalization efforts. The HBA holds monthly professional development and networking meetings which often have guest speakers who discuss current topics. A "Start a Business Boot Camp" seminar series is currently being planned by the HBA.

In 2009 the HBA initiated its "Support Hudson/Buy Local" campaign in an effort to promote local businesses. Promotional materials such as posters and press releases have been distributed in the local community to advertise the campaign and encourage local shopping. In addition to more traditional methods of promotion, the HBA is also using new media such as Facebook.com.

Contact: D.J. Collins, 978-562-3352 ext. 16; dj@hudsonappliance.com,

www.hudsonbusinessassociation.com

BerkShares, Inc. Formed in 2006, BerkShares, Inc. is non-profit located in Great Barrington, MA working to boost the Berkshire region economy. BerkShares, Inc. operates in conjunction with participating area banks, businesses, and other non-profits with a primary focus on the promotion of a local currency, the BerkShare. BerkShares are intended to stimulate the economy of the Berkshire region by offering an incentive to consumers to shop locally. BerkShares, available at numerous participating banks in denominations of 1, 5, 10, 20, and 50 "shares," have a fixed exchange rate of $0.95 per BerkShare. Participating businesses accept payment in BerkShares for the price listed in federal currency. The consumer is therefore given an automatic 5 percent discount by paying for goods and services with BerkShares. Businesses benefit from increased consumer spending in the region and the organization's promotional efforts. To date, approximately 400 local businesses have signed up to accept the BerkShare and over 2.5 million "shares" have been circulated through the local economy.

Contact: Susan Witt, co-founder, P.O. Box 125, Great Barrington, MA 01230 USA

info@berkshares.org (413) 528-1737; http://www.berkshares.org

Co-sponsor: E. F. Schumacher Society, 413-528-1737; www.smallisbeautiful.org

Additional "Shop Local" Initiatives

- **"Made in Groton" stickers affixed to all locally-produced goods and on invoices for local services.** Based on the "Made in USA" campaign, this program is intended to raise consumer awareness of local products. Promotional signs and other forms of advertising would likely be used in conjunction with the stickers for maximum effectiveness. This technique is currently used in Hillsboro, OH.

- **"Stay Local" Website promoting local businesses, news, promotions, and events of interest to the local economy and residents.** A "Stay Local" website acts as a clearinghouse for everything local. Consumers are presented with a straightforward, centralized source of information on local news, businesses, and other articles of interest. The overriding theme of the website is to showcase the myriad benefits of supporting the local economy. This technique is currently in use in New Orleans, LA, and many other communities.

- **Follow "GrotonShopLocal" on Twitter.** Several communities around the country have utilized Twitter and other social networking methods to promote and support locally-owned businesses. This tool allows towns, business associations, Chambers of Commerce, etc. to quickly and easily disseminate information about local businesses and events.

- **Leaflets or local maps showing local shopping destinations,** including possible joint promotional efforts underway between businesses. This technique is common in tourist destinations, where maps and leaflets showcasing local businesses can be distributed throughout town.

- **Loyalty cards or stickers promoting local businesses.** Many communities or even specific commercial sectors have utilized this technique as a way to encourage consumers to branch out beyond their usual shopping routine. For example, a card could list ten local businesses and the consumer would need to visit each to get a stamp (but not necessarily need to make a purchase). When the card has a stamp from each of the ten stores, it is entered into a monthly drawing for prizes. The card could target one type of business such as restaurants or clothing stores, or could include a range of commercial destinations.

- **Extended business hours for a special shop-local event or festival.** Community "shop walks" could be held where businesses stay open late and offer wine

and cheese in a relaxed atmosphere to encourage consumer exploration of businesses in a community.

- **3/50 Initiative.** This technique encourages local residents to designate fifty dollars to spend at three local stores in one month that would normally be spent at chain stores or other non-local businesses.

- **"I Found It in Groton" website** where consumers can find information on local retail shops or services. Facebook, blogs, and other social media can be used for this program. This technique is currently in use in Georgetown, TX.

Agriculture

LOCAL AGRICULTURAL COMMISSIONS

Hatfield Agricultural Advisory Committee (HAAC). Established in 2001, the Hatfield Agricultural Advisory Committee has actively promoted local agriculture and supported local farmers. The committee has sponsored educational seminars on farm support and farmland protection efforts for both town officials and farm and forest land owners. The committee also held a series of forums to give information to local farmers in town and receive feedback issues that should be addressed by the committee. The HAAC was instrumental in generating support for separate agricultural water rates for farm operations and encouraging the passage of a Local Preference Bylaw that encourages the purchase of locally grown food products by town institutions, such as the School Department. The bylaw allows local purchasing agents to state a preference for products grown in Massachusetts in bids and contracts greater than $25,000.

The HAAC has also promoted local agriculture through marketing materials and community partnerships. The committee produces a "Hatfield Farms" brochure that features information on the town's twenty-one full and part-time farms and farm stands and their location on a town-wide map. Initially created in 2004, the brochure is now updated every two years. With support of area businesses and farmers, the town distributes more than 2,500 copies of the brochure each year at Town Meeting, at each of the featured farm stands, at community buildings and offices, and local restaurants and stores.

The committee also partners with local schoolchildren to commission outdoor murals highlighting Hatfield's agricultural heritage. Using funds from the Massachusetts Cultural Council and the Massachusetts Ag in the Classroom Program, the partnership has created four murals depicting farm scenes, activities, and local farmers created by the high school art department. For the 2008 mural project also involved the Western Massachusetts Food Bank (which is located in Hatfield) who worked with the students to create a mural that highlighted relationship between farms, food, and people in need.

The **Rehoboth Agricultural Commission** promotes the town's local agricultural resources by hosting a Farmers' Market, developing a Right to Farm bylaw, and installing Rehoboth Right to Farm Community signs throughout the town. The commission also won a Sustainable Agriculture Research and Education (SARE) grant to develop an inventory of farms and conduct a needs assessment survey. The grant also enabled the commission to create an educational and marketing brochure and interactive GIS maps. The brochure includes information on CSAs, the Right to Farm bylaw and community signs, a history of agriculture in Rehoboth, and a list and map of Rehoboth's farms, which include hay and livestock farms as wells as garden centers, tree farms, and equestrian facilities. Each farm is identified by its products, agritourism related activities, and hours of operation.

The **Gill Agricultural Commission** produces a brochure that lists the town's seven farms that sell products or services available on-site or through local merchants. The brochure also includes a brief history of farming in Gill as well as a section on how residents can support local farms and farmers.

The **Littleton Agricultural Commission** actively promotes local farms through a variety of endeavors. The Commission recently instituted a "Buy Local" campaign and sells "Save Our Farms" tote bags and "Locavore" shirts to raise money for this initiative. The group also recently published a brochure, "Preserving an American Tradition," highlighting Littleton's agriculture and works with the local newspaper to include a weekly local food page during the farm season. The Commission hopes to institute local food into Littleton's school system and incorporate agriculture into the classroom as well.

REGIONAL NON-PROFIT ORGANIZATIONS

Community Involved in Sustainable Agriculture (CISA) is a non-profit organization operating in Franklin, Hampshire, and Hampden counties. Established in 1993, its mission is to strengthen connections between farms, community members, and markets. CISA's "Be a Local Hero, Buy Locally Grown®" public awareness and marketing campaign is the longest-running "buy local" program in the country. The organization runs a range of other programs to address many aspects of local agriculture, including farms and institutional relationships, agricultural infrastructure development, and special programs for seniors and school-age children. CISA also provides

technical support for agricultural issues on topics such as financial sustainability and labor issues.

The **Forever Farmland** sign project began through a collaboration between the Kestrel Trust, a regional land trust in the Pioneer Valley, and the Town of Hadley in 2009. Farms that have Agricultural Preservation Restrictions (APR) or conservation restrictions display "Forever Farmland" signs which raises public awareness of the importance of preserving farmland. The Forever Farmland website outlines the benefits of preserving agricultural land, describes the DAR's APR program and provides links to farm support organizations and area land trusts. Since its inception, the sign program has been expanded to the City of Amherst, Towns of Sunderland and Belchertown, and to other land trusts in the Pioneer Valley. The Kestrel Trust promotes the economic benefit of farming in addition to its nutritional and aesthetic importance. According to the Forever Farmland website, Hampshire County farms provide $7.3 million in worker wages, and $35 million in sales, including $1.6 million in direct-to-consumer-sales.

Grow Food Northampton is a non-profit organization dedicated to promoting food security through sustainable agriculture in and around Northampton. The organization has a board of directors and has several working committees to lead initiatives such as community farm fundraising, public engagement, and community farm planning.

FARM WEBSITE EXAMPLES

Verrill Farm, Concord – www.verrillfarm.com. An APR-protected property, Verrill Farm's website includes recipes, restaurant connections, and information on sustainable agriculture. An on-site farm stand includes New England specialty foods and hosts cooking classes, events, and festivals. Verrill Farm also offers space for catered parties and tours.

Parlee Farms – www.parleefarms.com. Parlee Farms' website highlights activities such as pick-your-own fruit, vegetable and flower sales. The on-site farm stand also offers baked goods and ice cream and the farm includes agritourism related activities such as a small animal petting area, Farmer Mark's Tractor Training Course, school tours, birthday parties, and a hay play area in the fall.

STATE GOVERNMENT

Massachusetts Department of Agricultural Resources Agricultural Directional Signage Program. The MDAR sponsors the Agricultural Direction Signage (ADS) program in collaboration with the Massachusetts Highway Department and the Office of Travel and Tourism in an effort to promote local farms. This program places directional signage along state roadways for farms located within a specific distance of the road. These blue signs feature the logo "Massachusetts grown…and fresher!" as well as the name of the farm and icons for farms products. There is a fee associated with placement of these signs. Farms must also meet specific criteria to participate in this program.

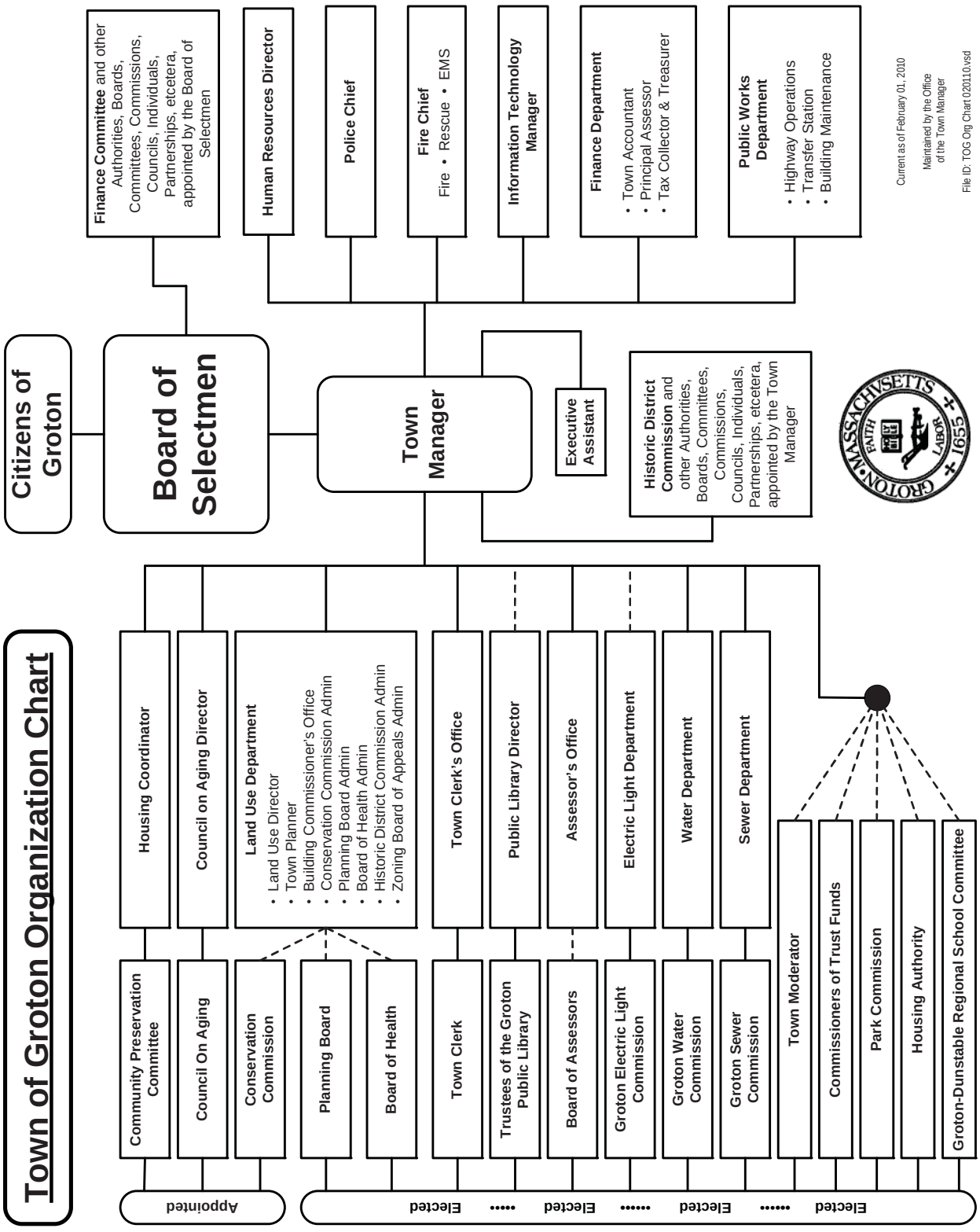
This program differs from the state's Attractions signs, which are located on major access highways across Massachusetts. These signs were erected by the joint efforts of the Massachusetts Office of Travel and Tourism, Regional Tourist Councils, and the Massachusetts Highway Department. These signs list a variety of attractions located in the specific community.

Appendix I: Municipal Facilities Inventory

Town of Groton Public Facilities				
Facility Name	Location	Date Constructed	Recent Repairs/ Upgrades	Comments
Town Hall	173 Main Street	1859	Substantial renovation, 1999	Well preserved; increasingly limited storage and archival space.
Groton Public Library	99 Main Street	1893	Substantial expansion, 1999	Insufficient meeting space.
Public Safety Building	99 Pleasant Street	1991	New roof in rear of building, 2006	Undersized for current use; limited expansion options.
Fire Station #1	20 Station Avenue	1915	Minor renovations in past 20 years, including new roof, door modifications, etc.	Narrow garage bays restrict fire apparatus; limited parking for call firefighters; deferred maintenance, incl. missing mortar, broken bricks; second floor meeting space with ADA issues.
Fire Station #2	46 West Main Street	1958	Rear addition, 1995	Driveway apron deteriorated; very little and poorly marked parking; roof damaged from ice storm; recurring ice dams indicate ventilation issues; bathroom is old.
Fire Station #3	185 Lost Lake Drive	2004		Could be considered as future polling location; community space underutilized.
Public Works Facility	600 Cow Pond Brook Road	1990s		Only one garage bay is currently heated. Site large enough for future expansion.
West Groton Annex Public Works Facility	173 West Main Street	1958	New sand/salt shed, 2005	Needs new septic system, planned for 2011.
Groton Electric Light Department	23 Station Avenue	1909 office building, ca. 1970 garage	New building on site, 1992; new roof, 2004	New facility to be constructed on the existing site.
Senior Center	163 West Main Street	1990	New roof, 2008; replace entry door, 2001	Ramp requires significant maintenance during winter months.
Groton Golf and Pool Center	94 Lovers Lane	Various	Accessibility improvements, 2010; pro shop, 1992	Deferred maintenance of various facilities, e.g. tennis courts and pool area.
Groton Fairgrounds/ Hazel Grove Park	Jenkins Road	Deeded to Town in 1940	Wood barn, two small masonry buildings	Legality of property's current use exclusivity by private organizations is unclear; could be considered for future use as public open space with access to Nashua River.
Legion Hall / Chaplin School	75 Hollis Street	1869	Exterior well maintained; minor repairs over past 20 years	Second floor restricted for Legion use; first floor contains meeting space as well as committee offices. First floor exhibiting deferred maintenance; lacks accessibility; existing heating system is inefficient.

Town of Groton Public Facilities				
Facility Name	Location	Date Constructed	Recent Repairs/ Upgrades	Comments
Williams Barn	164 Chicopee Row	ca. 1840	Restoration, 1990	Used for community events, education projects, and seasonal farmers market.
Prescott School	145 Main Street	1928	Windows replaced, 2005	Owned by Town; leased to GDRSD; used by Superintendent's offices and SEPAC. Lacks accessibility.
Tarbell School	73 Pepperell Road	1915	Minor repairs, e.g. replacement of windows and doors	Currently vacant; general building deterioration; septic system needs upgrade/ replacement; Town seeking to dispose of property.
Sawtell School	366 Chicopee Row	ca. 1833	Restored outhouse on property using CPA funds	Used for education field trips.
Squannacook Hall	33 West Main Street	1887	New roof , 2004	Currently vacant; major renovations required ($1.7 million est.); failed septic system, no on-site parking.

Appendix J: Town Government Organizational Chart

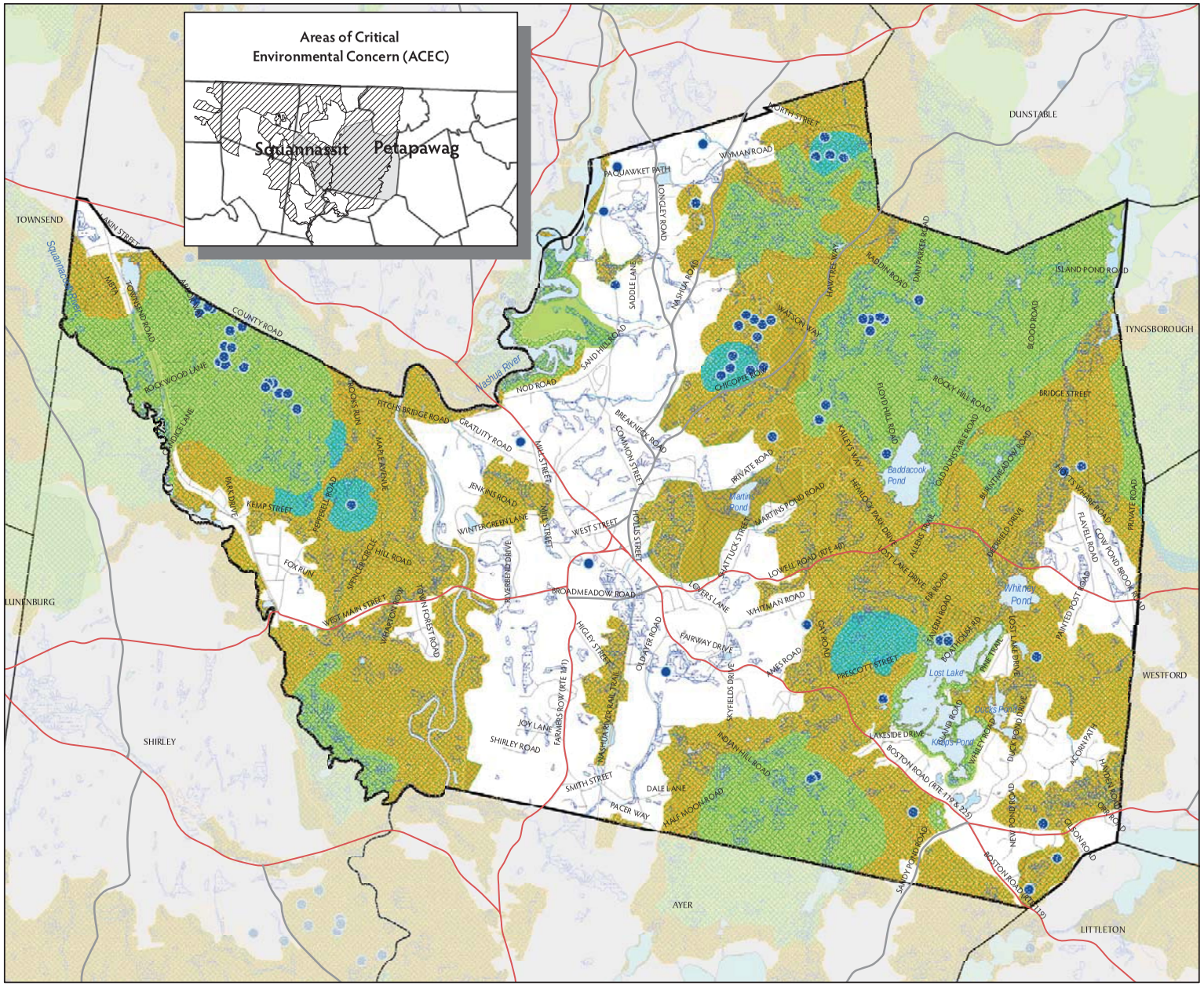


Appendix K: Master Plan Maps

Groton Master Plan

Map 3.1: Ecological Diversity

March 2011



KEY

ROADWAYS

- Limited Access Highway
- Multi-Lane (Not Limited Access)
- Other Numbered Highway
- Major Road, Collector
- Local Roads

WATER RESOURCES

- Open Water
- Wetlands
- Rivers and Streams

NHESP INVENTORIES

- Certified Vernal Pool (2010)
- NHESP Priority Habitat (2008)

BioMap 2 Areas (2011)

- Core Habitat
- Critical Natural Landscape
- Core Habitat: Priority Natural Communities
- Core Habitat: Forest Core
- Core Habitat: Vernal Pool
- Core Habitat: Species of Conservation Concern
- Critical Natural Landscape

0 0.5 1 Miles

Groton Planning Board

CONSULTANTS

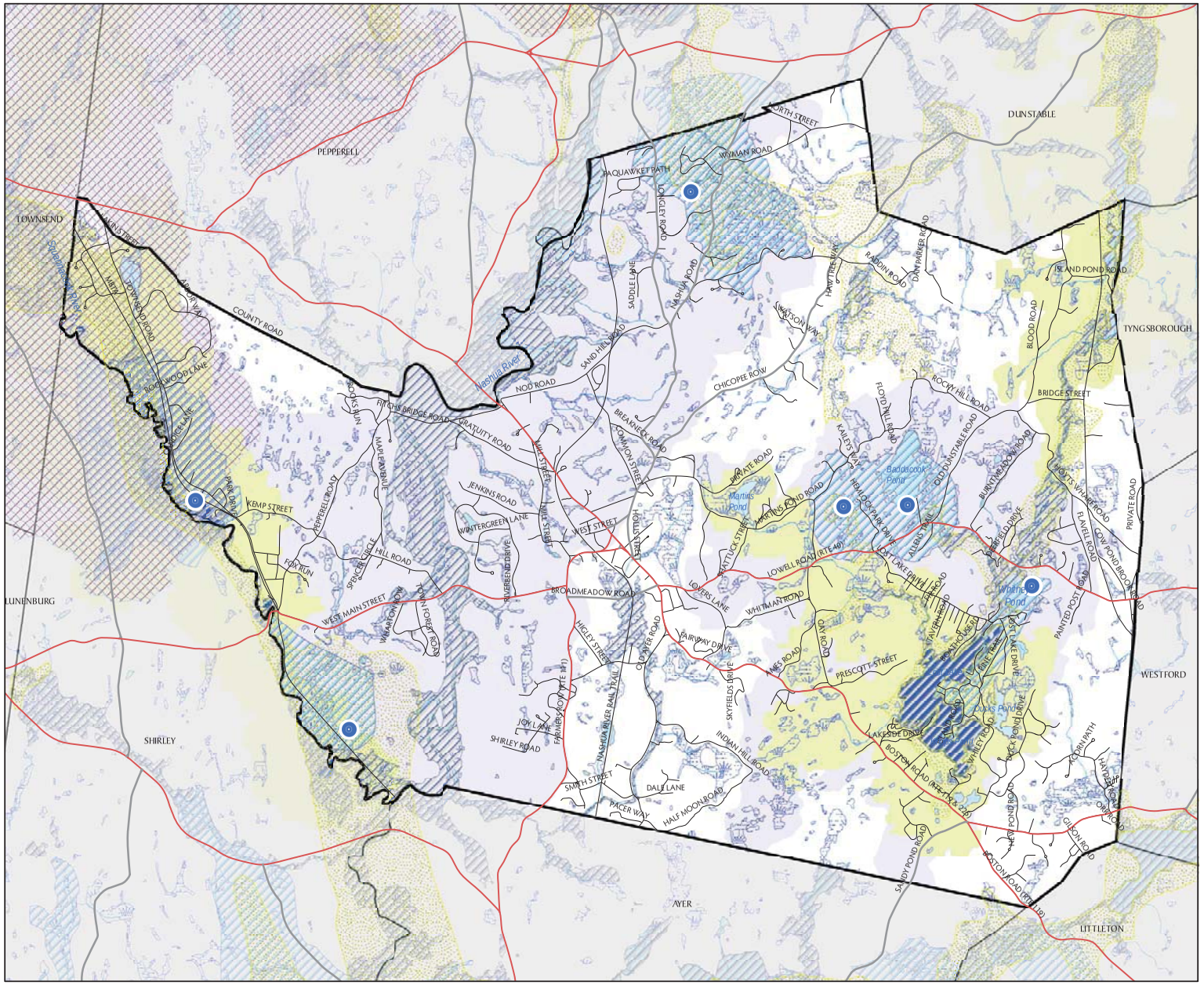
Community Opportunities Group, Inc.

Dodson Associates

Fay, Spofford & Thorndike, Inc.

Data Sources:
Applied Geographics, Inc., MassGIS,
Natural Heritage and Endangered Species Program (NHESP)
Natural Resources Assessment by Dodson Associates

Note: This map is for general planning purposes only. The data used to create the map are not adequate for making legal boundary determinations or delineating resource areas. Exercise caution when interpreting the information on this map.



Groton Master Plan

Map 3.2: Water Resources

March 2011

KEY

ROADWAYS

- Limited Access Highway
- Multi-Lane (Not Limited Access)
- Other Numbered Highway
- Major Road, Collector
- Local Roads

- Water Bodies
- Rivers and Streams
- Public Drinking Water Supply
- DEP Zone II
- Aquifers
- Groton Water Resource Protection District
- 100-Year Flood Plain
- Oustanding Resource Waters
- NHESP Living Waters Core Habitat
- NHESP Living Waters Supporting Watershed

0 0.5 1 Miles

Groton Planning Board

CONSULTANTS
Community Opportunities Group, Inc.
Dodson Associates
Fay, Spofford & Thorndike, Inc.

Data Sources:
Applied Geographics, Inc., MassGIS,
Natural Heritage and Endangered Species Program (NHESP)
Natural Resources Assessment by Dodson Associates

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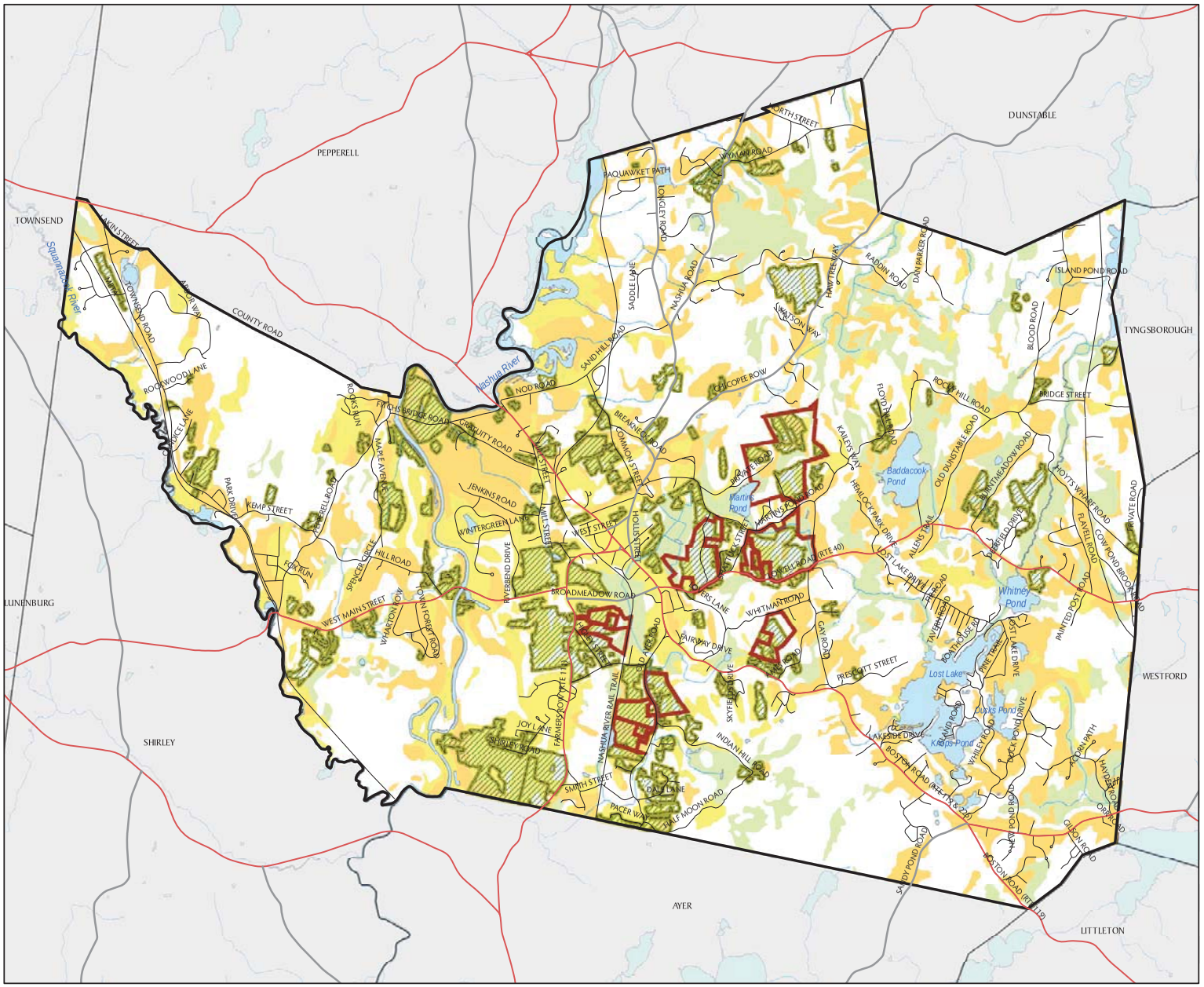

Groton Master Plan

Map 3.3: Agricultural Resources

March 2011

KEY

ROADWAYS

- Limited Access Highway
- Multi-Lane (Not Limited Access)
- Other Numbered Highway
- Major Road, Collector
- Local Roads

- Water Bodies
- Rivers and Streams
- Agricultural Uses*
- APR and CR Parcels

Farmland Soils by Class (USDA)

- Prime Farmland
- Farmland of Statewide Importance
- Farmland of Unique Importance

*Includes any land used for crops, pastures, orchards, and nurseries; Statewide Land Use Map, 2005.

Groton Planning Board

CONSULTANTS
Community Opportunities Group, Inc.
Dodson Associates
Fay, Spofford & Thorndike, Inc.

Data Sources:
Applied Geographics, Inc., MassGIS,
Natural Heritage and Endangered Species Program (NHESP)
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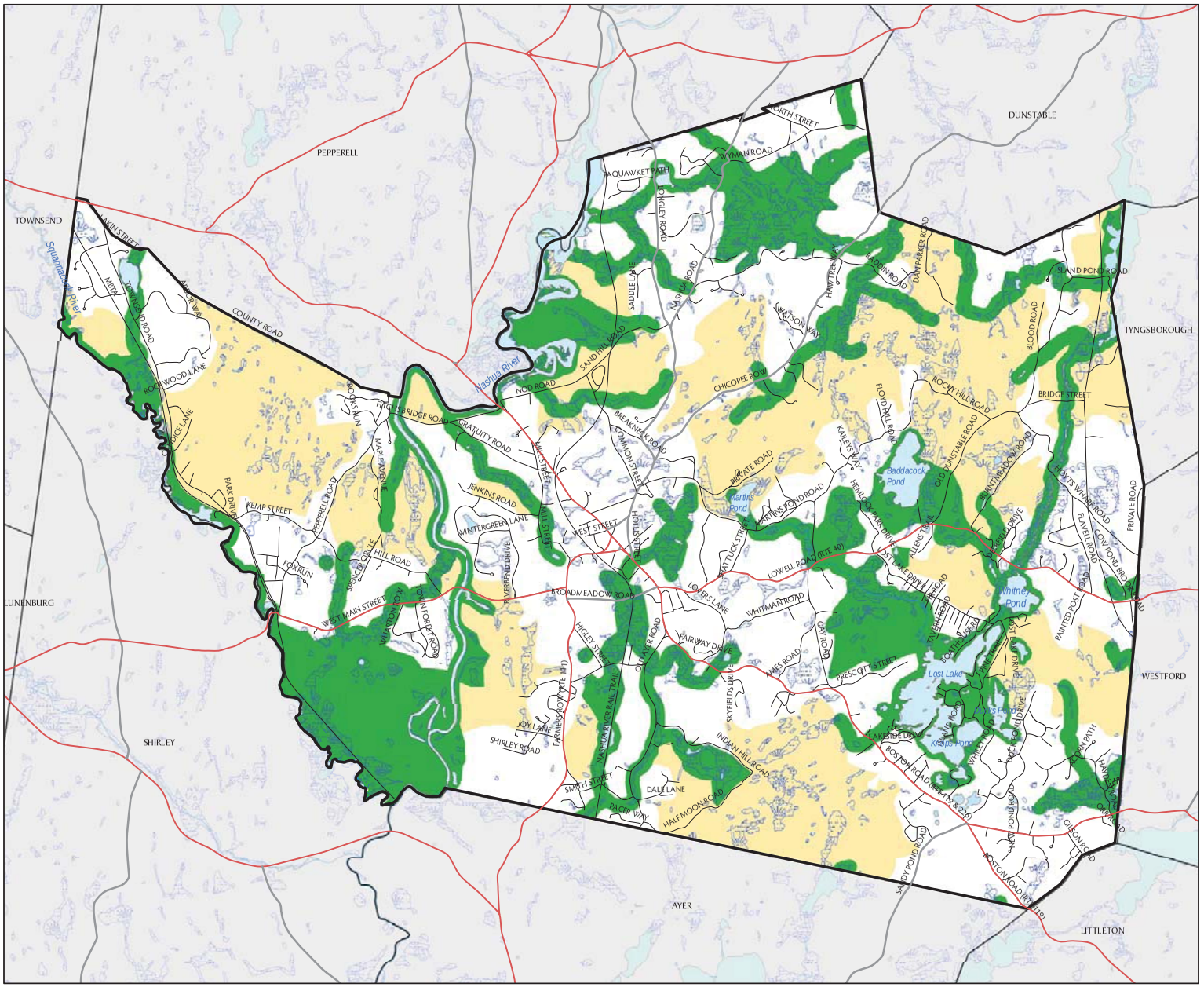

Groton Master Plan

Map 3.4:
Natural Resources Assessment

March 2011

KEY

ROADWAYS

- Limited Access Highway
- Multi-Lane (Not Limited Access)
- Other Numbered Highway
- Major Road, Collector
- Local Roads
- Water Bodies

ASSESSMENT RESULTS

- Preservation Areas
- Conservation Design Areas
- Growth Areas

0 0.5 1 Miles

Groton Planning Board

CONSULTANTS
Community Opportunities Group, Inc.
Dodson Associates
Fay, Spofford & Thorndike, Inc.

Data Sources:
Applied Geographics, Inc., MassGIS,
Natural Heritage and Endangered Species Program (NHESP)
Natural Resources Assessment by Dodson Associates

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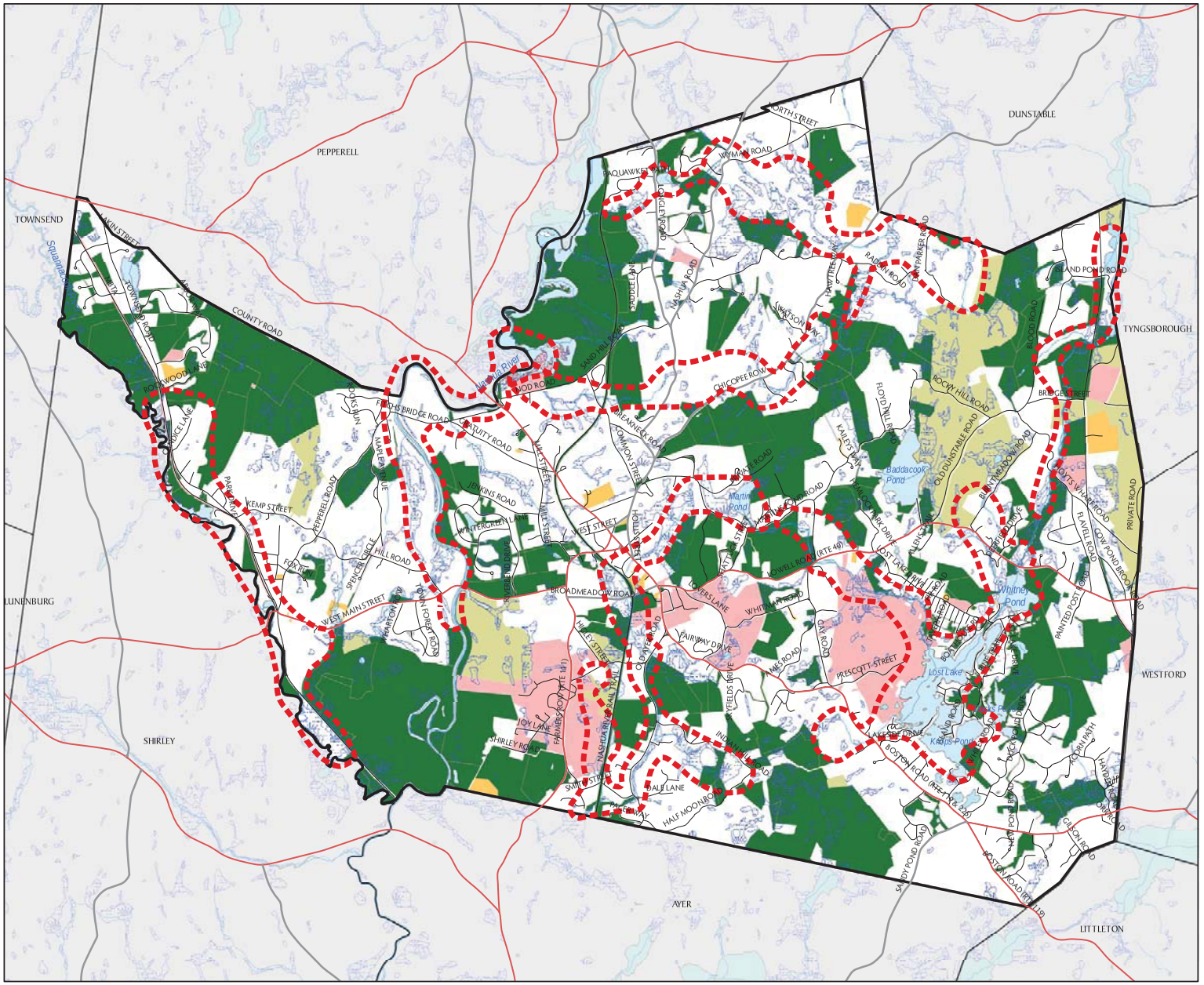


Note: This map is for general planning purposes only. The data used to create the map are not adequate for making legal boundary determinations or delineating resource areas. Exercise caution when interpreting the information on this map.

Groton Master Plan

Map 3.5:
Natural Resource Protection Gaps

March 2011

KEY

ROADWAYS

- Limited Access Highway
- Multi-Lane (Not Limited Access)
- Other Numbered Highway
- Major Road, Collector
- Local Roads
- Water Bodies
- Rivers and Streams
- Gap Areas

LEVEL OF OPEN SPACE PROTECTION

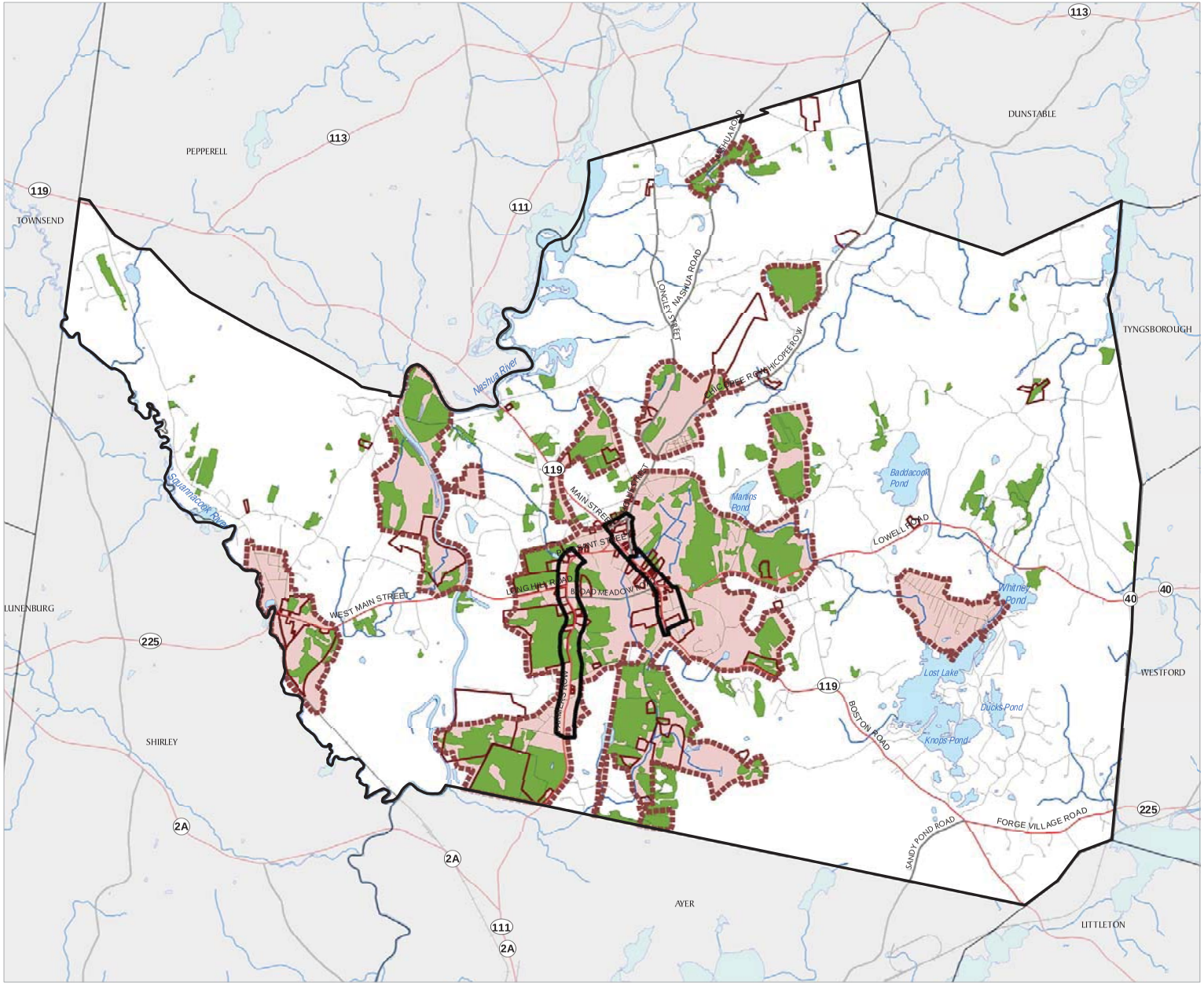
- In Perpetuity
- Limited or None
- Undocumented
- Other Municipal Land

0 0.5 1 Miles

Groton Planning Board

CONSULTANTS
Community Opportunities Group, Inc.
Dodson Associates
Fay, Spofford & Thorndike, Inc.

Data Sources:
Applied Geographics, Inc., MassGIS,
Natural Heritage and Endangered Species Program (NHESP)
Natural Resources Assessment by Dodson Associates



Groton Master Plan

Map 4.1:
Cultural Resources Assessment

March 2011

KEY

ROADWAYS

- Limited Access Highway
- Multi-Lane Highway (Not Limited Access)
- Other Numbered Highway
- Major Road, Collector
- Local Roads
- Rail (Frieght & Passenger)
- Open Water
- Rivers & Streams

CULTURAL RESOURCES INVENTORY

- Historic Districts (State Register)
- Historic Properties
- Farmland
- Cultural Resource Priorities

0 0.25 0.5 1 Miles

Groton Planning Board

CONSULTANTS
Community Opportunities Group, Inc.
Dodson Associates
Fay, Spofford & Thorndike, Inc.

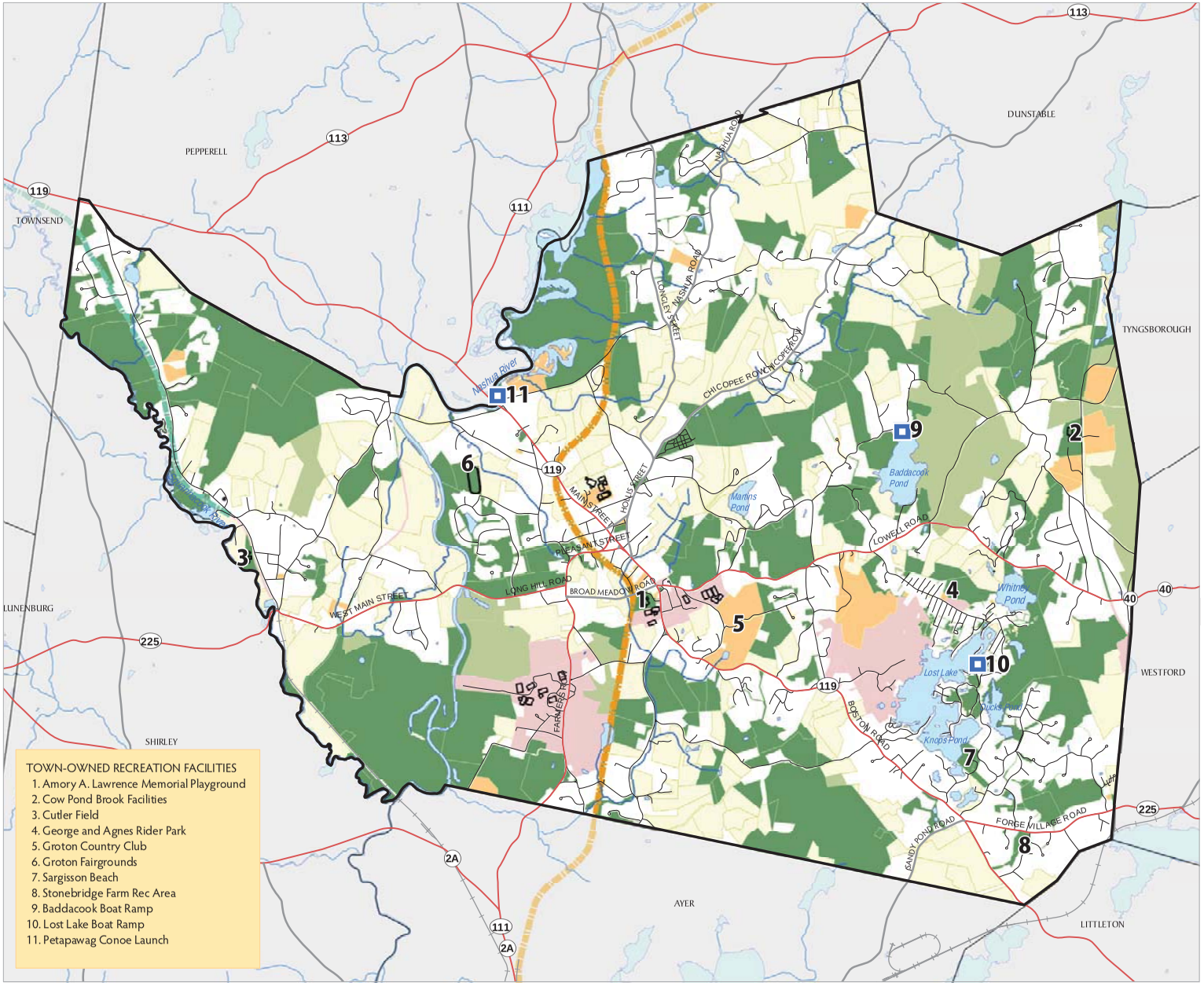
Data Sources:
Applied Geographics, Inc., MassGIS,
Natural Heritage and Endangered Species Program (NHESP)
Massachusetts Historical Commission
Cultural Resources Assessment by Dodson Associates

This map is for planning purposes only. The GIS data used to create the map are not adequate for making legal or zoning boundary determinations or delineating resource areas. Exercise caution when interpreting the information on this map.

Groton Master Plan

Map 5.1:
Open Space & Recreation Resources

April 2011



TOWN-OWNED RECREATION FACILITIES
1. Amory A. Lawrence Memorial Playground
2. Cow Pond Brook Facilities
3. Cutler Field
4. George and Agnes Rider Park
5. Groton Country Club
6. Groton Fairgrounds
7. Sargisson Beach
8. Stonebridge Farm Rec Area
9. Baddacook Boat Ramp
10. Lost Lake Boat Ramp
11. Petapawag Conoe Launch

KEY

- Railroad

ROADWAYS
- Limited Access Highway
- Multi-Lane Highway (Not Limited Access)
- Other Numbered Highway
- Major Road, Collector
- Local Roads
- Railroad
- Open Water
- Rivers & Streams
- Boating Access

RAIL TRAILS
- Nashua River Rail Trail
- Mason NH Rail Trail ext. (Not Built)
- Privately Owned Unrestricted Land
- Municipal Land

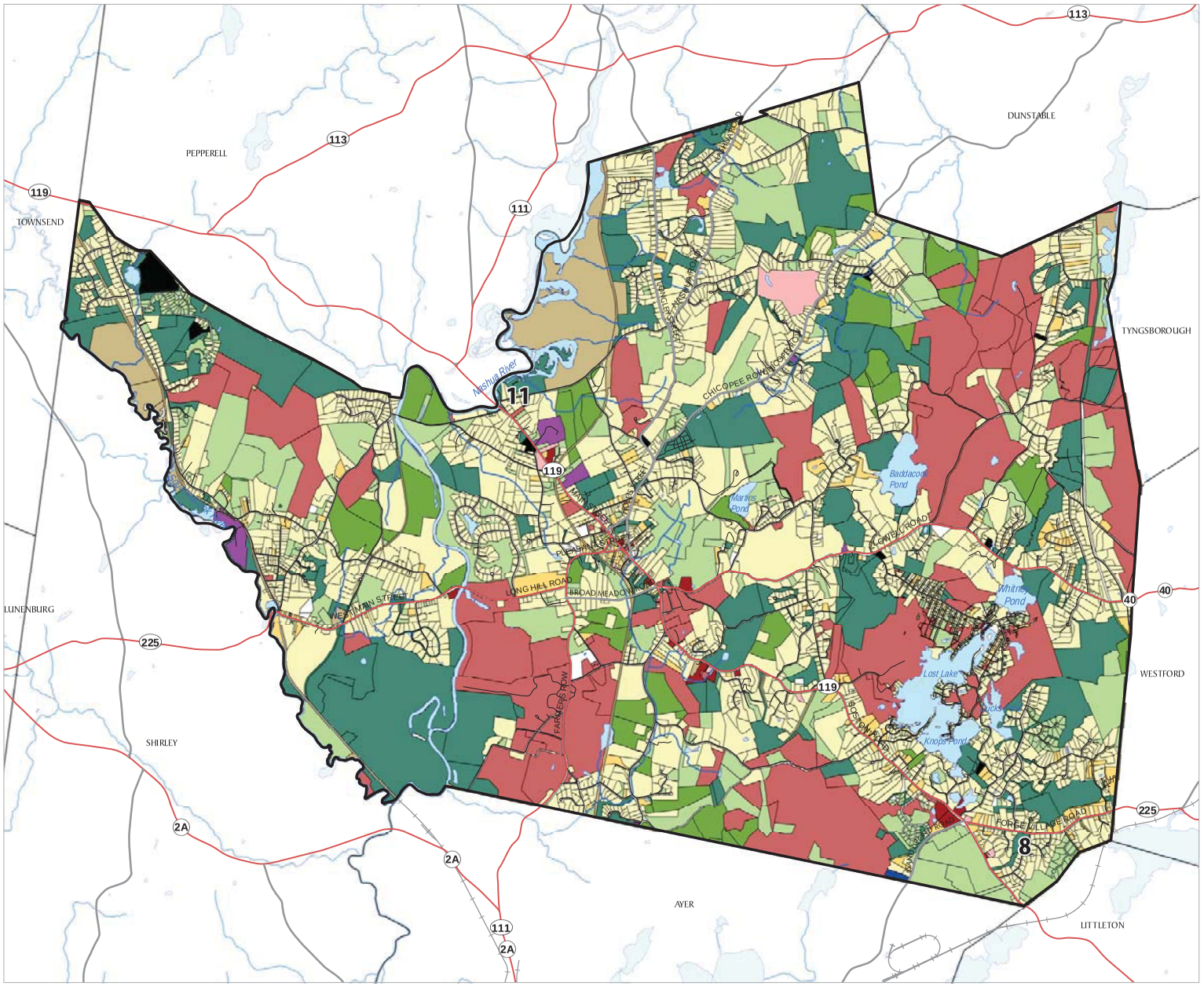
OPEN SPACE
- In Perpetuity
- Limited or No Protection
- Level of Protection Unknown

0 0.25 0.5 1 Miles

Groton Planning Board

CONSULTANTS
Community Opportunities Group, Inc.
Dodson Associates
Fay, Spofford & Thorndike, Inc.

Data Sources:
Applied Geographics, Inc., MassGIS,
Natural Heritage and Endangered Species Program (NHESP)
Massachusetts Historical Commission



Groton Master Plan

Map 7.1: Existing Land Uses

April 2011

KEY

- Railroad

ROADWAYS

- Limited Access Highway
- Multi-Lane Highway (Not Limited Access)
- Other Numbered Highway
- Major Road, Collector
- Local Roads
- Railroad
- Open Water

CLASS OF USE

- Single-family dwelling
- Multifamily housing
- Retail and restaurant
- Other commercial
- Public services
- Industrial and utilities
- Chapter 61, 61A
- Privately owned recreation area
- Vacant land
- Federal, state, county
- Municipal
- Institutional and religious
- Unclassified

0 0.25 0.5 1 Miles

Groton Planning Board

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Data Sources:
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Natural Heritage and Endangered Species Program (NHESP)
Massachusetts Historical Commission

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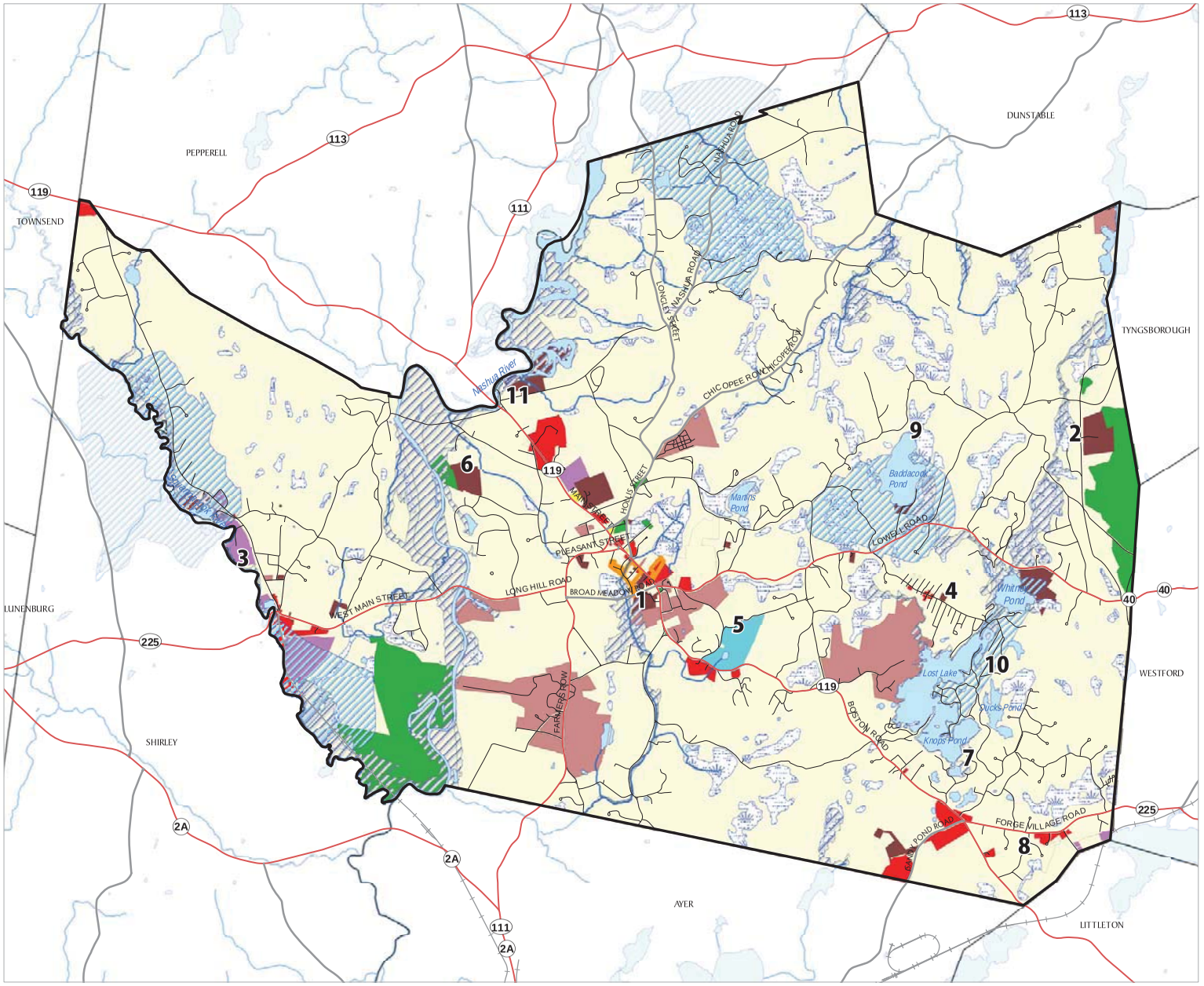
Groton Master Plan

Map 7.2: Existing Zoning

April 2011



KEY

- Railroad

ROADWAYS

- Limited Access Highway
- Multi-Lane Highway (Not Limited Access)
- Other Numbered Highway
- Major Road, Collector
- Local Roads
- Railroad
- Open Water
- Rivers & Streams

USE DISTRICTS

- Residential-Agricultural
- Residential-Business
- Business I
- Manufacturing/Industrial
- Public Use
- Institutional
- Conservancy
- Official Open Space

OVERLAY DISTRICTS

- Floodplain District
- Town Center Overlay District
- Recreation Overlay District
- WPD II

0 0.25 0.5 1 Miles

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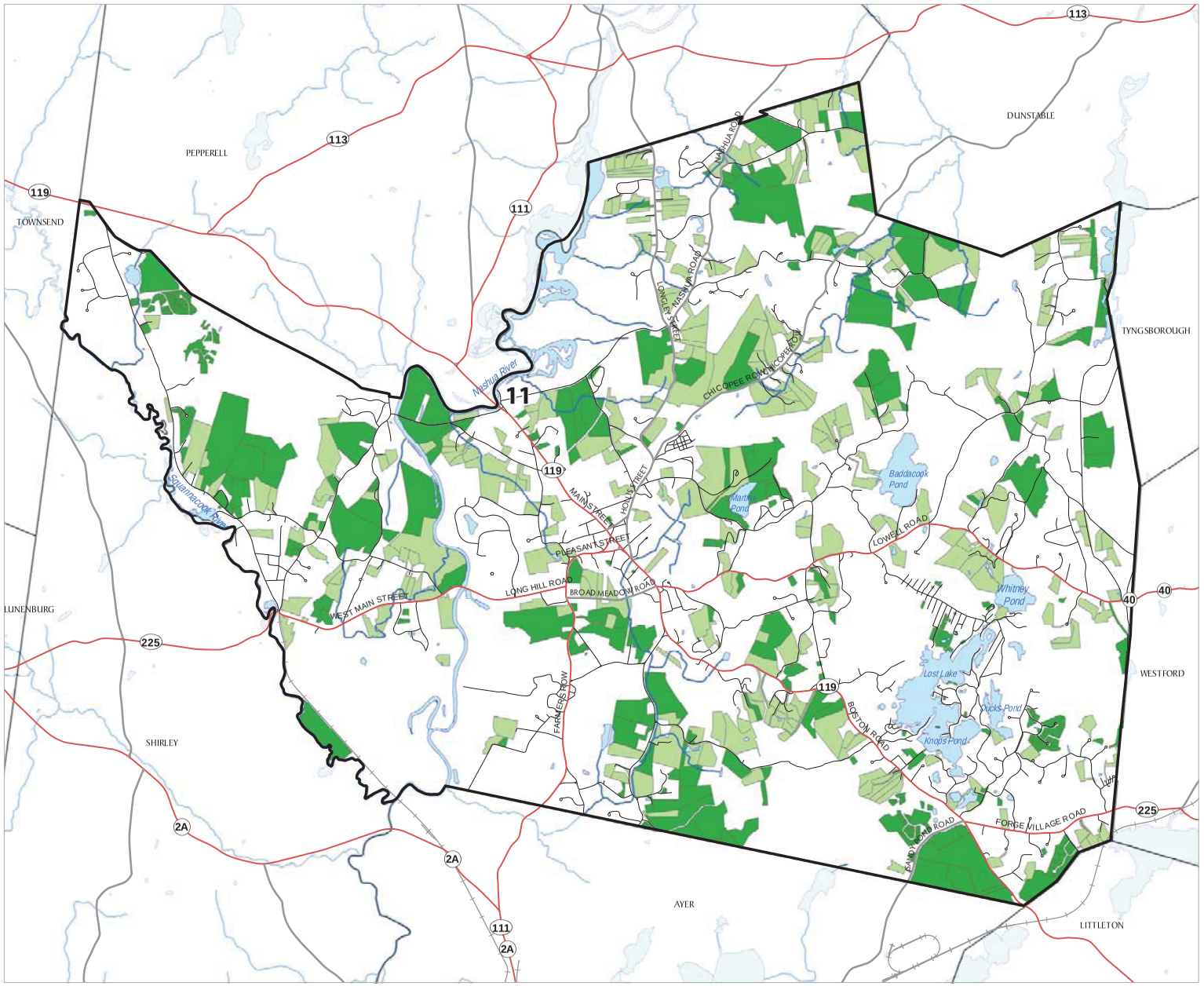

Groton Master Plan

Map 7.3: Vacant Land Parcels with Additional Development Potential

(Based on Assessor's Land Classification)

April 2011

KEY

- Railroad

ROADWAYS

- Limited Access Highway
- Multi-Lane Highway (Not Limited Access)
- Other Numbered Highway
- Major Road, Collector
- Local Roads
- Railroad
- Open Water

Vacant Parcels

- Vacant Parcels
- Parcels with Additional Development Potential

0 0.25 0.5 1 Miles

Groton Planning Board

CONSULTANTS

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Dodson Associates

Fay, Spofford & Thorndike, Inc.

Data Sources:
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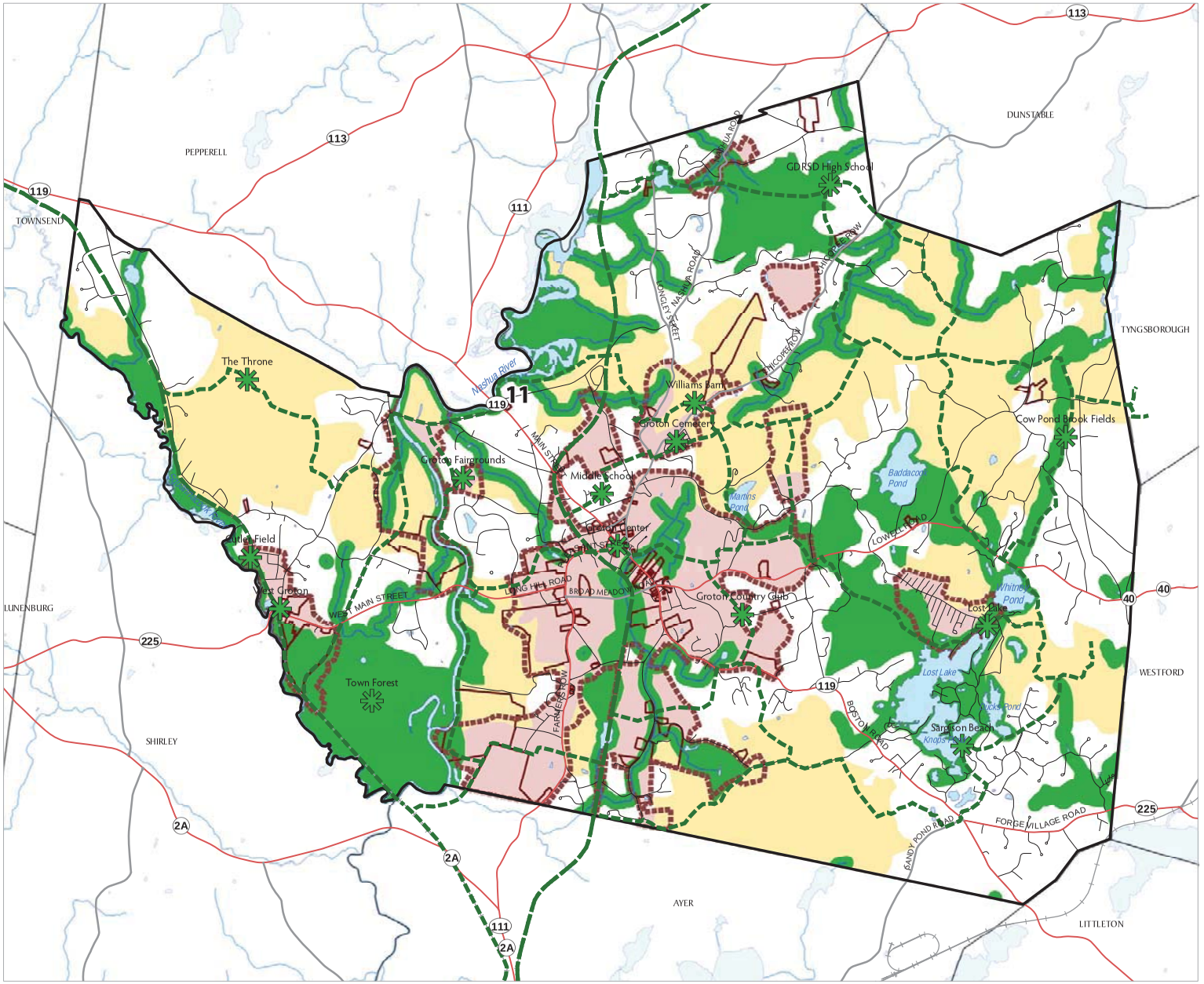
Massachusetts Historical Commission



Groton Master Plan

Map 7.4:
Green Infrastructure Assessment

April 2011

KEY

- Railroad

ROADWAYS

- Limited Access Highway
- Multi-Lane Highway (Not Limited Access)
- Other Numbered Highway
- Major Road, Collector
- Local Roads
- Railroad
- Open Water

ASSESSMENT SUMMARY

- Preservation Areas
- Conservation Design Areas
- Cultural Resource Priorities
- Proposed Trails
- Points of Interest along Trails

0 0.25 0.5 1 Miles

Groton Planning Board

CONSULTANTS
Community Opportunities Group, Inc.
Dodson Associates
Fay, Spofford & Thorndike, Inc.

Data Sources:
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Natural Heritage and Endangered Species Program (NHESP)
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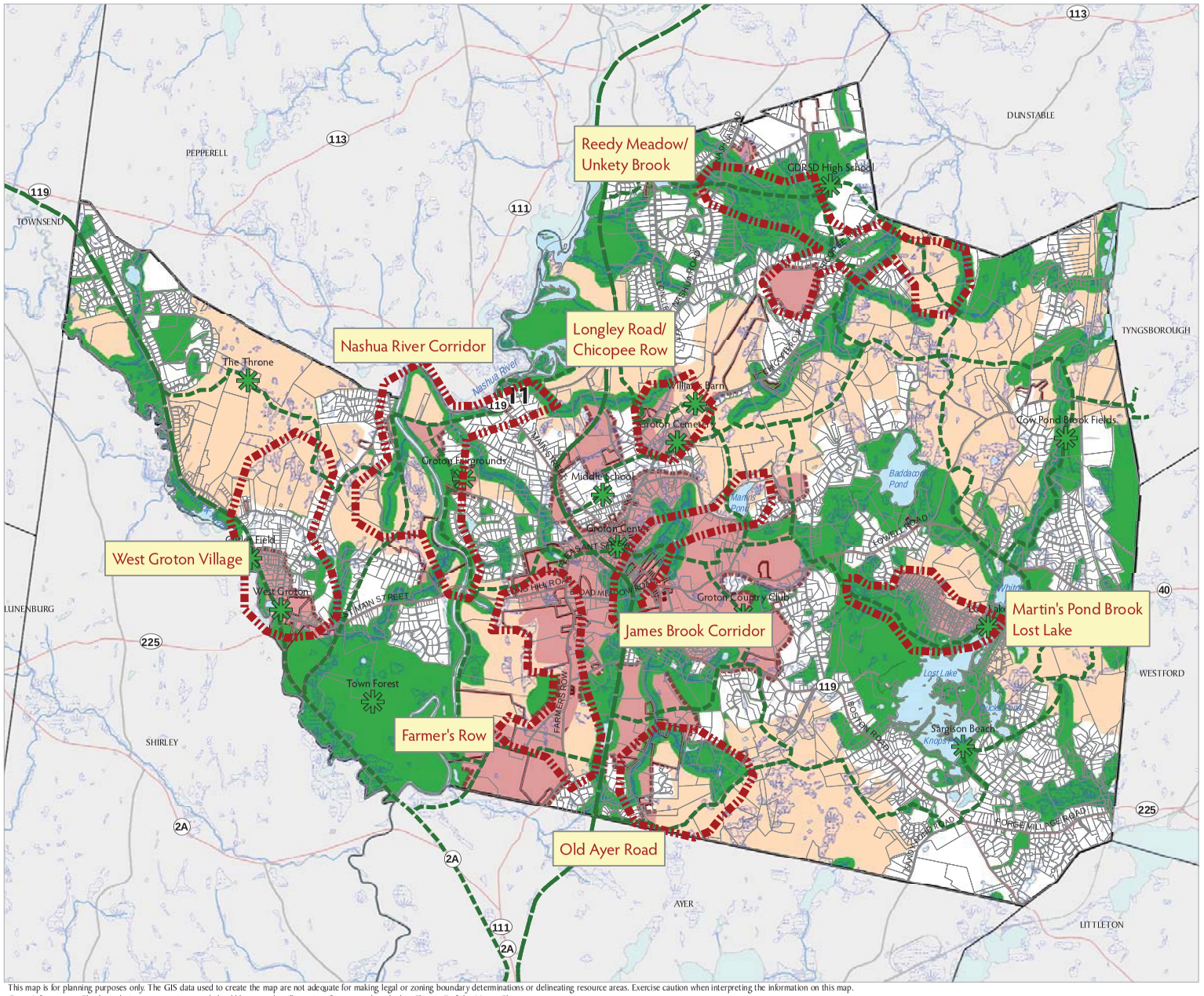

Groton Master Plan

Map 7.5:
Green Infrastructure Plan

April 2011

KEY

- Railroad

ROADWAYS

- Limited Access Highway
- Multi-Lane Highway (Not Limited Access)
- Other Numbered Highway
- Major Road, Collector
- Local Roads

WATER RESOURCES

- Open Water
- Wetlands

PLAN ELEMENT

- Preservation Areas
- Conservation Design Areas
- Cultural Resource Priorities
- Proposed Trails
- Points of Interest along Trails

0 0.25 0.5 1 Miles

Groton Planning Board

CONSULTANTS
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Dodson Associates
Fay, Spofford & Thorndike, Inc.

Data Sources:
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Natural Heritage and Endangered Species Program (NHESP)
Massachusetts Historical Commission

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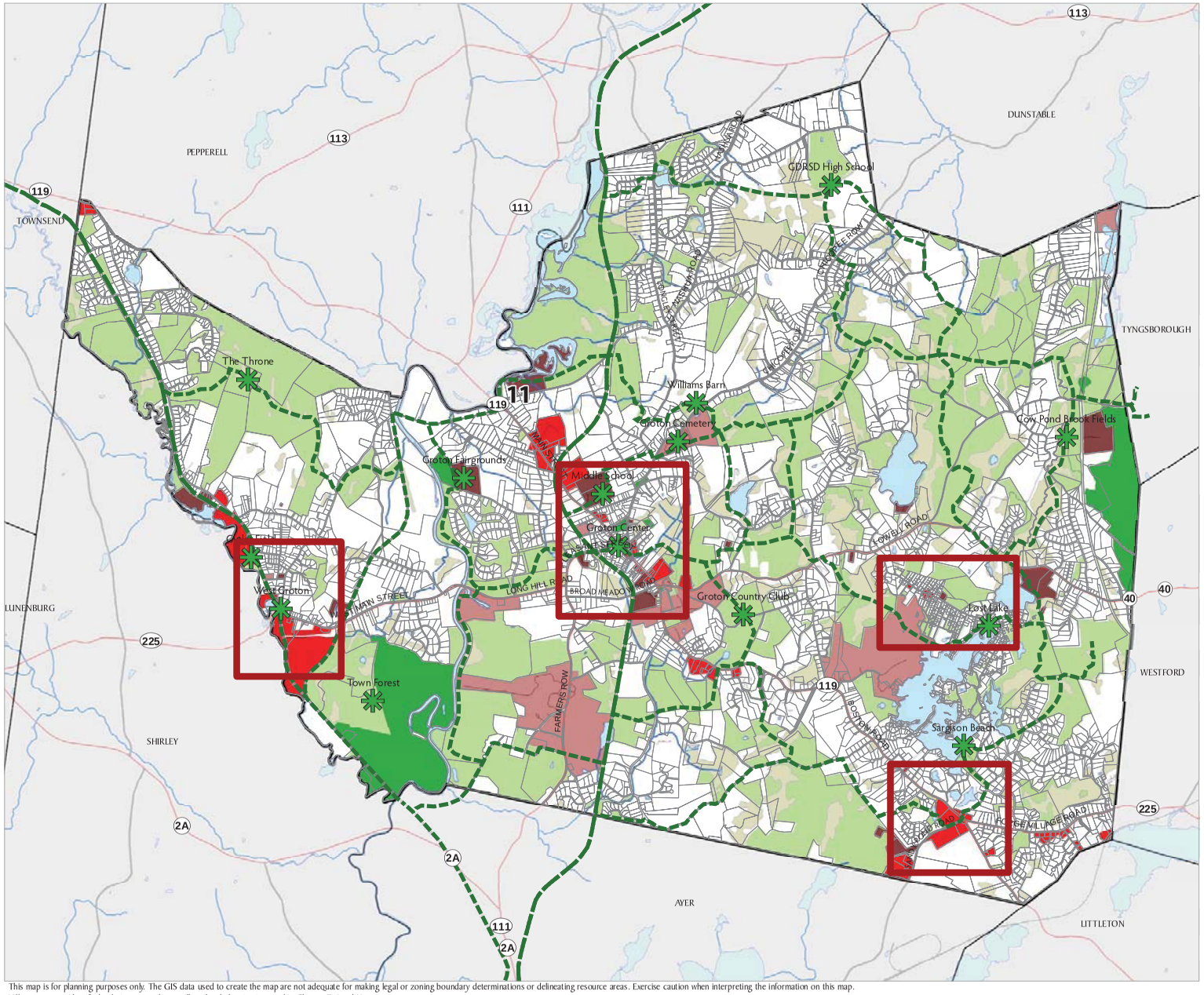
Green Infrastructure Plan boundaries are approximate and should be treated as illustrative of concepts described in Chapter 7 of this Master Plan.



Groton Master Plan

Map 7.6: Future Land Use

April 2011

KEY

ROADWAYS
- Railroad
- Limited Access Highway
- Multi-Lane Highway (Not Limited Access)
- Other Numbered Highway
- Major Road, Collector
- Local Roads
- Proposed Trails
- Points of Interest along Trails

PRIMARY USE
- Predominantly Residential, Agricultural
- Neighborhood Businesses
- Public Facilities
- Institutional Uses
- Natural Resource Protection
- Public Open Space
- Preservation Area/Limited Development
- Village Centers

0 0.25 0.5 1 Miles

Groton Planning Board

CONSULTANTS
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Dodson Associates
Fay, Spofford & Thorndike, Inc.

Data Sources:
Applied Geographics, Inc., MassGIS,
Natural Heritage and Endangered Species Program (NHESP)
Massachusetts Historical Commission

This map is for planning purposes only. The GIS data used to create the map are not adequate for making legal or zoning boundary determinations or delineating resource areas. Exercise caution when interpreting the information on this map.
Village areas are identified only in a general way; village-level planning is a goal in Chapter 7, Land Use.