



MORETOWNPLAN

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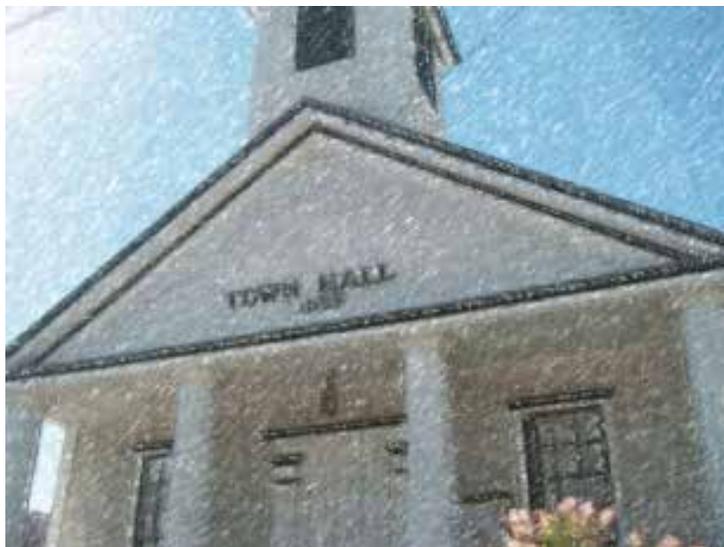
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PART 1. OUR VISION AND GOALS

CHAPTER 1A. VISION

It is our vision that Moretown will grow...

- To become a more inclusive and connected community whose different areas identify as a cohesive whole.
- More small-scale, clean and homegrown businesses.
- As a vibrant, affordable and family-oriented town with access to quality schools, recreation opportunities, full broadband service, and transportation alternatives.
- Creatively and responsibly in order to preserve and sustain our rural character and culture.



CHAPTER 1B. GOALS

Our goal is for Moretown to be a community that...

Overall. Balances efforts to provide for locally-generated economic and housing development with protection of our natural resources and historic settlement patterns of compact villages surrounded by rural countryside.

Land Use. Plans development to build a cohesive network between our existing settlement areas while preventing rural sprawl.

Housing. Has safe, affordable and energy-efficient housing choices for families and residents of all ages and income levels.

Economic Development. Fosters and supports a vibrant, homegrown economy built primarily on small businesses that:

- Takes advantage of our location, natural resources, scenic beauty, and residents' skills and talents;
- Creates employment, expand the tax base, provide goods and services locally; and
- Maintains high environmental standards and the rural character of our community.

Farming and Forestry. Bases our homegrown economy on farm and forest industries that keeps land in productive use and preserves our rural character. Expands the production and marketing of local food and other farm or forest products.

Resource Extraction. Uses natural resources responsibly and efficiently. Manages resource extraction to avoid, minimize or mitigate adverse impacts on environmental quality, rural and scenic character, and quality of life in our community.

Resource Preservation. Identifies, protects and preserves important natural and historic features of our landscape by:

- Investing in land conservation of special natural and fragile resources, and preservation of historic structures;
 - Promoting responsible use and stewardship of our resources; and
 - Managing development to avoid, minimize or mitigate adverse impacts on our resources.
- Environmental Quality. Maintains and improves the health and quality of our air, water, wildlife and land resources by:
- Promoting responsible use and stewardship of our land, rivers and natural environment;
 - Managing development to avoid or mitigate adverse impacts; and
 - Guiding growth away from hazards and locations poorly suited for development.

Recreation. Sustain a high quality of life for residents and attracts visitors to Moretown by:

- Establishing and responsibly using an interconnected network of Class 4 roads, trails and paths.
- Preserving and enhancing access to and enjoyment of our rivers; and
- Supporting and expanding arts and music events.

Transportation. Improves the sustainability, affordability and efficiency of our transportation system by:

- Promoting safe and convenient alternatives to single-occupancy vehicle trips;
- Supporting grant funded construction for pedestrian access; and
- Guiding development towards more compact and mixed-use settlement patterns.

Energy. Uses energy more efficiently. Increases the amount of renewable energy generated in Moretown at a scale that does not compromise the rural and scenic character of our landscape, nor the health and integrity of our natural environment.

Public Facilities and Services. Plans for, finances, develops and maintains an affordable and efficient system of community infrastructure, utilities, facilities and services as needed to support growth and development while maintaining our rural character and culture. Supports efforts of town government to effectively manage that system in a manner that is responsive and transparent to our citizens.

Education. Continues to have a public school system that attracts families to live in Moretown and strengthens our sense of community. Broadens access to affordable, high quality educational and vocational training opportunities by expanding:

- Opportunities for students of all ages to learn from and contribute to the success of local businesses and organizations;
- Regional coordination and sharing of educational resources;
- Access to educational technology and distance learning; and
- Use of local, informal learning and training networks.

Child Care. Is a family-friendly community that has safe, affordable and convenient childcare options for parents.

PART 2. ABOUT OUR TOWN PLAN

CHAPTER 2A. PURPOSE

Simply put, the purpose of the Moretown Plan is to state our vision for the town and recommend strategies for achieving that vision.

The Moretown Plan is a comprehensive, long-range plan for our town's future. This plan:

- Describes the forces that have shaped our history.
- Analyzes our current condition.
- Expresses our shared community values and aspirations.
- Examines the forces that have potential to change our community in the future.
- Establishes goals and policies for guiding and managing change in a manner consistent with our shared values and community aspirations.
- Complies with Vermont's municipal planning laws.

The plan provides a useful reference for local and state officials when making decisions affecting our community, and it may be used to inform anyone interested in Moretown's history, resources, challenges and policies. In particular, this plan establishes a framework within which Act 250, Public Service Board and other state, as well as local, permitting will take place.

CHAPTER 2B. USE

The Moretown Plan serves multiple purposes. A clear understanding of those purposes is necessary to properly interpret the plan.

The plan contains both aspirational and visionary statements, and specific policies that apply in regulatory proceedings. It attempts to broaden our understanding of a wide range of issues affecting Moretown, while also calling for town government and others to take specific actions on some matters.

To properly interpret this plan, it is important to distinguish between aspirations, recommendations, and requirements. The vision and goals expressed in Chapter 1 describe an ideal future Moretown and are stated as what "will be." These are our aspirations. Throughout, the plan recommends various policies, strategies, approaches and actions. The recommendations of other plans and studies are summarized or presented, and best practices are described.



It is only within Parts 4 and 5 that specific policies and actions are stated, some of which are intended to be requirements when applied in a regulatory context. The choice of words indicates whether a stated policy or action is a recommendation or requirement. Words like "should," "may" and "encourage" indicate that the statement is a recommendation; while words like "must," "prohibit" and "require" indicate that the statement is a requirement.

Community Assessment. To effectively guide growth and change in our town, we should be aware of Moretown's strengths and weaknesses and anticipate the factors that may influence the future of our community. Preparing this plan provided us with a structured process for assessing the community's past,

taking stock of current conditions, and predicting future trends and influences. That process of community assessment and discussion regarding Moretown's future was as important as this resulting document.



Part 3 of this plan summarizes our assessment of Moretown's past and present condition. We do not intend for this chapter to be used or applied in a regulatory context. Rather it is the factual, analytical and public opinion foundation for the policies and actions expressed in Parts 4 and 5.

Balance Conflicting Interests and Articulate a Vision. This plan recognizes that residents hold a diversity of opinions and attitudes about the town's future, particularly the policies and actions we should pursue, and that even when we do agree it is still possible for goals to conflict with one another. Therefore, this plan strives to provide an effective framework and process for forging consensus and balancing competing interests, identifying issues in which consensus is not possible, and resolving future conflict.



Part 1 presents a vision statement and broad goals for Moretown expressing in general terms the community values and aspirations for the future of our town that are shared by most residents. The vision statement and broad goals are intended to be a guiding framework within which more specific policies, actions and regulations should be debated, adopted, implemented or interpreted. Given that they are expressed in broad, general language, the vision statement and goals cannot on their own be used or applied in a regulatory context and must be interpreted in conjunction with the more specific policies and actions found in Parts 4 and 5.

Town Land Use Planning and Regulations. One of the primary purposes of this town plan is to describe how we – Moretown residents – want our community to grow and develop over time. By state law, the plan must establish the type, location, form

and intensity of future growth and development in town. The land use section in Part 3 serves as our future land use plan. That future land use plan is then implemented through land use (zoning and subdivision) regulations. By state law, land use regulations must be based on and implement the policies of the town plan.

Moretown first adopted zoning regulations to implement a community land use plan in 1977. Those regulations served the town during two decades of rapid growth. In 2000, the regulations were comprehensively reevaluated and revised to correct deficiencies and address development pressure. During the ensuing years, there have been only minor changes to the land use plan and regulations in most of town, with the exception of Moretown village.



As we continue to evaluate and improve our zoning regulations and districts, this plan should serve as the blueprint for possible future changes. Parts 4 and 5 recommend some specific changes to our currently adopted zoning regulations to more effectively implement this plan.

In addition to regulating the future use or development of land, we may have the opportunity to help conserve open space and protect important natural resources for future generations of Moretown residents. The assessment of our natural environment in Part 3, and the policies and actions in Parts 4 and 5 should be used to help establish conservation priorities and identify those properties, features or resources that are most deserving of protection.

Capital Budgeting and Planning. One of the primary functions of town government is to plan for, raise funds for, and efficiently provide public facilities and services. This plan is intended to help guide the town's decisions about raising and spending funds for public improvements, facilities and services.

Moretown maintains a capital budget, which links this plan with the town's annual budgeting process by identifying, prioritizing and scheduling major capital investments over multiple years to prevent budget and tax rate fluctuations. By state law, projects included in the capital budget must implement the policies and recommendations of this plan.



Part 3 identifies the need or desire for various public improvements, facilities and services. Parts 4 and 5 establish policies and actions to guide prioritizing and meeting those needs or desires in a cost effective manner.

State Development Regulations. Many state regulations, most importantly Act 250 (statewide land use review process for large development projects) and Section 248 (statewide review process for electric generation or transmission and other utility projects), are required to consider the policies established in a town plan as part of the review and permitting process. The Selectboard and Planning Commission both have automatic "party status" under Act 250, and are now party status under Section 248, allowing either or both to represent the town's interests in these state regulatory processes.

Act 250's Criterion 10 requires applicants to demonstrate that their project is "in conformance" with the town plan. When deciding whether to issue a Certificate of Public Good under Section 248, the Public Service Board must give "due consideration" to the town's recommendations and any land conservation measures in the town plan.



Any determination of conformance with this plan or specific recommendations made on behalf of the town must be based upon the policies and actions expressed in Parts 4 and 5. Those statements of the town's policy or position may refer to more specific language within the zoning regulations, which should then also be considered in any state regulatory process.

Economic Development. This plan also addresses how the town government, private businesses, economic development agencies, and other regional entities can coordinate their efforts to foster a healthy local economy.



Part 3 analyzes our local economy, and identifies needs and opportunities for economic development. Parts 4 and 5 establish policies and actions to support economic development, particularly through the provision of facilities and services and by creating a regulatory climate that encourages business growth and expansion in appropriate locations.

Other Policies and Programs. Development regulations are not the only forum in which it is important for Moretown to have clearly articulated policies and strategies. Other decisions of neighboring town governments, state or federal agencies, or non-profit organizations may affect our community's future (ex. transportation improvements, environmental protection, land conservation, economic development, education, etc.).

In some instances, public agencies and private organizations may informally seek guidance from town government to ensure that their activities are compatible with the community's values and vision. This is increasingly the case with competitive grant programs where conformance with the town plan is often an important eligibility requirement.



The policies and actions expressed in Parts 4 and 5 should guide any recommendation or position taken by Moretown or other entity representing the town's interests. Parts 4 and 5 also identify potential projects and improvements that the town or other entities may pursue with grants or other outside funding sources to implement our town's goals and policies.

CHAPTER 2C. AUTHORITY

Vermont state law (24 VSA, Chapter 117, The Vermont Municipal and Regional Planning Act) authorizes, but does not require, municipalities to adopt a plan. This plan was prepared by the Moretown Planning Commission and adopted by the Moretown Selectboard in accordance with state law.

As described below, the Planning Commission engaged in an open, comprehensive planning process that invited public participation and has prepared a plan that is consistent with state law. While the plan meets state requirements, it does so in a manner that responds to Moretown's specific conditions and needs, and our unique vision and aspirations for the community's future.

Moretown 2013 Community Survey

The Planning Commission wants to hear your opinions about how Moretown is doing and ideas for future of our town. We are starting work on an update to Moretown town plan as our community faces some major changes and uncertainties. The plan will chart a course for Moretown based on our shared vision and goals. This survey is the first step in determining whether residents think Moretown is headed in the right direction now and where the town should be headed in the future.

The Planning Commission encourages all residents to take a few minutes and respond to this survey. Paper surveys can be returned by mail or dropped off at the Town Office, the Red Hen, the Northfield Store, and the Moretown Store (extra copies are also available at these locations).

You can also take survey online at www.moretownvt.org.
The deadline to respond is September 27.

To learn more about the town plan update - how you can stay informed and get involved - look for the link on the town website. We'll be posting the schedule, progress reports, draft documents and more on the town plan webpage. The Planning Commission will be hosting public meetings and asking for feedback throughout the process. The more residents who participate, the better our plan will become!

1. What are the top 3 reasons to live in Moretown?

- (1) _____
(2) _____
(3) _____

2. What 3 things would you like to see change about Moretown?

- (1) _____
(2) _____
(3) _____

CHAPTER 2D. PLANNING PROCESS

Moretown residents value their ability to participate in the process of making local decisions. This town plan offers Moretown residents a direct opportunity to guide the policies and actions of town government and to shape how those decisions may affect our community's future. Recognizing this, the Planning Commission worked to involve as many Moretown residents as possible in the process of preparing this plan. Specifically, the Planning Commission:

- Distributed a town wide survey at the start of the planning process to gauge public opinion on the range of topics included in this plan. The purpose of the survey was to assess how residents felt about the current condition of our town, how residents want the town to change or not change over time, and what residents think are the major issues facing the town. The Planning Commission used the survey responses to help guide revisions to the plan, ensuring that this plan reflects what town residents think about our town today and want it to become in the future. The survey results are incorporated throughout Part 3, and the full report of survey results is incorporated into this plan as Appendix B.
- Hosted a community workshop to start work on the vision statement and broad goals expressed in Part 1.
- Hosted a community workshop to discuss the town's fiscal health and economic development opportunities.
- Hosted a community workshop in coordination with the Moretown Energy Group to discuss renewable energy and energy conservation issues.

CHAPTER 2E. COMPATIBILITY AND CONSISTENCY

Due to our geography, dispersed settlement pattern, small population, and limited resources, it has always been and will continue to be necessary for Moretown to work with adjacent communities to efficiently and affordably serve residents. Many of our needs, issues and goals are shared by other Vermont towns – both in our neighborhood and around the state. This plan identifies opportunities for ongoing or further cooperation and coordination to achieve common goals and objectives with neighboring communities, our region and the state as a whole.

It is conceivable that our vision, goals or policies could conflict with those of a neighboring community, the region, or the state. This plan includes an assessment of the compatibility and consistency of this plan with the plans of neighboring municipalities and the region, and the statewide planning goals expressed in the Vermont Municipal and Regional Planning Act.

2E-1. WITH STATE LAW

The Vermont Municipal and Regional Planning Act establishes guidelines for town plans. The plan must be consistent with statewide planning goals and must at a minimum include 12 specific elements.

The broad goals expressed in Part 1 of this plan are modeled on and consistent with Vermont’s statewide planning goals. The Moretown Plan includes the following elements required by the Act:

- **Land Use Plan and Map.** See Chapter 3G, 4B and 5B of this plan.
- **Transportation Plan and Map.** See Section 3E-1, and Chapters 4D and 5D of this plan.
- **Utility and Facility Plan and Map.** See Sections 3E-2 and 3E-3, and Chapters 3F, 4D, 4E and 5D of this plan.

- **Resource Preservation Statement.** See Chapters 3A, 3D, 4A and 5A of this plan.
- **Educational Facilities Plan and Map.** See Section 3F-6 and Chapters 4E and 5D of this plan.
- **Implementation Program.** See Part 5 of this plan.
- **Compatibility Statement.** See Chapter 2A of this plan.
- **Relationship to Neighboring Towns and the Region.** See Chapter 2A of this plan.
- **Energy Plan.** See Section 3C-4, and Chapters 4C and 5B.
- **Housing Element.** See Section 3C-2, and Chapters 4B and 5B.
- **Economic Development Plan.** See Section 3C-3, and Chapters 4C and 5B.
- **Flood Resilience Plan.** See Section 3A-6, and Chapters 4C and 5B.

2E-2. WITHIN OUR REGION

Moretown has a long history of coordination with the Central Vermont Regional Planning Commission (CVRPC) and regularly benefits from assistance provided by CVRPC staff. The Planning Commission reviewed and considered the Central Vermont Regional Plan as this plan was drafted.

The Central Vermont Regional Plan, last revised in 2008, states that the regional plan is compatible with the plans of its member municipalities, including Moretown’s previous plan. The goals, policies and actions expressed in this plan are not substantively different from the previous plan, which suggests that this plan remains compatible with the Central Vermont Regional Plan.

The regional plan supports many of the same planning concepts and approaches recommended in this plan including:

- Preservation of important historic, natural, cultural and recreational resources.
- Respect for the historic settlement patterns.
- Diversified economic development.
- More energy-efficient transportation patterns.

In 1985 the towns of Warren, Fayston & Waitsfield created a planning partnership called the Mad River Valley Planning District (MRVPD). The purpose of the MRVPD is to carry out a program of planning for the future of the Mad River Valley. The planning programs are directed toward the physical, social, economic, fiscal environmental, cultural and aesthetic well being of the member towns. The current MRVPD Steering Committee encourages Moretown to participate and the Moretown Planning Commission and Selectboard will consider options for participation on an annual basis.

2E-3. WITH NEIGHBORING TOWNS

Compatibility with neighboring towns is particularly important with regard to land use, where incompatible policies could result in conflicting development activities and land uses along town boundaries. The land use plan established in Chapter 3G of this plan emphasizes the relationship between various areas of Moretown and adjoining communities.

- This plan continues to call primarily for low-density residential and forest uses along the Berlin and Northfield town lines, which is similar to what both neighboring communities are planning for on their side of the line.

- This plan speaks to the scenic and agricultural value of the valley land along the Mad River and Route 100B at the Waitsfield town line. This plan encourages continued agricultural use and discourages residential development from locating in flood hazard areas and scenic viewsheds. These policies are similar to those expressed in the Waitsfield Town Plan for their portion of the Mad River Valley.
- This plan recognizes two planning areas along the Duxbury town line. Most of the border area is remote and relatively inaccessible and this plan continues to call for primarily low-density residential and forest uses, which is compatible with the Duxbury plan. Along the Route 100 corridor, both plans support moderate-density residential uses, agriculture and low-intensity rural businesses.
- In North Moretown, this plan continues to call for a greater intensity and mix of uses, including commercial uses along the Route 2 corridor. This is compatible with the existing and planned land use at the Duxbury and Waterbury town lines.
- Middlesex lies across the Winooski River from Moretown. The river, rail line and interstate corridor serve both to separate and link the communities. The plans for both communities emphasize discouraging development within the floodplain and enhancing the character and function of Route 2 as a major regional transportation corridor.

CHAPTER 3A. NATURAL SETTING

Moretown's natural setting and resources are the foundation for our history, community, economy and way of life.



3A-1. CLIMATE

Moretown shares with communities throughout New England a climate that is highly changeable with wide-ranging temperatures (both daily and annually) and great differences between the same seasons from year-to-year. Relative to other areas of the country, a large number of low-pressure storm systems and fronts pass over or near Vermont – commonly caused by the convergence of dry, cold air from the Canadian arctic and moist, warm air from the Gulf of Mexico. Regionally, the Green Mountains have a strong effect on precipitation. Precipitation, clouds and fog results from cooling air as the prevailing winds from the west are forced up and over the mountains.

July is usually the warmest month in the Mad River Valley with an average high temperature around 85°F and January is usually the coldest with an average low temperature around 0°F. High and low temperatures around town vary noticeably based on elevation. We receive approximately 49 inches of precipitation annually, which is fairly evenly distributed throughout the year with an average of 3 to 5 inches of precipitation per month. The growing season has historically been around 120 days long with the last frost likely during the second or third week of May and the first frost likely during the last two weeks of September – again with variation based on elevation.¹

In describing the climate, the 1889 Gazetteer of Washington County states “Snow sufficient for sleighing frequently falls in November and remains until April.” This description has not been accurate in recent years. An overall warming trend in our average temperature is evident. Spring arrives earlier, summers are hotter, and winters are less snowy.

Globally, 9 out of the 10 warmest years in the modern meteorological record have occurred since 2000. Since 1970, the average annual temperature in the Northeast has increased by 2°F, with winter average temperatures rising by 4°F. Between 1952 and 1982, the average annual temperature recorded at the Berlin airport was 42°F. Between 1982 and 2012, the average annual temperature was 43°F. The average annual temperature in Vermont is projected to increase another 3-4°F by 2050 and anywhere from 5-10°F by the end of this century.²

¹ 30-year averages generated from National Oceanographic and Atmospheric Administration climatological data from 1971 to 2000 for Waitsfield, Vermont.

² Results of the IPCC-AR4 model projections as presented in *Global Climate Change Impacts in the United States*, U.S. Global Change Research Program and online at www.globalchange.gov/usimpacts.

Changes in winter precipitation are of particular concern in the Mad River Valley, where winter recreation is a major component of the local economy. Climate change is causing snow to become wetter and slushier, and has decreased the number of snow-covered days. Climate change projections suggest that snow season could be cut by one-third to one-half by 2050.¹ Warming is resulting in many other climate-related changes including:

- More days each year with temperatures above 90°F.
- A longer growing season.
- More storms with heavy precipitation.
- Less snow and more rain in the winter.
- Reduced snow pack and ice on lakes and rivers some winters.
- Earlier spring snow melt and break-up of ice.

3A-2. AIR QUALITY

Air quality throughout Vermont is generally very high and most areas of the state are considered “clean air” regions under the federal Clean Air Act. As such, there is limited monitoring of air quality statewide. Given the relative lack of heavy industry in Vermont, the transportation sector is responsible for most of our air quality issues, and locations with heavy traffic and congestion are the most likely to have reduced air quality. Compromised air quality can exacerbate respiration-related health problems like asthma for people in the vicinity of pollution sources.

While overall air quality in Moretown is excellent and unlikely to degrade significantly in the foreseeable future, we do have localized air quality concerns. For example:

¹ *Climate Change in Vermont*. Vermont Agency of Natural Resources Climate Change Adaption White Paper Series. June 2011. Available online at <http://www.anr.state.vt.us/anr/climatechange/Pubs/VTCCAdaptClimateChangeVTBetts.pdf>.

- Emissions from vehicles idling or waiting in traffic can reduce air quality in the immediate area. ‘No idling’ policies, like the one that the Moretown Elementary School adopted, are one way to address this problem. State law prohibiting idling for more than five minutes in a 60-minute period (with exceptions) took effect in 2014.
- Operating heating systems properly, burning only the fuels the system is designed for, maintaining the system as recommended, and replacing old, inefficient models can minimize localized air quality problems.
- Many common activities – farming, trucking, construction, and driving on our gravel roads – can generate considerable dust. Simple measures like good road maintenance, covering loads, watering or using dust inhibitors on haul roads and at construction sites, and following accepted agricultural practices can do much to minimize air quality impacts.

The Moretown Landfill has potential to generate air pollution and affect air quality in the surrounding neighborhood. The landfill has operated under two separate state air quality permits, one for the landfill itself and another for the landfill gas electrical generation facility. Air quality is regularly monitored at and around the landfill.

The decomposition of landfill waste produces a variety of gases. The Moretown Landfill deploys a system of buried pipes that is designed to capture those gases. Methane and carbon dioxide are the major compounds generated by decomposing waste, but there are a number of other gases produced as well. A gas collection system greatly reduces air emissions from the covered portions of landfill, but it is particularly challenging to manage emissions from the open portion of a landfill when waste is being actively deposited.



3A-3. TERRAIN AND ELEVATION

Moretown is located in the Green Mountains. The Northfield Range crosses our southern town boundary and terminates in the northern part of town in a series of hillsides sloping towards the Winooski River. West of Moretown is the main range of the Green Mountains with a ridgeline defined by recognizable peaks like Camel's Hump. The Winooski River with its broad floodplain cuts through the mountains on its way to Lake Champlain fed by tributaries that flow in narrow valleys down the mountain slopes.

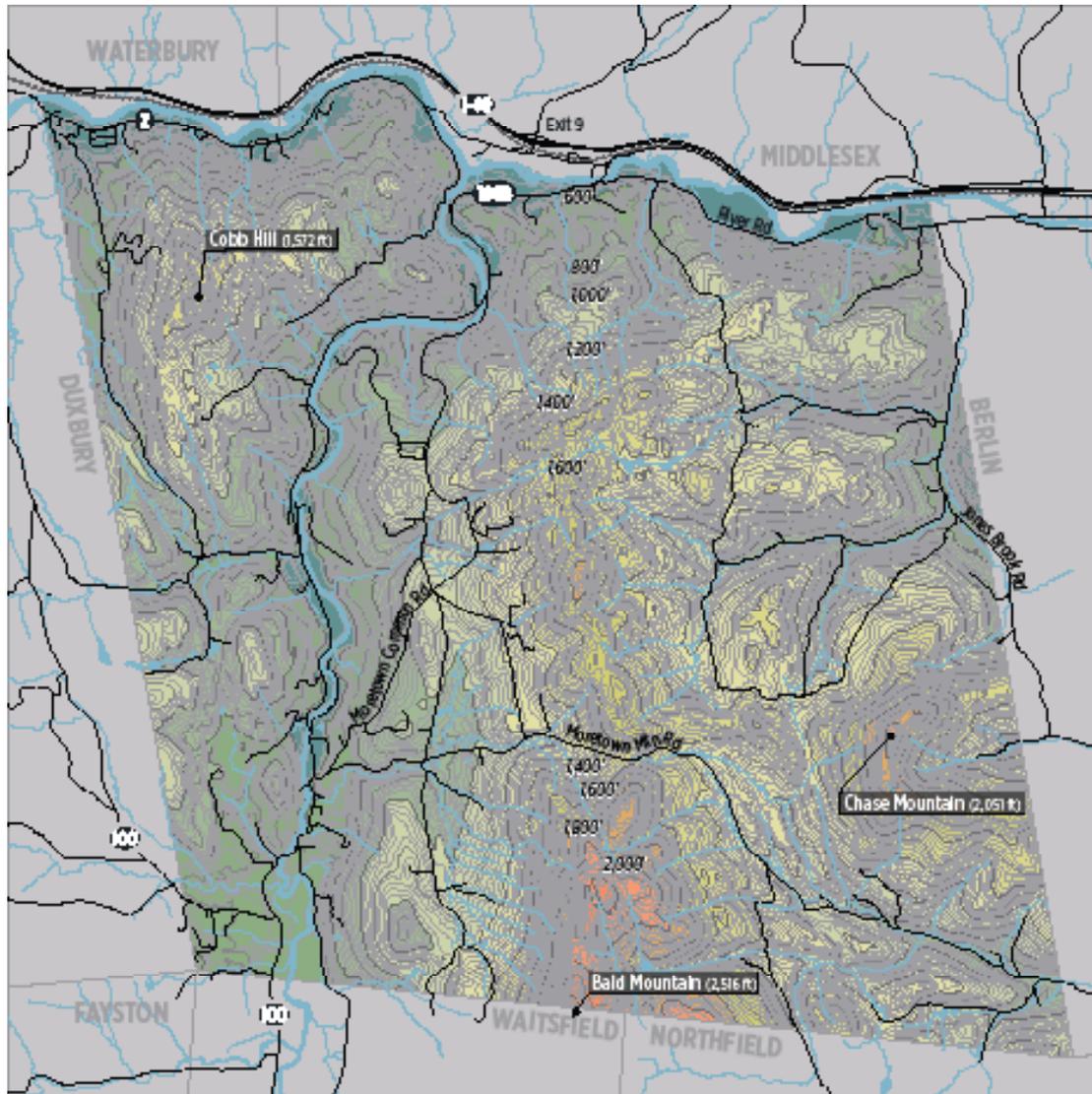
The terrain has directly shaped our town's history and development pattern. Mountains (including the unbroken, natural Northfield and Camel's Hump ridgelines) and river valleys (including the Winooski River, Mad River and Jones Brook valleys) characterize our landscape. Steep slopes and substantial changes in elevation are a common feature in Moretown as shown on the Elevation Map and Slope Map, below. The highest point in town (near the summit of Bald Mountain along the Waitsfield line) is more than 2,000 feet above the lowest point in town (where the Winooski River flows into Waterbury and Duxbury).

The mountainous terrain and steep slopes significantly limit our ability to travel from one area of town to another and restrict where development is feasible or desirable. Despite their rugged appearance, high elevations and steep slopes are fragile environments that are easily damaged by human activities. Clearing natural vegetation, disturbing soil or altering natural grades can result in high rates of erosion and run-off that can reduce water quality and damage property downslope.

The USDA Natural Resource Conservation Service has established slope categories and described the constraints and management requirements associated with each as summarized below:

- Slopes in excess of 25% are generally not suitable for development or widespread clearing for farming and forestry. Any disturbance of these severely steep slopes is discouraged and will require careful attention to erosion control and stormwater management.
- Slopes from 15-25% are generally poorly suited for development. Use of these lands for farming or forestry will require special consideration and best management practices to conserve soil and minimize erosion. Any disturbance of these moderately steep slopes will require specific measures to control erosion and manage stormwater.
- Slopes from 8-15% can generally accommodate development. Disturbance of these slight slopes may still require measures to control erosion and manage stormwater.
- Slopes of less than 8% generally do not pose any particular development constraints due to the slope itself, although level land (<3% slope) may be poorly drained and prone to ponding.

The steeper the slope, the larger the area of disturbance has to be to accommodate the development footprint as demonstrated in the figure below. The cost of development generally increases as slope and elevation increases, as does the ongoing cost of providing services to what are often remote areas. It is

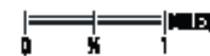


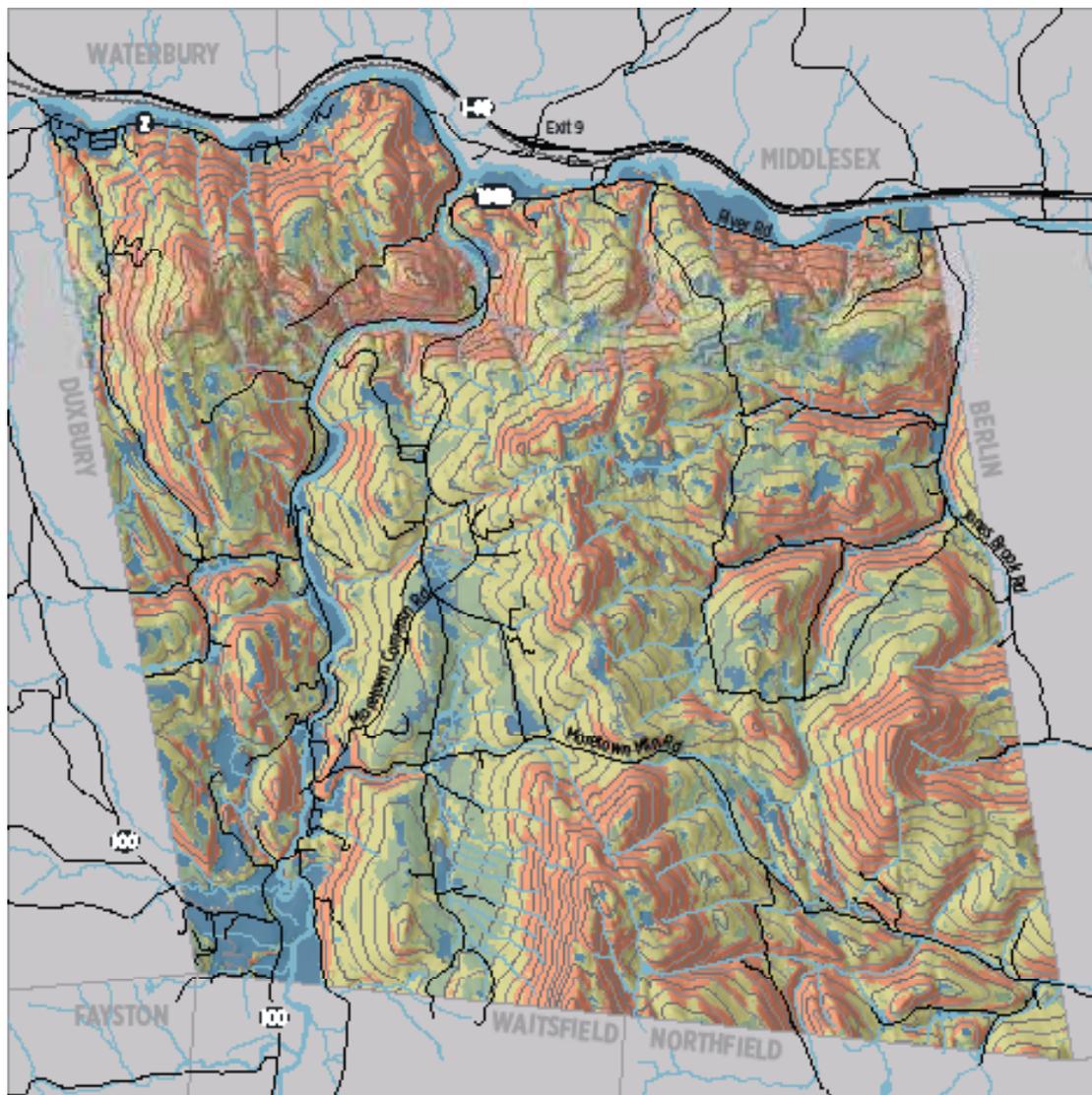
**ELEVATION
MORETOWN, VT**



- 20 ft contours 
- 100 ft contours 
- 200 ft contours 

Source: Contours derived from the USGS
1/3-Arc Second National Elevation Dataset





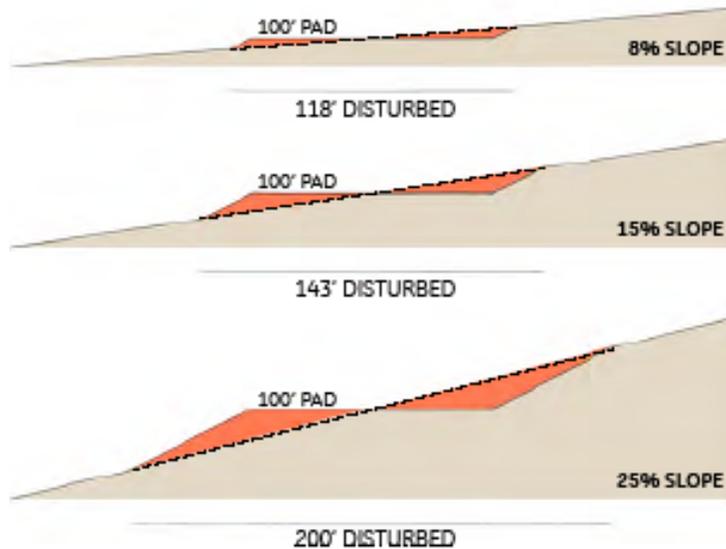
SLOPE
MORETOWN, VT

- Flat to Gently Sloped (0-8%) █
- Slightly Steep (8-15%) █
- Moderately Steep (15-25%) █
- Severely Steep (>25%) █

- 100 ft contours
- 200 ft contours

Source: Slope and contours derived from the USGS 1/5-Arc Second National Elevation Dataset





challenging to provide adequate access for emergency and service vehicles to development on steep slopes or at high elevations. Additionally, development on higher elevations is typically more visible than downslope development as high elevations and ridgelines are frequently visible from many locations. See Section 3D-4 of this plan for discussion of ridgeline development and scenic resources.

While land above 2,500 feet receives a higher level of protection under state law, Moretown's highest areas are just below that elevation. Approximately 4% of land in town (1,000 acres around Bald Mountain, Chase Mountain and Cobb Mountain) is between 2,000 and 2,500 feet in elevation. Much more of our land is located on steep slopes than is located at high elevation. Approximately 40% of the land in town is moderately steep (15-25% slope) and another 20% is severely steep (>25% slope).

3A-4. GEOLOGY AND SOILS

Bedrock is the most basic component of our environment. The bedrock underlying Moretown (and throughout the northern Green Mountains) consists primarily of metamorphic rocks such as schist, phyllite, gneiss and quartzite. Fragments of calcareous materials (like the talc found in Moretown) that formed under an ancient ocean are common. The Green Mountains formed millions of years ago and have eroded to a fraction of their original height. When highways were constructed through town, numerous rock cuts were needed to accommodate the terrain. Those cuts expose the bedrock that underlies Moretown, providing us with a unique opportunity to see the geological forces that created the Green Mountains.

The landscape we know today was significantly shaped by the advance and retreat of glaciers during the last Ice Age. The ice scraped and rounded the Green Mountains, widening the valleys and carving gaps through the mountains. The advancing glaciers created the iconic steep slope of the south peak of Camel's Hump, for example. The melting glacier left rocks and gravel covering the ground. This layer of glacial till covers our landscape, except for areas of exposed bedrock. The valley floors contain sediments, including sand and gravel, deposited under glacial lakes 10,000 or more years ago.

Because of their importance to our ability to grow crops, develop land, and obtain raw materials, soils are better understood and documented than many other components of our natural environment. The USDA Natural Resource Conservation Service (NRCS) maintains county soil surveys that map and inventory soils. The NRCS reports describe the characteristics of each soil type and its suitability for various uses. Section 3D-1 includes further discussion of soil productivity for farming and forestry, and Section 3D-2 includes a further discussion of mineral resources.

Soil conditions play a critical role in determining the location and intensity of development in Moretown. In addition to their suitability for supporting roads and structures, soils must be suitable for septic systems. There is no municipal sewer service in Moretown and all development relies upon on-site septic systems for waste disposal. The map below shows the general suitability of soils in town for septic systems. Approximately 60% of soils in Moretown are moderately suited to treat wastewater and 20% are marginally suited, which means that most landowners will need to build septic systems that may be more technologically advanced, more expensive, and require more land than a basic conventional in-ground system.

Since 2007, a state wastewater system and potable water supply permit has been required for every new lot and most new construction, and the town is no longer directly involved in regulating wastewater systems. While the state wastewater rules still assert a strong influence over development, the changes to the rules in the 2000s created more opportunity to develop marginal land in Moretown. With expansion in the type of septic systems allowed and other changes, we can no longer rely upon the state wastewater rules as a default means of managing land use and growth.

The state regulations also create incentives for community wastewater systems – private, in-ground septic systems that would serve two or more properties. Community systems can promote more compact development patterns with buildings being clustered in order to share common infrastructure. They also allow owners to more efficiently use smaller pockets of good soils to provide wastewater treatment for multiple properties.



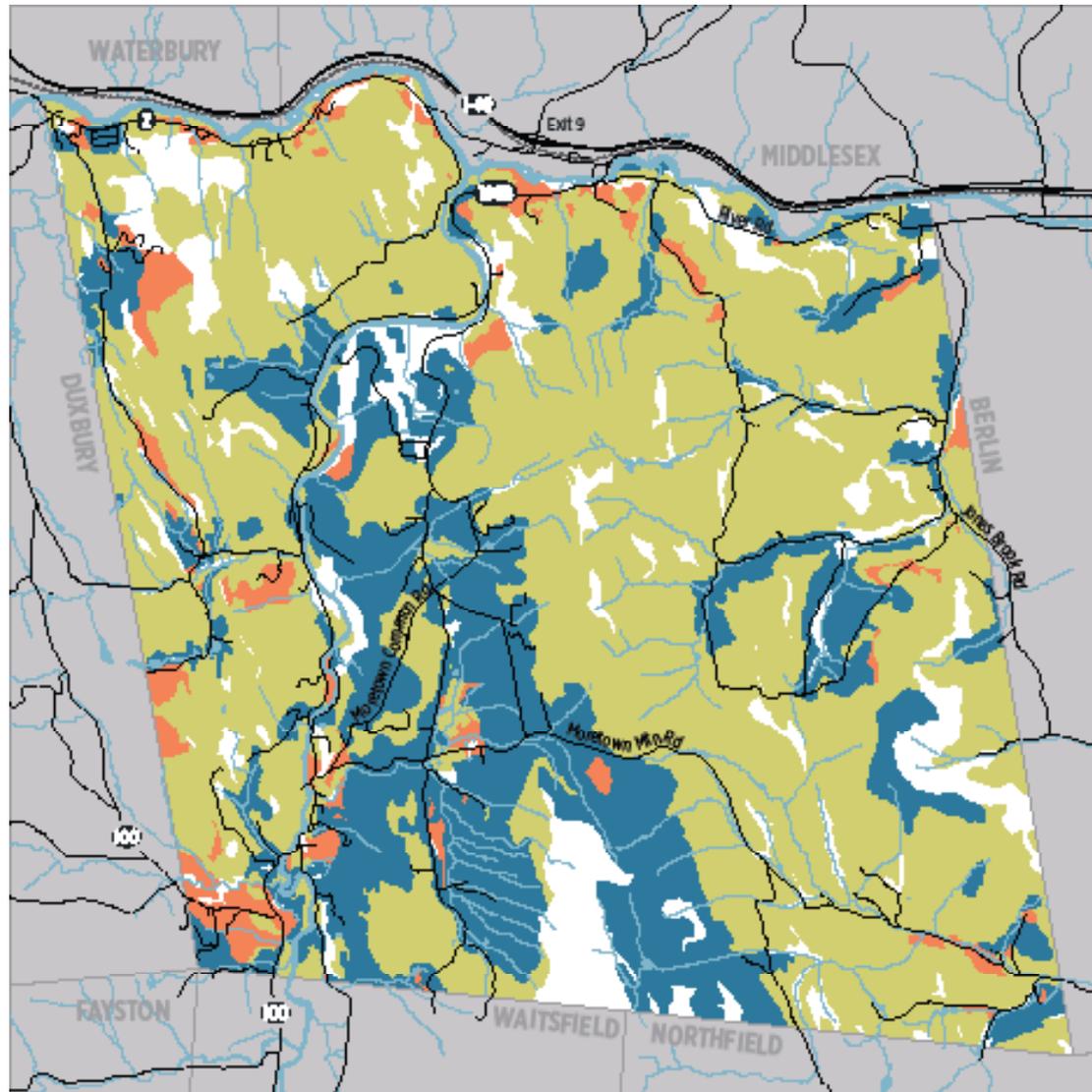
3A-5. WATER RESOURCES

Watershed

Moretown is within the Winooski River watershed, which is part of the larger Lake Champlain watershed. Most of the town drains to either the Mad River or the Dog River (two of the Winooski's seven major tributaries). A small amount of land drains directly to the Winooski River. The 1,080 square mile Winooski River watershed includes all of Washington County and portions of Chittenden, Lamoille and Orange counties – approximately 10% of Vermont's land area.

Winooski River

The Winooski River forms Moretown's northern boundary. We have more than 7 miles of frontage on the river, and Route 2 and Route 100B travel along the river. The river originates in Cabot and flows westward to Lake Champlain. Our portion of the river valley has a very gentle slope – the change in elevation from one end of town to the other is only 80 feet, an average grade of approximately 0.2%.

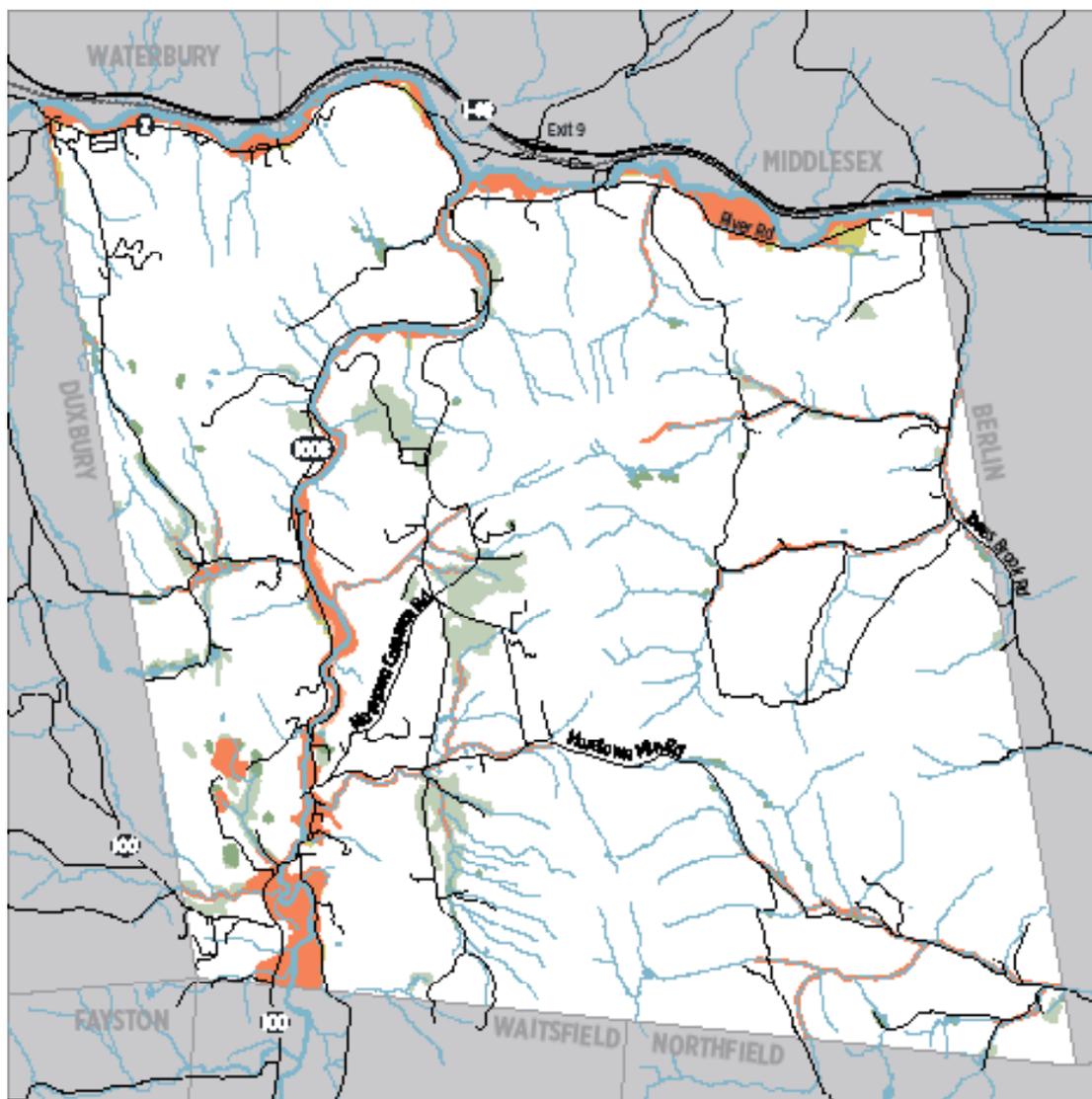


SEPTIC SUITABILITY
MORETOWN, VT

- Class I - Well suited
- Class II - Moderately suited
- Class III - Marginally suited
- Class IV - Not suited
- Class V - Not rated

Sources: Natural Resource Conservation
 Soil Survey for Washington County, VT.
 On-site sewage disposal ratings based
 on the 2002 Vermont Environmental
 Protection Rules.

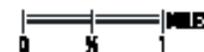




WATER RESOURCES MORETOWN, VT

- Flood Hazard Area
- Erosion Hazard Area
- Frequently Flooded Soils
- Wetlands
- Hydric Soils

Sources: Frequently flooded and hydric soils from the Natural Resource Conservation Soil Survey for Washington County, VT. Flood hazard area from the Federal Emergency Management Agency's Flood Insurance Rate Maps. Fluvial erosion hazard area provided by Central Vermont Regional Planning Commission. Wetlands from the Vermont Significant Wetlands Inventory prepared by the Vermont Agency of Natural Resources. Surface waters from the Vermont Hydrography dataset.



The Winooski River valley is a vital east-west transportation corridor through the Green Mountains. Route 2, Interstate 89 and a rail line all share the relatively narrow valley floor with the river. To accommodate this transportation infrastructure and other development, the river channel has been straightened, the banks armored and berms built in an attempt control the river. There are also dams on the Winooski River that are used to regulate the river's flow and generate electricity.

All of these efforts have not changed the underlying fact that the river is designed by nature to meander around the valley floor, depositing sediment in one location while eroding it in another – and periodically surging out of its banks to cut a new channel. It is increasingly evident that we cannot engineer away these natural processes and forces. Neither can we afford to relocate major infrastructure and development further from the river. Instead, we must find a new approach to balance the needs of our natural and built environments.

The 2007 Phase I Geomorphic Assessment for the Winooski River found that land use and floodplain modifications are contributing to the river's instability. Most sections of the river are undergoing a process of geomorphic adjustment that will likely to continue to cause erosion along the banks. The assessment recommends restoration of a natural riparian corridor along the river wherever possible.

Mad River

The main stem of the Mad River enters Moretown from Waitsfield and flows 7.5 miles before emptying into the Winooski River. The Mad River is a unifying feature in Moretown's landscape, which is otherwise fragmented by the terrain. The river flows in a northerly direction and the village grew up alongside it. Much of the town's historic development was focused around the Mad River, and along the Winooski River to a lesser degree, because



the river provided both power and transportation. Route 100B travels along the Mad River creating many opportunities to enjoy the river's scenic qualities. The federal Highway Administration recognized Route 100B as a Scenic Byway in 2007. Residents and visitors alike enjoy recreating on and along the river.

The Mad River has been the focus of comprehensive, broad-based, citizen-initiated watershed planning and protection efforts. The Friends of the Mad River has been actively working to protect the river and its water quality for more than 20 years.

Dog River

While the main stem of the Dog River does not pass through Moretown, one of its major tributaries – Cox Brook – flows down the eastern side of the Northfield Range into Berlin where it enters the Dog River. The state has classified the Dog River and all of its tributaries as “wild trout waters.” As productive trout

streams, the river and its tributaries are popular with anglers. There is strong interest in protecting and restoring riparian buffers along the Dog River and its tributaries to provide a suitable environment for trout, along with expanding fishing access. The benefits of riparian buffers are discussed below.

Smaller Streams and Brooks

Smaller tributaries draining portions of Moretown include Jones Brook (including its tributaries, Herring Brook and Kelley Brook), which flows directly into the Winooski River; and the upper reaches of Crossett Brook, which drains into the Winooski River in Duxbury.

Wetlands

Moretown does not have any large wetland areas, another result of our hilly terrain. Smaller wetland areas are found throughout town, as identified in the Vermont Significant Wetlands Inventory and shown on the Water Resources Map above. These are generally associated with brooks or streams. Altogether, we have less than 160 acres of mapped wetlands and the largest wetland area in Moretown is approximately 15 acres (the average size is 2½ acres).

The state Agency of Natural Resources (ANR) considers all of the mapped wetlands in Moretown to be Class 2 Wetlands. ANR updated the Vermont Significant Wetlands Inventory in 2010, which resulted in some minor changes to the extents and boundaries of wetlands in Moretown. It is possible that there are additional wetlands in Moretown that have not yet been identified and mapped. Available soil data shows areas in Moretown with hydric soils, which indicates potential wetland conditions in those locations.

Science has shown that wetlands are a necessary and valuable element of our landscape. Wetlands can filter run-off and allow

water to infiltrate into the ground, recharging groundwater supplies. They can absorb and store floodwaters, reducing flood-related hazards to people and property. Wetlands are home to a variety of wildlife, aquatic and plant species, and are essential for the survival of some of these species.

Wetlands are not well suited for development due to their poor drainage and high water table. Historically, people filled in wetlands to create suitable development sites and as a result, ANR estimates that nearly 50% of wetlands statewide have been lost.¹ Filling in wetlands is no longer an accepted practice. State and federal regulations limit disturbance and development in wetland areas in order to preserve their ecological functions. Generally, all development within wetland areas will require a state permit and some projects may require a federal permit (from the U.S. Army Corps of Engineers) as well.

Groundwater

Groundwater is one of our most essential resources. Almost all residents rely on groundwater as our drinking water source. There is no municipal water service in Moretown. Homes and businesses have individual wells. Most properties have drilled wells, but there is likely still a small number that get water from dug wells or springs.

Despite our reliance on this resource, we know relatively little about the quality and quantity of groundwater available in town. Groundwater mapping has not been completed statewide and is not available for Moretown. While groundwater mapping is underway in Vermont, a relatively small area is mapped each year and it is not known when maps will be produced for Moretown.

¹ *Conserving Vermont's Natural Heritage: A Guide to Community-Based Planning for the Conservation of Vermont's Fish, Wildlife, and Biological Diversity.* Vermont Fish and Wildlife Department and Agency of Natural Resources. 2004.

There is no requirement that the wells serving individual homes be regularly tested in Vermont to assess water quality. Groundwater is susceptible to contamination from the discharge of waste, chemicals and other contaminants within recharge areas. Potential contamination sources include: agricultural runoff, road salt or similar materials, fuel and petroleum products, and failed septic systems. Failed septic systems are a particular concern in higher-density areas like Moretown village. See further discussion of this issue below.

Moretown Landfill. Based on a petition from Moretown Landfill, the Vermont Agency of Natural Resources reclassified the groundwater underneath the landfill and downslope towards the Winooski River from Class III (potable) to Class IV (non-potable) in 2012.

This decision was based on the presence of elevated levels of arsenic, iron and manganese in the water from monitoring wells near the landfill. However, the groundwater uphill of the landfill also has high levels of arsenic and manganese, which suggests they are also naturally occurring elements in the area. There is also no evidence that reductions in groundwater quality downslope of the landfill are impacting surface water quality in the Winooski River.

The reclassification of groundwater under and downslope from the landfill prohibits the development of any potable water supplies within the delineated area.¹

¹ *Findings of Fact and Reclassification Order: Groundwater Reclassification at the Moretown Landfill.* Vermont Agency of Natural Resources and the Vermont Groundwater Coordinating Committee, 2012.

Public Water Supplies. The Vermont Agency of Natural Resources' Drinking Water and Groundwater Protection Division regulates and requires regular testing of public water supplies (water sources serving 15 or more service connections or 25 or more individuals at least 60 days a year, but not necessarily publicly owned). There are five public water supplies in Moretown (Moretown Elementary School, Harwood Union High School, the General Store, the Commons subdivision, and the Riverside mobile home park).

Each of these public water systems has a source water protection plan and a mapped source water protection area to avoid contamination of the water supply, as required by state and federal law. Moretown's zoning regulations currently do not apply additional restrictions on development within the mapped source water protection areas. None of the public water systems in Moretown reported any water quality violations in 2012.

Water Quality

Clean water is a basic necessity – essential for our health and the overall health of the natural environment. Federal and state laws have been enacted to improve and maintain water quality so that our rivers, streams, lakes and ponds are “fishable and swimmable.” The Vermont Agency of Natural Resources (ANR) has classified all the surface waters in Moretown as Class B. When water quality falls below the standards for Class B surface waters, the state lists the water body or portion of the water body on the 303(d) List of Impaired Surface Waters as required by the federal Clean Water Act.

Respondents to the 2013 community survey indicated only a moderate level of satisfaction with water quality in our rivers and streams. While 34% thought that the overall quality of the natural environment in Moretown was excellent, only 15% thought water quality was excellent.

Impaired Waters. Currently, a 6-mile segment of the Mad River from its mouth to Moretown village is on the impaired list due to high E.coli levels. E.coli is fecal coliform bacteria, which comes from human and animal waste. The most likely sources of the E.coli present in the Mad River are failed septic systems and agricultural run-off throughout the watershed. While only the final segment of the Mad River is considered impaired, pollutants accumulate from the tributaries and main stem of the river as they combine and flow into Moretown – making the high E.coli levels a watershed-wide problem.

The state’s current water quality standard for E.coli is not to exceed a geometric mean of 126 organisms/100 ml obtained over a representative period of 60 days, and no more than 10 percent of samples above 235 organisms/100ml. This is more conservative than the national standard recommended by the EPA, which is 235 organisms/100ml in a single sample and an average of 126 organisms/100ml from multiple samples. Historic and current E.coli data is available from the Friends of the Mad River, which has been monitoring water quality in the Mad River and several of its tributaries since 1986.¹

ANR prepared a Total Maximum Daily Load (TMDL) Plan for E.coli in the Mad River in 2011. It recommends additional testing to better identify the sources of E.coli contamination. To reduce E.coli levels in the Mad River, the TMDL recommends action throughout the watershed in four areas:

- **Septic Systems.** Development should be discouraged on steep slopes and on soils not suited for septic systems. New septic systems should be properly designed and constructed. Existing septic systems should be properly operated and maintained. There should be programs to educate property owners about septic system function and identifying a failed system, and to assist property owners who need to replace or upgrade a failed septic system.
- **Agriculture.** Land adjacent to streams and rivers should be removed from production and returned to a naturally vegetated riparian buffer. Livestock should not be allowed to enter streams, rivers or riparian buffers. Farmers should be encouraged to participate in programs like the Conservation Reserve Enhancement Program (CREP) that provide incentives and assistance for actions that can improve water quality.
- **Conservation.** Efforts to conserve priority lands within the watershed should continue and be expanded. Priority lands include contiguous forestland, wetlands, and floodplains.
- **River and Riparian Corridors.** Regulations should limit further development within floodplains and river corridors. New development should retain naturally vegetated riparian buffers along streams and rivers. Property owners should be encouraged to re-establish naturally vegetated buffers where they have been removed.

Sedimentation and Erosion Control. While E.coli poses a specific hazard to human health, sedimentation reduces water quality and affects our aquatic ecosystems more broadly. Excess sediment can smother or suffocate aquatic plants and animals. It can block the sunlight aquatic plants need to thrive. Sediment can also carry other pollutants like petroleum products, metals, chemicals and fertilizers into our streams and rivers. Sedimentation also contributes to and is exacerbated by flooding.

The movement of sediment downstream is a natural process, but various human activities that change land cover and disturb

¹ More information is available online at <http://www.friendsofthemadriver.org>.

soil (construction, agriculture, logging, road maintenance, etc.) can result in excessive erosion and sedimentation. The rate of erosion in areas with bare soil is 100 times greater than in areas that are forested. The potential for excessive erosion is greater at high elevations, in areas with shallow or poor soils, and on steep slopes. Development in these fragile areas poses direct threats to water quality, and the extension of roads and utilities to serve such development further exacerbates erosion, sedimentation and habitat loss.

Excess erosion and sedimentation can be controlled by relatively simple practices during road construction and maintenance, on construction or industrial sites, in agricultural fields, and while harvesting timber including:¹

- Limit the area of disturbance and preserve existing vegetation. Mark boundaries and fence off areas near water bodies or wetlands.
- Limit the amount of soil exposed at any one time. As soon as work is completed in an area, stabilize the exposed soil with seed and mulch or erosion control matting.
- Provide a stabilized entrance for vehicles and equipment.
- Install silt fences on the downslope side of disturbed areas, and between disturbed areas and any water bodies, wetland, ditches or swales.
- Use berms and ditches to divert upland run-off from flowing across the disturbed area.
- Slow down channelized run-off by installing check dams in drainage channels.
- Stabilize disturbed areas before winter. Precipitation and snow melt flowing over frozen or saturated ground greatly increases the potential for erosion.

¹ *The Low Risk Site Handbook for Erosion Prevention and Sediment Control.* Vermont Department of Environmental Conservation. 2006.

- Regularly inspect sediment and erosion control measures to ensure they are functioning properly.

As discussed below, the Vermont Department of Environmental Conservation Stormwater Program issues permits for erosion control on some construction sites (generally if an acre or more of land will be disturbed). The erosion prevention and sedimentation control measures listed above are also applicable to smaller-scale disturbances.

In Moretown, many construction projects or other activities that disturb soil fall below the threshold for a state permit. Currently, Moretown’s zoning regulations do not require erosion prevention or sedimentation controls for most development (extraction and quarrying operations are required to have and follow an approved erosion control plan). Our current regulations authorize the Development Review Board to require erosion control as a condition of approval, but there are no specific standards provided within the zoning regulations.

Riparian Buffers. The word “riparian” simply means the area alongside a river, stream, pond, lake or wetland. Riparian buffers are naturally vegetated upland areas adjacent to surface waters and wetlands. Throughout Moretown, the “natural” vegetation alongside our rivers and streams would be primarily woody vegetation – trees and shrubs – except for some wetland areas that would naturally be wet meadows with primarily herbaceous vegetation.

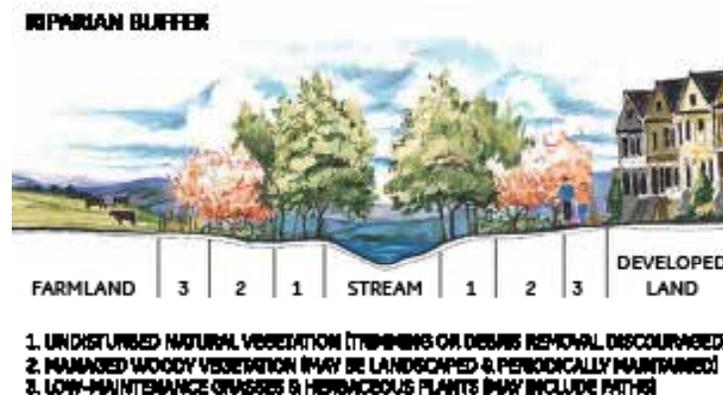
Maintaining or restoring riparian buffers along all our streams and rivers would have multiple beneficial effects. Riparian buffers protect water quality, provide wildlife habitat, filter run-off, absorb floodwater, shade surface water (keeping it cooler), contribute to scenic character, and reduce the likelihood of human disturbance. Woody vegetation in riparian buffers intercepts rainfall, slows run-off and promotes infiltration.

Streams and rivers with naturally vegetated buffers experience more gradual changes in water level, which minimizes downstream flooding potential. Riparian buffers along small tributaries higher up in the watershed are more effective at attenuating downstream flooding and limiting sedimentation than buffers along major rivers.

The effectiveness of a naturally vegetated riparian buffer to protect water quality depends on several factors: soil type, slope, amount of water flowing through the buffer, time of year, type of vegetation, and buffer width. Of these, we can most easily control buffer width. Nearly all the benefits of riparian buffers are enhanced as the buffer width increases. There has been considerable scientific research on the relationship between buffer width, water quality protection and habitat protection as summarized below:¹

- **50-Foot Buffer.** The effectiveness of a 50-foot naturally vegetated riparian buffer at pollutant removal will be heavily dependent on local conditions (soil type, slope, etc.). It will provide the shade necessary to control the temperature of small streams and will provide some protection for aquatic plants and animals. It will not provide adequate habitat for most non-aquatic animal species.
- **100-Foot Buffer.** A 100-foot naturally vegetated riparian buffer generally will remove at least 60% of pollutants from run-off (even where the soil and slope conditions are less than optimum). It also protects plant and animal species that are aquatic or stay very close to the water's edge. It likely will not provide adequate floodwater abatement.
- **300-Foot Buffer.** A 300-foot naturally vegetated riparian buffer will provide wildlife habitat for a broad array of species that are dependent on both water and uplands, as well as a travel corridor for both small and large animals. It will generally

¹ *Buffers for Wetlands and Surface Waters: A Guidebook for New Hampshire Municipalities.* Audubon Society of New Hampshire et al. 1995



remove at least 90% of pollutants from run-off and will provide greater floodwater abatement.

Currently, Moretown's zoning regulations require a minimum setback of 25 feet from all streams and rivers. No disturbance or development is allowed within the 25-foot buffer and vegetation is to be left in a natural condition. Our regulations allow for clearing and site development within the 25-foot buffer as necessary to accommodate: road, driveway and utility crossings; stream bank stabilization and restoration projects; unpaved paths and trails; residential landscaping; and public recreation facilities and water access. The regulations also require a minimum of a 50-foot naturally vegetated buffer around all Class 2 wetlands. No development or disturbance is allowed within the wetland buffer unless it is permitted by the state Wetland Rules.

Respondents to the 2013 community survey expressed strong support for requiring development to be set back from streams and for retaining or establishing natural buffers along streams.

Stormwater Management. Managing water flowing off developed land is essential to protecting and improving water quality. The first step in stormwater management is to reduce the amount of run-off a site will generate by minimizing:

- The amount of impervious surface, which directly reduces the amount of stormwater to be managed.
- The area of development or disturbance, which offers multiple environmental, energy and financial benefits.
- Soil compaction, which reduces the ability of water to infiltrate into the ground.
- Disruption of natural drainage patterns.
- Clearing of natural vegetation.

The Vermont Department of Environmental Conservation Stormwater Program issues stormwater permits for run-off from impervious surfaces, construction sites and industrial facilities. The state's stormwater permitting system generally only covers projects that result in at least one acre of impervious surface on a property or disturbs at least one acre of land. Most of the development that occurs in Moretown falls below those thresholds.

Even for smaller projects and sites, stormwater management is important. Low impact development (LID) is an approach to land planning and site design that the state is encouraging municipalities and property owners use to prevent and minimize environmental degradation. Most LID techniques relate to stormwater management because of the environmental and water quality impacts associated with run-off from developed land – often referred to as nonpoint source pollution. Simple LID practices and tools appropriate to residential properties and small-scale development projects include:

- Maximizing sheet flow and infiltration to slow and disperse the energy in the flow of stormwater and allowing it to soak into the ground by disconnecting roof drains and collecting water in rain barrels or cisterns, or directing water to rain gardens, vegetated swales or infiltration trenches.
- Minimizing lawn and garden watering by using drip irrigation, soaker hoses or micro-spray systems, and avoiding directing water onto paved surfaces or drainage ways.
- Minimizing or reducing the amount of mowed lawn by retaining or re-establishing native woody vegetation, particularly in riparian areas, or by planting gardens or using low-growing native sedges. Native plants and grasses are typically more drought tolerant and pest residents, requiring less watering and pesticide use.
- Preventing and eliminating pollutants from run-off by: avoiding and minimizing the use of fertilizers, pesticides and other chemicals on lawns and landscaped areas; properly cleaning up pet waste; properly disposing of household cleaners and chemicals; directing water used to wash vehicles into an area where it can infiltrate into the ground and using more environmentally friendly cleaning products; properly cleaning up any oils or fuels that leak or are spilled; and composting leaves, grass clippings and tree trimmings on-site.

Currently, Moretown's zoning regulations include a general requirement that conditional uses (which would include most nonresidential development and would exclude most single-family homes) appropriately manage their stormwater. The regulations authorize the Development Review Board to require a stormwater management plan as a condition of approval, but there are no standards or guidance for stormwater management provided within the regulations.

3A-6. FLOODPLAINS AND RIVER CORRIDORS

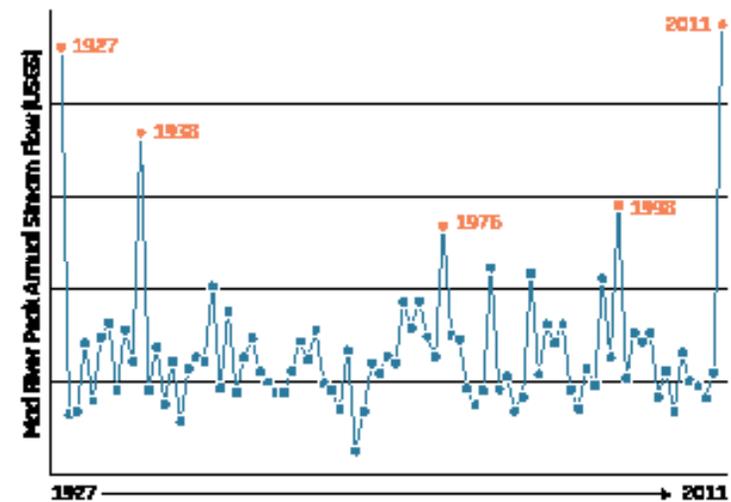
Flooding

Major floods occur periodically in Moretown. One of the earliest written accounts of flooding in Moretown was included in the 1889 Gazetteer of Washington County, attributed to a D.P. Thompson of Montpelier, describing a severe storm that occurred in the 1830s.

“The most remarkable instance of a sudden and great fall of water, which was ever known in this region, occurred about thirty years ago, round the sources of Jones’s brook, a small mill stream that rises in Moretown Mountains and empties into Winooski river three miles below Montpelier... The inhabitants of the basin, when the storm burst upon them so suddenly and unexpectedly, were struck with astonishment and alarm at the unwonted quantity of water that descended upon them, from the seemingly flooded heavens... The rain, after a brief duration of less than half an hour, ceased as suddenly as it came, and the inhabitants ran out of their drenched houses just in time to behold the numerous uniting streams, that had come pouring down the encircling mountain, gathering into a mighty river that swept away shanties, fences, old trees, logs, lumber, and everything in its path...”

That description sounds eerily familiar to those of us who experienced Moretown’s most recent major flood – Tropical Storm Irene in 2011 – as it would have to town residents who lived through flooding in 1927, 1938, 1976 or 1998. The worst recorded flood in Moretown occurred in 1927. We believe that the 1927 flood levels were two to three feet higher than they were during Tropical Storm Irene when up to seven feet of flooding occurred in the village. Tropical Storm Irene caused \$1.8 million in damage to public infrastructure and flooded 52 homes in Moretown.

Minor flooding is a regular occurrence in Moretown, while more significant floods occur periodically. Flooding generally results



in one foot of floodwater in low-lying areas every two to three years. Localized flooding also occurs regularly as a result of ice jams that develop during the spring thaw. Smaller flash floods caused by a short but intense storm are also common and often result in road washouts, which may be exacerbated by blocked or undersized culverts.

Floodplains

Floodplains are the lands adjacent to bodies of water that flood during storms or periods of high water. Floodplains are vital to the health of rivers and streams and the safety of the community. They serve as a “safety-valve” by retaining runoff during periods of heavy rain and spring thaw, and reducing the velocity of rivers and streams. Floodplains also improve water quality by filtering stormwater before it reaches streams and rivers. Floodplains tend to be flat with gravelly, nutrient-rich soils – characteristics of high quality farmland.



Floodplains are poorly suited for development due to the hazards associated with periodic flooding. Harmful effects on channel capacity and downstream properties often result from filling, and there is risk of groundwater contamination from septic systems associated with typically high water tables.

The Federal Emergency Management Agency (FEMA) has mapped floodplains along major water bodies based on the likelihood of flooding. If land has a 1% chance of flooding in any given year, it is described as being within the 100-year floodplain. If it has a 0.2% chance of flooding, it is within the 500-year floodplain. FEMA has further classified a portion of the 100-year floodplain as a floodway. The floodway is the area required to carry the 100-year flood without causing an increase in flood elevation downstream of more than one foot.

The floodway and floodplains in Moretown are shown on the Water Resources Map.¹ FEMA updated and modernized the floodplain maps for Washington County in 2013. The maps are now available in digital format and can be viewed online through the Vermont Natural Resource Atlas or the FEMA Map Service Center. The recent revision did result in some changes to the floodplain boundaries in Moretown. A more detailed floodplain study could still be done, particularly within the village, to more accurately delineate the floodplain. This is an action that our Hazard Mitigation Plan recommends that the town pursue with the state Agency of Natural Resource and FEMA.

Approximately 430 properties or 1,055 acres in Moretown are located within the 100-year floodplain. 505 of the 1,055 acres within the 100-year floodplain are within the floodway. Another 170 acres in Moretown are within the 500-year floodplain.

¹ The official Flood Insurance Rate Maps (FIRMs) must be referred to for any regulatory purpose. The FIRMs are available at the town office.

A number of our civic buildings are located within the floodplain including: the former town office, the Catholic Church, and the Moretown fire station. Whether to rebuild or reinvest in public buildings within the floodplain is an issue where our goals and policies may conflict. As reflected in the 2013 survey, residents strongly support maintaining the village as the center of our community – where public buildings should be located. Residents also clearly expressed support in the survey for prohibiting development in floodplains. Many existing buildings may be retrofitted to make them flood proof and reduce the likelihood of flood damage in the future, as has been demonstrated around the country.



Floodplain Regulations

Moretown adopted floodplain regulations as part of the zoning bylaw in 1978 and we have updated them several times since. The town needs to have these regulations, which must meet federal requirements, so that landowners within the floodplain will be eligible to participate in the National Flood Insurance Program. The regulations are intended to protect life and property, and to allow property owners to obtain flood insurance and mortgages. Our current floodplain regulations apply to land within the 100-year flood zones depicted on the FIRMs. Within the 100-year floodplain, building design standards are imposed to minimize property damage during flood events. Within the designated floodway, building and filling is prohibited.

Standard property and casualty insurance does not cover damages from flooding. Since 1968, the federal government has operated the National Flood Insurance Program. Property owners are required by their lender (who is in turn required by federal law) to purchase flood insurance on structures within the 100-year floodplain. In 2013, the federal government revised the residential flood insurance program, which is deeply in debt due to a series of massive storms around the country during the past decade. The result is that many property owners within the floodplain will see the cost of their flood insurance increase. The premiums will now reflect the real actuarial risks and the deductibles will be higher. These changes will be fully phased in by the end of 2014.

River Corridors

The federal flood maps and regulations are designed primarily to address inundation flooding, but property in Moretown is at greater risk of damage due to erosion than to inundation. Erosion that occurs along flood-swollen rivers and streams is referred to as fluvial erosion. Buildings and infrastructure within river corridors, but outside floodplains, can be vulnerable to erosion

hazards and can exacerbate erosion and flooding problems downstream.

As our understanding of river science and dynamics has improved, it is becoming evident that the majority of rivers and streams throughout Vermont are unstable as a result of the changes we have made to the river channels and the adjacent corridors. Rivers and streams have been contained and re-directed. They have been cut-off from their natural floodplains. The state is now recommending that municipalities consider the “river corridor” as an area of special concern and planning. The river corridor includes the floodplains, but also includes other adjacent lands needed for a river or stream to adjust laterally over time and maintain a natural, stable form.

Mapping of river corridors has begun in Moretown, but is not complete. To date, a full geomorphic assessment and delineation of a fluvial erosion hazard area has been completed only for a segment of the Mad River in the vicinity of the village. We anticipate that the state and local watershed organizations will complete river corridor mapping throughout Moretown within a couple of years.

The portion of the corridor that has been mapped along the Mad River is not significantly wider than the 100-year floodplain. We expect that the width of the river corridors will vary considerably throughout town. Unlike the areas in danger of inundation, which are based on elevation, the areas vulnerable to erosion are based on multiple factors – soil type, slope, characteristics of the river channel, and adjacent development and infrastructure. In some areas of town, it is possible that the fluvial erosion hazard area will be considerably larger than the flood hazard area. When the river corridor mapping is complete, we will need to decide whether to adopt stricter standards for development within the erosion hazard area similar to those in place for the floodplains.

Flood and Erosion Hazard Mitigation

Moretown has taken a number of actions to address flood mitigation since Tropical Storm Irene in 2011 – in fact, we were working on many of these efforts before the storm, recognizing our vulnerability to flooding. Residents who responded to the 2013 community survey indicated that they felt Moretown has done very well at responding to emergencies and disasters.

We completed a culvert and bridge inventory in 2011. Following Irene, we have adopted new road and culvert standards. We are working to upsize culverts and are having hydraulic studies performed on culverts that have been repeatedly flooded. Moretown participated in an erosion hazard study sponsored by the Friends of the Mad River in 2011 and 2012, which assessed and prioritized areas of erosion along town Class 3 and Class 4 roads.¹ That study produced design plans to mitigate erosion at five sites in Moretown.

We updated our Hazard Mitigation Plan (HMP) in 2012 with the assistance of the Central Vermont Regional Planning Commission. That plan is adopted by reference into this Town Plan. The purpose of the HMP is to identify the hazards we face and identify strategies to reduce the risks they pose to life and property. The HMP found that Moretown is most vulnerable to flooding and severe storms.

We participated in an assessment of our previous town plan, hazard mitigation plan, and zoning regulations in 2012 that resulted in a series of recommended policies, strategies and regulations that we could adopt to improve flood resilience in Moretown. The recommendations fall into four categories:²

¹ *Mad River Valley Erosion Study Final Report*. Watershed Consulting Associates, 2012.

² *Disaster Recovery and Long-Term Resilience Planning in Vermont: Policy Memo for the Mad River Valley*. U.S. EPA Smart Growth Implementation Assistance Project. 2013.

- Conserve land and avoid additional development in river corridors, which includes the river channel, floodplains and adjacent lands needed for the river to adjust laterally over time and maintain a natural, stable form.
- Reduce future flooding risk and protect people, building and infrastructure where development already exists in vulnerable areas.
- Plan for and encourage new development to locate in areas that are less vulnerable to future flooding.
- Implement stormwater management techniques town-wide to keep the rain where it falls, and slow, spread and sink floodwater.

The Hazard Mitigation Plan also includes a number of specific recommendations. Many of the mitigation-related recommendations from these and other plans and studies have been incorporated into the policy and action sections of this plan (See Parts 4 and 5).

3A-7. WILDLIFE AND FISHERIES

Respondents to the 2013 community survey indicated a high level of satisfaction with the ability to enjoy wildlife in town. They also expressed strong support for protecting wildlife habitat and travel corridors.

No comprehensive inventory of species or their habitat needs has been undertaken in Moretown. We know that a variety of game and non-game wildlife species reside in town, including white-tail deer, black bear, moose, coyote, mink, otter, fisher, bobcat, turkey, ruffed grouse and numerous species of raptors and migratory songbirds. The wildlife species that are most abundant in Moretown are those better adapted to survive in close proximity to humans. There also remain areas of remote, contiguous forest habitat in town that are home to wildlife species that require large areas or undisturbed areas to survive.

Specific elements of our landscape that are critical to the survival of a wide range of species include:

- Large tracts of undeveloped forest.
- Wetlands.
- Riparian corridors, especially those connecting large tracts of forest.
- Travel corridors, including sheltered road crossings.
- Vernal pools (isolated, temporary water holes that water does not enter nor leave via a stream).
- Open meadows and associated forest edge.
- Habitat for specific species, such as rare and endangered species and deer wintering areas.

The Vermont Department of Fish and Wildlife maintains some information about wildlife habitat and travel corridors. In addition, private organizations, such as the Friends of the Mad River, sponsor the Keeping Track® volunteer-based wildlife monitoring program in portions of Moretown. Despite the lack of a comprehensive habitat inventory, the specific needs of several species have been identified in Moretown to varying levels of detail, as discussed below.

Deer Habitat

Deer are Vermont's most popular game species. Despite their relative abundance and adaptability to human activity, deer have specific habitat needs. Most important are adequate wintering areas (deeryards) to ensure survival during severe winter conditions. Areas of coniferous forest on predominately south or west facing slopes, typically below elevations of 2,000 feet are best suited to provide suitable habitat for deer in winter. The state has mapped more than 5,000 acres of deer wintering areas in Moretown.

In addition to their benefits for deer, these areas also provide winter food supplies and shelter for other species including porcupine, snowshoe hare, fox, fisher, coyote, bobcat, crow, raven, and crossbill among others. The Vermont Fish and Wildlife Department offers specific management recommendations for these areas in its publication, Management Guide for Deer Wintering Areas in Vermont.

In 2007, the Selectboard and School Board placed a conservation easement on 81 acres within the Town Forest to provide deer wintering habitat in perpetuity. The Vermont Land Trust holds the easement, and the Vermont Agency of Natural Resources supported the action. The town's decision to grant the easement was connected to the state's requirement that Moretown Landfill Inc. mitigate an anticipated loss of deer wintering habitat if the landfill expanded into Cell 4. There is a Town Forest Land Management Plan, which establishes specific goals and policies related to the management of the Town Forest for recreation, wildlife habitat protection (deeryard specifically), education, hunting, and timber production.

Bear Habitat

Maintaining a viable population of black bears requires a large land area of contiguous forest, in addition to some specific types of habitat. Given the broad habitat needs of the black bear, they are considered an "umbrella species" for many other wildlife species in Vermont. If we protect habitat for black bear, we are protecting habitat for many other species as well.

Black bears rely on beechnuts and acorns produced by beech and oak trees as a significant part of their diet. These nut-producing trees are referred to as "hard mast" and groups of such trees are called "mast stands." The Vermont Department of Fish and Wildlife consider mast stands as necessary wildlife habitat as defined by Act 250. The state has identified one mast stand on the eastern slope of the Northfield Range and approximately 3,500 acres of bear habitat in Moretown.

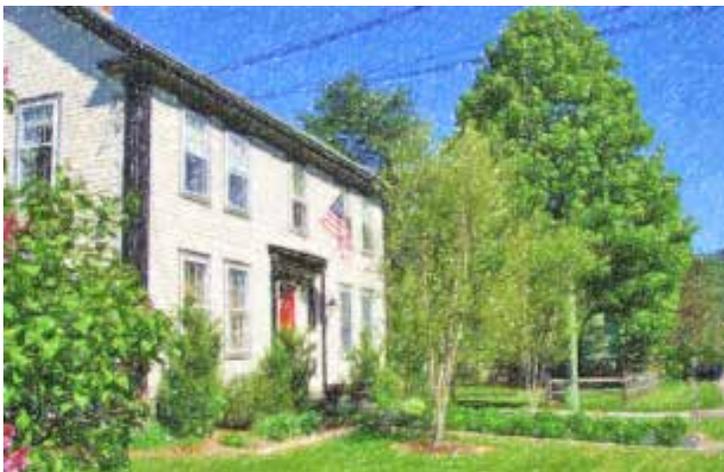
The bear habitat in Moretown is connected to significantly larger tracts in Duxbury and Fayston. Wildlife corridors connecting these areas with the Northfield Range are important so that black bears can travel between habitat areas to access food sources and to prevent populations from becoming isolated. Frequent bear sightings – and bear/vehicle collisions – have occurred on Route 100 in the vicinity of the Moretown-Duxbury town line, and on Moretown Mountain. This suggests that the bears are moving between core habitat in the Green Mountain Range and the wetland areas located between Route 100 and Route 100B, south of Cobb Hill.

Rare, Threatened or Endangered Species

The rate of species loss is a barometer of the overall health of our natural environment. Various state and federal laws define and protect rare, threatened and endangered species. The Vermont Endangered Species Law protects approximately 200 species of plants and animals and a smaller number are federally recognized under the Federal Endangered Species Act. Species may be rare, threatened or endangered because they are on the edge of their native range, they are separated from the main population of their species by a large distance, or they occur only in a unique or rare natural habitat or community. The state has identified two locations of rare, threatened or endangered plant species in Moretown.

Fisheries

Moretown's streams and rivers support moderately healthy fish populations. Native brook trout populations are found in many upper watersheds, including Jones, Crossett and Cox brooks. Limited stocking of rainbow and brown trout occurs in the Mad River and several small tributaries near the Winooski River. As discussed above, improving water quality would improve the health of our fisheries.



CHAPTER 3B. HISTORIC CONTEXT

Our history tells the story of the people, events and forces that have shaped Moretown and created the community we know today.

3B-1. BEFORE 1763

Archeological evidence suggests that people have been living in Vermont for approximately 11,000 years. As the last glaciers retreated northward and the Champlain Sea shrank to the lake we know today, people began to expand northward from the Hudson River into New England following the major watercourses.

The first Native Americans in Moretown likely arrived on the Winooski River. They would have traveled primarily by water and lived in close proximity to rivers and streams. One of the oldest Paleoindian artifacts yet discovered in Vermont – a fluted projectile point – was found in Moretown on a ridge near a small brook off South Hill Road. It dates from approximately 9000 B.C.E.

Over the centuries, the human population and way of life responded to changes in the climate, landscape and ecology. Thick forests and smaller game replaced the grassy plains and the big game that characterized the landscape after the retreat of the glaciers. Approximately 3,000 years ago, the Abenaki culture observed by European explorers 400 years ago was already thriving. The Abenaki lived in villages of up to 1,000 people along lakes and in river valleys – evidence of such settlements have been found along the Winooski River in our region. The Abenaki were Vermont’s first farmers and added cultivated crops like corn, beans and squash to a diverse diet of game, fish, berries, nuts and other wild plants. They also tapped maple trees and boiled the sap for sugar.

This way of life persisted until the arrival of Europeans in North America brought sudden and rapid change. Before Samuel de Champlain ever saw the land that is now Vermont, European diseases had already had devastating effects on the native population. The centuries of conflict that followed as European powers battled for control of the new world further disrupted the Abenaki’s way of life. Having aligned with the French, many migrated north into Quebec when England prevailed in the French and Indian War. When settlers arrived in Moretown in the 1790s, the Abenaki and much of the evidence of their centuries-old culture had largely disappeared.

3B-2. 1763 TO 1860

Charter and Organization

We celebrated Moretown’s 250th anniversary in 2013. Moretown was one of 36 Vermont towns chartered in 1763 by colonial Governor Benning Wentworth of New Hampshire. Moretown came into existence on June 7 that year with an original grant of 6 square miles (23,040 acres) of land. The reason why the town was named “Moretown” is lost to history, although it was likely in honor of the members of the Morehouse family who were among

the original proprietors, but no other municipality in the country shares our name.

Looking at the proprietors' map on the wall of Town Office, you will notice that the land grants are drawn in straight and orderly lines. The original grants did not take into consideration the mountains, valleys and rivers that define our landscape and hinder travel from one area of town to another. As a result, Moretown does not have a single, cohesive "center" like many Vermont towns. Hamilton Child noted this fact in his 1889 *Gazetteer of Washington County* where he stated "Owing to the mountainous condition of the township it is divided into several separate neighborhoods, which prevents building up any large village within its borders." The town is divided into multiple zip codes and telephone exchanges, reflecting the orientation of different parts of Moretown to centers in adjacent towns resulting from our topography and settlement pattern.

Although the proprietors signed the charter in 1763, settlers did not arrive in Moretown until sometime around 1790. The first settlement was in the North Moretown / Duxbury Corners area. The town's first school district was organized in that area as well. Some of the original families to settle in Moretown were the Munsons, Haseltines, Parchers, Heatons and Bartletts. They held the first Town Meeting on March 9, 1792 at Joseph Haseltine's home.

Early Settlement, Growth and Development

The location of the annual town meeting speaks to the progress and pattern of settlement in Moretown. Shortly after that first meeting in 1792, residents began holding the annual meeting in Moretown Common. In 1832, they voted to hold future meetings in the "Hollow" or what we now know as the village, and they have been held there ever since. Following that decision in 1832, residents raised money through a subscription to build a meeting

hall. Our Town Hall was built in 1835 and remains a centerpiece in the village today. It is a unifying feature for our dispersed community and central to Moretown's identity. The building was restored in 1985 in celebration of its 150th anniversary, and that event spurred the formation of the Moretown Historical Society.

Within two decades, Moretown grew from a small group of settlers to a town of more than 400 residents. Throughout the first half of the 19th century, Moretown's population grew by 20 to 30 people each year reaching a peak of 1,410 residents in 1860. By the mid-1800s, Moretown had multiple small settlements dispersed around town – Moretown village, Moretown Common, North Moretown near the Duxbury/Waterbury town lines, Cox Brook over Moretown Mountain near the Berlin/Northfield town lines, and Jones Brook bordering on Berlin and Middlesex.

The lumber industry fueled Moretown's early growth, aided by the power and transportation provided by the Mad River and the Winooski River. Sawmills and gristmills proliferated. There were large mills located in Moretown village on the Mad River and on the Winooski River opposite Middlesex. There were also smaller mills on the brooks and tributaries in the Jones Brook area, Cox Brook and South Hill. In addition to the mills, there was an array of small businesses operating in Moretown by 1860 that provided most of the basic goods and services residents would need – including 2 general stores, 3 blacksmith shops, a hotel, harness shop, a door and window maker, a box factory, 2 carriage and sleigh shops, a dressmaker, 2 milliners, a goldsmith and a tinsmith.

For the first several decades, Moretown's early settlers operated small subsistence farms. In the 1830s, raising merino sheep for wool, meat and breeding stock came to dominate Vermont agriculture. Merino sheep were well adapted to hilly terrain and marginal pastureland. Our landscape in the mid-1800s would



have looked dramatically different than it does today. In less than 50 years, logging and sheep farming resulted in massive clearing of the native forest. Not only would there have been farms in the valleys, as there still are today, but there were many “hill farms” in places that are now forest. Remnants of stone walls and foundations found throughout the remote areas of town today remind us of this earlier settlement pattern.

The Vermont Central Railroad line was built through the Winooski valley during 1848 and 1849. It traveled along the Middlesex side of the Winooski River, with a station in Middlesex and a rail yard in Northfield. The railroad made it possible for lumber, farm products, stone, minerals, and other commodities produced in the region to be shipped to urban markets in Montreal, Boston and New York City.

3B-3. 1860 TO 1960

After the Civil War, Vermont’s agricultural economy shifted primarily to dairy farming and the marginal “hill farms” began

to disappear as families moved westward in search of more productive land, or to cities where the industry was booming. Improved transportation and communication (telegraph lines were constructed alongside the railroad during 1865 and 1866) facilitated the out-migration of people. Moretown, like most rural Vermont communities, experienced nearly a century of population decline and stagnation.

In the 1870s, the Ward family started a lumber and milling business that became one of the largest in the region and continues to operate today. By the mid-20th century, the Wards owned thousands of acres in Moretown and surrounding towns. They practiced a forest management program, and planted plantations of softwoods that they pruned and thinned until the trees were of harvestable size. In Moretown, Ward’s operated the Upper Mill where they processed softwood lumber and manufactured wooden boxes and components for wooden furniture, and the Lower Mill (Clapboard Mill) that produced hardwood clapboards. The original Upper Mill burned in 1955 and another was built across the road, which still survives and is now a private residence. While the company still produces clapboards using some of the original equipment from the late-1800s, the mill building was severely damaged by fire and was replaced by the current structure. The business was for many years, the town’s largest employer with loggers and haulers (first with horse teams and then later with trucks) working from logging camps, in addition to those employed in the mills.

During the first half of the 20th century, the mining of talc was another major industry in Moretown. Starting in 1913, the Eastern Magnesia Talc Company extracted and processed the mineral in the Rock Bridge area of town, employing up to 50 people at the height of their operation. In 1960, the talc company was the fourth largest taxpayer in Moretown. The facility closed in 1961 as new materials replaced talc powder in various manufactured products, resulting in a substantial loss of jobs and

revenue for the town. We are again facing the possible loss of a major industry with the future of the landfill – and the associated revenues for the town – uncertain.

Moretown's rivers, which had powered mills since the arrival of the first settlers, were harnessed to produce electricity at the turn of the 20th century. There were three hydroelectric plants in operation prior to 1927 – the Middlesex Plant built in 1895, a plant on Lover's Lane built in 1904 and the #8 Dam built in 1910. The 1927 flood heavily damaged all three plants and the Lover's Lane plant was not rebuilt. The other two remain in operation – the #8 Dam is privately owned and Green Mountain Power now owns the Middlesex Plant.

While electricity was first generated in Moretown in 1895, it took more than 50 years for electric power to become available throughout town. It was 1951 before wires reached the Jones Brook schoolhouse, for example. Major regional or national corporations owned most of the hydro plants in Vermont and they shipped the power to cities like Boston and New York. Power companies saw no financial benefit to serving rural areas and even argued that farm families would have little use for electricity – a situation not dissimilar to what we have faced in recent years with getting high speed internet and cell phone service throughout town.

The 1927 flood was a defining event for Moretown, as it was for Vermont as a whole. The flood damaged or destroyed many homes, mills, bridges, roads and the railroad (which was so badly damaged that service did not resume until 1929). The bridges at both end of Moretown village, the bridges at Middlesex and across the river at Duxbury Corners, as well as most of the small bridges on town roads, were washed away isolating Moretown. Several dams failed, and houses were lifted off their foundations and overturned. Those buildings in the village that remained standing were filled with mud and water.

3B-4. SINCE 1960

By the late 1950s, Moretown's demographics were beginning to change. The post-war baby boom was filling the town's five one- and two-room schoolhouses. In 1957, a study committee proposed building a central school and bussing all Moretown students to the village – a proposal that the voters turned down for several years before finally approving it. The Central Elementary School opened in September 1960 with an enrollment of 145 students in grades 1 through 8. Demographic pressure and increasing rates of high school attendance led Moretown and neighboring towns to join together to form Union #19 in 1964. Harwood Union High School opened in 1966 serving grades 7 though 12.

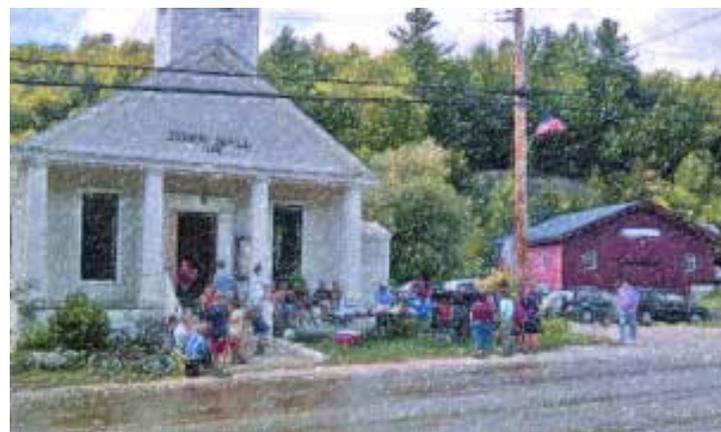
The first segment of Interstate 89 from Montpelier to Waterbury opened in 1960. The highway was completed through Vermont by 1965. Interstate highways made a visit to Vermont a day trip for millions of people living in southern New England and New York, greatly expanding the role of tourism in the state's



economy. In our region, the ski areas developed into major attractions and created demand for vacation homes.

Similar to rural communities around Vermont, new people moved into Moretown in significant numbers during the 1960s and 1970s, something that hadn't occurred for more than a century. Vermont promoted itself as a recreation destination and rural haven, and many people – primary young, baby-boomers – moved to the state. Moretown, because of our proximity to both Interstate 89 and the ski areas in the Mad River Valley, was strongly affected by these trends. Our location near the interstate between Montpelier and Burlington remains one of the major reasons people choose to live here, as evidenced by the responses to the 2013 community survey.

Tropical Storm Irene in August 2011 tore through Moretown, flooding village homes along Route 100B adjacent to the Mad River, as well as homes adjacent to the Winooski River and its tributaries, and ripping up roads throughout the town and state. Vermont was declared a national disaster area and Moretown was recognized as one of the most severely affected towns in the state. Moretown residents spent the next month cleaning up and preparing to rebuild. The 2011 school year opened with Moretown Elementary School students attending classes in a tent. The Town Office was destroyed, and the fire station and Town Hall both flooded. As we have rebuilt our buildings and infrastructure, we have tried to do so in ways that will protect them in the event of future floods and with a new awareness of the vulnerabilities of living in our river valleys.



CHAPTER 3C. COMMUNITY PROFILE

We need a clear understanding of Moretown's current condition in order to make the best choices for our future.

3C-1. POPULATION

Demographic Change

Moretown experienced a pattern – growth from the late-1700s through the Civil War, followed by a century of decline and stagnation, and then rapid growth beginning in the 1960s – that is typical of many Vermont communities. The growth in our population that began in the 1960s remained strong through the 1990s, but has slowed substantially since 2000.

The 2010 Census counted 1,658 people living in Moretown, only five more than were counted in 2000. Current demographic and economic trends suggest that there will be limited growth in the number of town residents over the next 10 to 20 years. More information about Moretown's historic and recent population trends can be found in Appendix A.

Demographic Profile

Many of the people who moved to Moretown in the 1960s and 1970s and remain living here today are part of the “baby-boom” generation born between 1946 and 1964. Baby-boomers settled here as young adults, raised families, and are now at or nearing retirement age. More than one-third of town residents were between the ages of 45 and 64 in 2010. This generation, which is larger than those that came before or after, continues to strongly influence our demographics.

The demographic profile of Moretown residents is not significantly different from that of the county or state as a whole. The median age of our residents is slightly older. The percentage of residents age 65 or older is slightly lower, reflecting the limited supply of senior housing in Moretown. The percentage of residents under age 18 is slightly lower. But none of these differences between the town and county or state averages is substantial. Our demographics are very typical of rural, bedroom communities around Vermont where most of the housing consists of detached, single-family homes on an acre or more of land. Such communities usually do not offer many housing opportunities for either young adults just starting out or elders who can no longer live independently. A detailed demographic profile of town residents and households is included in Appendix A.

More than half of Moretown residents (age 25 or over) have been to college and most of those have a bachelors, graduate, or professional degree. The percentage of residents with a college education has been increasing, while those without a high school diploma has been decreasing in recent decades. This reflects the greater percentage of each post-war generation that has completed high school and continued on to college. Moretown and Washington County both have a greater percentage of residents with college degrees than the state as a whole, which indicates that many of the region’s jobs require higher education.

Commensurate with education level, the income levels in Moretown are on average higher than in Vermont as a whole, and poverty rates are significantly lower. While median family income in Washington County and Vermont has increased only slightly over the past two decades after adjusting for inflation, there have been larger gains for Moretown residents. In 2010, the median household income in Moretown was nearly \$63,000, approximately \$11,000 higher than the statewide median.

Household Characteristics

The number of households living in Moretown has been increasing more rapidly than the number of residents in recent years. This is due to declining household size, although the average size of our households remains above county and state averages. In 2010, the average household size in Moretown was 2.38 people. It is the number of households, rather than the number of residents, that drives demand for housing and most town services.

One-third of the households living in Moretown are married couples without children living at home. During the 2000s, the number of single-person households surpassed the number of married couple households with children living at home. These changes in household size and composition reflect the strong influence of the baby-boom generation.

We anticipate that household size will continue to decline over the next 10 to 20 years given demographic trends like an aging population. This will generate higher rates of household growth than population growth. It is difficult to predict how much further the average household size will decline, however. If most town residents at or nearing retirement age decide to continue living as couples or singles in their current homes, the average household size could decline to two or less. If more residents decide to leave Moretown after retirement and younger families

with children move into those homes, the decline in household size could be stabilized or even reversed.

The results of the 2013 survey suggest that for many residents Moretown Elementary School is fundamental to our town's identity and quality of life. A number of survey respondents made connections between the aging of our population, declining school enrollment and increasing school costs. Clearly, our current demographic trends are a matter of concern and could change the character of our community over the next several decades.

Population and Household Projections

There have been several projections of how many residents and households will be living in Moretown in the future. While projections are useful and necessary for planning, it is important to recognize their limitations. Demographic and economic conditions can change quickly and projections are only as valid as the assumptions made about the future based on current trends.

The Central Vermont Regional Planning Commission hired Economic Policy Research, Inc. (EPR) in 2002 to prepare regional growth projections for 2000 to 2020. These projections were made during the housing boom prior to the 2008 recession. EPR projected that the number of households in Moretown would increase at an average annual rate of 2.5% during those two decades. However, actual growth between 2000 and 2010 proved to be much lower – an average annual growth rate of 0.7%. So rather than an increase of 200 households as projected, we grew by less than 50 households during the 2000s and it seems unlikely that growth will be substantially greater this decade. EPR's growth projections for Washington County as a whole also appear high. They projected a 1.3% average annual rate of household growth between 2000 and 2020, while the actual rate between 2000 and 2010 was 0.6%.

In 2013, the Vermont Agency of Commerce and Community Development released statewide population projections for 2010 to 2030. This projection suggests a much lower rate of growth in Moretown than the earlier EPR projection. The number of town residents is projected to increase by 30 to 70 people between 2010 and 2020, and by another 10 to 40 people between 2020 and 2030. This projection does not estimate the number of households. If household size continues to decline, these figures suggest that Moretown will grow by 50 to 70 households each decade even with this much slower rate of population growth. That would be a rate of household growth similar to what we experienced during the 2000s.

3C-2. HOUSING

Housing Change

Historically, the village was the only area of town with a concentrated amount of housing – the other settlements were much smaller with just a handful homes in close proximity. The remaining homes were farmsteads dispersed throughout town. As the population declined, many of the hill farms were abandoned and our settlement pattern contracted, placing a greater emphasis on the village as a population center.



Our settlement pattern has changed again during the last 50 years. As families moved to Moretown from the 1960s through the 1990s, new homes were built in the valleys along rural roads and up into the hillsides above, while there was very little growth in the village. As a result, the village is no longer a population center and there are other areas of concentrated housing located throughout town – although these areas have a different character than the historic village.

The 2010 Census counted 797 housing units in Moretown. That was 70 more homes than were counted in 2000, despite our population only increasing by five people during the decade. The homes built during the past decade were dispersed throughout town as shown on the Housing Map. A detailed housing profile is included in Appendix A.

Current economic trends suggest that the rate of housing development will remain stable or decline somewhat over the next 10 to 20 years. However, the demographic profile of Moretown residents suggests that housing needs and preferences may change. As discussed above, empty-nesters and seniors have limited housing choices if they want to continue living in Moretown other than to stay in their current homes and “age in place.” The 16 units in the Fairground Apartments (discussed further below) are the only senior housing in Moretown. Given demographic trends in Moretown and throughout the state, it is likely that there will be demand during the next several decades for smaller, easier to maintain homes and apartments that are more accessible than most of our existing housing stock (single-story living, universal design features, proximity to services or transit, etc.).

Housing Profile

Typical of rural bedroom communities around Vermont, housing in Moretown is overwhelmingly owner-occupied. 75% of year-

round homes were owner-occupied in 2010, which was a higher rate of homeownership than in the county or state as a whole. Rental housing made up less than 20% of our total housing stock, which was a significantly lower percentage than in the county or state as a whole. There has been little change in the total amount of rental housing in Moretown in recent decades.

The Census Bureau counted less than 10% of homes in Moretown as seasonal in 2010, which sets Moretown apart from other Mad River Valley towns that have a substantial amount of vacation and second homes. This was also a lower percentage than in the county or state as a whole. There were approximately 60 vacation homes listed on the town’s Grand List most years during the 2000s. While other Mad River Valley towns have significantly more seasonal housing than Moretown, the health of the valley’s tourism and recreation sector does influence our housing market. When demand for second homes is high, there is inflation in home prices throughout the region.

Nearly 75% of our housing units were detached single-family homes according to the 2010 Census, which is also typical of rural bedroom communities around Vermont. Mobile homes accounted for another 10% and the others were in multi-unit or attached buildings. Our housing stock includes a greater percentage of detached single-family and mobile homes than in the county or state as a whole. It is also newer than the housing stock in the county or statewide. Most of the housing Moretown has been built since 1970; only 20% was built before 1940.

Housing Costs

One of the factors that drew so many new residents to Moretown between 1960 and 2000 was the relative affordability of housing in town as compared to nearby communities. The 2013 community survey indicated that many residents are concerned

that Moretown is becoming a less affordable place to live – due to both increased home values and higher taxes.

The median assessed value of a primary home in Moretown was approximately \$233,000 in 2013.¹ The median sale price of a primary home ranged from \$160,000 to \$230,000 between 2008 and 2012.² Looking at home sales data for the past 25 years, it is interesting to note that prices in Moretown have actually been fairly similar to the median price in the county. The common perception of Moretown as being more affordable is obviously influenced by the high cost of housing in neighboring towns, rather than in comparison to the broader Central Vermont region.

The sense that housing is becoming less affordable in Moretown is likely related to recent real estate, employment and property tax trends. Strong demand caused the value of homes and residential properties in Moretown to increase during the first half of the 2000s – a trend common throughout the region and most of the state. The recession slowed home construction and sales, caused home values to fall somewhat, and resulted in job losses. Between 2004 and 2013, the assessed value of a primary home in Moretown increased 10% above the rate of inflation while household income increased by 6%.

Affordable and Workforce Housing

When asked in the 2013 survey how Moretown is doing with regards to the cost of housing, 62% of respondents indicated a level of dissatisfaction. Many survey respondents commented on the affordability of living in Moretown now and in the future. The cost and availability of housing has been an issue of concern

¹ Primary homes do not include seasonal homes or mobile homes not on their own lot.

² There were fewer than 20 home sales each of those years. Fewer sales result in higher variability in the median sale price.

in the region for many years – particularly within the Mad River Valley where prices are heavily influenced by the vacation and second home market. Given the high cost of land and lack of infrastructure, it is challenging to build new, affordable single-family homes in Moretown and neighboring communities.

The term “affordable housing” is widely misunderstood and frequently has negative connotations. State law defines affordable housing as a residence that a household earning 80% of the median family income for the county could rent or own without spending more than 30% of household income on housing costs. In Moretown in 2013, a home that could be purchased for \$134,500 to \$193,000, or an apartment that could be rented for \$1,000 to \$1,400 per month met the state’s definition of affordable housing.³ The affordable housing we are talking about is primarily workforce housing – homes that people working in the region can afford to own or rent.

In 2013, approximately one-third of homes in Moretown might have qualified as “affordable housing” under the state’s definition. But, assessing the affordability of housing is complex. Median income in Moretown is higher than the county average, increasing what would be an “affordable” housing cost for that household. Approximately 60% of homes would have been affordable to a household earning the median family income in Moretown. This suggests there is not a significant gap between income and housing costs. Other data, however, presents a different picture of affordability. For example in 2010, the Census Bureau reported that 28% of homeowners and 40% of renters in Moretown were spending more than 30% of household income on housing – a total of 200 households.

³ The low end of the range would be affordable to a one-person household, while the upper end would be affordable to a four-person household.

Rental Housing

Renting is generally a more affordable option than purchasing a home. Low-income households (those earning less than 80% of median family income) are more likely to be renters, as are young adults, singles, and seniors. According to the 2010 Census, approximately half of town residents under age 35 were renting and 40% of those living alone were renters.

According to the Census Bureau, there were approximately 145 rental units in Moretown in 2010. Our rental housing stock largely consists of single-family homes that are rented as one unit or that have been converted to two or three apartments, as well as a few condos or mobile homes. The 2013 grand list identified five properties as “commercial apartments” including the Fairground Apartments (discussed below) with 16 units. The remaining multi-family properties have five or fewer units.

There is relatively little data about rental housing costs in Moretown. According to the 2010 American Community Survey in 2010, the median rent (including utilities) in Moretown was approximately \$780 per month – the same as the median rent for Washington County. The 2013 HUD fair market rent was approximately \$780 per month for a one-bedroom unit and \$970 for a 2-bedroom unit.

The Fairground Apartments has provided 16 one-bedroom units for low-income elderly or disabled residents since 1979. The Housing Foundation owns the property and the Vermont State Housing Authority manages it, ensuring that it will continue to provide affordable housing in perpetuity. USDA Rural Development provided the initial construction financing and subsidizes rents so that qualified tenants pay no more than 30% of their income for housing.

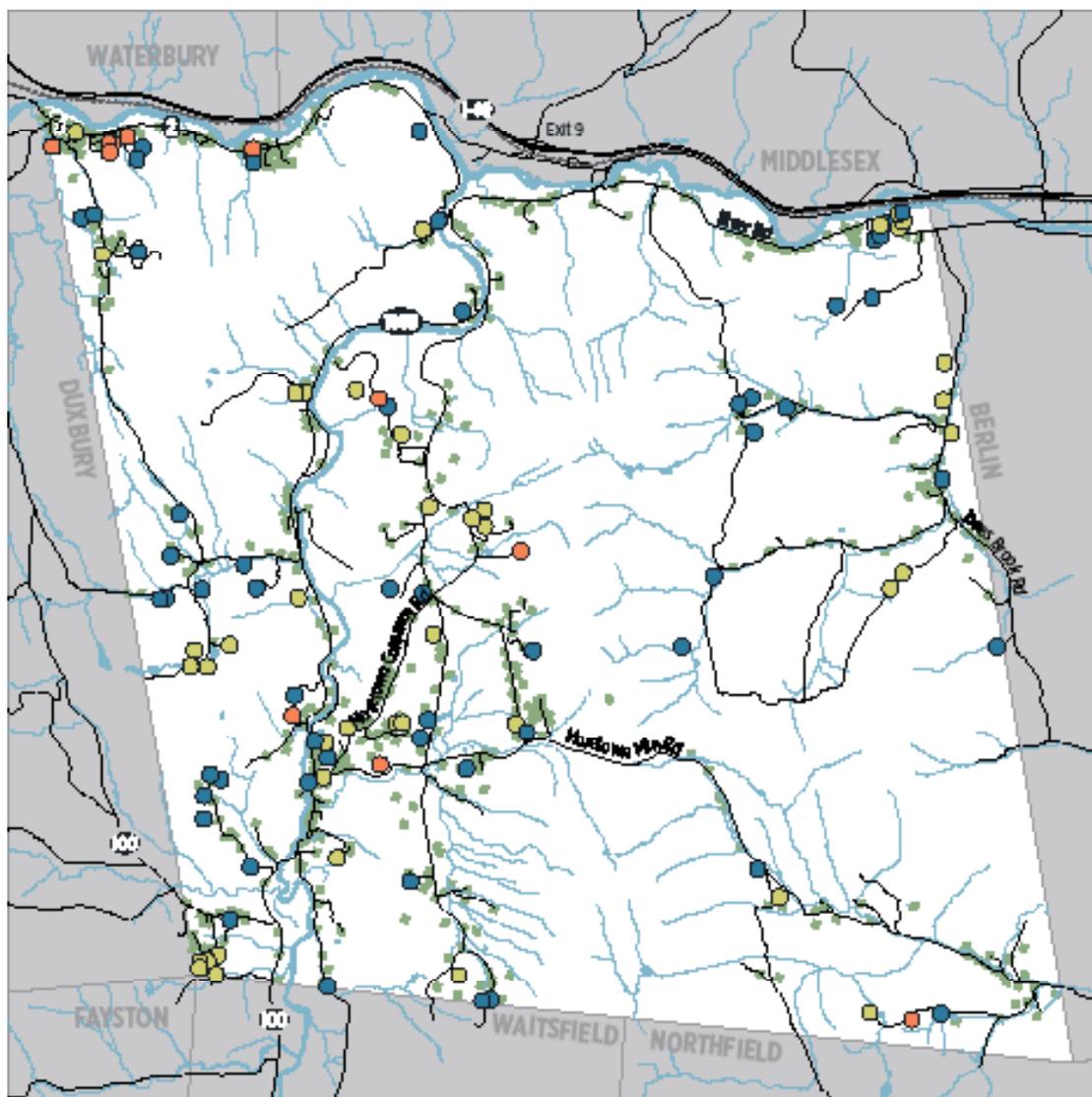
Mobile Homes

In rural communities, mobile home parks are a common form of affordable housing and many parks offer a more affordable housing option than market-rate rental units. There is one mobile home park in Moretown – the Riverside Community off River Road, which is privately owned. As of 2013, there were nine mobile homes located in the park and the rent was approximately \$370 per month (included water, sewer and snowplowing). The number of mobile homes in parks declined, while the number on their own lot increased, between 2004 and 2013 in Moretown. The median value of a mobile home on its own lot was approximately \$117,000 in 2013, about half the median value of all primary residences in Moretown.

Attached Housing

Attached housing is typically more affordable than detached single-family homes because of lower construction costs, reduced energy costs, and significantly lower land costs. Attached housing is less common in rural communities like Moretown. Because it is higher density or more compact, some see this type of housing as out of place in a rural or small town setting. It also requires the developer to invest in community water and sewer systems, if there is not municipal infrastructure (and there is not town water or sewer in Moretown).

The only attached housing development in town, the Commons, was built between 1973 and 1975 with 30 condominium units on a 10-acre parcel. In 2013, the median assessed value of a condo in the Commons was \$97,500 – providing an affordable opportunity for home ownership. Our current zoning would likely not allow a new housing development as dense as the Commons to be built today. However, accessory housing units are permitted under state law and could be built in Moretown to increase availability of senior or more affordable housing.

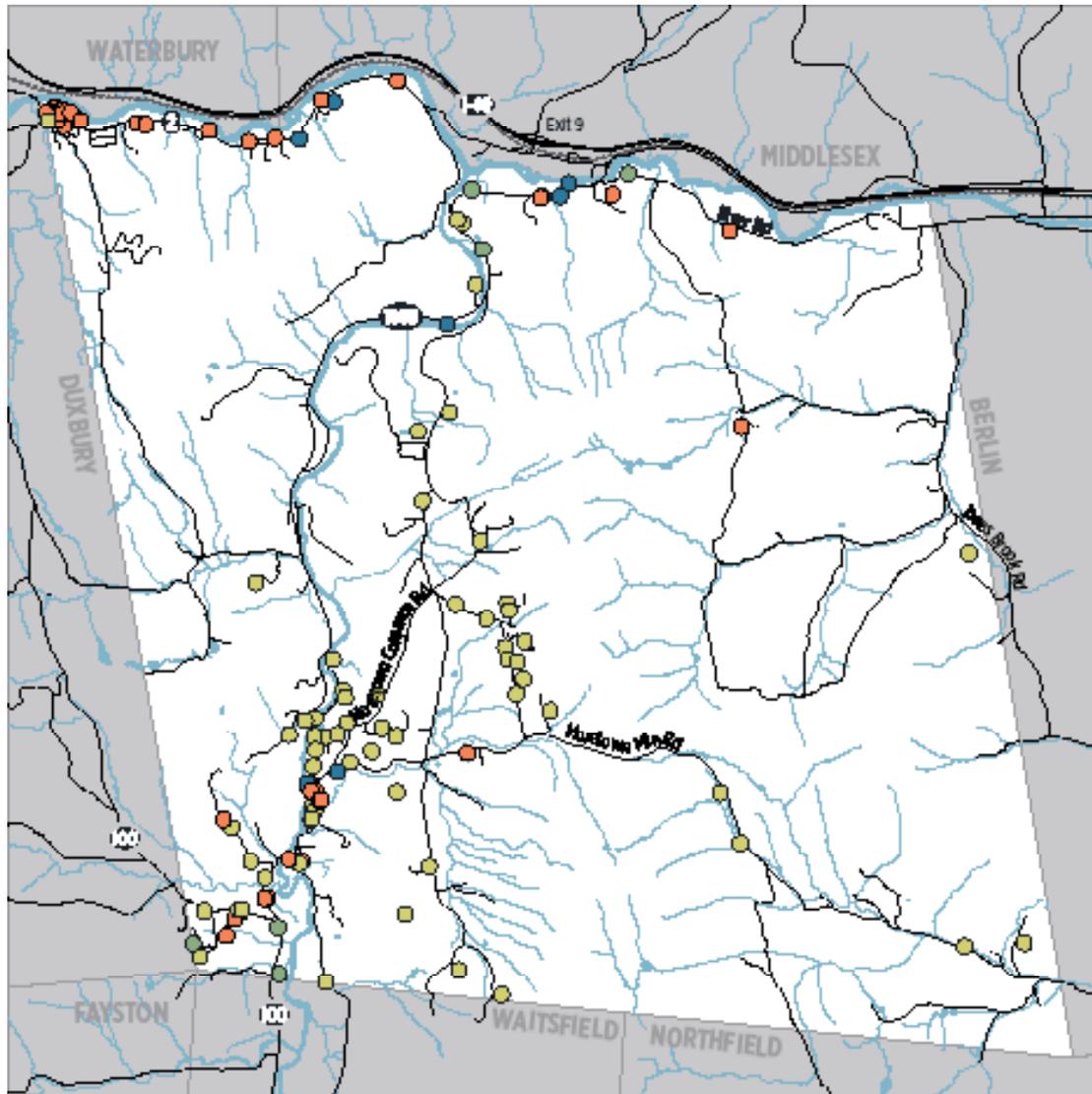


Existing Homes BY DATE BUILT MORETOWN, VT

- After 2000
- 2005-2010
- 2000-2005
- Before 2000

Source: Vermont ESRI Site Locations.





EXISTING BUSINESSES MORETOWN, VT

- Commercial
- Industrial
- Home business
- Farm

Source: Vermont ESRI Site Locations and local business inventory.





3C-3. ECONOMY

Economic Change

Historically, Moretown's economy was directly dependent on natural resources – farming, maple sugaring, logging, lumber manufacturing, talc mining, and hydroelectric power. People made their living primarily from what they could grow, harvest, extract or produce from the land. While farming and forestry remain significant land uses and continue to contribute to the local economy, they are no longer the “economic engine” of our town. Moretown is now a bedroom community where most residents commute to jobs outside of town and are not dependent on local resources for their livelihood.

Economic Profile

The Vermont Department of Labor reported that there were 44 business establishments located in Moretown in 2012, which employed a total of 308 people. Prior to the recession in

2005, there were 52 business establishments employing 440 people. The 2011 and 2012 employment numbers suggest that our economy is again growing. A detailed economic profile is included in Appendix A.

As shown on the Business Map, most of the larger businesses in town are located either in the village or on Route 2. A number of businesses are clustered around the intersection of Route 2 and Route 100 – primarily retail or service businesses like the home center and hardware store, vehicle sales and service, self-storage, etc. The landfill and adjacent composting business are further east on Route 2. On Route 100B in the village, there are local businesses including the general store, small professional offices, and personal services. Also within the village is the school, which is one of our largest employers.

The Department of Labor figures include only businesses with employees who are covered by unemployment insurance. There are a significant number of small businesses in Moretown that are not included. In 2013, we were able to identify more than 100 businesses based in Moretown. A majority of these are home-based businesses – many in the construction trades, various types of professionals, consultants and artists, and several B&Bs. There were seven agricultural businesses, several of which are part of the valley's burgeoning local food movement (see further discussion of farming and forestry in Section 3D-1). According to the Census Bureau, one quarter of households in Moretown had some self-employment income in 2010.

Looking at sales tax data and the grand list, it is evident that our economy has not grown significantly in many years. After adjusting for inflation, the gross sales tax generated by businesses in Moretown declined between 2000 and 2012. Sales taxes generated in Moretown represented only 0.2% of all sales tax generated in the county in 2012 – a decline from 0.3% in 2000. There were 30 commercial or industrial properties

on Moretown's 2013 grand list. Commercial and industrial properties comprised only 7% of the total assessed value of property in town. These figures have not changed substantially in more than a decade.

Economic Development

Responses to the 2013 survey suggest that many residents would like more businesses in Moretown. Some believe that this would reduce property taxes for homeowners. Others want more choices for dining or shopping in town. When asked how well the town is doing on a variety of factors, the three elements that survey respondents ranked lowest were all related to the local economy – overall business climate, availability of goods and services in town, and job opportunities in town.

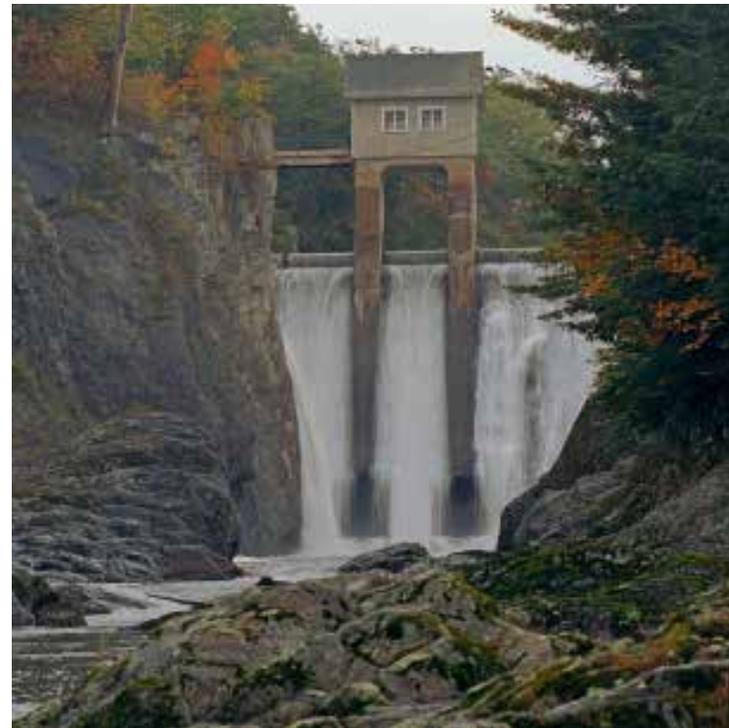
Despite what appears to be strong support by residents, town government has not taken many concrete actions to promote economic development in Moretown. There is a regional economic development corporation and within the Mad River Valley, there are a number of groups working on economic development. Moretown has not been particularly active in any of these regional organizations or efforts to-date, but expects to be more proactive going forward.

Our current zoning allows for commercial and industrial uses primarily within Moretown village or within the commercial district in North Moretown along Route 2. Throughout town, home occupations are allowed as required by state law, and the Development Review Board can approve larger home-based cottage industries with up to eight employees as a conditional use.

3C-4. ENERGY

Changing Role of Energy in Our Lives and Community

Energy in the form of hydropower had a significant role in shaping the early history of our community. During the 20th century, Moretown residents shifted from reliance on primarily local resources to dependence on outside – even global – resources. The energy sector exemplifies this change in our way of life. As the costs and impacts of importing non-renewable energy are becoming increasingly evident, we are again considering how to meet more of our energy needs locally and



sustainably. A majority of residents who responded to the 2013 survey thought that more of our energy should be generated from renewable sources and in Vermont.

Understanding our current energy use is a necessary first step in planning for a different energy future, including opportunities for conservation and efficiency. See Section 3D-6 for a discussion of local, renewable energy resources.

Overall Energy Use

There is relatively little information available on our energy use in Moretown specifically, although more local data is becoming available as towns are becoming more active in energy planning. This section presents what we do know about our energy use – using local data when available and supplementing that with statewide data. This analysis will focus primarily on residential energy use because there is better information available at the town level for the residential sector than the commercial and industrial sector. Households use energy primarily for lighting and appliances, for heating, and for transportation.

Electricity

Three utilities – Green Mountain Power (GMP), the Washington Electric Co-Op (WEC) and the Northfield Electric Department (NED) – provide electricity in Moretown. In 2011, 35% of WEC's electricity supply was hydropower and 65% was from other renewables (mostly methane from the Coventry landfill). Nearly 50% of GMP's was hydropower and 40% was nuclear (this is anticipated to change in future years). NED's electricity supply was more than 65% hydropower, biomass and other renewables. Given the current power portfolio of these companies, our electricity use is nearly carbon neutral – it produces almost no climate-changing greenhouse gases.

Our town wide electricity usage is approximately 8.5 million kilowatt hours annually and that 70% of that power is used by residential customers and 30% by commercial or industrial customers.¹ That means that the average household in Moretown consumes approximately 6,500 kilowatt hours of electricity each year. This is slightly less than the statewide average of 6,800 kilowatt hours, but still suggests that average household energy consumption patterns in Moretown are typical of those found throughout Vermont.

Electricity has historically been more expensive in the Northeast than elsewhere in the country. A typical household in Moretown would have had an electric bill of \$95 to \$105 per month in 2012 (based on average use of 6,500 kWh of electricity per year).

Since 2005, there has been a slight decline in both total and average household electricity use in Moretown. This too is consistent with statewide trends. According to the Vermont Department of Public Service, residential electricity use per customer decreased 13% between 1986 and 2007 in Vermont as the number of homes heated with electricity declined sharply and residents began using more efficient lighting and appliances. The 1980 Census found that 18% of homes in Moretown were heated with electricity as compared to 3% in 2010. Per household electricity use in Vermont has been consistently among the lowest in the nation. However, recent trends like the increasing size of homes and use of air conditioning appears to be canceling out some of the savings from more efficient lighting and appliances.

Home Heating

Given our climate, we use a significant amount of energy for home heating. Half of the energy used in a Vermont home is for heating. Moretown averages around 7,700 heating degree days

¹ Based on electricity usage data between 2005 and 2011.

each year.¹ The typical Vermont home requires approximately 114 million BTUs for heating annually.

As of 2010, the primary heat source for 75% of homes in Moretown was some type of fossil fuel – fuel oil, propane, kerosene or natural gas. About 20% of homes were primarily heated with wood, and we know that many residents use wood as a more affordable, supplemental heat source. According to the Vermont Department of Public Service, the average annual heating bill for a Vermont home was \$2,600 in 2010. Fossil fuel prices more than doubled during the 2000s.

Buildings in Moretown vary widely in the efficiency of their construction and heating systems. While our housing stock is newer than the statewide average, the majority of our homes were built prior to the widespread use of energy-efficient construction standards. Further, the amount of useful heat obtained from any given fuel depends on how efficiently it is consumed. Combustion efficiency varies widely (as low as 30% for the least-efficient outdoor wood boiler to more than 95% for the most-efficient condensing gas boiler).

The siting, design and construction of buildings significantly affects the amount of energy required for heating. A well-insulated home that is built to take advantage of passive solar heating will require 75% less energy for heating than the typical Vermont home.

¹ Heating degree days measure the difference between the daily average temperature outside and 70°F inside and can be used to calculate the amount of energy that will be needed to heat a building. The number of heating degree days for Moretown was based on average annual total heating degree days calculated from data collected by weather stations in Waterbury, Waitsfield, Northfield and Montpelier between 1995 and 2012 and measured in degrees Fahrenheit. The total annual heating degree days ranged from a low of 5,700 to a high of 9,800 at the four stations over that period.

Household Transportation

Moretown is a rural, bedroom community with most residents commuting to jobs out of town. Typically, residents have to drive to most destinations due to the distance and lack of other transportation options. As a result, we consume a significant amount of energy for transportation.

The total vehicle miles traveled by vehicles registered in Vermont peaked at 7.9 billion miles (14,600 miles per driver) in 2003 and has declined to 7.2 billion miles (13,500 miles per driver) in 2012. The average fuel efficiency of vehicles in Vermont is approximately 23 miles per gallon. Assuming driving patterns in Moretown are similar to those state averages, town residents would have traveled approximately 17 million miles and consumed nearly 740,000 gallons of gasoline in 2012. The average household in Moretown would have spent nearly \$4,000 on gasoline and generated more than 7,000 tons of carbon dioxide (a climate-changing greenhouse gas) from vehicle emissions in 2012.

Approximately 80% of employed Moretown residents drove alone to work in 2010. The percent of residents carpooling continues to decline. In 1980, more than 20% of commuters carpooled as compared to less than 10% in 2010. About half of employed residents travel less than 10 miles from home to work, and about one-third commute to either Waterbury or Montpelier.

Over the past decade, technology has made it possible for more people to telecommute or work from their home in Moretown for an employer based elsewhere. Some may work from home all the time, while others may work from home some days and work from another location on other days. We also know that there are a significant number of residents who are self-employed and work from home, although many may be in sectors like construction that typically would require travel to a work site.

There is not sufficient data to assess the extent to which these employment trends are affecting energy used for transportation.

The Census Bureau reported in 2010 that virtually no Moretown residents take public transit to work, despite the availability of bus service in the region. GMTA's Waterbury Commuter route provides service on Route 2 between Waterbury and Montpelier, and connects to the Route 100 Commuter, Montpelier Circulator, City Commuter, Northfield Commuter, and US 2 Commuter, and the Montpelier Link Express. The Waterbury Commuter bus makes stops at the Red Hen Bakery and at the Exit 9 park-and-ride. The Montpelier Link Express, which provides commuter bus service between Burlington and Montpelier, passes by Moretown on Interstate 89. However, the nearest stops are in Waterbury or Montpelier.

Energy Conservation and Efficiency

We conserve energy when we take steps to reduce the amount of energy we consume (by driving less or lowering the thermostat, for example). We use energy more efficiently when we achieve the same end result with less energy (by driving a car with better gas mileage or better insulating a building, for example).

Energy conservation and efficiency are far more cost effective than any other form of energy. According to the Vermont Department of Public Service, reducing energy demand cost 3.5¢ per kWh in 2010, which was 25% of the cost of comparable electric supply. Energy efficiency benefits the local economy, while most energy is purchased out-of-state. Approximately 80¢ of every dollar spent on energy efficiency remains in Vermont, while approximately 80¢ of every dollar spent to purchase energy leaves the state. A 2007 report found that Vermont could save more than \$3 in reduced fuel cost for every \$1 invested in making our homes and businesses more efficient, which would result in nearly half a billion dollars in savings over 10 years.



Efficiency Vermont

In 2000, Vermont was the first state in the nation to create a single energy efficiency utility to coordinate electrical efficiency programs, save energy, reduce energy costs and protect the environment. Efficiency Vermont, the energy efficiency utility, is funded by an energy efficiency surcharge on all electric utility customers. Efficiency Vermont operates independently of the electric utilities, and offers energy savings programs, technical support and some financial incentives.

Weatherization Program

Since 1976, Vermont's Weatherization Program has been helping income-eligible households save fuel and money by improving the energy efficiency of their homes. In 1990, the state established a Weatherization Trust Fund and placed a tax on non-transportation fuels to provide a stable source of funding for the program and to supplement funding from the federal Weatherization Assistance Program.

The Central Vermont Community Action Council implements the state's Weatherization Program in our region. Weatherization assistance is available at no cost to households that meet income-eligibility guidelines, regardless of whether they are homeowners or renters. Qualified households may receive an energy audit to identify potential improvements in energy efficiency and comfort, lighting and appliance upgrades as needed (provided by Efficiency Vermont), and home renovations completed by a qualified crew including building materials and supplies. Other regional organizations, like the Central Vermont Community Land Trust, also provide weatherization assistance and funding.

Vermont Energy Code

Vermont enacted an energy code that went into effect in 1998 that applies to all new residential construction, including additions, renovations and repairs. The energy code has been revised several times since, most recently in 2011. Efficiency Vermont offers an Energy Code Plus service to help builders meet or exceed the energy code requirements, as well as provide incentives for certain energy efficiency upgrades. This service is provided at no cost and provides third-party verification to ensure quality insulation and air sealing, installation of high efficiency lights and appliances, and performance testing of air infiltration and ventilation systems. Efficiency Vermont has established three tiers of buildings exceeding the residential buildings energy standards: Energy Code Plus (bronze), Vermont Energy Star Homes (silver), and High Performance Homes (gold). There are a variety of incentives available for homes that exceed the minimum energy code requirements.

PACE

The Vermont Energy Act of 2009 created the Property Assessed Clean Energy (PACE) program. Municipalities can establish a PACE program, which allows homeowners to make energy

improvements to access financing by opting in to a special assessment district. Homeowners may borrow 15% of the assessed value of their home up to a cap of \$30,000. Participating homeowners repay the cost of the energy improvements over a period of up to 20 years as a special assessment collected with their property taxes. If a participating homeowner sells their home, the PACE obligation is either transferred to the new owner or paid off at the time of the sale. Municipalities can contract with Efficiency Vermont to administer their local PACE program with the cost of that service borne by participants. To date, Moretown has not established a PACE program.

Smart Grid

As of the writing of this plan, GMP and WEC have replaced the majority of their customers' old analog electric meters with new digital electric meters as part of efforts to modernize the electric grid. The advanced meter infrastructure deployments, including smart meter installations, are intended to allow the utilities to realize delivery and operation efficiencies as well as to provide customers with a better understanding of their energy use, which is anticipated to spur added interest in conservation, efficiency and dynamic pricing opportunities.

Municipal Buildings and Operations

Improving the efficiency of municipal (town and school) buildings and operations serves multiple purposes. It can save money – savings that is passed on to all taxpayers. It is also an opportunity for local government to demonstrate a commitment to energy goals and policies, and leadership by making wise investments in energy improvements. Municipalities may be eligible for a variety of efficiency programs and financial incentives through Efficiency Vermont for interior lighting, heating and cooling systems, building performance and street lighting, and municipal facilities and equipment.



Moretown Town Office
Moretown, Vermont

BUILDING ELEVATION FROM PARKING
July 17, 2013
MORDELL ARCHITECTS

In 2006, Moretown conducted an initial energy assessment of the town clerk's office, town hall, library, fire station and municipal garage. More detailed energy audits were completed for the fire station and library in 2010. The Moretown Energy Group secured funding for weatherization in the town office, fire department and library in 2011. Recovery from Tropical Storm Irene took precedence over the weatherization improvements, but the Moretown Energy Group is currently working to get weatherization efforts back on track. Current plans for the new town office will result in a net-zero, energy-efficient building.

In recent years, Moretown Elementary School has completed a number of efficiency projects. These included adding insulation when a new roof was installed, sealing and insulating the older part of the building, and replacing light fixtures.

CHAPTER 3D. COMMUNITY RESOURCES

We have a wealth of resources upon which to build a sustainable future for Moretown.

3D-1. FARM AND FOREST LAND

As of 2012, approximately 15,600 acres (60% of the town) of farm and forest land in Moretown was enrolled in the Current Use program. That state program, which has been in place since 1980, is intended to keep Vermont's farm and forest land in production and slow the development on those lands. It allows enrolled land to be assessed and taxed based its value for farming or forestry, rather than for development. The owner must pay a land use tax to remove enrolled land from the program for development purposes. There has been a slight increase in the amount of land in Moretown enrolled in recent years, which may be related to the economic downturn and rising property taxes.



Respondents to the 2013 survey ranked supporting local farm and forestry enterprises as the most important goal for the town – 75% stated it was a high priority. Maintaining rural character and minimizing the loss of productive farm and forest land ranked second and third, respectively – each with 70% of respondents stating those goals were a high priority.

Farms and Farmland

Historically, much more land in Moretown was farmed than is still farmed today. The remaining agricultural land is generally some of the highest quality and most productive land in town. The Natural Resource Conservation Survey (NRCS) has mapped and classified soils based on the productivity for various agricultural uses. Primary agricultural soils include prime soils and soils of statewide significance:

- Prime agricultural soils have the highest potential productivity due to their chemical and physical properties, and the fewest limitations for farming. They have high potential for sustained agriculture and little or no limitation for a wide variety of crops adapted to Vermont's climate.
- Soils of statewide significance have good potential for growing crops, but have one or more limitations that restrict the choice of crops or require more intensive management than prime soils.
- The NRCS has identified approximately 530 acres of prime agricultural soils and 2,230 acres of statewide agricultural soils in Moretown (see map below). However, only portions of these soils are currently being farmed or available for agricultural use. Many of the soil qualities that make land good for farming, also make it good for development. Moretown village is located on prime agricultural soils, as is the cluster of development near the Route 2 and Route 100 intersection. As a result less than 60% of our prime and statewide agricultural soils (approximately 1,650 acres) remain available for farming now or in the foreseeable future.

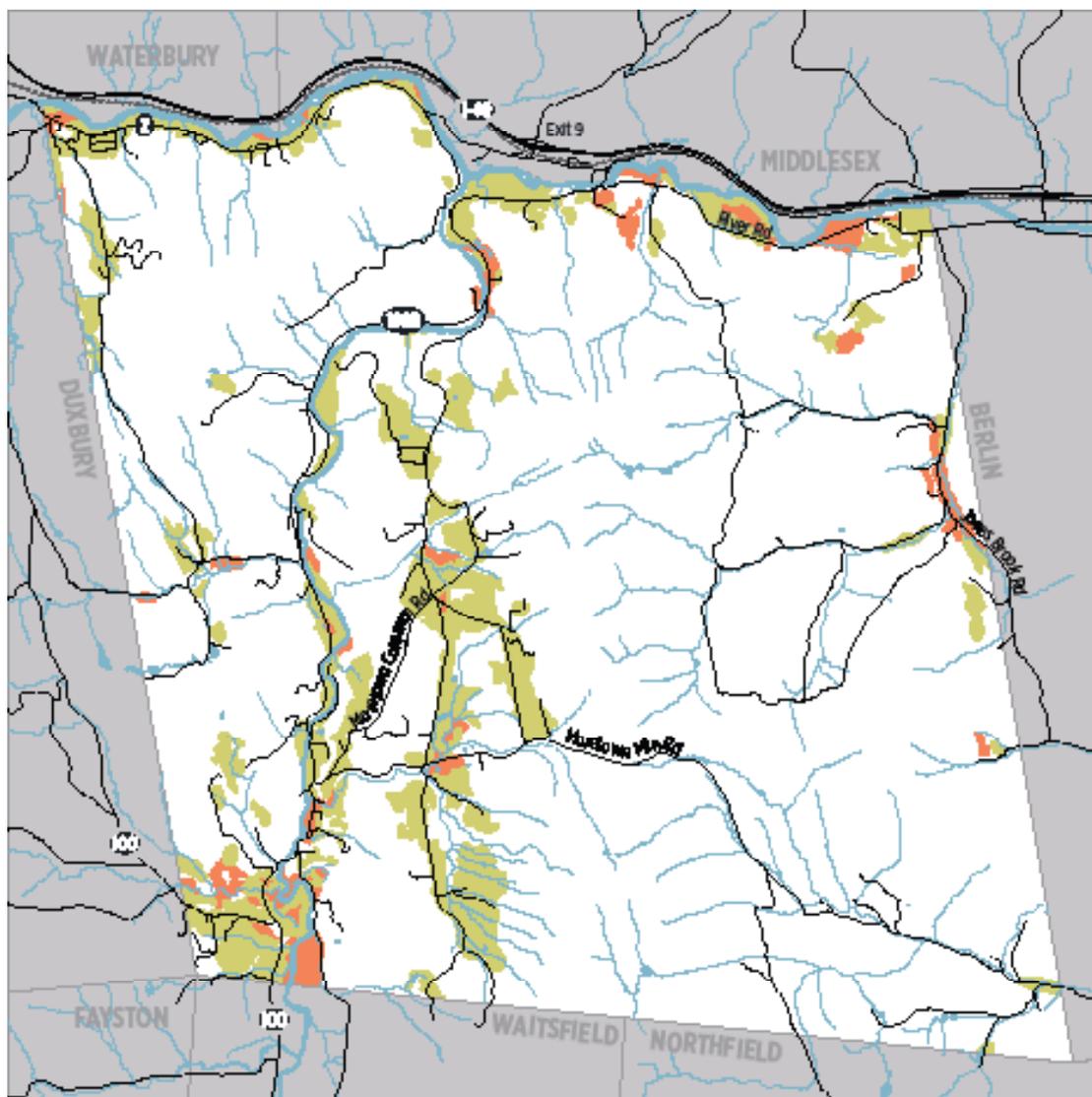
Under Act 250, applicants may mitigate impact on agricultural soils by making cash payments to a state fund used to conserve farmland elsewhere. The off-site mitigation payment will be set at an amount sufficient to conserve at least twice the number of acres of comparable agricultural soils as will be lost to development.

In recent years, the localvore movement has begun to influence agriculture in Vermont with a return to the idea of small, diversified farms that produce basic and specialty foods. There is a particularly active local food movement in the Mad River Valley. This has come at a time when small- and medium-sized dairy farms have been struggling economically and has provided new opportunities for agriculture in Vermont. The number of traditional dairy farms in Moretown has been declining for several decades, but within the past decade we have seen new, diversified farms start up.

Forests and Forestry

Forest covers approximately 22,000 acres (85%) of land in Moretown. Northern hardwood forests and related communities – composed of sugar maple, American beech, and yellow birch, along with eastern hemlock – characterize much of the broad region. The distribution of forest types across the landscape is influenced by multiple interconnected factors that include soils, climate, topography, natural disturbance patterns, and time, along with varying ways people have used and changed the land over time.

A booming 19th century lumber industry in Vermont led to widespread clearing along major river valleys like the Winooski and Mad River valleys, which provided natural transportation routes. The rise of the railroad and the damming of larger waterways increased the ease with which trees could be harvested and economically shipped out of the region. By the late

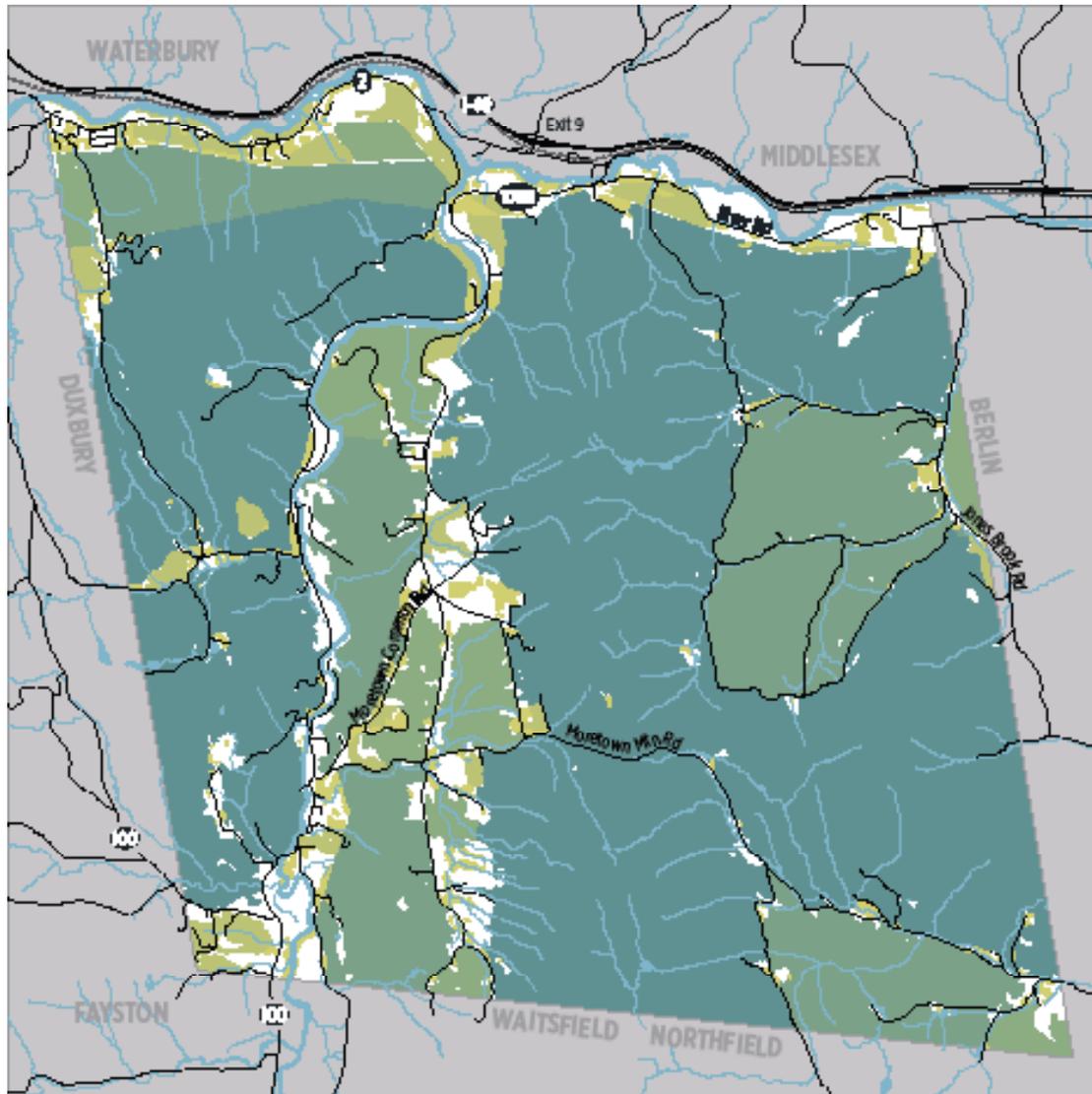


AGRICULTURAL SOILS MORETOWN, VT

- Prime agricultural soils
- Statewide agricultural soils

Source: Natural Resource Conservation
Soil Survey for Washington County, VT.

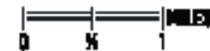




FORESTLAND MORETOWN, VT



Sources: Forest blocks generated from aerial photographs.



1800s, approximately 70% to 80% of Vermont had been cleared for agriculture and timber production. The valleys and foothills were largely denuded of trees, and forest clearing extended far up the slopes the Green Mountain ridgelines.

Since then, most of the formerly cleared hillsides and mountain slopes have reverted to forest. The 20th century brought a reduction in large-scale timber harvesting and the abandonment of many of the more marginal hill farms and less productive valley farms. The regrown forest is comprised of the same tree species that were found in the pre-settlement forest, but the percentages have changed, partially as a result of the past timber harvesting practices. Estimates of the overall percentages of beech and red spruce have declined sharply, while sugar maple and red maple have increased in abundance.

While there are individual landowners who own relatively large blocks of undeveloped, largely forested land in Moretown, much of our forestland remains in smaller parcels and woodlots associated with rural residences. The 2013 Grand List included approximately 5,500 acres or 16 parcels classified as “woodland.” Timbervest, an investment corporation based in Atlanta, Georgia, which holds and manages timberland around the country, owns approximately 3,300 acres (four parcels) in Moretown.

Public and Conserved Lands

There is no state or federal forestland in Moretown, as there is in most neighboring towns. We have a 175-acre town forest behind the school and part of the Harwood School Forest extends into Moretown as well. Private landowners have sold or donated their development rights on several parcels of land in Moretown, ensuring that the land will remain undeveloped farm or forest land in the future.

Tim and Mary Larsen donated a conservation easement on 255 acres off Stevens Brook Road and Cobb Hill Road in 1998. The

property is now primarily managed for timber, but it formerly was a dairy farm and includes an old apple orchard.

In 2009, the Vermont land trust purchased the development rights on the 102-acre Bruce Farm on Route 100B. Funding to purchase the development rights including a grant from the Vermont Housing and Conservation Board (which is partially funded by the off-site mitigation program) and private contributions. After being in the Bruce family for 100 years, the LaCroix family purchased the conserved farm, which includes 37 acres of farmland and a 65-acre woodlot. They are now operating the former dairy farm as Solterra Farm, a diversified operation that produces mixed vegetables, flowers, beef, pork, chicken, eggs and honey, and sells direct to customers from the farm.

3D-2. MINERAL AND GROUNDWATER RESOURCES

Mineral Resources

Historically, sand, gravel and other mineral resources such as talc were mined in Moretown. Some landowners may remove small amounts of sand or gravel from existing pits, but there is currently no large-scale extraction occurring in town. As part of its normal operation, the Moretown Landfill has and proposes to continue blasting, extracting and processing material for their on-site use. In past years, the landfill provided the town with road materials.

Sand and gravel deposits in Moretown are primarily located in the river valleys, where they were deposited under glacial lakes and streams thousands of years ago. The river valleys also have soils and slopes more conducive to development than the upland areas of town. As a result, a large percentage of our sand and gravel resources are now located under or near existing homes – thus greatly limiting access to those resources in the foreseeable future.

Sand and gravel are essential resources needed to maintain and repair our roads, and for construction generally. The costs of hauling these materials from out of the area are high and increasing.

In 2004, a rock quarry was proposed on a 93-acre site off Route 100B north of Moretown village, which would have extracted and crushed about 75,000 cubic yards of stone each year. The Vermont Environmental Court ultimately ruled against the project after six years of state and local review, and various legal challenges. One of the primary reasons the project was ultimately denied was its proximity to residences and the impact that operations would have had on those neighbors.

Moretown adopted revised zoning regulations for extraction operations in response to this project in 2006. Major earth extraction and minor quarrying operations are currently allowed as a conditional use in all zoning districts except for the Village District. The regulations include limits on hours of operation, minimum setbacks and buffers, and escrow requirements to cover the cost of site reclamation.

Groundwater Resources

Here in Moretown, we rarely face a scarcity of water –making groundwater a resource we often take for granted. Without statewide groundwater mapping, it is also a resource that is not well understood. In the face of rapid expansion of the bottled water industry in the Northeast, Vermont began regulating large groundwater withdrawals in 2008 and authorized municipalities to manage their groundwater resources. Under the Vermont Groundwater Act, any proposed project involving large groundwater withdrawals must be consistent with the town plan to receive a state permit. Our zoning regulations currently do not define groundwater extraction as a specific use, but light industry and cottage industry are allowed in several districts and it is possible that such a business could involve groundwater extraction.

3D-3. ARCHAEOLOGICAL AND HISTORIC RESOURCES

Archaeological Resources

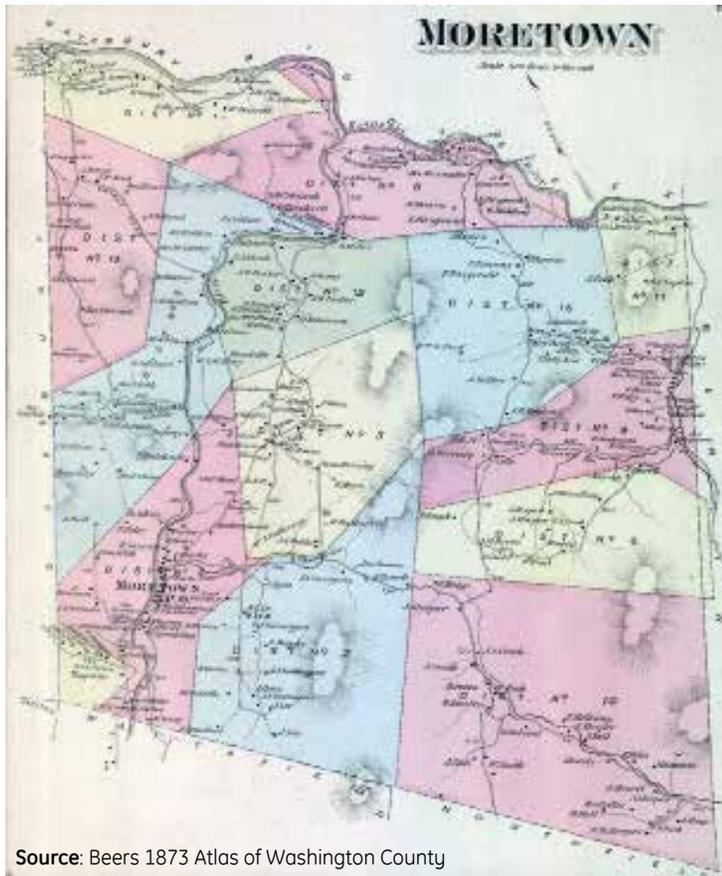
Archeological sites provide an opportunity to learn more about the people who lived in Moretown before us – whether in the historic or prehistoric past. The remnants of the historic past – such as abandoned farms and water-powered mills – are visible around town. While prehistoric archeological resources are less evident to the untrained eye, the likelihood of finding Native American artifacts in Moretown is relatively high.

According to the Vermont Division for Historic Preservation, prehistoric sites are more likely to be located on level, well-drained soils near rivers and streams, high terraces that command a view of the landscape below, and adjacent to major river confluences. Native Americans used rock ledges as temporary shelters and sought out mineral resources (like talc, for example) for raw materials. Most of those elements are present in Moretown and we can assume that locations with one or more of those characteristics have potential to contain prehistoric archeological resources.

There are two documented archeological sites in Moretown where projectile points were found - one near the Route 100/100B intersection and another off South Hill Road. A Native American settlement site has been identified on the Middlesex side of the Winooski River near the confluence of the Mad River.

Historic Resources

The Vermont Division for Historic Preservation completed a Historic Site and Structure Survey in Moretown in 1983. As a result, nearly 100 structures in Moretown were listed on the Vermont State Register of Historic Places, which also makes those properties eligible for listing on the National Register of Historic Places.



Source: Beers 1873 Atlas of Washington County

Approximately 30 of the listed historic structures are located in Moretown village, which is recognized as a Historic District in the State Register of Historic Places and is therefore eligible for listing on the National Register of Historic Places as a Historic District. Many residents value the historic, small-town character of Moretown village and 75% of respondents to the 2013 survey supported protecting the historic character of Moretown village.

There is one federally recognized Historic District in Moretown, the Mad River Valley Rural Historic District. This Historic District encompasses approximately 2,000 acres in Moretown and Waitsfield with a collection of farms in a well-defined geographic area that reflects the evolution of Vermont agriculture. It recognizes the historic and cultural significance of the working landscape bordering the Mad River, and shows the diversity of agricultural traditions, periods of economic prosperity, and the importance of the natural environment in shaping the built environment. The following Moretown properties are part of the Historic District:

- Bis-May Farm
- Freeman-Murphy House
- Belding House
- David Belding, Sr. Farm
- David Belding, Jr. Farm
- G. Bulkeley Farm
- Goodyear Farm
- Route 100B Bridge over Dowsville Brook
- Moretown Village Cemetery

The state's survey of historic structures in Moretown has not been updated for more than 20 years. Some structures identified in the survey have been lost and other structures have become eligible for listing. Sites and structures that are eligible for listing on the State Register of Historic Places are typically more than 50 years old and:

- Are associated with historically significant events or the lives of historically significant people;
- Represent the distinctive characteristics of a type, period, method of construction, or designer or builder; or
- Yield information archeological or historical information.

The Mad River Valley Planning District (MRVPD) is a Certified Local Government under the National Historic Preservation Act, which makes MRVPD eligible for funding of historic preservation efforts. MRVPD and the Vermont Land Trust established the Mad River Rural Resource Commission in 1987 to inventory and promote conservation of the valley's rural resources. As a result, there has been more research and documentation of historic resources in the valley, including the portion in Moretown even though the town is not a member of MRVPD.

The federally recognized Historic District is one result of the Mad River Rural Resource Commission's efforts, as is a survey of historic barns in the valley. The original survey conducted in 2002 identified approximately 40 barns in Moretown built before 1950 that were eligible for listing on the National Register. Unfortunately, the high cost of upkeep and maintenance of large barns has resulted in several falling into disrepair after they were no longer used for agriculture.

Regulations for Resource Protection

Our current zoning regulations refer to historic character, historic resources and archaeological sites, but do not include specific standards to protect these resources. The regulations do have special provisions for the "adaptive re-use" of historic barns, which allow those buildings to be for a variety of non-agricultural purposes. We adopted these provisions in response to the findings of the survey of historic barns.

There are state and federal regulations related to archaeological and historic resources that apply to development activities that require state or federal permits and to projects that receive state or federal funding. The Vermont Division of Historic Preservation reviews state or federally funded or permitted projects to evaluate their potential impact to historic buildings and structures, historic districts, historic landscapes and context,



and known or potential archeological resources. This includes development activities that require an Act 250 permit or a Certificate of Public Good (Section 248).

Incentives and Benefits for Resource Protection

Owners of income-producing properties listed on or eligible for listing on the National Register of Historic Places may be eligible for federal tax credits for historic building restoration. If the town applied for and received designation for Moretown village under the state's Designated Village Center program, owners of income-producing historic properties in the designated area could also receive state tax credits for building improvements. The tax credits are intended to support general rehabilitation, code compliance and exterior improvements that follow historic preservation best practices.



3D-4. RURAL AND SCENIC CHARACTER

Rural and Scenic Character

Moretown is fortunate to retain much of its rural character and it is an aspect of our town that residents highly value, as demonstrated in the responses to the 2013 survey. Survey respondents ranked maintaining rural character as the second highest priority for the town. But what do we mean when we refer to rural character? While each of us may have our own, individual perception of rural character, there are common elements that most of our definitions share:

- **Working Landscape.** Although today we are less dependent upon the land for our livelihood than prior generations, working lands remain fundamental to sustaining our rural character. The productive use of land – for farming, forestry, energy production and resource extraction – over generations has created the rural landscape we value so highly. Most residents want our landscape to remain largely as it is today, but since the settlement of Moretown 250 years ago the landscape has never been static. Looking at the forested slopes of Moretown,

much of our landscape appears to be wilderness shaped solely by natural forces. But in reality, generations of Moretown residents have created the landscape as they worked to make a living off the land. As their activities changed over time, so too did the landscape. This tells us that it is possible to accommodate future change – even if it alters the appearance of the landscape – and still retain rural character as long as we continue to make productive use of the land.

- **Clean, Healthy Environment.** A clean and healthy natural environment – clean air, clean water, a lack of pollution, healthy wildlife populations, etc. – is an essential component of our rural character.
- **Open Space.** A rural place has a relatively low population density and large blocks of open space – both working lands and natural areas. People often use words like privacy, peace, quiet or solitude to describe characteristics of rural living. To some that suggests that spreading homes out and separating neighbors will protect rural character, but rural character can be destroyed by such low-density sprawl. A closer examination of the rural landscape shows that the historic pattern was one of small groups of buildings separated by fields or forests. Large expanses of open space provide opportunities for outdoor recreation and enjoyment of nature that are hallmarks of a rural lifestyle.
- **Respect for Tradition and Sense of Community.** While rural character may be founded on the natural environment, it is enhanced by the built environment and social institutions that have created community for generations of Moretown residents. The relatively small population of a rural community makes it more possible and likely that neighbors will know one another. Rural residents have a strong sense of independence and individualism, but that is frequently accompanied by strong community ties and a sense of shared responsibility. Both self-reliance and neighborliness are elements of our rural character.

Specifically, the following landscape features define Moretown and contribute to our community's rural character:

- Open farmland and meadows, particularly when located in the foreground of an expansive view.
- Forested knolls, steep mountainsides and ridgelines, which provide the unbroken background for most distant views.
- Riparian areas along the Winooski River, Mad River and their tributaries.
- Scenic and gravel roads, especially those designed to discourage high-speed travel and to be pleasant places for walking, bicycling and other recreational activities.
- Historic settlement patterns, including traditional settlements and small clusters of buildings arranged around a common focal point.
- Individual buildings that serve as a visual and cultural focal point such as large barns, silos, churches and civic buildings.
- Public land, protected natural areas, conserved working lands and recreational areas

Two areas of critical importance to the town's rural character and scenic landscape – the Route 100B/Mad River corridor and the high elevation areas of the Northfield Range and Cobb Hill – are discussed in greater detail below.

Route 100B/Mad River Corridor

The drive along the length of Route 100B is among the most beautiful in Vermont, which is why the corridor received federal designation as a Scenic Byway in 2007. The meandering river, broad floodplains, rolling hills and deep gorges combine to create a stunning landscape. The areas of Moretown visible from Route 100B primarily include the valley and its enclosing hillsides. The peak of Bald Mountain and the Northfield Range ridgeline are visible in the distance from many vantage points along the



road. The Mad River Valley Corridor Management Plan includes a detailed assessment of the highway's scenic qualities and features and finds a consistent level of scenic quality along Route 100 due to:

- The presence of the Mad River with many engaging visual, physical and recreational assets.
- The intact settlement pattern of historic homes, barns, farmsteads and villages (at either end) that is aesthetically pleasing and fast disappearing elsewhere in the state and nation.
- The overall, intact and quintessential Vermont landscape quality that is present throughout the corridor.

The Management Plan also notes that a substantial portion of the corridor is highly sensitive to visual impact and change due to its open landscape qualities and topography. It states that highly visible, out-of-character, context-insensitive development could have a significant impact on the corridor's scenic character and aesthetic qualities.

Prior to the work completed for the Scenic Byway designation in 1999-2000, the Planning Commission analyzed the Route 100B corridor and concluded that most of its defining features are located within a broad corridor defined by a distance of 300 feet east and west of the 100-year floodplain.

At that time, the Planning Commission considered regulatory options for protecting the historic and scenic character of the landscape, including requiring DRB review for all development within the corridor. Ultimately, the Planning Commission decided not to pursue any revisions to the zoning within the corridor. Regulation of the flood hazard area does provide some level of protection by limiting development opportunities in close proximity to the river. However, development on the hillsides (far above the protected flood areas) has considerable potential to affect the scenic character of the corridor.

High Elevation Areas

The Planning Commission also analyzed Moretown's high elevation areas in 1999-2000 and considered:

- The location of steep slopes.
- The location of soils classified as being poorly suited for septic systems.
- The location of existing homes.
- The location of maintained town roads and private driveways.
- The location of large tracts of productive forest land.
- The location, configuration and size of existing parcels.
- Visibility from distant vantage points.

Based upon these features, the Planning Commission concluded that the land above an elevation of 1,400 feet in the Northfield Range and 1,100 feet on Cobb Hill was largely undeveloped,

remained in large parcels and was managed timberland. Above those elevations, town roads and services were also very limited. The land generally had steep slopes and poor soils for septic systems. Above those elevations, the land was highly visible (the top of several intermittent knolls west of the Northfield Range are at the 1,400-foot elevation). As with the Route 100B corridor, the Planning Commission considered regulatory options for protecting the high elevation areas in 1999-2000 and ultimately decided not to pursue any revisions to the zoning. These high elevation areas are largely located within the Preserve District (see discussion in Section 3G-8).

The Northfield Range ridgeline is a highly visible feature of our landscape and can be seen from many areas of town. The ridgeline is particularly visible from the slopes west of the Mad River. Cobb Hill is visible primarily from the western slopes of the Northfield Range.

Scenic Roads

Our perception of a place is largely created by what we can see as we are traveling by road. The perception of Moretown as a rural, scenic community that is enjoyed by many residents and visitors is based primarily on the "view from the road." Because of this, we are particularly concerned about how development will change the landscape as viewed from the road. Moretown has officially designated certain town roads as "scenic roads." Additionally, the federal Highway Administration designated Route 100B as a Scenic Byway in 2007.

In many instances, the roads themselves contribute to the rural and scenic quality of our landscape. Features such as tree canopies, stone walls and narrow, unpaved travel lanes are elements of our town's rural character. Many of these same features discourage high-speed travel, which makes it possible for people to use rural roads for recreation with relative safety and for people to see and enjoy the surrounding landscape.



3D-5. PUBLIC LANDS AND RECREATION RESOURCES

Public Lands

As noted above, Moretown has relatively little public land unlike many neighboring towns. Together the town, state and school district own approximately 350 acres. The two most significant public landholdings include the 175-acre Town Forest (located behind Moretown Elementary School) and a 90-acre portion of the Harwood School Forest. The management plans for each of those public forests are incorporated into this plan by reference.

The recreation fields and Town Forest behind the Moretown Elementary School offer a variety of activities including community events, picnics, team and individual sports, and trails, and are our primary recreation resource. The facilities support a number of recreational activities, including baseball, basketball, soccer, tennis, hiking, skiing, and skateboarding. Moretown maintains a Recreation Fund, which is primarily used to maintain the town/school property, although the town has not allocated any tax dollars into it in recent years. Money generated through donations and private fundraising supports our recreation programs and facilities.

High school athletic teams, including cross-country and Nordic skiing teams, use the Harwood School Forest trails for training and competitive meets. There is a disc golf course through portions of the forest. Forest trails are open to the public for hiking, walking, running, mountain biking, skiing, snowshoeing, horseback riding and other passive recreational activities. A major VAST trail also travels through the property.

Rivers

The Mad River and, to a lesser degree, the Winooski River and smaller streams offer multiple recreation opportunities in Moretown including fishing, canoeing, kayaking and swimming. The state has recognized the Mad River as recreational resource of statewide significance and it has been described as one of the state's best swimming resources. In the spring, the Mad River's white water makes it a popular destination for boaters. There is formal public access to the Mad River at the town-maintained Ward Memorial Access Area and at the hydro station. Several segments of Route 100B are located immediately adjacent to the river, which creates informal opportunities to access the river directly from the public right-of-way.

There are many swimming holes on the Mad River, but a number of factors are reducing the opportunities for swimming in the river. There are two sites used for swimming – the swimming hole at the Ward Access and the Moretown Gorge swimming hole at the south end of the village. The remaining swimming holes are located on private land, and in recent decades, private landowners have become less willing to allow public access to the river from their property, particularly for swimming. In addition, elevated E.coli levels in the Mad River and sedimentation sometimes reduce opportunities for swimming in the river (see Section 3A-5 for further discussion of water quality issues).

Trails

Moretown has approximately 14 miles of Class 4 town highways and 15 miles of legal trails. Together these roads, trails and rights-of-way comprise more than 175 acres of land owned or controlled by the town and available for public recreational use. A number of these roads and trails are particularly valuable recreation resources because they are interconnected loops or connect between maintained town roads.

Many of the town's Class 4 roads and legal trails are popular with motorized recreationists. In recent years, a number of these roads or trails have been seriously damaged by heavy use when the surface was wet and muddy. This has made segments of these roads or trails difficult or impossible for bicyclists or other non-motorized recreationists to travel.

There are public nature and recreational trails on both the Town Forest, behind the Moretown Elementary School, and the Harwood School Forest. The forest management plans recommend building a trail between the two properties, which would connect the schools and the high school to Moretown Village. They also recommend extending trails from the Town Forest to South Hill Road, creating a virtually contiguous block of protected forest available for public recreational use.

Mad River Path. The Mad River Path Association (MRPA) has been working since 1987 to build a continuous path from Warren to Moretown along the Mad River and connecting community centers and schools. To date, six segments of the path exist – although none are located in Moretown. Those path sections are available for walking, running, bicycling, cross-country skiing and snowshoeing. MRPA seeks landowners who are willing to donate, or in some cases sell, an easement across their property for the path.¹

¹ Moretown landowners that are interested in hosting the path on their land can contact MRPA at 496-7284 or path@madriverrunners.com. More information about the Mad River Path is available online at www.madriverrunners.com.

Snowmobile Trails. A Vermont Association of Snow Travelers (VAST) snowmobile trail passes through the southwestern corner of Moretown generally paralleling Route 100 along the Moretown-Duxbury line. VAST is a statewide association of local snowmobiling clubs, which maintain a network of winter trails located primarily on private land for use by their members or by riders who have purchased a pass. In the Mad River Valley, the Mad River Ridge Runners Snowmobile Club is responsible for trails in Moretown, Duxbury, Fayston and Waitsfield.²

Cross Vermont Trail. The Cross Vermont Trail is a multi-use, four-season path that travels 90 miles across Vermont from the Connecticut River to Lake Champlain through the Wells River and Winooski River valleys. Currently, the Cross Vermont Trail follows the Winooski River through Moretown on River Road, Route 100B, Lovers Lane and Route 2. There is a parking area and river access for trail users off Route 2 near the River Road intersection, and a riverside park and picnic area at the hydro station. The trail is a mix of on-road segments (such as in Moretown), community paths (like the Central Vermont Bike Path in Montpelier), and a long rail-trail segment (the old Montpelier-Wells River Railroad). Vermont designated the Cross Vermont Trail as part of the Vermont Trails System in 1996 and the federal government designated it as a National Recreation Trail in 2003.³

Public Access and Landowner Liability

Most of the outdoor recreation resources in Moretown are located on private land. Allowing public access to private land for recreation has been a long-standing tradition in Vermont. State

² Moretown landowners that are interesting in granting snowmobile trail access on their land can contact the Mad River Ridge Runners Trail Master, Tom Clark, at 583-4040. More information about the VAST trail system in the region is available online at www.madriverridgerunners.com and www.vtvast.org.

³ More information about the Cross Vermont Trail is available online at www.crossvermont.org.

law allows people to hunt, fish, and walk on private property without permission unless the land is legally posted (motorized uses like snowmobiling and ATV-riding and trapping do require landowner permission). Most of the hunting, fishing, trail use, swimming and other recreation activities we enjoy in Moretown would not be possible without the cooperation of private landowners.

Recognizing that concern about legal liability was causing some landowners to post their land and discontinue public access, Vermont updated the state law that protects landowners who let people recreate on their property free of charge in 1998. The law encourages landowners to open their land for recreational use and provides landowners with substantial legal protection from personal injury or property damage claims.

Vermont's Landowner Liability Law (12 VSA §§ 5791-5795) states that *"An owner shall not be liable for property damage or personal injury sustained by a person who, without consideration, enters or goes upon the owner's land for a recreational use unless the damage or injury is the result of the willful or wanton misconduct of the owner."* It covers:

- Open and undeveloped land.
- Waterways and water bodies.
- Structures such as fences, bridges and walkways.

Under the law, the landowner does not have to ensure that the land is completely safe for recreational use, but the landowner may not intentionally create a risk to recreational users. The landowner is not required to inspect the land to discover dangerous conditions, but if the owner knows of an extremely dangerous hazard that is not obvious such as an unmarked well on the property, then the owner should take some action to warn recreational users.



Tourism and Economic Development

As a designated Scenic Byway, Route 100B attracts visitors who want to enjoy our scenery and recreation opportunities, including many bicyclists and canoeing/kayaking enthusiasts. While the economy of the Mad River Valley is built around tourism, Moretown has not fully capitalized on the opportunities created by our scenic and recreation resources.

3D-6. RENEWABLE ENERGY RESOURCES

Historically, town government played a significant role in providing power in Moretown, and as mentioned previously most energy sources were local. The town once owned the Moretown/Middlesex hydroelectric plant, which is now owned by GMP. Moretown also supported the initial development of the hydroelectric facility on the Mad River through a tax abatement.

Today, our energy needs are largely met by imported resources, but there are opportunities to produce more energy locally from renewable sources. Energy from renewable sources – combined with energy efficiency and conservation – could supply a much

greater percentage of our energy needs while reducing climate-changing greenhouse gas emissions and benefitting the local economy. Vermont has an ambitious statewide goal to produce 90% of our energy from renewable resources by 2050.

A majority of respondents to the 2013 community survey supported generating more electricity in Vermont from renewable sources. A majority also had a positive opinion of small- and medium-scale renewable energy projects, but a large number of respondents were undecided about commercial-scale projects.

Here in Moretown, we are already producing energy from renewable sources – solar, wind, hydropower, biomass, biogas, and geothermal – and there are many opportunities to expand use of renewable energy and reduce dependence on fossil fuels where appropriate and at the same time that we protect our natural resources and rural character. The electric transmission infrastructure that already exists in Moretown (as a result of our history of hydropower) makes the town a more attractive location for “commercial-scale” renewable electricity projects. “Commercial-scale” is not a term defined in statute or local bylaws.

Solar

Advances in solar technology have made it easier, and increasingly affordable, to use solar energy to heat water and homes, and to generate electricity. Solar energy technologies are continuing to improve, prices are falling, and the payback time is decreasing.¹ Solar energy has relatively minor environmental impacts (primarily associated with production and shipping of the technology and equipment, rather than operation).

¹ Payback time includes the time required for the system to produce more energy than was required to manufacture and ship it, and to save an amount of money equal to its purchase and installation costs.

Solar space heating can be either passive or active. Passive solar systems take advantage of building orientation and design to capture, store, and circulate heat derived from solar energy. Constructing a passive solar building does not have to cost significantly more than standard construction and the return on investment can be extremely high given the energy savings on heat. Active solar heating systems use special collectors to absorb sunlight and distribute the resulting energy either as hot air or water heat. Solar water heating systems are widely used in Vermont and can supply nearly all the hot water needed by the average household even during the winter months.

Solar photovoltaic (PV) panels, which convert solar energy to electricity, are becoming an increasingly viable and cost-effective alternative for producing electric power. Solar tracker PV panels, which are ground-mounted and rotate to follow the sun, as well as fixed ground- and roof-mounted arrays, are becoming a common sight in Vermont. As of the writing of this plan, there were 18 net-metered solar PV systems in Moretown, which included both roof-mounted and tracker systems.

Vermont’s Sustainably Priced Energy Development (SPEED) Program is promoting the development of in-state renewable energy sources with a goal of meeting 20% of total statewide electric retail sales with new renewable energy by 2017. The program has spurred development of renewable energy around Vermont in recent years by offering a long-term, fixed-price contract for their power. The majority of these projects have been 1 to 2 MW commercial solar arrays. These arrays typically occupy 10 to 20 acres and produce an amount of electricity equivalent to what is used by 200 to 400 homes each year.

48% of respondents to the 2013 community survey supported commercial-scale solar in Moretown, as compared to 18% who were opposed. A number of respondents mention either the landfill site or the property behind the school as potential

locations for solar installations. Moretown Landfill officials have expressed interest in the idea of creating an “energy park” on their property, but to date the company has not proposed any specific plans for installing a solar array at the landfill.

Wind

Vermont’s best wind resources generally occur at high elevations and on ridgelines. There are areas in Moretown where commercial-scale wind generation might be feasible, particularly given our existing transmission infrastructure.

As noted in Section 3A-3, Moretown’s highest elevations are below 2,500 feet and thus our wind generation capacity is less than that in many other parts of the state. The best wind resources in Moretown are along the Northfield ridgeline with the greatest potential closest to Bald Mountain. The higher elevations around Mount Cobb and Chase Mountain have lesser wind resources. Wind developers have looked at Moretown in the past, and may do so again, given Vermont’s renewable energy goals and programs.

However, commercial-scale wind development in Vermont is a controversial and often times divisive issue, particularly in towns with greater wind potential and the surrounding communities, given the size of the turbines used for such projects (more than 400 feet high) and the location of such projects along ridgelines, which are dominant features in the landscape.

Only 24% of respondents to the 2013 community survey supported building large-scale wind facilities in Moretown. However, there was not a majority opposed either. 35% of respondents were undecided, a clear signal that this is an unresolved issue for many residents. Interestingly, in response to a later survey question that asked whether building wind

turbines on ridgelines should be among our goals for the town’s future, 36% of respondents replied yes and 37% replied no.

As discussed above, there is considerable support for local, renewable power among Moretown residents. Yet at the same time, we value the scenic beauty of our largely undeveloped ridgelines and are concerned about the ecological impact of development at high elevations. Some residents clearly believe utility-scale wind would be incompatible with our rural character and would irreparably harm our natural environment. Others do not find wind power infrastructure aesthetically objectionable and point to the damage that will be done to the environment if we do not generate more renewable power.

Hydropower

As our history demonstrates, Moretown has considerable hydropower resources. Two hydroelectric facilities continue to operate in Moretown at the Moretown #8 dam on the Mad River and the Middlesex #2 dam on the Winooski River with a generating capacity of 1.2 MW and 3.2 MW, respectively.

Ampersand Hydro, an investment group focused on renewable power generation, which currently owns six hydroelectric facilities in the Northeast and Canada, purchased the Moretown #8 plant in 2013. The company refurbished the run-of-the-river generating station after it sustained damage during Tropical Storm Irene. Hydropower has been generated from this location since 1910, but the current station went online in 1989 and is permitted to operate through 2022. Its average annual output is approximately 2.5 million kWh, an amount of electricity equivalent to the power used by 400 homes.

GMP owns and operates the Middlesex #2 generating station, which opened in 1928 after having to be reconstructed following the 1927 flood. As of the writing of this plan, it is being



reconstructed again. Its average annual output is approximately 17.3 million kWh, an amount of electricity equivalent to the power used by 2,700 homes.

Hydropower has long been considered a clean source of renewable energy. As we have gained a greater understanding of the environmental impacts of dams – including the effects of changing water levels on river flow, temperature and aeration, and fisheries and adjoining riparian and shoreland areas – that blanket assumption has been questioned. Given current state and federal regulations, it is unlikely that any new, utility-scale hydropower plants will be developed in Vermont.

There has been interest in recent years in more efficient use of existing dam sites and in micro-hydro systems that do not have the associated environmental impacts of large-scale projects. As technology advances, there may be further opportunities for

using our hydro resources – particularly micro-scale projects that would provide power for an individual or small group of users.

Biomass

Biomass is organic material that is burned to generate energy such as wood or biofuels like ethanol or biodiesel. Heating with wood is one of the oldest forms of energy. Over the past 25 years, the use of wood for energy has expanded beyond traditional residential woodstoves to large-scale power generation, combined heat and power for commercial, industrial and institutional buildings, and wood pellets for home heating. Responsible harvesting, processing and selling firewood or wood pellets within Vermont benefits the state's economy. It redirects our energy spending from sending dollars out of the state to recirculating them within the state.

Vermont's forest resource is abundant. More than 78% of the state's land area is forested, and the current rate of annual forest growth exceeds the annual rate of harvest by two to one. The Renewable Energy Atlas of Vermont estimates that there are nearly 17,000 acres (66% of town) in Moretown that are currently forested and suitable for producing woody biomass. Clearly, Moretown has an abundant supply of firewood for home heating and many residents are already harvesting wood from their own property to heat, or partially heat, their homes.

The number of homes heated with wood has been increasing in recent years in response to the climbing cost of oil and propane, the economic downturn and the movement to use local energy. One in five households in Moretown used wood as the primary heating source for their homes in 2010 and many more use wood as a supplemental heat source. In recent years, wood pellet stoves for home heating have become increasingly popular due to the efficiency of the units, the ease of operation, and the cost of wood pellets (which have been roughly half the price of fuel

oil or propane). The Vermont Sustainable Heating Initiative, in partnership with the state's Low-Income Home Energy Assistance Program, operates a program that provides wood pellet stoves to qualified low-income households at reduced or no cost.

Biogas

Methane is a natural by-product of the decomposition of carbon-based waste. Methane is a greenhouse gas and a significant contributor to climate change. Landfills are required to capture their landfill-generated methane (landfill gas) so that it is not released into the atmosphere. For many years, the Moretown Landfill simply burned off its landfill gas. In 2009, a 3.2 MW landfill gas electrical generation facility began operation. The facility, which is owned and operated by Pennsylvania Power and Light, generates approximately 25.2 million kWh of electricity each year, enough to power approximately 4,000 homes. GMP is currently purchasing the electricity generated at Moretown Landfill. Even if the landfill stops accepting new waste, it will continue to generate enough methane to produce electricity for at least another 12 years.



Geothermal

Geothermal or ground source heat pump systems extract natural low-temperature thermal energy from the ground during colder months for heating, and transfer thermal energy from the building to the ground in warm months for cooling. The system operates much like a refrigerator, utilizing a heat pump, heat exchanger and refrigerant. While geothermal systems do require electricity to operate the pumps, they generally deliver 3 to 5 times more heat than the electrical energy they consume. Installation of a geothermal system is usually most cost-effective for new construction that will include drilling a well.

Net Metering

Net metering has been available in Vermont since 1998 and has been a strong incentive for more widespread adoption of small-scale renewable energy systems. Net metering allows electric customers, as individuals or in groups, to interconnect small-scale renewable energy systems and combined heat and power systems to the grid and offset their power usage with the power produced by their system and to receive credits to their account(s) for any excess power produced at a rate higher than current residential rates. As of the writing of this plan, GMP, NED and WEC are accepting net-metered projects.

Several revisions to the net metering law over the last several years, including expanding production limits, simplifying permitting, and increasing peak load capacity, have simplified the process and increased the number of participants. Net metered renewable systems have multiple benefits. Besides producing green power and providing monthly electric bill credits, the systems reduce the capacity pressure on local transmission systems during peak demand times.



CHAPTER 3E. COMMUNITY INFRASTRUCTURE

Infrastructure is essential to our way of life, and maintaining and improving infrastructure in Moretown is an investment in our community's future.

3E-1. TRANSPORTATION

Route 100B

Vermont Route 100B is the primary transportation corridor through Moretown. This state highway travels approximately 8 miles from the intersection with Route 100 south of Moretown village to the intersection with U.S. Route 2 in Middlesex. Route 100B largely parallels the Mad River, creating a scenic corridor designated by the Federal Highway Administration in 2007 as a Scenic Byway. That close proximity to the river has also resulted in the highway sustaining damage during major floods, most recently during Tropical Storm Irene.

Route 100B is a two-lane highway with 11-foot travel lanes and paved shoulders on each side. The width of the shoulders vary

along the corridor, but are generally at least 4 feet except in some limited sections that are constrained by narrow bridges, topography or proximity to the river. There are several pull-off areas along the highway that provide views of and access to the Mad River. The wide paved shoulders, scenic views and byway designation all contribute to making Route 100B a popular driving and bicycle route for both tourists and area residents.

The Route 100B corridor includes sidewalks in Moretown Village, which are in poor condition and incomplete. The first phase of work to reconstruct and extend sidewalks throughout the village is underway following the plans developed in 2010, which call for sidewalks along Route 100B from Dickerson Road to Hurdle Road. In 2013, Moretown received a \$375,000 grant from the Vermont Agency of Transportation Bicycle and Pedestrian Program to construct sidewalks on the east side of the highway from Moretown Mountain Road to Hurdle Road.

The Vermont Agency of Transportation (VTrans) classifies Route 100B as a major collector, which is a road that connects local roads with arterial highways. In 2010, VTrans reported that the average traffic on Route 100B from Moretown Village south was 3,400 vehicles per day and north of the village it was 2,800 vehicles per day.

VTrans estimates that by 2020, more than 4,700 vehicles will travel on Route 100B between Route 100 and Moretown Village each day and nearly 4,300 vehicles will travel from Moretown Village north to Middlesex. That would represent a significant increase in traffic from current levels, particularly from Moretown Village north. Between 1990 and 2010, traffic on Route 100B from Moretown Village south to Route 100 has increased 12% and has actually declined from the village north. Traffic on Route 100B declined in 2008, suggesting that the trend relates to the economic downturn. As of 2012, traffic has not returned to pre-2008 levels.

VTrans rates the current level of service (LOS) on Route 100B as a C and the road is expected to maintain a LOS C rating even with the anticipated increases in traffic by 2020. Level of service is a measurement of how a roadway functions using letter grades A through F. LOS A indicates free flowing traffic and LOS F indicates severe congestion. LOS C is the target for most rural highways with a stable flow of traffic that is usually able to move at the posted speed and the roadway safely operating below but efficiently close to capacity.

VTrans had not designated any high crash locations on Route 100B as of 2013. However, there are two intersections with safety concerns – the intersection of Route 100 and Route 100B, and the intersection of Moretown Mountain Road and Route 100B – as described below:

- At the Route 100 and Route 100B intersection, the sight distance for southbound motorists turning left from Route 100 onto Route 100B is limited. VTrans has recommended widening the shoulders and repaving at the intersection, but neither of those projects would improve visibility.
- Moretown Mountain Road intersects Route 100B with a steep grade and at a difficult angle. The intersection occurs at a curve on Route 100B resulting in extremely poor sight distances for motorists. The intersection is also dangerous for pedestrians and bicyclists, particularly children walking or biking to school. This segment of Route 100B was not included in the first phase of the sidewalk improvement project currently underway because of safety concerns associated with this intersection. This intersection poses significant engineering challenges. A road safety audit was completed for the intersection in 2009, which included various recommendations for short-term and long-term actions to improve safety. Some of the simple recommendations related to signage, pavement markings and snow storage practices have been completed, but the recommended physical changes to Moretown Mountain Road and the property on the south side of the intersection have not been implemented to date.

Route 2

U.S. Route 2 travels more than 3 miles through North Moretown from the Duxbury to Middlesex town lines. Route 2 follows the Winooski River and like Route 100B is located within or adjacent to the flood hazard area. The road dates back to 1805 when it was first “improved” to connect Burlington and Montpelier. Route 2 is part of the U.S. Highway System and is one of the primary roadways traveling east-west across Vermont.

Route 2 is a two-lane highway with paved shoulders on each side. The travel lanes are 11 feet wide. The paved shoulders are 9 feet wide west of Route 100 and 2 feet wide east of Route 100. There are sidewalks on the south side of Route 2 from the Route 100 intersection west into Waterbury.

The Vermont Agency of Transportation (VTrans) also classifies Route 2 through Moretown as a major collector. This portion of Route 2 serves as an alternate route to Interstate 89, primarily for local traffic, and serves to connect traffic from Route 100, Route 100B and other local roads to the interstate. VTrans estimated that the average traffic on Route 2 from Route 100 to the Duxbury town line was 7,800 vehicles per day and from Route 100 to the Middlesex town line was 3,700 vehicles per day in 2012.

VTrans estimates that by 2020, nearly 12,900 vehicles per day will travel on Route 2 west from the Route 100 intersection and nearly 4,900 vehicles per day will travel on Route 2 east of the intersection. That would be a substantial increase in traffic from current levels, particularly on the segment west of Route 100. Between 1990 and 2010, traffic on that segment of Route 2 has actually declined and it began decreasing in 2002 before the recession. VTrans estimates of traffic in 2012 suggest that the decline may have reversed and that traffic levels may again be increasing.

According to VTrans, Route 2 east of the Route 100 intersection has a current level of service (LOS) of C and is expected to maintain that rating even with the anticipated increases in traffic by 2020. The segment west of Route 100 had an LOS D rating in 2000, but that was upgraded to LOS C in 2006. If traffic increases to the projected level by 2020, the rating would likely fall back to LOS D.

The intersection of Route 100 and Route 2 in North Moretown is another area of concern. There is no traffic signal at the intersection and during periods of heavy traffic there are significant delays, particularly for southbound Route 100 motorists. The intersection has a LOS F rating for traffic turning left from Route 100 onto Route 2. The intersection lacks bicycle and pedestrian facilities, which is of particular concern given the proximity to the Crossett Brook School. The alignment of Commercial Drive and Juniper's Fare restaurant creates further conflicts and safety issues. The most recent assessment of the intersection, the 2012 North Moretown Transportation Study, recommends the following basic improvements:

- Enhancing the intersection as a gateway to create a sense of place, calm traffic, and improve safety and conditions for bicycles and pedestrians.
- Constructing the proposed Crossett Brook Middle School path between the school and the intersection.
- Realigning Commercial Drive so that it is directly across from Route 100 to reduce vehicle conflicts.
- Adding crosswalks on Route 100 and the east side of Route 2.
- Formalizing the right-turn lane on Route 100.
- Adding a sidewalk on the north side of Route 2 from Juniper's Fare, which would eventually extend over the bridge.
- Adding a sidewalk on Route 100 to connect the intersection to Cobb Hill Road.



- Planting trees and other landscaping to enhance the area, make it more pedestrian-friendly, and calm traffic.
- Closing the northern Juniper's Fare access to reduce vehicle turning movements and improve safety.

Previously, VTrans had proposed installing a four-way stop at the intersection. As a result of the 2012 study, that alternative was rejected. The study presents three alternatives – a traffic signal, signalization plus turn lanes, and a roundabout. These options are largely the same as those proposed in a 2002 transportation study completed for the Crossett Brook School area. With the decline in traffic levels that began in 2002, the need for improvements was forestalled. With traffic levels are rising again and further development occurring in the area, congestion and delay at the intersection is again increasing, along with the need for improvements.

Route 100

Two segments of Route 100 pass through Moretown. The southern segment travels slightly more than one mile from the Waitsfield town line to the Duxbury town line. The northern

segment runs less than 400 feet from the Duxbury town line to Route 2. Route 100 is a two-lane state highway. The southern segment has 11-foot travel lanes with narrow shoulders. The northern segment has 11-foot travel lanes and shoulders that widen towards the intersection with Route 2.

VTrans classifies Route 100 in Moretown as a minor arterial, which links municipalities in the region. VTrans estimated that the average traffic on Route 100 from the Waitsfield town line to the Route 100B intersection was 6,200 vehicles per day and from Route 100B to the Duxbury town line was 4,000 vehicles per day in 2012. VTrans estimated that the average traffic on Route 100 near the Route 2 intersection was 5,900 vehicles per day in 2012.

VTrans estimates that by 2020, nearly 10,500 vehicles will travel on Route 100 between the Waitsfield and Duxbury town lines and 5,300 vehicles will travel on Route 100 from the Duxbury town line to Route 2. According to VTrans, the southern segment of Route 100 has a level of service (LOS) of C, but is expected to drop to LOS of D if traffic increases to the projected level by 2020. The northern segment of Route 100 also has a LOS of C and is expected to maintain that rating even with the anticipated increases in traffic by 2020.

Town Roads

Moretown owns nearly 50 miles of town roads and maintains more than 35 miles of town roads for year-round vehicular travel. These town roads are gravel, except for short paved sections on Moretown Mountain Road and River Road. Our Highway Department, with the support of the Central Vermont Regional Planning Commission, maintains a detailed inventory of town roads and their condition using a Road Surface Management System (RSMS). The department uses this system to more effectively manage town roads and prioritize improvements.

Approximately 11 miles of our roads are Class 2 town highways (Moretown Mountain Road, Pony Farm Road and River Road). These roads are local collectors that provide access to adjoining development and connections to neighboring communities. They are the most heavily traveled town roads. Another 25 miles are Class 3 town highways. These roads primarily provide access to adjoining development, and are not typically used by through traffic. The remaining 14 miles are Class 4 town highways or legal trails, which are not maintained for year-round vehicular travel.

While the town performs only limited maintenance on Class 4 town roads and legal trails and does not plow them in the winter, these roadways provide access to more than 40 homes. Landowners take responsibility for keeping these roads maintained for vehicular traffic year-round. Of the homes accessed via Class 4 town roads or legal trails, nearly one-third have been built since 2000. Our zoning regulations currently allow development on Class 4 town roads or legal trails, but it is discouraged and the Development Review Board must approve the access. Continued development on Class 4 town roads or legal trails raises a number of issues including:

- Whether Class 4 town roads or legal trails will be able to provide adequate access for emergency and service vehicles.
- Whether allowing development on Class 4 town roads or legal trails facilitates growth in remote areas of town, which is not consistent with the town's land use goals.
- Whether the town should repair Class 4 town roads or legal trails following storm damage.
- Whether Class 4 town roads or legal trails will need to be upgraded to Class 3 town road standards and maintained as such if more residents start to rely on them to access their property.
- Who would be responsible for the cost of upgrading a Class 4 town road or legal trail if it became necessary.

To address some of those issues, the Selectboard has adopted a Class 4 Road and Trail Policy. The Class 4 town roads have been classified into two groups, A and B. Group A roadways are in sufficiently good condition that town equipment can be used on them, while the Group B roadways cannot be graded by town equipment. The highway department does not perform summer maintenance on Group B Class 4 town roads or on legal trails, and does not perform winter maintenance on any Class 4 town roads or legal trails.

Traffic data is not regularly collected for town roads as it is for state highways. We do know that in 1975 the average daily traffic on Moretown Mountain Road near the Route 100B intersection was 240 trips. That had increased to around 700 trips by the early 2000s and nearly 1,000 trips by the end of the decade. The amount of traffic at the other end of Moretown Mountain Road near the Berlin town line is significantly lower, less than 400 trips per day. In 1975, the average daily traffic on River Road was 150 trips, while currently it averages between 300 and 400 trips. While limited, this data does suggest that our Class 2 and Class 3 town roads have experienced significant increases in traffic in recent decades.

The cost of maintaining town roads accounts for 50-60% of Moretown's annual budget. In recent years, the town highway operating and capital expenses have been approximately \$550,000 to \$650,000. These costs are largely funded through property taxes. Moretown received approximately \$44,200 in state aid for maintaining our Class 2 roads (\$4,120 per mile) and \$39,150 for the Class 3 roads (\$1,520 per mile) in 2013. There is no state aid for Class 4 roads or legal trails. The operating expenses of the highway department have been increasing above the rate of inflation for more than a decade despite considerable effort to control costs. The increased expense has been driven by vehicle and personnel costs. In fact, when adjusted for inflation, the town spends less on actual highway work and materials now than in the late 1990s.



Private Roads

There were 52 private roads (totaling more than 12 miles altogether) in Moretown in 2013, providing access to approximately 150 homes. For 911 addressing purposes, a shared driveway that serves 3 or more homes is defined as a private road. The average length of a private road in Moretown is $\frac{1}{4}$ mile and none exceed a mile in length. On average, there are 3 homes accessed from each private road and Dean's Mountain Road serves the largest number at 14 homes. Approximately one-third of homes built during the 2000s are accessed via a private road.

The cost of maintaining a private road is entirely the responsibility of a relatively limited number of property owners served by the road. Moretown typically will not "take" new development roads, which would result in the road becoming a Class 3 town highway and would make the town responsible for maintenance. Most private roads are not being built to Class 3 town highway standards (and currently are not required to

be), which would be a minimum requirement before the town would even consider accepting a road. Our current zoning regulations do not include any standards for private roads such as maximum slope or minimum width/clearance. We do require private roads to meet state standards, but those primarily address the intersection of the private road with the public road. Development served by private roads can raise some of the same issues as development on Class 4 roads and legal trails listed above, particularly in relation to providing adequate access and facilitating development in remote areas.

Bridges and Culverts

The Moretown Highway Department has maintained an inventory of bridges and culverts since 2001 with the support of the Central Vermont Regional Planning Commission. The inventory currently includes more than 400 structures – each of which represents a critical interface between the natural and built environment. Failure of bridges and culverts is often a root cause of damage to roads and adjacent property during floods. The Selectboard adopted new road and culvert standards in 2012 following Tropical Storm Irene. Bridges and culverts that have been repeatedly flooded or eroded have been identified and the Highway Department is working to upsize culverts as necessary. The Selectboard has established a Bridge and Culvert Fund with the intent of allocating at least \$10,000 annually to provide a stable source of funding for this effort.

Most of the structures identified in the bridge and culvert inventory are driveway culverts. The town’s policy has made property owners responsible for maintaining and replacing any driveway culverts installed in the town right-of-way.

In addition to the town-owned bridges, there are six state-owned bridges in Moretown. VTrans replaced the historic truss bridge that carried Route 2 across the Winooski River

between Moretown and Middlesex in 2009. VTrans has identified their two Route 100B bridges south of Moretown village as functionally deficient, primarily because the bridges are narrow. There are also three state-owned bridges on Route 100B north of the village, which are not considered to be structurally or functionally deficient.

Curb Cuts and Access Management

Roads serve two principal functions – to carry through traffic and to provide access to adjacent property. These two functions can come into conflict, but by managing access to public roads conflicts can be minimized. Most accidents occur at points of access or intersections where motorists are entering or exiting the roadway. The frequency and location of curb cuts directly affects the efficiency and safety of the road. The location and design of curb cuts can also affect road drainage and maintenance. As a result, both the town and the state require property owners to obtain an access permit before building a curb cut onto a public road.

VTrans recommends that municipalities implement appropriate access management techniques such as:

- Enforcing minimum sight distance standards at driveways and intersections based on the posted speed of the road. The faster traffic is moving on the road, the greater the sight distance needs to be to allow motorists to safely enter and exit the roadway.
- Minimizing the number of curb cuts along a road to reduce the potential number of conflict points. This can be accomplished by limiting the number of curb cuts allowed on any single property and requiring shared driveways and parking whenever feasible.
- Requiring development to provide adequate off-street loading and unloading, parking and turnaround space so that motorists,

including service vehicles, do not have to block the roadway or back out onto the roadway.

- Establishing maximum driveway widths and corner turning radii that adequately control the speed, location and angle at which motorists can enter or exit the roadway.
- Requiring development to use site elements such as landscaping, signs and lighting to visually define and enhance access points so that motorists are more aware of locations where vehicles may be entering or exiting the roadway and are better able to identify and safely navigate to their destination.

Our current zoning regulations do incorporate a number of access management elements such as allowing only one access to a property and limiting the width of the access point.

Complete Streets

Complete streets is a relatively new approach to planning, designing, building and maintaining our roadway network to consider the needs of everyone who uses the road – not just motorists, but pedestrians, bicyclists, transit riders, children, elders, people with disabilities, etc. Complete streets are an essential component of a multi-modal transportation system that improves everyone’s safety and creates more options for how we can get from one place to another. In 2011, Vermont adopted a complete streets law (Act 34) that requires the state and municipalities to consider complete streets principles of safety and accommodation of all users into any transportation project involving a paved highway.

Pedestrians and bicyclists in Moretown generally must share the road with vehicles – and for many years those roads have been designed primarily for vehicles. As described above, the existing sidewalk network in Moretown is limited to portions of Moretown village along Route 100B and a small segment along Route 2 in North Moretown. Most roads in

town either have shoulders that are too narrow to safely accommodate pedestrians or bicyclists or no shoulders at all – the only exception being Route 100B, most of which has shoulders suitable for walking and bicycling. Recent and future transportation projects are anticipated to improve these conditions and incorporate complete streets principles. As described above, Moretown has secured funding for the first phase of sidewalk construction in the village. Future improvements to the Route 100 and Route 2 intersection are expected to extend sidewalks and establish pedestrian crossings.

Our zoning regulations do not currently require new subdivisions or development to implement complete streets principles. For example, the regulations could require development projects to install or upgrade sidewalks in those areas of town where transportation studies have recommended sidewalks be provided, or to establish off-road paths.

Truck Traffic

The state highways – Route 100, Route 100B and Route 2 – are corridors for truck traffic carrying goods to and from local and regional destinations. Such freight traffic is essential to support the region’s businesses. These highways also travel through the most developed portions of our community – Moretown village and North Moretown – where the greater noise, dust and hazards created by truck traffic can conflict with local vehicle and pedestrian traffic, adjacent land uses and quality of life. In the aftermath of Tropical Storm Irene, when Route 100B was closed through the village, truck traffic was notably absent and the village was remarkably quiet.

VTrans reported that medium (single-unit) trucks accounted for 7% of traffic on Route 2 in 2012 and that heavy (tractor trailer) trucks accounted for another 1%. North of Moretown village on Route 100B medium trucks also comprised 7% of traffic,

but heavy trucks comprised another 3%. South of the village on Route 100B, 6% of traffic was medium trucks and 1% was heavy trucks.

Public Transit

Public transit services are limited in Moretown, like many other rural Vermont communities. Dispersed, low-density development patterns pose a significant barrier to providing cost-effective, efficient public transit service in most areas of town. Public transit service is available along the state highway corridors.

Green Mountain Transportation Agency (GMTA) provides public transit service in Central Vermont. GMTA merged into the Chittenden County Transportation Authority (CCTA) in 2011. GMTA operates fixed route and commuter buses, and a variety of demand response service, local shuttle service, winter seasonal service, and special individual service. GMTA routes and services most likely to be used by Moretown residents include:

- The Waterbury Commuter provides service on Route 2 between Waterbury and Montpelier. The bus makes one stop between those two communities at the Red Hen Bakery, just over the town line in Middlesex.
- The Montpelier Link Express provides commuter service between Montpelier and Burlington via Interstate 89. It makes limited stops along the route. The closest stop to Moretown is at the Waterbury Park-and-Ride.
- The Snowcap Commuter provides seasonal winter service between Montpelier and the Mad River Valley ski centers. It travels through Moretown on Route 100B and stops at the Moretown General Store.

GMTA and various social service organizations provide individual transportation services for the elderly, people with disabilities, and others with special needs. Given the anticipated increase in older residents during the next 10 to 20 years, as well as rising

transportation costs and changing social norms, demand for alternatives to driving is likely to increase.

Interstate Bus, Rail and Air Travel

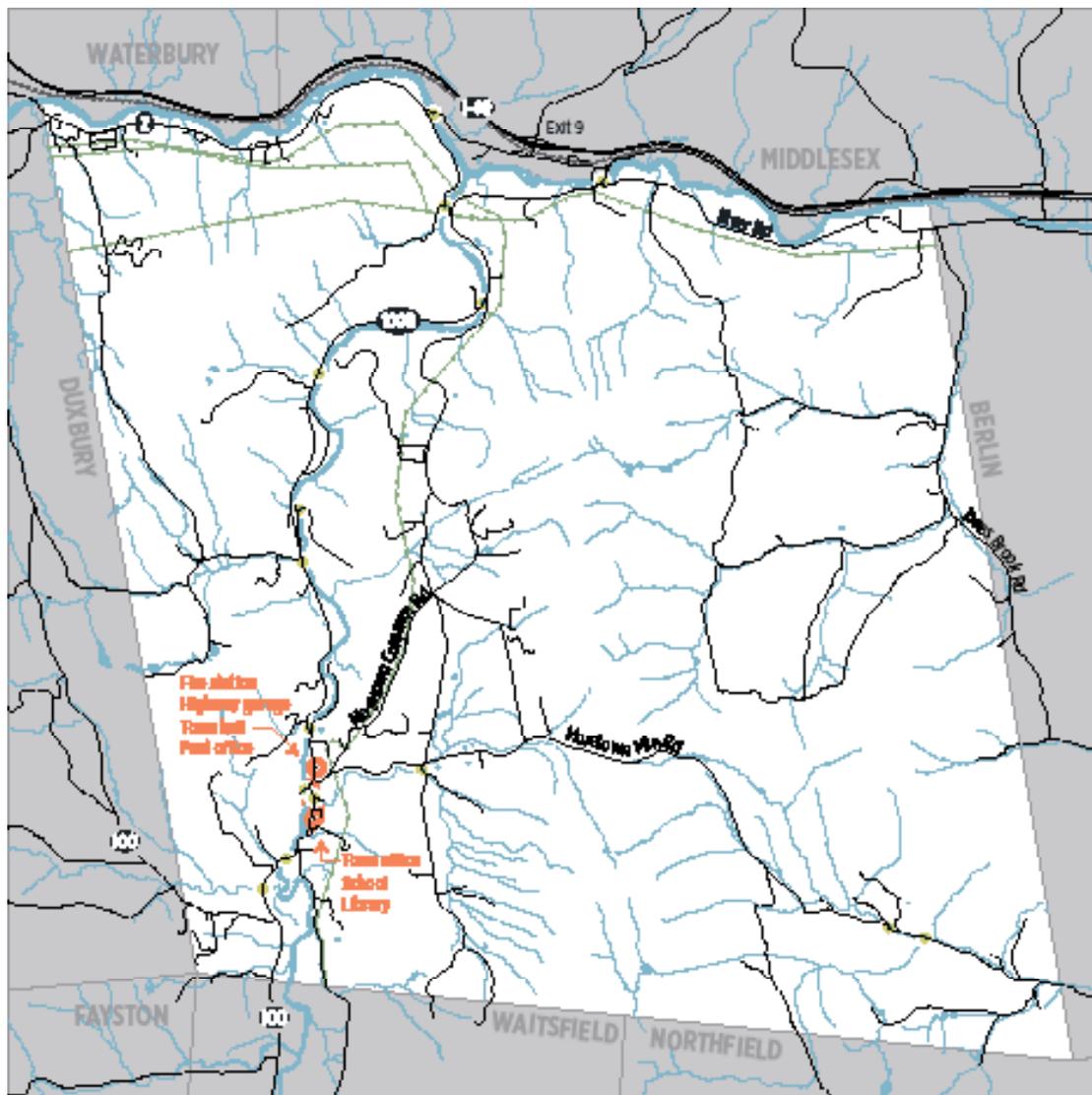
New England Central Railroad now operates the rail line across the Winooski River from Moretown. The line provides passenger service, and is an important freight link between Canada and Southern New England.

Moretown residents have convenient access to passenger rail service via Amtrak and can travel by train to various New England cities, New York City and Washington D.C. from either Waterbury Village or Montpelier. Interstate bus service via Greyhound is available in Montpelier.

The nearest air passenger and freight services are located at the Burlington International Airport in South Burlington, and the state-owned E.F. Knapp Airport in Berlin. Interstate 89 provides relatively easy access to both airports.

Transportation Planning

The Central Vermont Regional Planning Commission has a Transportation Advisory Committee (TAC) composed of representatives from each member municipalities. Participation on the TAC provides Moretown with an important opportunity to provide local input into transportation planning at the state and federal level. The TAC guides the development and implementation of the Central Vermont Regional Transportation Plan. It is also responsible for identifying and prioritizing transportation projects in the region, and providing local input and direction to VTrans, the Federal Highway Administration, and state and federal legislators regarding Central Vermont's transportation needs.



INFRASTRUCTURE AND FACILITIES MORETOWN, VT

- Civic and educational facilities ●
- State highways
- Class 2 town roads
- Class 3 town roads
- Class 4 town roads
- Town legal trails
- Private roads
- Bridges and major culverts ●
- Transmission lines

Source: Civic and educational facilities from Vermont EMT site locations. Roads and Agency of Transportation class from Vermont EMT road centerline data. Transportation structures from the Vermont Bridge and Culvert Inventory. Transmission lines derived from VELCO transmission line data, statewide electric transmission line data and aerial photos.



3E-2. SOLID WASTE

Solid Waste Planning

Since 1987, municipalities have been responsible for solid waste management under Vermont law. In the past, many towns (including Moretown) had a “dump” where residents could dispose of trash. In 1987, Act 78 revolutionized the state’s solid waste management system. Beginning in 1988, landfills were required to have protective liners installed underneath the trash to prevent pollution of the surrounding soil and water. The legislation also required towns to prepare Solid Waste Management Plans to be approved by the Agency of Natural Resources (ANR). As management of solid waste became more regulated and complex, municipalities joined together, forming solid waste districts or alliances, to carry out their solid waste responsibilities.

Moretown has been a member of the Mad River Resource Management Alliance since 1994 when it was created by an inter-local agreement. As of 2015, the Alliance included Duxbury, Fayston, Moretown, Roxbury, Waitsfield, Warren and Waterbury. A board comprised of a representative from each member municipality governs the Alliance, overseeing policy, programs and the District Administrator. Member municipalities pay annual dues to support the work of the Alliance. In prior years, one of the benefits that Moretown Landfill, Inc. provided to the town was a reimbursement of our Alliance dues (approximately \$3,300 in 2012).

The Alliance maintains a current Solid Waste Implementation Plan (SWIP) on behalf of its members, which is incorporated into this plan by reference. It regularly holds events to collect household hazardous waste, tires, appliances, textiles, and sells compost bins. It educates residents about solid waste management through its website, newsletter and events.

Solid Waste Services

The increasing complexity of solid waste management has also led to the private sector taking over the collection and disposal of solid waste. Moretown, like most Vermont towns, does not provide trash pick-up and does not own or operate any solid waste management facilities. Similarly, the Mad River Resource Management Alliance does not directly collect, transport, process or dispose of solid waste. Moretown residents contract with a private hauler to collect their trash and recyclables, or personally drop off their household waste at a collection point.

How we dispose of our waste is changing again as a result of the state’s universal recycling law (Act 148), which was adopted in 2012 and is being phased in through 2020. In 2015, disposal of various recyclable materials such as aluminum, glass, plastic, cardboard and paper in landfills will be banned. By 2016, leaf and yard debris and clean wood wastes will have to be diverted from landfills. Beginning in 2014, a food scrap diversion program is being implemented incrementally so that by 2020 all food scraps, including those from households, will be diverted from landfills.

Solid Waste Facilities

Moretown is the host community for a closed regional landfill that is located on a 200-acre site off Route 2 in North Moretown. Prior to 1994, there was an unlined landfill on the property that had operated in conjunction with a sand and gravel business. The unlined landfill was closed in the 1990s and new owners began accepting waste in a series of lined cells. Cell 1 operated from 1994 to 1999. Cell 2 operated from 1999 to 2006. Cell 3 operated from 2006 to 2013.

Moretown had an agreement as authorized under state law that required the landfill to make compensatory host community payments to the town when it was operating. On November 18,



2013, MLI submitted a solid waste certification application for a new Cell 4 at the landfill, which was deemed incomplete on January 21, 2014.

Since that time, MLI has withdrawn its Cell 4 application and committed to submitting a closure plan for the landfill.

UTILITIES

Telecommunications

Access to telecommunications infrastructure is now essential for economic development, education and overall quality of life. However, our terrain and low population density have combined to limit access to telecommunications in many parts of Moretown since the earliest days of telephone service. Responses to the 2013 community survey indicate that many residents are not satisfied with their access to high-speed internet (41% rated

availability as fair to poor) and cell phone service (67% rated availability as fair to poor).

Fairpoint provides landline phone service to the northeast portion of town. Waitsfield and Champlain Valley Telecom provides landline phone service to western side of town. Northfield TDS provides landline phone service in the southeast area of town. All three companies also offer broadband internet service via digital subscriber line (DSL) within portions of their service territories. The subscriber's distance from the equipment serving the telephone exchange limits the speed and availability of internet service via DSL. Customers that are more than 1.5 miles from the exchange equipment have significantly lower internet connection speeds and those more than 3 miles from the exchange equipment are generally not able to access DSL service at all. As a result, many Moretown residents, notably those served by Fairpoint, have poor to no internet access via DSL service.

Portions of Moretown have access to cable television and broadband internet service via cable. Cable television and broadband internet service is available with service from Comcast along Route 2, River Road and Jones Brook Road, Cobb Hill Road and Route 100. Waitsfield Cable provides cable television service, but not broadband internet service via cable, in the southwest area of town along Route 100B, Stevens Brook Road, part of Moretown Mountain Road, and in Moretown Village and Moretown Common.

Broadband internet service over fiber optic cable is not yet available in Moretown and we are not aware of any plans to extend such infrastructure into town at this time. Much higher connection speeds are possible with fiber than with service over copper wire (DSL), cable or wireless. Various companies also offer broadband internet service via satellite, which is more broadly available in all areas of town. However, the speed and

cost are typically not competitive with other forms of broadband internet service.

Cell phone service from various carriers is available in some areas of town, but others remain dead zones or have low quality service. A wireless signal is transmitted by line of sight from the wireless device to an antenna and it can be lost or severely weakened by hilly terrain, dense foliage, distance and atmospheric conditions. There are two telecommunications towers hosting multiple wireless service providers in Moretown:

- A 74-foot tall monopole telecommunications tower was built on Cobb Hill in 2003. Two carriers – Nextel and T-Mobile – currently have antennas mounted on the tower.
- A 107-foot tall monopole telecommunications tower was built just south of the transmission line adjacent to the landfill in 2007. The tower is camouflaged as a pine tree. It currently hosts a Verizon antenna.
- At the time of the writing of this plan, the town had been informed that a developer is interested in constructing two additional telecommunications towers in Moretown.

The Vermont Telecommunications Authority offers an online form for property owners interested in hosting wireless telecommunications infrastructure to submit their sites.¹ The characteristics that telecommunications providers look for when selecting sites for wireless towers include:

- A minimum of 180-degree views and preferably 360-degree views.
- Ability to access the facility at any time, preferably vehicular access.

¹ More information and the Site Submission Form is available at www.telecomvt.org.

- Proximity to electric power and public roads, preferably no more than 500 feet from the road.
- A minimum area of 100 by 100 feet that is at least 100 feet from property boundaries within a zoning district that allows telecommunication towers.

The characteristics that telecommunications providers look for when selecting an existing building or structure to mount a wireless antenna on include:

- A minimum of 180-degree views and preferably 360-degree views.
- Ability to access the facility at any time, preferably vehicular access.
- Proximity to electric power and public roads, preferably no more than 500 feet from the road.
- A minimum of 30 feet tall and preferably 60 feet or higher.
- A flat roof capable of handling a minimum load of 150 pounds per square foot, or the ability to mount antennas on the side of the structure.
- A minimum area of 20 by 30 feet for equipment either on the roof, in the building, or on the ground immediately next to the building or structure.

Electricity

We have been generating electricity in Moretown for more than a century and as a result we host a considerable amount of electric generation and transmission infrastructure:

- Vermont Electric Power Company (VELCO) owns and operates a 115kV electric transmission line that runs east-west through Moretown south of Route 2.
- GMP owns and operates a 33kV transmission line that runs from the VELCO line south through town to the east of Route 100B.

Two additional GMP 33kV sub-transmission lines travel west from the VELCO 115kV line.

- There are three major electric generation facilities in Moretown – two hydropower dams and the landfill gas electrical generation facility – as described in Section 3D-6 of this plan.
- There are also several substations located in Moretown that link those generators to the transmission grid, interconnect the multiple transmission lines, and provide power to the local distribution system.

Several utilities provide electric service in Moretown. GMP serves the northern part of town along the Route 2 corridor and much of the Route 100B corridor, including Moretown village. A small area in the southeast corner of town is within service territory of the Northfield Village Electric Department. Washington Electric Co-op (WEC) serves the remainder of town.

Vermont, like many other states, is engaged in an effort to modernize its electric grid. This “smart grid” effort is integral to the state’s effort to promote efficiency, conservation and renewables. By 2013, GMP and WEC had replaced the majority of their customers’ old, analog electric meters with new digital meters known as “smart meters.” Smart meters have the ability to provide customers with detailed information about their energy use, which is anticipated to change their choices and consumption patterns. They are also intended to improve the utilities’ ability to manage power supply and demand.

Water and Wastewater

There is no municipal water or sewer service in Moretown. All development is dependent on private on-site wells and septic systems. Moretown, like many rural Vermont communities, did not build centralized water or wastewater facilities when federal funding was widely available. Now federal and state dollars for water and wastewater infrastructure are limited and

small communities like Moretown are severely challenged to raise funds for such an investment. Respondents to the 2013 community survey clearly expressed that they did not want to develop a water or a wastewater system in Moretown village – the comments indicated that cost was a primary consideration.

Without water and/or wastewater infrastructure, our ability to promote compact development patterns - particularly in and near existing settlement areas such as Moretown village, Moretown Common and North Moretown – is limited. Similarly, the lack of infrastructure limits the potential for economic development in Moretown. There are alternatives between individual wells and septic systems, and conventional municipal water and wastewater treatment systems – shared, community and decentralized systems. These systems are less expensive to establish and maintain than conventional, centralized systems, and as such are seen as a more feasible option for rural Vermont communities.

Changes made to the state’s wastewater regulations in 2002 were supportive of shared or community water and wastewater systems, and allowed for alternative types of septic systems. Shared and community systems are also consistent with our goal of encouraging more compact land use patterns in order to conserve open space and working lands. Shared or community systems may serve just two neighbors or an entire neighborhood. Two Mad River Valley towns – Warren and Waitsfield – have pursued decentralized wastewater treatment during the past decade to serve their village centers and designated growth areas. Decentralized systems consist of multiple individual, shared or community systems that are commonly managed and maintained.

CHAPTER 3F. COMMUNITY SERVICES

Community services contribute to the quality of life in Moretown.

3F-1. TOWN BUILDINGS AND LAND

Town Office

Our town office, which was located in the center of Moretown village, was substantially damaged during Tropical Storm Irene in 2011. The office housed the town's property and administrative records, some of which could not be salvaged after the flood. It provided office space for administrative staff and a small meeting room for town officials. Following the flood, the town office was temporarily relocated to a leased building on the landfill property in North Moretown.

The Selectboard appointed a committee to assess the options for permanent office space in December 2011. The Town Office Committee ultimately recommended construction of a new building on the site of the current school playground. Many residents felt that the town office needed to remain in Moretown village, the civic center of our community, despite the threat of future floods. To safeguard the future office, the site and building will be raised so that the building's floor level will be three feet higher than Irene's floodwaters and one foot higher than the 500-year floodplain. The windows will be another three feet above floor level and the doors will be waterproofed. The flooded, former town office building has been destroyed.

In 2013, Moretown received a \$700,000 Community Development Block Grant for the construction of the new town office. The grant, combined with \$120,000 in insurance money received for the flooded building and a Hazard Mitigation Grant for buyout of the former town office, are anticipated to cover most of the \$865,000 cost of construction and associated site improvements. Construction is anticipated to begin in 2014. The



new town office will be nearly 2,000 square feet, which is about twice what was available in the former building, including semi-open office space, a meeting room and a larger vault. The new building will be fully accessible and highly energy efficient.

Town Hall

The Town Hall, located on Route 100B in Moretown village, is in the center of our community and is one of its most enduring and recognizable features. Townspeople have been gathering there each March since 1835 for Town Meeting, as well as for many other community activities and special events. The Town Hall can be rented for private functions and hosts various events, programs and activities throughout the year.

The Town Hall is our community's principal large meeting space. The upper level is an open room with a raised stage in the front and has changed little over the years. The lower level includes kitchen and bathroom facilities, as well as a smaller meeting space. The Town Hall is located in the 100-year floodplain and the lower level of the Town Hall was flooded during Tropical

Storm Irene. The lower level has been used for various purposes over the years and remodeled a number of times – most recently in 2012 to repair flood damage. .

The Town Hall’s 150th anniversary in 1985 spurred efforts to preserve and restore the historic building and many repairs and improvements were made around that time. In 1999, a lift was installed to make both levels of the building more accessible to all residents. In 2007, the town hired an architect to prepare plans for more substantial renovations and in March 2009, the voters approved spending up to \$190,000 on the project. In light of the recession and concerns over the property tax burden, the project was scaled back and approximately \$75,000 was spent to:

- Insulate the walls and ceiling.
- Upgrade the heating system.
- Repair the front steps and porch.
- Repair the cupola.
- Repair rotted clapboards and window frames.
- Repaint the exterior.
- Install energy-efficient lights.

The bond for that project will be paid off by 2020 with annual payments of approximately \$9,400. The annual operating cost of the building is approximately \$4,000 to \$4,500, most of which is spent on heating. The building generates approximately \$2,000 per year in rental income.

Town Garage

Our current town garage was built in 2009. While other options were considered, ultimately a new building was constructed on the same site on Route 100B in Moretown village as the former garage, which was demolished. The building and site is within the mapped flood hazard area. The 3-bay, 6,600-square foot building is more than twice the size of the former structure, allowing

the town’s current complement of vehicles and equipment to be stored inside. The town purchased an additional 2.5 acres of land across the road to provide additional space to store road materials. The property also has frontage on the Mad River.

Moretown spent approximately \$1.1 million to purchase the additional land and build the new garage, most of which was borrowed. The annual payments are approximately \$75,000 and the bond will be paid off by 2024. The building’s annual operating cost is approximately \$17,000.

Fire Station

Our current fire station, located at 1049 Route 100B in Moretown village, was built in 2004. It replaced an older building on the same site. The fire station is located within the mapped flood hazard area. During Tropical Storm Irene in 2011, the building was inundated with eight feet of water. Due to advance warning of the storm, the department had time to prepare by removing vehicles and major equipment from the lower level prior to the flooding.

The two-story three-bay structure provides vehicle and equipment storage on the first floor with meeting and office space above. The building cost approximately \$450,000 to construct, most of which was financed with a bond that will be paid off in 2014. The building’s annual operating cost is approximately \$16,000.

Town Land

The town owns five properties in Moretown village totaling approximately six acres:

- Town Garage (5.25 acres)
- Town Hall (0.3 acres)
- Fire Station (0.2 acres)

- Former town office (0.20 acres)
- Library (0.1 acres)

The town owns and maintains five cemeteries totaling approximately six acres:

- Village Cemetery (2.5 acres)
- Mountain View Cemetery (2.5 acres)
- Jones Brook Cemetery (0.5 acres)
- Moretown Common Cemetery (0.5 acres)
- Belden Cemetery (0.1 acres)

The town also owns two small vacant parcels: a 2.8-acre lot on Lynch Hill (landlocked) and a 2.4-acre lot off Hurdle Road.

The town and school have jointly owned the approximately 175-acre parcel on which the Moretown Elementary School is located since the 1950s. Approximately 20 acres of the property are developed with the school building, municipal parking, recreation facilities and new town office site (west of the power line), and the remainder (east of the power line) is our municipal forest.

The first Forest Stewardship Plan was prepared for the property in 1990, and that was updated with the *2009 Town Forest Land Management Plan*. The updated plan benefited from resource mapping and data collection completed during the 2000s by the Planning Commission, Recreation Committee, and Moretown teachers and students. As a result of an agreement between the town, school and Moretown Landfill, Inc., a conservation easement held by the Vermont Land Trust was placed on 81 acres of the Town Forest to create a permanently protected deeryard in 2007. The landfill paid the town for the value of the easement, approximately \$100,000, and in doing so, fulfilled a state requirement to mitigate disturbance of deeryards on their property.

3F-2. TOWN GOVERNMENT

Town Employees, Elected Officers and Volunteers

Our town government is heavily dependent on the willingness of townspeople to volunteer their time to serve the community. Like most rural Vermont communities, Moretown has a limited number of paid staff to carry out the day-to-day operations of the town. Currently, the town employs:

- A full-time town clerk and treasurer (these are two separate elected positions each with a three-year term, but one person holds both at this time)
- Two part-time assistant clerks
- A full-time town administrator
- A part-time zoning administrator
- A road crew consisting of three full-time employees

Local government services in Moretown are generally limited to those mandated by state law. Additional services, programs or activities are possible only with significant volunteer leadership and support. With so few employees, the direct participation of town residents – in various elected and appointed positions – is critical to maintaining a functioning local government. While a few of those positions offer a small stipend, most of the elected and appointed town officers do not receive any compensation or benefits. Moretown, like many rural Vermont communities, is perennially challenged to fill these positions. More volunteers are always needed, welcomed and appreciated. Any resident interested in serving the community should contact the town clerk or a selectboard member.

Elected town officers include:

- A five-member selectboard (with staggered three-year terms)
- A delinquent tax collector (elected annually)
- Three auditors (with staggered three-year terms)

- Three listers (with staggered three-year terms)
- A first and second constable (first constable has a two-year term and second constable has a one-year term)
- Three cemetery commissioners (with staggered three-year terms)
- Five library trustees (with staggered five-year terms)
- Five school directors (Moretown Elementary School) and one representative to Union District #19 school board
- A trustee of public money (elected annually)
- A town grand juror (elected annually)
- An agent to prosecute/defend suits (elected annually)
- Multiple justices of the peace (two-year terms)
- A town meeting moderator (elected annually)

The selectboard appoints volunteers to a number of other positions including:

- Five-member planning commission
- Five-member development review board
- A representative to the Central Vermont Regional Planning Commission
- A representative to CVRPC's Transportation Advisory Committee
- A representative to the Mad River Planning District Steering Committee
- A representative to the Mad River Resource Alliance
- Animal control officer
- E911 coordinator
- Emergency management chairperson
- Fire warden (appointed by the state)
- Solid waste officer
- Health officer
- Energy coordinator
- Energy committee

- Tree warden and alternate tree warden
- Town website administrator
- Town hall coordinator
- Fence viewers
- Inspector of lumber, shingles and wood
- Service officer

Town Budget and Taxes

In recent years, the annual town budget has been approximately \$1.1 million, \$585,000 of which was raised through property taxes. Approximately \$550,000 was spent on town highways, \$400,000 on town administration, \$75,000 on the fire department, and \$40,000 on special articles. Moretown provides relatively few discretionary services as discussed above and our total town budget is below the average for similarly sized municipalities in Vermont.

Additionally, the tipping fees paid to the town by Moretown Landfill, Inc. under the host town agreement significantly reduced our municipal tax burden for many years. With the closing of the landfill, those revenues were reduced in 2013 and we do not expect to receive any revenues in 2014. Prior to the closing, Moretown Landfill, Inc. paid the town approximately \$500,000 annually under the host town agreement – roughly \$300,000 went into the general fund and \$200,000 was distributed among various reserve funds.

Not surprisingly, the 2013 Community Survey (conducted after the landfill closing) found that Moretown residents were very concerned about town spending and taxes. When asked what they would like to see change about Moretown, the issue respondents cited most frequently was taxes and spending. Similarly, respondents overwhelmingly identified taxes and spending as a top concern for the town's future. From the responses, it appears that this sentiment is related to both the

cost of town services and the cost of education, which is also funded primarily through the property tax.

The concerns over the town's fiscal condition may also be related to investments over the past decade in public buildings - the town hall, fire station and town garage – and the current need to replace the flood-damaged town office. Those major projects, plus flood recovery and the ongoing replacement of vehicles and equipment, have led to substantial borrowing and reduction in amount saved in town reserve funds. The fire station will be paid off in 2014, but we will be paying off the town garage for another decade.

Largely in response to those major capital expenditures, Moretown prepared and adopted a capital improvement program (CIP) in 2010 and has subsequently updated it each year. The CIP is a mechanism for the town to identify, prioritize, plan for and schedule capital expenses (major, one-time costs for equipment, vehicles, land, buildings, etc.). The CIP can help us stagger large capital expenditures in the future, which will help avoid sharp fluctuations in the town budget and our tax bills.

3F-3. CIVIC FACILITIES AND ORGANIZATIONS

Library

The Moretown Memorial Library, located at 897 Route 100B, offers full library services to town residents including: interlibrary loans, internet access (Wi-Fi access is available 24/7), preschool story time, a summer reading program for children, online courses, homebound services, genealogy resources, and various other programs throughout the year. The library's collection now surpasses 6,800 books, DVDs, audio books and magazines. In addition to the materials available through interlibrary loan, patrons also have online access to resources such as professional and scholarly journals, small

business resources, health and wellness resources, language learning resources, eBooks, audio books and more.

The library is funded primarily through an annual town appropriation. In recent years, voters have approved approximately \$20,000 for the library. The library's appropriation is supplemented by fundraising, grants and donations. The library is open six days a week – 24 hours each week during the school year and 22 hours during the summer.

In 2013, the library served nearly 400 registered patrons. Patrons visited the library more than 2,400 times that year and borrowed more than 5,500 books or other materials.

For the library to expand its collection and services, it would need a larger overall space and additional shelving. The library has identified the following issues with the current facility:

- The building is not handicapped accessible and does not have a restroom (currently has a port-a-potty).
- The building needs a new roof and to be repainted.
- The parking spaces need repair and re-surfacing with additional gravel.

Moretown Historical Society

The Moretown Historical Society formed in response to the 150th anniversary of the Town Hall in 1985. Since then, it has been active in documenting and celebrating Moretown's history. The society meets monthly at the library, and sponsors a variety of events and gatherings focused on the town's heritage. The Historical Society has long envisioned establishing a local history museum in Moretown. The former Taplin School building and the library building have been considered options for housing and displaying the society's collection of historic materials and

artifacts. Neither building is currently suitable for this purpose and renovations would be necessary.

Cemeteries

The Moretown Cemetery Commission is responsible for the oversight and maintenance of five cemeteries (listed above). The annual cost of cemetery maintenance is approximately \$10,000.

The Cemetery Commission also administers two funds (perpetual care and lot funds) to support maintenance activities. Those funds currently have a balance of approximately \$60,000. Several of the cemeteries are still active with space for new burials. The commission does not foresee a need to acquire any additional land for new or expanded cemeteries at this time.

3F-4. PUBLIC SAFETY

Fire Department

The Moretown Volunteer Fire Department is responsible not only for responding to fires, but to all manner of emergencies in our community. In fact, fires represent a small proportion of the calls the department responds to each year. Based on response to the 2013 survey, town residents have a positive opinion of the fire department – 65% of survey respondents rated quality of fire services as good to excellent while only 15% rated it as fair to poor.

Due to our challenging terrain, the town has a contract with the Waterbury Fire Department to provide first response service to the portion of Moretown near Waterbury. Conversely, we have an arrangement with Duxbury for the Moretown Fire Department to provide service to a portion of their town. There are also mutual aid agreements between all the area departments to provide assistance to each other when necessary.

The number of calls each year is highly variable – ranging from less than 30 some years to 50 or more other years. The number of volunteers also varies from year-to-year, but the department has maintained 20 to 30 members in recent years. Fire department volunteers make a significant commitment to our community – both in the amount of time they must devote to training and responding to calls, and in their willingness to put themselves at risk to help others. Rural volunteer fire departments like Moretown’s are facing increasing difficulty in attracting and retaining volunteers due to a combination of factors that include:

- Residents working out of town, making them less able to respond to emergency calls particularly during workday hours
- Aging population
- Increasing training requirements
- Increasing number of calls

The department currently has a fleet of four response vehicles, as well as miscellaneous firefighting equipment:

- A 2009 fire engine
- A 2000 pumper
- A tanker, which the department would like to replace within the next five years
- A rescue truck

The fire department budget has been approximately \$70,000 to \$80,000 in recent years. Approximately \$40,000 to \$50,000 has been debt service for construction of the fire station, which will be paid off in 2014.

Emergency Medical Service

Moretown does not directly provide emergency medical service

(EMS). Instead, the town has arrangements with several other entities to provide EMS response:

- Annually, we contract with the Montpelier Fire/Ambulance Department to provide EMS service to the northern and eastern portions of town. Currently, we pay approximately \$11,000 per year for that service.
- Waterbury Fire and Rescue responds to EMS calls in the northwestern part of town, where they also provide fire service. Currently, we pay approximately \$2,500 per year for that combined fire/rescue service.
- The Mad River Valley Ambulance Service is a volunteer, non-profit organization that serves multiple communities within the Mad River Valley. They do not receive direct funding from the valley towns. Valley residents can purchase an annual subscription, which covers emergency medical care and transport. MRVAS also bills patients and/or their insurance for any services provided.
- With multiple EMS service providers in Moretown, it is difficult to track the number of EMS calls annually. The demand for EMS response is anticipated to grow over the next two decades as the number of elderly residents increases. Based on response to the 2013 survey, residents are satisfied with our current EMS system – 64% of respondents rated quality of ambulance service as good to excellent while only 12% rated it as fair to poor.

Law Enforcement

Moretown does not have a local police department. The Vermont State Police provide law enforcement services in town from their regional barracks on Route 2 in Middlesex. Their service is generally limited to call response and highway patrol along the state highway.

Moretown supplements those basic law enforcement services by contracting periodically with the Washington County Sheriff's Department to provide additional highway patrol on town roads.

We also have elected first and second constables who have only limited law enforcement authority.

There are relatively few crimes committed in Moretown. In recent years, there have been 20-30 crimes reported each year. Most of these were property crimes – burglary, vandalism, larceny, etc.¹

Based on the response to the 2013 survey, many residents are dissatisfied with our current level of law enforcement. 23% of survey respondents rated the quality of police services as good to excellent while 47% rated it fair to poor. While 54% rated safety from crime as good to excellent, 33% rated it fair to poor. A number of respondents raised concerns about the amount and speed of traffic on town roads. 57% of respondents rated the safety walking and biking on town roads as fair to poor, as compared to 31% who rated it as good to excellent.

Emergency Response and Hazard Mitigation

During the past decade, we experienced several significant disasters in Moretown – most notably Tropical Storm Irene in 2011. In response, the town has focused on improving our ability to respond to emergencies and on mitigating hazards. The town has prepared and adopted a Rapid Response Plan (2011) and a Hazard Mitigation Plan (2012) with support from the Central Vermont Regional Planning Commission, both of which are incorporated into this plan by reference. The 2013 community survey indicated that town residents are pleased with these efforts. 74% of survey respondents ranked the town's response to emergencies and disasters as good to excellent, which was the third highest ranking out of more than 40 elements.

As discussed elsewhere in this plan, flooding is the most significant hazard in Moretown. More than 50 buildings in town

¹ Based on statistics for 2004-2011 from the Vermont Crime Report released annually by the Vermont Department of Public Safety.



are located within the 100-year floodplain identified on the FEMA flood maps.¹ In 2012, only 17 of those properties had flood insurance through the National Flood Insurance Program. Flood insurance is required when property owners have a mortgage or receive other federal grants, loans or disaster aid.

The increasing cost of flood insurance may make it more difficult to sell or transfer property within the 100-year floodplain in the future – this could have significant implications for the future of Moretown village. In addition, many of our critical facilities – fire station, town hall, town office, post office, elementary school – are either within the 100-year or 500-year floodplain, which means that they may not be accessible or functional during and after a flood.

Moretown has participated in the National Flood Insurance Program since 1975 by adopting and enforcing local flood hazard regulations that meet federal requirements. Staff at the Vermont Department of Environmental Conservation reviewed our flood hazard regulations in 2012 and recommended some revisions so

¹ The official Digital Flood Insurance Rate Map and Flood Insurance Study is available for review at the town office and online at the FEMA Map Service Center, www.msc.fema.gov.

that our regulations would be consistent with the state's current model regulations. Moretown is also actively pursuing various state and federal programs that provide training and funding to assist us with better preparing for and responding to future emergencies and disasters.

3F-5. HUMAN SERVICES

Healthcare

As is typical of rural Vermont towns, Moretown residents rely on healthcare providers and services located in nearby, larger communities. 42% of respondents to the 2013 community survey rated access to healthcare providers as fair to poor, while 34% rated it as good to excellent.

There are pharmacies and various medical and dental practitioners with offices in Waitsfield, Montpelier and Waterbury. The Central Vermont Medical Center (CVMC) in Berlin is the nearest hospital. CVMC is a regional medical center that includes a 122-bed hospital, 24-hour emergency care, a full spectrum of inpatient and outpatient services, the National Life Cancer Treatment Center, 17 medical group practices, and the Woodridge Rehabilitation and Nursing Home. Many residents also travel to Chittenden County for healthcare services.

Moretown voters annually authorize the town to provide financial support to a number of regional healthcare and social service organizations that assist town residents, including Central Vermont Home Health and Hospice and the People's Health and Wellness Center. The People's Health and Wellness Clinic, located in Barre City, provides primary healthcare and wellness education for uninsured and under-insured Central Vermont residents. Central Vermont Home Health and Hospice (CVHHH) is a non-profit visiting nurse association that provides services to Central Vermont residents regardless of their ability to pay including:

- Home healthcare services such as skilled nursing, rehabilitation services, and hospital and in-take coordination.
- Hospice and palliative care.
- Long-term assistance for the frail elderly and people with disabilities with the activities of daily living so they can live safely and comfortably at home.
- A maternal child health program that provides prenatal health care and postpartum home visits.
- Health promotion including vaccination clinics.

Childcare

In Moretown, most families with children lead lives that require some amount of childcare outside of their homes. Based on 2010 Census data, we know that in approximately 60% of two-parent families with preschool-age children both parents are working outside the home and that at least 30% of single parents with preschool-age children are working outside the home. In nearly 90% of two-parent families with school-age children, both parents are working outside the home and 75% of single parents with school-age children are working outside the home. When asked on the 2013 survey 33% of respondents rated access to childcare as fair to poor, as compared to 13% who rated it as good to excellent.

Moretown Elementary School has offered a two-year preschool program for up to 30 three- and four-year olds since 1986. The program has enrolled 20 to 24 children annually in recent years. Currently, the program is available to all four-year old children residing in Moretown and three-year olds are invited whenever space allows.

The Precious Moments Preschool, associated with the Church of the Crucified One, offers full-day childcare and preschool programs for up to 18 children (from six weeks through five

years old). The program had no vacancies as of February 2014. There was one provider with an in-home daycare with a capacity for six children operating in Moretown with no vacancies as of February 2014. The number of in-home daycare providers in Moretown has varied in recent years. Many Moretown parents seek childcare outside of town closer to their place of work.

As required by Vermont law, our current zoning regulations allow any resident to operate a home-based daycare, which may serve up to six children full-time, as a permitted use. Childcare facilities serving more than six children are allowed as a conditional use throughout town.

3F-6. EDUCATION

Moretown belongs to the Washington West Supervisory Union, together with the towns of Duxbury, Fayston, Waitsfield, Warren and Waterbury. Moretown students from pre-K through grade six attend the Moretown Elementary School in Moretown village. Our 7th through 12th grade students attend Harwood Union Middle and High School in Duxbury with students from throughout the district.

Moretown Elementary School Building and Grounds

The Moretown Elementary School, located in the center of Moretown Village, has a student capacity of approximately 230 students. The last major building renovations occurred in 1996 when the building was expanded. The building's roof was replaced in 2008. The school is located within the 500-year floodplain and did sustain minor damage during Tropical Storm Irene in 2011.

The school presently houses ten classrooms, eight with a 25-student capacity and two rooms with a capacity of approximately 15 students each. Only seven classrooms were being actively used during the 2013-14 school year. A multi-

purpose room, gymnasium, library, art/music room, language room, and associated office, stage and special services space, also are located within the building.

As discussed above, the town and school jointly own the 175 acres on which the school is located. Approximately 20 acres of that property is developed with a parking lot and recreation facilities that are shared by the school and community.

The Moretown Elementary School is an important source of community pride and identity. It is a gathering place that hosts many community and family activities year-round. The future of our elementary school is clearly of concern to many residents. In response to the 2013 community survey, many respondents cited the school as one of the top three reasons to live in Moretown and one of the things they hope never changes about Moretown. Approximately 62% of respondents ranked the quality of the local school system as good to excellent. The school was also frequently mentioned as one of the top concerns for the future with many questioning the sustainability of declining enrollment and increasing education costs. Others worried about the loss of community identity that would result if the school were to close.

Moretown Elementary School Enrollment

Enrollment at Moretown Elementary School reflects the wider demographic trends affecting our community, region and state. The last peak in enrollment occurred in the early-1990s when more than 200 students attended Moretown Elementary School. In the 20 years since, the number of students has declined. In recent years, enrollment at Moretown Elementary has been below 120 students in pre-K through grade 6. As discussed in Section 3C-1, there is no indication of a change in demographic trends in the foreseeable future that would cause enrollment to grow significantly. The school is operating well below the building's capacity, which results in higher per pupil costs.



Harwood Union Middle and High School

The Harwood Union Middle and High School (Harwood UHSD #19) is located off Route 100. The building is in Duxbury, but the grounds extend into Moretown. The building was renovated and expanded in 1997, creating a wing to house the middle school. The middle school serves students from Moretown, Fayston, Waitsfield and Warren, while the high school serves students from those towns plus Waterbury and Duxbury.

The core facility of the building (cafeteria, gymnasium, auditorium, etc.) is designed to accommodate up to 1,000 students. In 2012-13, enrollment was 727 students – 149 in the middle school and 578 in the high school. The most recent peak in enrollment occurred in early 2000s when there were 800 to 840 students attending Harwood. Moretown has sent around 140 students Harwood Union Middle and High School in recent years and our students have comprised approximately 20% of the school's total enrollment.

Vocational Training

Harwood students can attend vocational training programs at the Barre Technical Center in Barre City. The center currently offers a variety of programs including automotive technology, culinary arts, building trades, digital media arts, natural resources and sustainable technology and business. Additionally, Harwood provides limited vocation training opportunities on-site.

Post-Secondary and Adult Education

Moretown residents have access to a variety of post-secondary, adult, and vocational educational opportunities in Central Vermont. The Community College of Vermont (CCV) offers 20 associate degree and a number of career certificate programs from 12 locations (one of which is in Montpelier) around the state and online. There are several four-year colleges in the region including Union Institute and University, Norwich University, Vermont Technical College, the Vermont College of Fine Arts, and Goddard College, as well as specialized educational institutions like the New England Culinary Institute and the Yestermorrow Design/Build School.

There are also a number of state entities and nonprofit organizations that provide workforce training and adult education in Central Vermont. Central Vermont Adult Basic Education provides free literacy instruction. The Central Vermont Community Action Council offers a workforce development programs including Vermont Green, a training partnership that prepares people for careers in the green industry. The Vermont Department of Labor partners with local Workforce Investment Boards (WIBs) to support workforce development and training programs.

Education Spending and Taxes

Each Vermont town was responsible for financing public education through a local property tax until 1997. That year the

Vermont Supreme Court declared the existing school funding system to be unconstitutional because of the great disparity in the property tax base between towns and therefore in the amount of funding that could be raised for public education. The result was a new system that made the state solely responsible for equitably funding education across Vermont and a new state property tax system to raise those funds. Currently, the state property tax covers approximately two-thirds of the total statewide cost of education (the remainder is raised through other taxes and state lottery proceeds).

There are two property tax rates – the homestead rate (for primary residences) and the non-residential rate (for all other property). There is also an income sensitivity mechanism that allows households earning less than \$90,000 per year to pay an income-based school tax rather than the property taxes on their primary residence. Due to the increase in these tax rates, the state is currently studying the education financing system and may propose further adjustments in the near future.

The homestead tax rate, which is based on the district's per pupil spending, is the only school revenue source that local voters can control. Each year, the state legislature sets a base spending amount per pupil. If a district spends that amount or less, the homestead tax rate will be the statutory minimum. If voters approve spending more, the homestead tax rate will increase in proportion to amount being spent in excess of the base amount per pupil. However, all the education taxes are pooled by the state and redistributed to the school districts, so the amount spent on education by a district is only indirectly related to the amount of homestead taxes collected in that district.

In recent years, total education taxes paid in Moretown have ranged between \$3.2 and \$3.5 million of which approximately \$1.8 to \$2.0 million was from the homestead tax. Between 2001 and 2013, the total amount of education taxes raised

in Moretown has increased 18% above the rate of inflation. Moretown Elementary School's total budget per pupil was approximately \$18,300 in 2013 (as compared to a statewide average of \$16,600). It has increased 39% above the rate of inflation since 2001 (as compared to 49% statewide). Over the same period, the number of students at Moretown Elementary has declined by 34% (as compared to a 13% decline statewide). These figures clearly illustrate one of the factors driving the growth in education costs statewide – most school costs are fixed or do not change in direct proportion to the number of students. Enrollment is declining in most of Vermont's schools. Fewer students leads to higher per pupil spending, which leads to higher homestead tax rates.

CHAPTER 3G. LAND USE AND DEVELOPMENT

Mountains, valleys, rivers and streams define our landscape and have shaped our land use and settlement patterns over the past 250 years. Largely because of the terrain, Moretown did not develop with a single village center around which the rest of the community is oriented – as is found in many Vermont towns. Instead, the terrain and waterways divide Moretown into several distinct areas and limit our ability to travel between them. Parts of Moretown developed outward from centers in neighboring municipalities and remain more connected to and identified with those communities than with other parts of Moretown.

Moretown is a rural bedroom community. Our mountainous terrain is largely forested, with a few larger areas of farmland remaining in the Mad River Valley and in Moretown Common. We have a small, historic village center on Route 100B and a more recent growth area in North Moretown where most of the commercial development in town is located. Approximately 65 new residential parcels were created during the 2000s, which was most of the development activity that occurred in town.

This chapter examines current land use patterns, development constraints and opportunities, and desired future land use change in a series of planning areas. The planning areas largely follow watershed boundaries in recognition that the natural landscape – defined by terrain and waterways – will continue to be the dominant factor structuring and guiding the future growth and development of our community.

3G-1. MORETOWN VILLAGE PLANNING AREA

Current Land Use

Moretown village is distinguished from the larger Mad River watershed of which it is a part by its historic settlement pattern. It is a traditional Vermont village center that developed in a linear pattern along a main highway. Most of the buildings are 1½ to 2½ story structures located 10 to 40 feet from the road with peaked roofs and wooden clapboard siding. Many were built

in the first half of the 19th century and are typical vernacular New England architecture of the period. Porches, dormers and ells are common, as well as buildings oriented with the gable end facing the road.

Moretown village is bounded by two bridges over the Mad River – one to the north and one to the south – and by the Mad River to the west and the GMP transmission line to the east. Moretown village is the highest density area of town with approximately 55 homes, 10 commercial properties and 10 civic buildings built along a one-mile stretch of Route 100B. Nearly all our public buildings and functions are located in Moretown village.

Currently, the land between the Mad River and Route 100B is in the Village zoning district. East of Route 100B, the Village district extends to a depth of 200 to 500 feet and beyond that, the remainder of the area is in the Agricultural Residential district. Most of the land between Route 100B and the Mad River is within the 100-year floodplain, along with a limited amount of land east of Route 100B.

Very little new private development has occurred within this area in recent decades. During the 2000s, several homes were built around the outskirts of the village. There has been considerable revitalization and reinvestment in public buildings and facilities within the village since the mid-1990s.

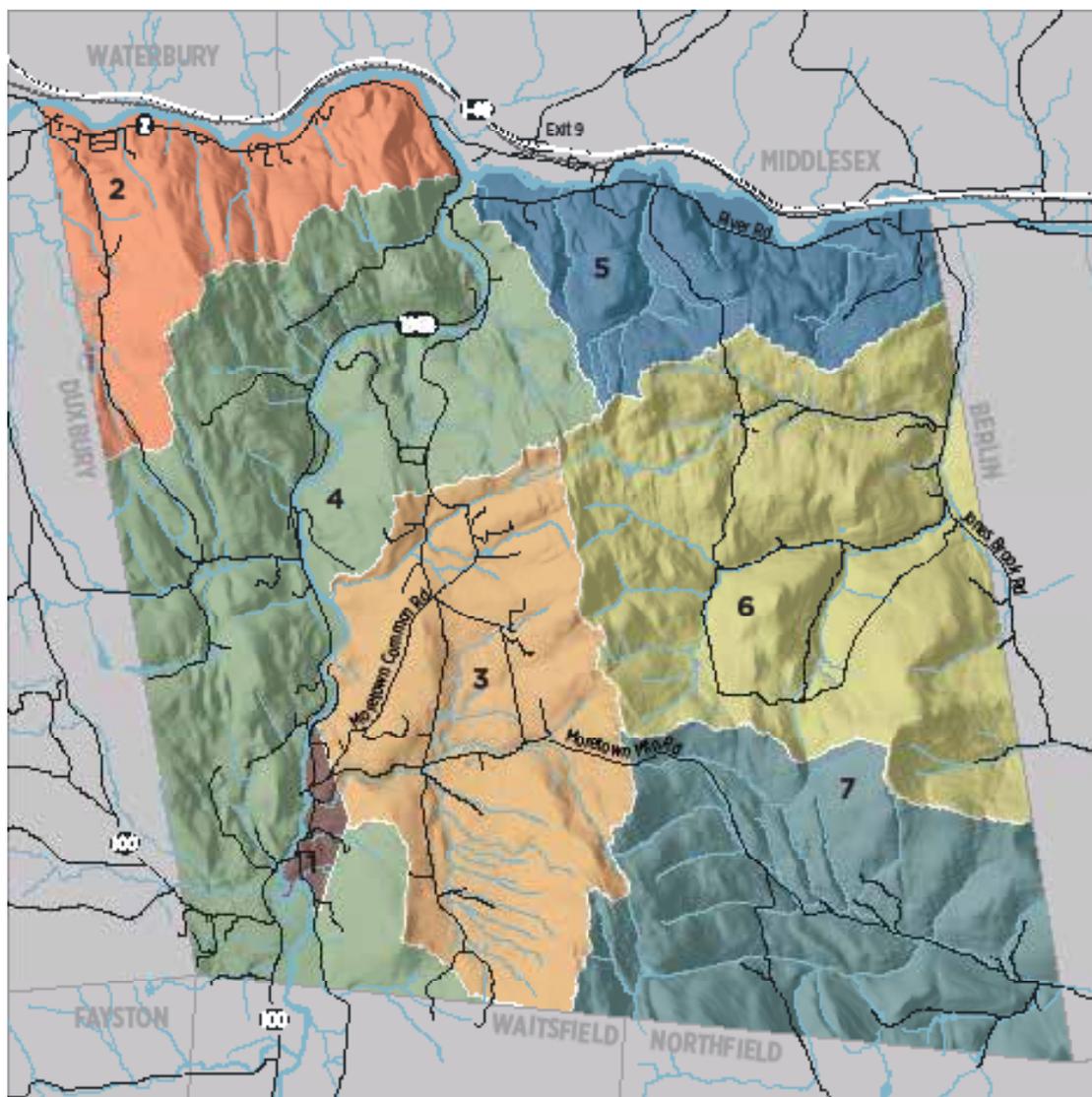
Development Constraints and Opportunities

The floodplain is the most significant natural constraint to development within the Moretown Village area. The lack of community water or wastewater infrastructure is the other major constraint on more intensive use of existing properties or further growth at a density that would extend the historic settlement pattern.



Route 100B itself is both an asset and liability for the village area. Heavy traffic, including truck traffic, through Moretown village creates noise, dust and safety concerns. At the same time, the traffic creates an opportunity to entice travelers to stop at village businesses. Current efforts underway to improve and extend sidewalks along Route 100B will make the village more pedestrian friendly. Future improvements to the Route 100B corridor such as on-street parking, street trees, landscaping, and/or decorative streetlights would further calm traffic and enhance the character of Moretown village. The availability of municipal parking in Moretown village also creates an opportunity to lessen on-site parking requirements for village businesses.

The frontage property along Route 100B is largely built-out with only limited opportunity for additional development. The best opportunity for growth in this area would be to expand the village development pattern to the east of Route 100B –



FUTURE LAND USE MORETOWN, VT

- 1. Moretown Village
- 2. North Moretown
- 3. Moretown Common and South Hill
- 4. Mad River
- 5. River Road
- 6. Jones Brook
- 7. Cox Brook



transforming Moretown’s linear settlement pattern into one with greater depth through extension of one or more streets off Route 100B. Given that the terrain begins to rise east of Route 100B, such a development pattern would also allow for growth above the floodplain.

Future Land Use

The 2013 community survey indicated that Moretown residents would like to see more small businesses in Moretown village. Respondents also strongly supported maintaining Moretown village as the town’s center (80% agreed that should be a goal for the town’s future) and protecting the historic character of Moretown village (75% agreed that should be a goal for the town’s future).

Maintaining the historic character of Moretown village and its traditional role as the center of our community remain important land use goals. In addition, this area should be enhanced with sidewalks and streetscape improvements, and efforts should be made to mitigate flood hazards to the greatest extent feasible. The possibility of developing a bike path in the village that connects to Harwood and to the Mad River Path should be evaluated. Specific zoning changes that would further these goals are discussed in Section 3G-8 below.

3G-2. NORTH MORETOWN PLANNING AREA

Current Land Use

The North Moretown Planning Area is located in the northwestern part of Moretown. It includes land within the Crossett Brook watershed and the land west of the Mad River that drains direct to the Winooski River. Route 2 travels through this area along the Winooski River, strongly tying North Moretown to Waterbury and its nearby downtown.

There is a continuous linear pattern of largely auto-oriented commercial development along Route 2 from Waterbury across the Winooski River into North Moretown. With more than 20 commercial properties in North Moretown, this area is where most of the commercial businesses (not including home businesses) in town are located. The area between the Winooski River and the VELCO transmission line on the south side of Route 2 is in the Commercial zoning district. The resulting land use pattern along Route 2 is characterized by auto-oriented development and utilitarian buildings.

While the Route 2 corridor is primarily commercial, there are approximately 150 homes in the North Moretown area as well. Nearly 20 homes were built in this area during the 2000s, many on new private roads off Route 2. While the Route 2 corridor is a mix of commercial and residential uses, Cobb Hill is primarily a developed, rural residential neighborhood. The land along Cobb Hill Road is in the Agricultural Residential district while the steeper slopes up to the top of Cobb Hill are in the Preserve district.

Development Constraints and Opportunities

Most of the land between the Winooski River and Route 2 is within the 100-year floodplain. South of Route 2, the terrain rises steeply, keeping most development within 500 feet of the highway. Most of the developable frontage along Route 2 has been developed, limiting opportunities for further growth, but a number of properties could accommodate infill development or more intensive use – particularly if water or sewer infrastructure were to become available in the future.

The Route 100-Route 2 intersection is another constraint on development in North Moretown. The intersection is approaching an unacceptable level of service, leading to concerns about the amount of traffic that any additional

development in this area would generate. The intersection and adjacent properties also serve as a gateway to our community. Improvements are needed not only to the functional aspects of the intersection and roadways (including sidewalks and crosswalks to make the area more pedestrian friendly), but to the aesthetic components of the highway corridors and adjacent properties to create a welcoming and attractive entrance to Moretown.

Over the past two decades, there has been considerable residential development in the North Moretown area – some of it in close proximity to very intensive businesses. As a result, there has been increasing conflict between area residents and existing or potential new businesses. Currently, the impacts and incompatibilities between residential and non-residential land uses in this area is a constraint on future development that needs to be addressed through revisions to our zoning regulations and districts.

Future Land Use

The responses to the 2013 community survey highlight some of the conflicting goals Moretown residents have for the future of North Moretown. Town wide, the survey indicated support for encouraging mixed use in North Moretown (69% supported this goal) and for directing commercial development to the area (68% supported this goal). However, the survey respondents who lived in North Moretown were less supportive of these goals. Further, 77% of all survey respondents supported the goal of avoiding strip development and sprawl, but only 49% supported the idea of creating more of a town center around the Route 100-Route 2 intersection.

The general concept of maintaining North Moretown as a commercial and mixed-use area remains the goal for future land use. However, it is clear that zoning changes are needed to

address the compatibility issues between land uses that have developed in North Moretown. The town will work to reduce speed limits and will explore bike shoulders along Route 2 below Waterbury . Specific zoning changes recommended for this area are discussed in Section 3G-8 below.

3G-3. MORETOWN COMMON & SOUTH HILL PLANNING AREA

Current Land Use

The Moretown Common and South Hill Planning Area is within the larger Mad River watershed. It includes the land along Moretown Common Road, Moretown Mountain Road and several intersecting town roads extending up hill from Moretown village and the Mad River Valley. Some of these areas were among the first to be settled and with good reason. They feature high quality farmland, moderately sloping terrain that offers excellent views, and an elevation well above the Mad River floodplain. The fact that some of this land remains in productive use today speaks to its suitability for farming. This area also includes the western slopes of the Northfield Range with terrain that is steep, rugged and forested. A series of small streams flow down those slopes, joining together to create a dense network of tributaries that feed into Doctors Brook and ultimately into the Mad River.

There are approximately 165 homes in the Moretown Common and South Hill area. These are mostly rural residential properties, typically several acres or more in size with a detached single-family home. The only non-farm businesses are home-based enterprises. Most of the land within this area is currently in the Agricultural Residential zoning district. Some of the higher elevation and steeper land is in the Preserve district.

Development Constraints and Opportunities

Natural features do not pose as significant a constraint on development in Moretown Common as compared to many other

areas of town. Most of the soils are moderately to marginally suited for on-site septic systems. On South Hill, natural features such as steep slopes, shallow soils, rugged terrain and many headwater streams pose greater constraints on development. Tree clearing and soil disturbance at higher elevations, on steep slopes and near these streams can result in reduced water quality and increased flooding downstream.

Future Land Use

Responses to the 2013 community survey show that Moretown residents value maintaining our town's rural character (87% supported this goal). There was a similar consensus for supporting local farm and forestry enterprises (83%). These results suggest that preserving rural character, working farm and forest lands, open space and scenic roads and views should be part of the future land use plan for this area.

In addition, respondents to the 2013 community survey also indicated support for requiring development to be setback from streams (80% supported this goal) and retaining or re-establishing natural buffers along streams (76%). While these goals apply town wide, they are particularly relevant on South Hill given the number of small tributary streams that flow down the hillside towards Moretown village. Infiltrating, storing and attenuating run-off in this area could reduce (or at least avoid any increase in) the severity of flooding downstream in Moretown village.

The recommendations for zoning changes in both the Agricultural-Residential and Preserve districts are relevant to this planning area.

3G-4. MAD RIVER PLANNING AREA

Current Land Use

The Mad River Planning Area includes the remaining land within the Mad River watershed in the central and southwestern part of town. The highly scenic river valley is defined by the surrounding hillsides. Route 100B parallels the river providing access from Interstate 89 to Moretown village and the other valley communities beyond. This part of Moretown is more a part of the Mad River Valley community than other parts of town. It is connected to the valley's recreation and tourism-driven economy, and to various valley-wide organizations, initiatives and activities.

There are approximately 175 homes and a handful of small businesses (primarily farms and lodging) along Route 100B and the network of town roads that extend up into the hillsides above the valley. While there are floodplains along the entire river corridor, the floodplain broadens out considerably south of Moretown village. Most of this planning area is within the current Agricultural Residential zoning district, although the higher elevation areas are within the Preserve district.

Development Constraints and Opportunities

The Route 100B corridor, which is designated as a scenic byway, creates an opportunity for recreation and tourism-oriented businesses. However, any development in this corridor will need to contend both with the floodplain and protection of scenic character. The terrain rises fairly steeply from the valley floor in most of this area.

Future Land Use

Responses to the 2013 community survey supported maintaining scenic character along Route 100B (80%) and protecting the character of scenic roads (85%) as important town goals. They

also agreed with keeping land open to preserve scenic views (74%) and enhancing access to the Mad River (73%). This suggests that the future land use plan for the Mad River Valley area should continue to focus on protecting rural and scenic character, while taking advantage of the area's natural assets for sustainable, small-scale recreation and tourism based economic development.

The recommendations for zoning changes in both the Agricultural-Residential and Preserve districts are relevant to this planning area.

3G-5. RIVER ROAD PLANNING AREA

Current Land Use

The River Road Planning Area includes the land east of the Mad River that drains directly to the Winooski River in the northeastern part of town. Route 100B travels through this area, crossing the Winooski River into Middlesex. River Road intersects with Route 100B and continues east along the Winooski River into Berlin and on into Montpelier. This area of town is oriented to Middlesex and Montpelier.

There are approximately 70 homes within this area, located fairly close to either Route 100B or River Road. There are a handful of businesses as well, mostly along Route 100B. The land from the Winooski River south to where the terrain starts to rise sharply is currently in the Agricultural Residential zoning district. The steep and high elevation lands are in the Preserve district. Much of the land between the Winooski River and Route 100B or River Road is within the 100-year floodplain. River Road was raised in 2007 to address ongoing flooding problems.

Development Constraints and Opportunities

Much of this area is characterized by steep slopes and limited access. Development is largely limited to the fairly narrow valley floor, which is also constrained by the floodplain. There are some relatively small areas with fewer constraints where a limited amount of growth and infill development may be feasible, particularly along Route 100B.

Future Land Use

Significant changes in the type and intensity of development in this area are not envisioned. The goal for future land use should be for this area to remain primarily rural and residential with the possibility of some additional small business activity in suitable locations near Route 100B. The recommendations for zoning changes in both the Agricultural-Residential and Preserve districts are relevant to this planning area.

3G-6. JONES BROOK PLANNING AREA

Current Land Use

The Jones Brook Planning Area includes the slopes of the Northfield Range along the eastern side of town. Most of this area drains to Jones Brook, with a small portion draining to the Dog River. This area of Moretown is not directly accessible from elsewhere in town and it is oriented more towards Montpelier.

There are approximately 70 homes in this primarily forested area. Most of the area is currently in the Preserve zoning district and much of the land remains in large parcels, including several that are managed for timber harvesting. Land within 1,000 feet of Jones Brook Road is within the Agricultural Residential District. The landscape creates a setting of isolation and solitude that area residents value.



The existing network of town roads (Class 3 and 4) in this area speak to an earlier settlement pattern of hill farms and lumber camps. Given that this otherwise remote land is served by existing roads there has been more residential development occurring within this area in recent years than in other similar parts of town that lack such access.

Development Constraints and Opportunities

This area of town is remote. Throughout much of this area, the terrain is steep, the soils are shallow and there are headwater streams. While there is an existing network of town roads (Class 3 and 4) throughout the area, additional development could require upgrades and improvements to those roads to accommodate additional traffic and could increase the town's annual road maintenance costs.

Future Land Use

Most of this land was placed in the Preserve zoning district in recognition of the environmental constraints and the high costs associated with providing services to remote areas of town. As recent development trends show, our current zoning is not limiting development within this area as envisioned. The recommendations for zoning changes in the Preserve district is relevant to this planning area, particularly concerns about roads and access to new development.

3G-7. COX BROOK PLANNING AREA

Current Land Use

The Cox Brook Planning Area is located in the southeastern corner of town. East of the gap through the Northfield Range, this area is primarily oriented to Northfield village a few miles away. Cox Brook and Moretown Mountain Road run through a narrow valley. The terrain rises steeply on either side, keeping most development within a few hundred feet of the road.

There are approximately 45 homes in this area and there has been very little development here over the past decade. Any development pressure would likely originate from Northfield, which has not experienced significant growth in many years.

Currently, land within 500 feet of Moretown Mountain Road is in the Agricultural-Residential zoning district and the remaining land is in the Preserve district.

Development Constraints and Opportunities

The steep terrain and numerous small streams flowing down to Cox Brook create significant challenges to development within this area. Moretown Mountain Road provides the only access to this area from other parts of Moretown. It is a gravel road that traverses steep terrain.

Future Land Use

No major change in the type or intensity of land use is desired in this area. A limited amount of additional residential development is possible, primarily at lower elevations closer to the Berlin/Northfield town lines. The recommendations for zoning changes in the Preserve district is relevant to this planning area, particularly concerns about roads and access to new development.

3G-8. ZONING DISTRICTS

Since 1976, Moretown residents have chosen to regulate development using zoning. Our current zoning regulations seek to maintain the historic character and settlement pattern of Moretown village, guide commercial and industrial development to the Route 2 corridor in North Moretown, allow residential growth in the most accessible areas of town, and limit development in the areas that are the most difficult to access and environmentally sensitive.

This section describes the purpose and standards of our current zoning districts in greater detail, analyzes the effectiveness of the current regulations, and recommends alternative approaches as appropriate to further the goals of each district.

Preserve District

This is the largest of our current zoning districts, encompassing most of the high elevation areas and 54% of the town's land area. The land in this district includes steep slopes, large tracts of forest, headwater streams, highly visible hillsides, poor soils and extensive wildlife habitat.

The stated purpose of this zoning district is to *“protect significant forest resources and water supply watersheds at higher elevations and to limit development in areas with steep slopes, shallow soils, unique or fragile resources, and poor access to town roads and*

community facilities and services.” However, the regulations in place today are not adequate to achieve that purpose. Currently, the Preserve district allows single-family residential development and related accessory uses as a permitted use at a density of one home per five acres. During the 2000s, approximately 20 new residences were built in the Preserve district.

In the past, the Planning Commission has considered an Upland Conservation overlay district and other regulatory changes to more actively protect the natural resources found in the Preserve district and guide development towards less remote areas of town. None of these changes were ever formally proposed as revisions to the zoning regulations.

The town has taken steps to discourage new development that will be accessed from Class 4 roads, but clearly those provisions should be strengthened given the number of homes that have been built off Class 4 roads in recent years. Other approaches that should also be considered include changes to our private road and driveway standards that would limit their length, prohibit roads or driveways that are too steep to provide safe access for emergency and service vehicles, and ensure that erosion and stormwater will be properly managed. Nearby communities largely prohibit new development in high elevation areas and this is another option that merits further consideration.

As discussed in greater detail below, full subdivision review and subdivision design and conservation standards are needed to achieve the stated purpose of this district. Many Vermont municipalities establish a building envelope when new lots are subdivided. The building envelope defines a relatively small area (usually not more than an acre in size) within which the building(s) must be located on the lot. This creates an opportunity to guide development to the most suitable area

of the lot so that impacts to significant natural features and resources can be minimized.

The 2013 community survey indicated that Moretown residents support the concepts expressed in the Preserve district's purpose statement.

- 82% of respondents agreed with the goal of protecting wildlife habitat and travel corridors
- 80% agreed with requiring development to be setback from streams
- 76% agreed with retaining or establishing naturally vegetated buffers along streams
- 72% agreed with minimizing the impact of development at high elevation
- 70% agreed with prohibiting development on steep slopes
- 64% agreed with prohibiting development on ridgelines
- 62% agreed with keeping remote areas relatively undeveloped

Agricultural-Residential District

The current Agricultural-Residential district encompasses most of the land within the Mad River valley and within 500 to 1,000 feet of Class 2 and Class 3 town roads. It is the second largest district encompassing 43% of the town's land area and nearly 70% of the residences in town are within this district. Approximately 90 homes were built in this district during the 2000s.

Most of the town's former and remaining farmland is located within this district. Much of the Mad River corridor, Moretown Common, South Hill, and land adjacent to the Winooski River east of Middlesex village retain an open, agrarian character. While the number of large-scale, commercial dairy farms has declined over the last several decades, more recently there has been an increase in smaller-scale, diversified and non-commercial farms associated with rural residences.

Both state regulations and our local zoning regulations need greater clarity with regard to what activities will be considered "farming" and exempt from zoning and how to appropriately regulate farm-related enterprises that fall outside that definition. There appears to be strong support in Moretown for those types of small businesses in concept, but agritourism or agri-education enterprises proposed in Moretown and nearby communities have raised concerns about increased traffic on town roads, for example. Our zoning regulations should incorporate specific standards that make it more clear to both potential applicants and neighbors what scale and impacts will be acceptable for farm-related enterprises, particularly those not located on a main road.

The stated purpose of this zoning district is to *"provide for medium density residential development, to permit the continuance of agricultural operations, to encourage clustered housing units, to preserve open space, and to preserve the significant resources of this district."* The regulations in place today cannot effectively achieve that purpose. Currently, residential development is allowed at a density of one home per acre, which may be considered medium density in a suburban context, but which is high density in a rural context. The mechanisms to encourage or require cluster development and open space preservation within our current regulations are limited to nonexistent.

The overall goal has been for this district to remain largely rural with the continuation of farming and preservation of open spaces for many years. The 2013 survey indicates that residents generally support that goal.

- 87% of respondents agreed with the goal of maintaining rural character
- 83% agreed with supporting local farm and forestry enterprises
- 82% agreed with minimizing the loss of productive farm and forest land

- 74% agreed with keeping land open to preserve views

In 2006, the Planning Commission prepared a comprehensive set of subdivision regulations, but the draft was never submitted to the Selectboard for adoption. Subdivision design standards and an alternative approach to the one-acre minimum lot size are needed to maintain rural character, working lands and open space in this district. Two such approaches used by other communities in Vermont that should be explored include lot size averaging for smaller subdivisions and requiring PUDs (planned unit developments) with a minimum amount of open space for larger subdivisions.

Lot size averaging allows for the subdivision of smaller house lots (usually ½ to 2 acres) but the overall density of development is kept at a level that will maintain rural character (usually 1 house for each 5 to 10 acres on average). Some municipalities require larger subdivisions (the number of lots that is considered a large subdivision varies widely given the community) to be designed as a PUD, which typically requires at least half the land to remain as open space while the development is clustered on the remaining portion. Clustering of lots has become increasingly popular in Vermont since changes to the state’s wastewater regulations created incentives for shared septic systems.

Village District

Moretown village, while not the focal point for the entire town, remains the center of our community because of its historic settlement pattern and because it hosts nearly all our civic buildings. The current Village zoning district encompasses approximately 100 acres or less than 0.5% of the town’s land area. There are 50 to 60 principal buildings (including approximately 40 homes) within this area, most of which are historic structures.

The stated purpose of this zoning district is to “*encourage a concentration of residential, commercial and civic activities within and immediately adjacent to Moretown village in a manner that respects the village’s small scale, historic character and residential uses.*” The current zoning dimensional standards and allowed uses are largely consistent with this purpose. A wide variety of uses are allowed with a minimum lot size of ½ acre and relatively shallow setbacks. While the current regulations allow for development that follows historic patterns, such development is not necessarily required. The regulations should incorporate more specific standards with regard to minimum building height, maximum building size, basic architectural form and design, and/or parking placement to ensure that new development would respect the village’s historic scale and character.

Further, the Village district currently is defined as a narrow corridor along Route 100B. If the goal is to encourage growth within and adjacent to Moretown village, additional land to the east of Route 100B (beyond the floodplain) should be included in this district as discussed above.

Responses to the 2013 community survey indicated that Moretown residents are generally supportive of the goals for this district:

- 80% of respondents agreed with the goal of maintaining Moretown village as the town’s center
- 75% agreed with protecting the historic character of Moretown village
- 74% agreed with making the village more pedestrian friendly

Commercial District

Moretown has historically promoted commercial and industrial development along the Route 2 corridor to expand and diversify our tax base. The Commercial district currently includes

approximately 675 acres of land along Route 2 in North Moretown.

The stated purpose of this zoning district is to *“allow for the location and expansion of commercial uses in appropriate locations in a manner that is compatible with residential uses and the town’s rural character.”* The regulations allow for a wide variety of uses – commercial, industrial and residential – with a minimum lot size of 1 acre and relatively shallow setbacks. The regulations should incorporate more specific standards with regard to access management, landscaping and signage, basic architectural form and design, and/or parking placement to enhance the aesthetics of this gateway to our town, to encourage higher quality development in this area, and to establish a more walkable commercial center particularly in the area around the Route 100 and Route 2 intersection.

Maintaining the compatibility of residential and nonresidential land uses within this district has become an increasing concern as the number of homes in the area has grown, as indicated by the responses to the 2013 survey. Presently, there are approximately 20 commercial properties and 110 residences within the district.

One option currently under consideration is to split this district in two with one district dedicated solely to more intensive industrial and commercial uses and another district that would continue to be mixed use with residential and compatible commercial and light industrial uses.

Whether that is pursued or not, the zoning regulations should incorporate more specific and clearly defined performance standards for nonresidential development, which would establish acceptable levels of light, noise, dust, traffic, etc. and hours of operation, and more specific requirements for setbacks and buffers between incompatible uses.

CHAPTER 3H. REFERENCES AND RESOURCES

This profile of Moretown today incorporates and summarizes many excellent plans, studies, educational materials and reference documents prepared over the years, which should be referred to for additional information.

- 2013** **Disaster Recovery and Long-Term Resilience Planning in Vermont: Policy Memo for the Mad River Valley**
U.S. EPA Smart Growth Implementation Assistance Project
<http://accd.vermont.gov/sites/accd/files/Documents/strongcommunities/cpr/Vermont%20SGIA%20Policy%20Memo%20FINAL.pdf>
- Economic Impact of the Moretown, Vermont Landfill**
Northern Economic Consulting, Inc.
<http://www.advanceddisposal.com/docs/default-document-library/moretown-lf--heaps-economic-development-report-01-19-13.pdf>
- Groundwater Feasibility Study: Moretown Landfill**
Environmental Planning Specialists
<http://www.anr.state.vt.us/dec/wastediv/solid/documents/MLIGroundwaterFeasibilityStudy.pdf>
- Town of Moretown Class IV Road and Trails Policy**
Town of Moretown Selectboard
http://www.moretownvt.org/wp-content/uploads/2012/09/ClassIV_Road_andTrailsPolicy_09172012.pdf
- 2012** **Mad River Valley Erosion Study Final Report**
Watershed Consulting Associates, LLC and the Friends of the Mad River
http://www.friendsofthemadriver.org/documents/MRV_Road_Erosion_Study_Report.pdf
- North Moretown Transportation Study Final Report: US 2 – VT 100 East Intersection Area**
Resource Systems Group, Inc.
<http://www.moretownvt.org/wp-content/uploads/2013/04/North-Moretown-RT100-RT2-Intersection-Final-Report.pdf>
- Findings of Fact and Reclassification Order: Groundwater Reclassification at the Moretown Landfill**
Vermont Agency of Natural Resources and the Vermont Groundwater Coordinating Committee
<http://www.clearvt.com/moretown%20landfill%20reclass%20final%20letter%20decision.pdf>
- Town of Moretown, Vermont Local Hazard Mitigation Plan**
Town of Moretown and Central Vermont Regional Planning Commission
<http://centralvtplanning.org/wp-content/uploads/2012/03/Moretown-Mitigation-Plan1.pdf>
- Winooski River Basin: Water Quality Management Plan**
Vermont Agency of Natural Resources
http://www.vtwaterquality.org/mapp/docs/mp_basin8final.pdf

Harwood Union School Forest Stewardship Plan

Grahm Leitner and Harwood Forest Project

<http://www.uvm.edu/~cfcf/ResearchProducts/HarwoodForestPlanRevDraft.docx>

Complete Streets: A Guide for Vermont Communities

Vermont Department of Health

http://healthvermont.gov/family/fit/documents/Complete_streets_guide_for_VT_communities.pdf

2011 Illicit Discharge Detection and Elimination in Richmond, Waterbury, Moretown, and Waitsfield

Stone Environmental and Friends of the Winooski River

<http://www.winooskiriver.org/images/userfiles/files/Mid-Winooskii%20DDE%20Report%20Final.pdf>

Vermont Statewide Total Maximum Daily Load (TMDL) for Bacteria-Impaired Waters: Appendix 14 – Mad River

Vermont Department of Environmental Conservation

http://www.watershedmanagement.vt.gov/mapp/docs/mp_bacteriatmdl.pdf

Vermont Statewide Total Maximum Daily Load (TMDL) for Bacteria-Impaired Waters: Appendix 14 – Mad River

Vermont Department of Environmental Conservation

http://www.watershedmanagement.vt.gov/mapp/docs/mp_14madriver.pdf

Vermont Low Impact Development Guide for Residential and Small Sites

Vermont Department of Environmental Conservation

http://www.anr.state.vt.us/dec/waterq/stormwater/docs/sw_LID%20Guide.pdf

2010 Town of Moretown, Vermont Final Sidewalk Feasibility Study

DuBois & King, Inc.

<https://www.dropbox.com/sh/yszfqer75ilwx0f/waDaEDI5cE/Moretown%20Final%20Sidewalk%20Feasibility%20Study%20Report%20part%201.pdf>

2009 Dog River Corridor Plan: Roxbury, Northfield, Berlin and Montpelier, Vermont

Bear Creek Environmental

http://www.anr.state.vt.us/dec/waterq/rivers/docs/FinalReports/155_CPA.pdf

Road Safety Audit Review: VT 100B and Moretown Mountain Road

Vermont Agency of Transportation and Central Vermont Regional Planning Commission

<http://www.moretownvt.org/wp-content/uploads/2013/03/Moretown-Moretown-Moutnain-Rd.pdf>

2007 Mid-Winooski Watershed Phase I Stream Geomorphic Assessment: Chittenden, Washington, and Lamoille County, Vermont

Bear Creek Environmental

http://www.anr.state.vt.us/dec/waterq/rivers/docs/FinalReports/112_P1B.pdf

Fluvial Geomorphology Assessment of the Mad River Watershed, Vermont

Field Geology Services and Friends of the Mad River

http://www.anr.state.vt.us/dec/waterq/rivers/docs/FinalReports/36_P1A.pdf

- 2006** **The Low Risk Site Handbook for Erosion Prevention and Sediment Control**
Vermont Department of Environmental Conservation
http://www.vtwaterquality.org/stormwater/docs/construction/sw_low_risk_site_handbook.pdf
- Mad River Valley Housing Study**
Central Vermont Community Land Trust
<http://www.mrvpd.org/documents/MRVHousingStudy2006.pdf>
- 2005** **Mad River Byway Nomination Package and Corridor Management Plan**
LandWorks and Resource Systems Group
<http://centralvtplanning.org/wp-content/uploads/2012/03/MadRiverByway100BCMPweb.pdf>
- 2003** **Assessment of Fluvial Geomorphology in Relation to Erosion and Landslides in the Mad River Watershed in Central Vermont**
Step by Step, Lori Barg and Friends of the Mad River
http://www.friendsofthemadriver.org/documents/MAD_GEO_REPORT.pdf
- 1995** **The Best River Ever: A conservation plan to protect and restore Vermont's beautiful Mad River Watershed**
Friends of the Mad River
http://www.friendsofthemadriver.org/documents/Best_river_ever_draft.pdf
- 1994** **Mad River Valley Rural Historic District Nomination Package**
UVM Historic Preservation Program
<http://accd.vermont.gov/sites/accd/files/Documents/strongcommunities/historic/MadRiverValleyRuralHD.pdf>
- 1988** **Mad River Valley Rural Resource Protection Plan**
Vermont Land Trust
http://www.warrent.vt.org/depts/Conserv_Com/Plan/MadRiverValleyRuralResourceProtectionPlan.pdf

PART 4. POLICIES TO GUIDE OUR FUTURE DECISIONS

CHAPTER 4A. RESOURCE PROTECTION

- POLICY A-1.** Pursue land use planning and regulatory approaches that will minimize the fragmentation, degradation or destruction of working land, important wildlife habitat, wetlands, floodplains and significant natural communities.
- POLICY A-2.** Pursue land use planning and regulatory approaches that will protect water quality and prevent the degradation of water resources.
- POLICY A-3.** Preserve or restore naturally vegetated buffers along all our streams and rivers.
- POLICY A-4.** Support the work of the watershed organizations working in Moretown to enhance water quality, stabilize our rivers and streams, and restore riparian and aquatic habitat.
- POLICY A-5.** Pursue land use planning and regulatory approaches that will protect and enhance our working farm and forest land, rural character and scenic resources.
- POLICY A-6.** Support landowners and conservation organizations seeking to permanently conserve working lands or open space in Moretown through the donation, sale and/or purchase of property or development rights.
- POLICY A-7.** Maintain existing public land as a community resource.
- POLICY A-8.** Encourage the appropriate maintenance, preservation and use of historic structures.
- POLICY A-9.** Recognize and appreciate the role of historic structures and settlement patterns in creating our community's character and documenting our heritage.
- POLICY A-10.** Discourage demolishing and encourage preserving and reusing historic structures.
- POLICY A-11.** Support the goals and objectives identified in the *Mad River Valley Corridor Management Plan*.
- POLICY A-12.** Pursue land use planning and regulatory approaches that will protect scenic views by maintaining open land.
- POLICY A-13.** Discourage development, including energy projects, from taking high quality farmland out of agricultural production.

- POLICY A-14.** Pursue land use planning and regulatory mechanisms that will minimize and mitigate visual and ecological impacts resulting from development in high elevation areas, on ridgelines and on steep slopes.
- POLICY A-15.** Prohibit land disturbance and building on severely steep slopes (grades of 25% or more) except for limited modifications or construction necessary for development to occur outside the steep area.
- POLICY A-16.** Prohibit large-scale development, including electric transmission projects, that would involve:
- Significant land disturbance in areas with slopes of 25% or greater.
 - Clearing or development that would have a significant adverse impact on the scenic character of the Route 100B viewshed (based on the scenic assessment included in the *Mad River Valley Corridor Management Plan*).
- POLICY A-17.** Prohibit telecommunication and energy generation projects that would involve:
- Structures with heights greater than 125 feet.
 - Construction of project elements at elevations above 1,500 feet.
 - Significant land disturbance in areas with slopes of 25% or greater.
 - Operational noise levels above the then current World Health Organization standards.
 - Clearing or development that would have a significant adverse impact on the scenic character of the Route 100B viewshed (based on the scenic assessment included in the *Mad River Valley Corridor Management Plan*).
- POLICY A-18.** Support businesses that make sustainable economic use of our local resources including agricultural, forest, scenic and recreation resources.
- POLICY A-19.** Encourage compliance with state and local anti-idling laws and policies.

CHAPTER 4B. LAND USE AND DEVELOPMENT

- POLICY B-1.** Pursue land use planning and regulatory approaches that will maintain the relatively slow rate of growth and change typical of a rural Vermont town, generally consistent with our recent average annual growth.
- POLICY B-2.** Pursue land use planning and regulatory approaches that will protect and build upon our historic settlement pattern, including maintaining Moretown village as the civic center of our community and establishing a better-integrated commercial and residential center in North Moretown.
- POLICY B-3.** Pursue planning and design strategies that focus on using land efficiently to reduce energy consumption such as:
- Compact development patterns rather than rural sprawl.
 - Pedestrian-oriented, mixed-use commercial centers rather than auto-oriented, single-use highway commercial strips.
- POLICY B-4.** Endorse the continued operation of Fairground Apartments as permanently affordable housing for low-income seniors and people with disabilities.
- POLICY B-5.** Endorse projects, programs and organizations that would preserve/create permanently affordable housing that is/would be compatible with our small town character.
- POLICY B-6.** Encourage affordable and senior housing to be developed in or near areas where residents would have greater access to transit and/or be able to walk to nearby destinations for basic goods and services.
- POLICY B-7.** Consider incentives within our zoning regulations for projects that will create affordable housing, senior housing, accessible housing, smaller homes and/or highly energy-efficient homes.
- POLICY B-8.** Continue to allow for a range of housing types to be built in Moretown while maintaining our small town character.
- POLICY B-9.** Encourage compact development residential patterns and building types that facilitate efficient use of land and preserve open space.
- POLICY B-10.** Pursue land use planning and regulatory approaches that will protect the scenic and rural character of the Route 100B corridor outside Moretown village.
- POLICY B-11.** Pursue land use planning and regulatory approaches that limit development in remote areas of town not accessible from Class 3 or better town roads or state highways.
- POLICY B-12.** Encourage economic development opportunities that will complement our rural character and quality of life.
- POLICY B-13.** Encourage new or expanded tourist-oriented businesses such as lodging, eateries, recreation, and artists and craftspeople.
- POLICY B-14.** Encourage new or expanded businesses that provide places for residents to shop and dine locally, particularly within Moretown village and North Moretown.

CHAPTER 4C. RESILIENCY, SUSTAINABILITY AND ADAPTATION

- POLICY C-1.** Support efforts to complete geomorphic assessments, assessments of all stream crossings (bridges and culverts) and river corridor (erosion hazard) delineations for all our rivers and major tributary streams.
- POLICY C-2.** Avoid locating new buildings, particularly residences, within flood and other known hazard areas.
- POLICY C-3.** Identify properties located in the flood hazard and fluvial erosion areas of Moretown.
- POLICY C-4.** Explore participation in the FEMA Community Rating System (CRS) in order to reduce the cost of flood insurance for property owners in Moretown and to expand the town's ability to access state and federal funding for flood mitigation and recovery.
- POLICY C-1.** Promote energy-efficient and environmentally sensitive site planning and building methods that take advantage of renewable energy including:
- Subdivisions and buildings located, oriented and designed for solar access.
 - Subdivision and site designs incorporating energy efficient landscaping and natural ventilation.
- POLICY C-2.** Encourage the generation of energy from renewable resources for on-site use.
- POLICY C-3.** Consider electric or alternative fuel options when purchasing new or replacement municipal vehicles and equipment.
- POLICY C-4.** Consider use of municipal/school land and buildings, or other shared sites, for community-scale solar energy generation, particularly projects are economically viable without significant subsidies or incentives.
- POLICY C-5.** Support the sustainable harvesting of timber and the conservation of forestlands in Moretown.
- POLICY C-6.** Support efforts to expand the economic viability of farm and forestry enterprises in the town and region.
- POLICY C-7.** Encourage new or expanded businesses that produce local and sustainable food, farm and forest products.
- POLICY C-8.** Support the continued operation and growth of the farmers' market.
- POLICY C-9.** Support efforts to increase purchases of local food and other farm/forest products by businesses and institutions in the town and region.
- POLICY C-10.** Support entrepreneurship and business creation by town residents.

CHAPTER 4D. INFRASTRUCTURE AND TRANSPORTATION

- POLICY D-1.** Continue to maintain town roads and transportation infrastructure in a manner that is cost-effective over the long-term, improves safety for all roadway users, incorporates complete streets principles, and protects rural and scenic character.
- POLICY D-2.** Pursue land use planning and regulatory approaches that result in a pattern and density of development that can be supported by our existing transportation infrastructure without requiring costly upgrades or reducing the rural and scenic character of our road corridors.
- POLICY D-3.** Maintain our gravel roads and do not pave them unless it becomes necessary for cost-effective maintenance or to address a specific safety concern.
- POLICY D-4.** Follow maintenance practices on the town's rural and scenic roads as recommended in Appendix C of *Designating Scenic Roads – A Vermont Field Guide*, and in accordance with state guidelines and best practices.
- POLICY D-5.** Encourage land use patterns and transportation infrastructure that support alternative modes of travel including transit, carpooling, bicycling and walking.
- POLICY D-6.** Maintain town control of Class 4 roads and legal trails for sustainable recreational use.
- POLICY D-7.** Prohibit the extension of existing town roads, the upgrading of Class 4 roads or legal trails for year-round vehicular use, and the town taking over private roads except when such an action would have significant and broad public benefit.
- POLICY D-8.** Support more convenient access to transit, bicycle paths and carpooling for residents in all areas of town.
- POLICY D-9.** Advocate for the timely replacement of the state's bridge on Route 100B south of Moretown village, and for the new bridge to be designed and constructed to minimize flooding hazards, to serve as an attractive gateway to our community, to slow and calm traffic entering the village, and to safely accommodate all roadway users.
- POLICY D-10.** Support the intersection, pedestrian and access management improvements needed to accommodate future business growth and development in North Moretown at the Route 100 and Route 2 intersection, including consideration of reconstructing the intersection as a roundabout.
- POLICY D-11.** Support the availability of affordable broadband and cell phone service town wide that is upgraded as technology advances.

CHAPTER 4E. COMMUNITY FACILITIES AND SERVICES

- POLICY E-1.** Pursue land use planning and regulatory approaches that will result in a pattern, scale and rate of development that will not exceed our ability to provide town services and facilities in a cost-effective manner that is affordable for taxpayers.
- POLICY E-2.** Ensure that the cost of any new, expanded or upgraded infrastructure needed to serve new development is privately funded and not placed on taxpayers.
- POLICY E-3.** Seek smaller, simpler or less expensive solutions to meet infrastructure needs rather than building new or significantly expanding existing infrastructure.
- POLICY E-4.** Improve the energy efficiency of municipal buildings, vehicles and operations.
- POLICY E-5.** Support programs like the Low Income Home Energy Assistance Program and the Weatherization Assistance Program that help low-income residents reduce their energy costs.
- POLICY E-6.** Maintain quality and cost-effective options for providing residents with emergency medical response and transport services.
- POLICY E-7.** Support efforts to regionalize the provision of community services and to share facilities, equipment and manpower with neighboring municipalities to reduce municipal expenditures.
- POLICY E-8.** Continue to support regional nonprofit organizations that provide important health, social welfare, educational, recreation and other community services to town residents.
- POLICY E-9.** Maintain existing public access and recreational areas in town.
- POLICY E-10.** Seek opportunities to expand public access to the Mad River, Winooski River, and other recreation resources in town.
- POLICY E-11.** Support the continued operation of Moretown Elementary School and its role as a center of community life, while urging state and school officials and administrators to pursue strategies that would stabilize or reduce education costs for town taxpayers.
- POLICY E-12.** Support programs in our schools that link students and local businesspeople, creating benefits for both.
- POLICY E-13.** Support efforts to offer affordable, quality childcare services for all Moretown families, including the continuation of childcare, pre-school, after-school and summer programs at Moretown Elementary School.

CHAPTER 4F. ADMINISTRATION AND GOVERNANCE

- POLICY F-1.** Provide opportunities for residents to have input at every stage of our town planning and decision-making processes, preferably going beyond minimum, statutory requirements and providing multiple avenues for people to participate.
- POLICY F-2.** Continue to have our town planning and decision-making processes occur in an open, public environment, and to use a variety of media to inform residents about town issues.
- POLICY F-3.** Continue to regularly review our town planning, policy and regulatory documents and update them when necessary to address changing circumstances.
- POLICY F-4.** Continue to participate in the National Flood Insurance Program.
- POLICY F-5.** Seek alternative funding strategies and mechanisms to reduce the municipal and educational property tax burden on Moretown landowners.
- POLICY F-6.** Support and publicize programs that reward energy conservation rather than consumption.
- POLICY F-7.** Support and publicize programs that assist building owners with energy audits, weatherization and other efficiency upgrades.
- POLICY F-8.** Increase residents' awareness of efficiency programs and incentives.
- POLICY F-9.** Require a host town agreement for any large-scale commercial or industrial enterprise proposing to locate or expand in Moretown.
- POLICY F-10.** Ensure that our zoning regulations and development review decisions are compatible with the policies expressed in this plan.
- POLICY F-11.** Provide a clear and straightforward permitting and regulatory review process for new and expanding development.

CHAPTER 4G. REGIONAL COORDINATION AND COOPERATION

- POLICY G-1.** Continue active participation in the Central Vermont Regional Planning Commission in order to improve regional coordination and cooperation and to advocate for our town's interests in regional and state planning and decision-making.
- POLICY G-2.** Continue active participation in the Mad River Resource Management Alliance as a means of efficiently providing solid waste planning as required by state law and ensuring residents have convenient and affordable access to solid waste services and facilities.
- POLICY G-3.** Provide neighboring towns with an opportunity to comment when our plans or decisions have the potential to have impacts beyond town boundaries.
- POLICY G-4.** Participate in regional and state energy programs and partnerships.
- POLICY G-5.** Support the provision of alternative fuel and electric vehicle infrastructure throughout the region.
- POLICY G-6.** Support the efforts of local, regional and state organizations and agencies to expand trail systems and improve road corridors to safely accommodate pedestrians and bicyclists in Moretown.
- POLICY G-7.** Participate in regional and state transportation planning programs and partnerships.
- POLICY G-8.** Be actively involved in the planning and design of any state transportation projects in Moretown and advocate for such projects to be compatible with the policies expressed in this plan, particularly the preservation of our rural and scenic character.
- POLICY G-9.** Participate in regional and state economic development programs and partnerships.

PART 5. ACTIONS TO ACHIEVE OUR VISION AND GOALS

CHAPTER 5A. CONSERVING OUR RESOURCES AND MAINTAINING RURAL CHARACTER

- ACTION A-1.** Complete the Phase 2 geomorphic assessment for the Mad River and its tributaries.
- ACTION A-2.** Initiate a public process to assess whether to revise our flood hazard regulations to include erosion hazard areas once the state releases river corridor maps for the rivers and tributary streams in town.
- ACTION A-3.** Revise our zoning regulations to increase the minimum setback and buffer requirement from rivers and streams to at least 50 feet, and incorporate more specific standards with regard to the removal of natural vegetation from riparian buffers.
- ACTION A-4.** Partner with conservation organizations and state agencies to inventory and study wildlife habitat and travel corridors in Moretown to provide the information needed to better protect these resources.
- ACTION A-5.** Conduct a scenic resource inventory on town roads similar to the scenic assessment completed along the Route 100B corridor as part of the Scenic Byway designation.
- ACTION A-6.** Adopt management guidelines to protect the scenic character of town roads, including maintaining our gravel roads.
- ACTION A-7.** Revise our zoning regulations to include specific standards for outdoor lighting, including requiring use of fully-shielded light fixtures.
- ACTION A-8.** Incorporate specific provisions into our zoning regulations and adopt a policy for town roads that would prohibit installation of streetlights in the rural areas of town except where lighting in a specific location is necessary for public safety, and that would require use of downcast, shielded and energy-efficient fixtures.
- ACTION A-9.** Incorporate specific provisions into our zoning regulations to minimize disturbance and establish responsible development practices in areas with moderately to severely steep slopes, particularly addressing erosion control and stormwater management best practices.
- ACTION A-10.** Revise our zoning regulations to establish minimum standards for erosion control and stormwater management, especially for smaller sites and projects that are exempt from state permitting.
- ACTION A-11.** Incorporate provisions for protecting groundwater resources into our zoning regulations, particularly specific standards for how land within mapped source water protection areas for community water supplies may be used in order to prevent the contamination of drinking water.
- ACTION A-12.** Maintain and abide by the resource extraction provisions within our zoning regulations in order to ensure: that any future extraction operations will be responsibly planned, carried out and reclaimed; and that extraction will not reduce quality of life or environmental health.

CHAPTER 5B. FOSTERING APPROPRIATE GROWTH AND DEVELOPMENT

- ACTION B-1.** Develop growth management strategies to address the cumulative impacts of development that would be implemented if the rate of growth increases above historic averages.
- POLICY B-2.** Review the state's river corridor mapping when it becomes available and consider expanding our flood hazard regulations to include any additional mapped areas.
- POLICY B-3.** Incorporate guidelines for passive solar siting, landscaping and building design and energy efficiency into our zoning regulations.
- POLICY B-4.** Revise the parking standards within our zoning regulations to prevent construction of excess parking, incentivize shared parking and access, and ensure parking areas are located, designed and landscaped to enhance rather than detract from the character of the property.
- ACTION B-5.** Update the provisions for accessory dwelling units within our zoning regulations to fully comply with state law and continue to provide flexibility for size and occupancy of accessory dwelling units.
- ACTION B-6.** Enact a PACE (Property Assessed Clean Energy) District to provide homeowners access to capital for energy improvements in collaboration with the Moretown Energy Group.
- ACTION B-7.** Establish an energy resources section on the town website to assist property owners with researching and assessing their options for conservation, efficiency and renewable generation in collaboration with the Moretown Energy Group.
- ACTION B-8.** Adjust the areas of town zoned for moderate to high density residential development based on the land use recommendations made in this plan, availability and capability of land, proximity to infrastructure, and natural hazards and constraints.
- POLICY B-9.** Adjust the areas of town zoned for commercial, industrial and mixed uses based on the land use recommendations made in this plan, existing development patterns, availability and capability of land, proximity to infrastructure, and natural hazards and constraints.
- POLICY B-10.** Incorporate specific standards for building and site design in our zoning regulations within Moretown village and North Moretown based on the recommendations made in this plan that will result in a high-quality, pedestrian-friendly and attractive built environment.
- POLICY B-11.** Incorporate performance standards for nonresidential uses into our zoning regulations to protect our rural character and quality of life for nearby residents.
- POLICY B-12.** Revise our zoning regulations to better protect rural character and open space as recommended in this plan.
- POLICY B-13.** Incorporate specific standards in our zoning regulations to address rural enterprises such as farm- and forest-based tourism, farm- and forest-based education, direct marketing of farm and forest products, manufacturing of value-added farm and forest products, and processing of farm and forest products as recommended in this plan.

CHAPTER 5C. PARTICIPATING EFFECTIVELY AT THE STATE AND REGIONAL LEVEL

- ACTION C-1.** Participate in the state’s Act 250 permitting process for development projects in or affecting Moretown to ensure that decisions will be compatible with the policies expressed in this plan and will protect the overall health of our environment, economy and community.
- ACTION C-2.** Participate in the state’s Section 248 permitting process for energy generation and transmission projects in or affecting Moretown and seek to ensure that decisions will be compatible with the policies expressed in this plan and will protect the overall health of our environment, economy and community.
- ACTION C-3.** Revise our flood hazard area regulations as needed to remain consistent with the state’s model regulations.
- ACTION C-4.** Participate in Mad River Valley initiatives related to housing, economic development, recreation, watershed conservation and the local food system.
- ACTION C-5.** Coordinate transportation planning and improvements at the local, regional and state level, including through active participation in the Central Vermont Regional Planning Commission’s Transportation Advisory Committee.
- ACTION C-6.** Work with the Vermont Division for Historic Preservation to update the survey of historic sites and structures in Moretown.
- ACTION C-7.** Seek state Village Center designation for Moretown village, which among other benefits would make owners of income-producing property eligible for tax credits when they invest in building improvements.

CHAPTER 5D. IMPROVING OUR INFRASTRUCTURE, FACILITIES AND SERVICES

- ACTION D-8.** Fully implement the sidewalk plan for Moretown village and call upon the state to construct planned pedestrian and bicycle improvements in North Moretown.
- ACTION D-9.** Work with VTrans to improve the safety of the Route 100B and Moretown Mountain Road intersection and implement the recommendations of the 2009 road safety audit.
- ACTION D-10.** Revise our zoning regulations to incorporate access management provisions for both new and previously developed sites, particularly along the state highway corridors.
- ACTION D-11.** Identify demand and potential locations for park-and-ride lots in Moretown.
- ACTION D-12.** Establish a flood resources section on the town website to assist property owners with finding information about flood mapping, insurance, regulations, mitigation and recovery.
- ACTION D-13.** Revise our zoning regulations to incorporate specific standards for meeting emergency service needs including adequate access for emergency vehicles, pull-offs, turnarounds, provision of water for firefighting, etc.
- ACTION D-14.** Request that the Selectboard periodically hold a meeting of first responders, emergency management chairperson, highway department, town health officer, planning commission and the zoning administrator to discuss current status and trends such as demand for emergency services and availability of volunteers, disaster response and hazard mitigation planning, and development activity to aid the town with planning to meet emergency response needs. Incorporate recommendations into the town's *Hazard Mitigation Plan* as appropriate.
- ACTION D-15.** Request that the School Board hold an annual meeting of school administrators, school board members, the planning commission and the zoning administrator to review statistics such as school enrollment, education costs, demographic, and residential permits to aid the town and school with pursuing policies that will support and enhance the viability of our elementary school.
- ACTION D-16.** Incorporate provisions within our zoning regulations to specifically authorize consideration of the impact of proposed development on public facilities, services and infrastructure during the review and permitting process, and to establish mechanisms that would require developers to pay any costs of new, expanded or upgraded facilities, services or infrastructure.
- ACTION D-17.** Seek grant funding to conduct a study to inventory and assess the capability of soils on undeveloped land in and around Moretown village to accommodate shared or community wastewater systems.

ACTION D-18. Provide information to residents about testing private drinking water supplies and maintaining private septic systems through the town website, and to landowners who apply for a zoning permit.

ACTION D-19. Prioritize and implement the improvements recommended in the previously completed municipal building energy audits, and incorporate major projects into our capital budget and program.

ACTION D-20. Prepare a street and municipal lighting plan that would offer prioritized recommendations for:

- Removing unneeded lights.
- Placing lights on timers.
- Using solar activated lights.
- Upgrading inefficient fixtures.
- Replacing, modifying or adjusting fixtures to minimize light pollution and sky glow.
- Locating lights where needed for public safety.

ACTION D-21. Assess the feasibility of using existing town land or buildings for a net-metered community solar system to provide electricity to municipal/school facilities and potentially to participating private partners depending on the potential capacity of the system.

ACTION D-22. Implement the policies and projects recommended in the Forest Management Plan for the land behind Moretown Elementary School.

ACTION D-23. Maintain a list of local businesses and services (including home businesses) on the town website.

CHAPTER 5E. BUILDING CAPACITY FOR GOOD LOCAL GOVERNANCE

- ACTION E-1.** Maintain a current capital budget and program that is compatible with the policies expressed in this plan.
- ACTION E-2.** Regularly review the town's adopted financial policies and update as necessary to meet the town's needs and follow best practices recommended by the Vermont League of Cities and Towns.
- ACTION E-3.** Revise the municipal purchasing policy to consider the life-cycle cost of purchases.
- ACTION E-4.** Revise the municipal purchasing policy to include buy-local provisions.
- ACTION E-5.** Prepare a cost-benefit analysis and calculate the payback period for major municipal projects and purchases.
- ACTION E-6.** Adopt and follow a long-term policy and plan for maintaining town roads.
- ACTION E-7.** Adopt minimum road standards for both town and private roads based on recommended state standards.
- ACTION E-8.** Revise our zoning regulations with clear standards and processes that will create greater certainty and consistency in decisions, and reduce delays in permitting and development review.
- ACTION E-9.** Establish a system for maintaining and adequately safeguarding town land use permitting records in both paper and electronic format, and for tracking permit data and development trends consistently over time in order to provide a foundation for future town planning and decision-making.
- ACTION E-10.** Regularly review our *Emergency Operations Plan*, *Hazard Mitigation Plan* and *Rapid Response Plan* and update them as needed.
- ACTION E-11.** Adopt rules of procedure for all town boards and committees.
- ACTION E-12.** Adopt a policy setting annual training requirements for those serving on various town boards (Selectboard, Planning Commission, Development Review Board, etc.).
- ACTION E-13.** Post information about development applications and decisions on the town website.
- ACTION E-14.** Post adopted town ordinances, bylaws, rules of procedure, and policies on the town website.

PART 6. APPENDICES

CHAPTER 6A. DATA TABLES

FIGURE 1. Population 1791 to 2010

	1791	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900
Moretown	24	191	405	593	816	1,128	1,335	1,410	1,263	1,180	952	902
Washington Cty.	826	5,877	11,601	15,445	21,510	23,506	24,654	27,612	26,520	25,404	29,606	36,607
Vermont	85,088	153,608	218,068	236,433	279,862	291,948	314,304	315,098	330,551	332,286	332,422	343,641

	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010
Moretown	886	930	888	975	883	788	904	1,221	1,415	1,653	1,658
Washington Cty.	41,702	38,921	41,733	41,546	42,870	42,860	47,659	52,393	54,928	58,039	59,534
Vermont	355,956	352,428	359,611	359,281	377,747	389,881	444,731	511,466	562,758	608,827	625,741

Source: U.S. Census Bureau Decennial Census

FIGURE 2. Population Change and Growth Rates 1950s to 2000s

	Change 1960 to 1970			Change 1970 to 1980			Change 1980 to 1990			Change 1990 to 2000			Change 2000 to 2010		
	Absolute	Percent	Rate												
Moretown	116	14.7%	1.4%	317	35.1%	3.1%	194	15.9%	1.5%	238	16.8%	1.6%	5	0.3%	0.0%
Washington Cty.	4,799	11.2%	1.1%	4,734	9.9%	1.0%	2,535	4.8%	0.5%	3,111	5.7%	0.6%	1,495	2.6%	0.3%
Vermont	54,850	14.1%	1.3%	66,735	15.0%	1.4%	51,292	10.0%	1.0%	46,069	8.2%	0.8%	16,914	2.8%	0.3%

Source: U.S. Census Bureau Decennial Census

FIGURE 3. Components of Population Change in Moretown 1950s to 2000s

	1950-1960	1960-1970	1970-1980	1980-1990	1990-2000	2000-2010
Population Change	-95	116	317	194	238	5
Births	168	150	176	252	183	130
Deaths	90	74	75	78	88	90
Natural Increase	78	76	101	174	95	40
Migration	-173	40	216	20	143	-35

Source: Vermont Department of Health Vital Statistics

FIGURE 4. Births and Deaths in Moretown 1989 to 2013

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Natural Increase	16	20	12	9	6	9	10	15	3	11	0	5	6	1	7	4
Births	20	24	25	17	19	15	24	17	13	15	14	12	15	16	12	11
Deaths	4	4	13	8	13	6	14	2	10	4	14	7	9	15	5	7

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Natural Increase	11	5	7	-1	-5		11	2	-4
Births	17	10	16	10	11		25	10	11
Deaths	6	5	9	11	16		14	8	15

Source: Vermont Department of Health Vital Statistics

FIGURE 5. Population Projection 2010 to 2030

	2010 Count	2020 Projection Low to High	2030 Projection Low to High	Change 2010 to 2020			Change 2020 to 2030		
				Absolute	Percent	Rate	Absolute	Percent	Rate
Moretown	1,658	1,692 - 1,724	1,698 - 1,766	34 - 66	2.1% - 4.0%	0.2% - 0.4%	6 - 42	0.4% - 2.4%	0.0% - 0.2%
Washington Cty.	59,534	60,027 - 61,186	59,960 - 62,372	493 - 1,652	0.8% - 2.8%	0.1% - 0.3%	-67 - 1,186	-0.1% - 1.9%	0.0% - 0.2%
Vermont	625,741	628,688 - 653,575	620,480 - 670,073	2,947 - 27,834	0.5% - 4.4%	0.0% - 0.4%	-8,208 - 16,498	-1.3% - 2.5%	-0.1% - 0.2%

Source: Vermont Department of Housing and Community Affairs

FIGURE 6. Population by Age Group 1990 to 2010

	Moretown					Moretown			Washington County			Vermont		
	1990	2000	2010	Change 1990 to 2010		1990	2000	2010	1990	2000	2010	1990	2000	2010
Total	1,415	1,653	1,658	243	17%	1,415	1,653	1,658	54,928	58,039	59,534	562,758	608,827	625,741
0 to 4	120	102	71	-49	-41%	8%	6%	4%	7%	6%	5%	7%	6%	5%
5 to 9	117	114	84	-33	-28%	8%	7%	5%	8%	7%	6%	7%	7%	6%
10 to 14	91	137	109	18	20%	6%	8%	7%	7%	7%	6%	7%	8%	6%
15 to 19	72	117	114	42	58%	5%	7%	7%	7%	7%	7%	7%	8%	7%
20 to 24	65	56	62	-3	-5%	5%	3%	4%	7%	6%	6%	8%	6%	7%
25 to 29	125	94	69	-56	-45%	9%	6%	4%	7%	5%	5%	8%	6%	6%
30 to 34	133	125	88	-45	-34%	9%	8%	5%	8%	7%	6%	9%	7%	5%
35 to 39	163	140	108	-55	-34%	12%	8%	7%	9%	8%	6%	9%	8%	6%
40 to 44	157	166	144	-13	-8%	11%	10%	9%	8%	9%	7%	8%	9%	7%
45 to 49	74	166	151	77	104%	5%	10%	9%	6%	9%	8%	6%	8%	8%
50 to 54	58	155	160	102	176%	4%	9%	10%	5%	8%	9%	4%	7%	8%
55 to 59	52	65	156	104	200%	4%	4%	9%	4%	5%	8%	4%	5%	8%
60 to 64	55	60	137	82	149%	4%	4%	8%	4%	2%	7%	4%	2%	7%
65 to 69	43	51	60	17	40%	3%	3%	4%	4%	4%	4%	4%	4%	5%
70 to 74	40	46	55	15	38%	3%	3%	3%	3%	3%	3%	3%	3%	3%
75 to 79	26	24	40	14	54%	2%	1%	2%	3%	3%	3%	2%	3%	3%
80+	24	35	50	26	108%	2%	2%	3%	4%	4%	4%	3%	4%	4%
0-17	377	440	345	-34	-9%									
18-64	905	1,057	1,108	203	22%									
65+	133	156	205	72	54%									

Source: U.S. Census Bureau Decennial Census

FIGURE 7. Households and Average Household Size 1950 to 2010

	Number of Households							Average Household Size			
	1950	1960	1970	1980	1990	2000	2010	1980	1990	2000	2010
Moretown		269	392	544	639	650	696	2.67	2.78	2.54	2.38
Washington Cty.	12,318	14,133	18,626	20,948	23,659	25,027		2.66	2.50	2.36	2.28
Vermont	110,754	132,041	178,394	210,650	240,634	256,442		2.75	2.57	2.44	2.34

Source: U.S. Census Bureau Decennial Census

FIGURE 8. Household Change and Growth Rates 1960s to 2000s

	Change 1960 to 1970			Change 1970 to 1980			Change 1980 to 1990			Change 1990 to 2000			Change 2000 to 2010		
	Absolute	Percent	Rate												
Moretown	123	45.7%	3.8%	152	38.8%	3.3%	95	17.5%	1.6%	11	1.7%	0.2%	46	7.1%	0.7%
Washington Cty.	1,815	14.7%	1.4%	4,493	31.8%	2.8%	2,322	12.5%	1.2%	2,711	12.9%	1.2%	1,368	5.8%	0.6%
Vermont	21,287	19.2%	1.8%	46,353	35.1%	3.1%	32,256	18.1%	1.7%	29,984	14.2%	1.3%	15,808	6.6%	0.6%

Source: U.S. Census Bureau Decennial Census

FIGURE 9. Households by Type 1990 to 2010

	Moretown				Moretown			Washington County			Vermont		
	1990	2000	2010	Change 1990 to 2010	1990	2000	2010	1990	2000	2010	1990	2000	2010
Total	639	650	696		639	650	696						
Single-person		145	179			22%	26%						
Unrelated multi-person		68	57			10%	8%						
Married couple, children		185	151			28%	22%						
Married couple, no children		173	233			27%	33%						
Female single-parent		35	39			5%	6%						
Male single-parent		16	13			2%	2%						
Other family		28	24			4%	3%						

Source: U.S. Census Bureau Decennial Census

FIGURE 10. **Housing Units 1950 to 2010**

	1950	1960	1970	1980	1990	2000	2010
Moretown	255	269	392	544	639	727	797
Washington Cty.	12,727	13,994	16,258	22,113	25,328	27,644	29,941
Vermont	121,911	136,307	165,063	223,198	271,214	294,382	322,539

Source: U.S. Census Bureau Decennial Census

FIGURE 11. **Housing Unit Change and Growth Rates 1960s to 2000s**

	Change 1960 to 1970			Change 1970 to 1980			Change 1980 to 1990			Change 1990 to 2000			Change 2000 to 2010		
	Absolute	Percent	Rate												
Moretown	123	45.7%	3.8%	152	38.8%	3.3%	95	17.5%	1.6%	88	13.8%	1.3%	70	9.6%	0.9%
Washington Cty.	2,264	16.2%	1.5%	5,855	36.0%	3.1%	3,215	14.5%	1.4%	2,316	9.1%	0.9%	2,297	8.3%	0.8%
Vermont	28,756	21.1%	1.9%	58,135	35.2%	3.1%	48,016	21.5%	2.0%	23,168	8.5%	0.8%	28,157	9.6%	0.9%

Source: U.S. Census Bureau Decennial Census

FIGURE 12. **Housing Units by Occupancy 1980 to 2010**

	Moretown						2010		
	1980	1990	2000	2010	Change 1980 to 2010	Moretown	Washington Cty.	Vermont	
Total	544	639	727	797	253	47%	797	29,941	322,539
Owner-occupied	314	420	504	522	208	66%	68%	59%	56%
Rental	144	120	146	144	0	0%	19%	25%	23%
Seasonal	34	47	63	66	32	94%	9%	12%	16%
Vacant	18	52	14	35	17	94%	5%	5%	5%

Source: U.S. Census Bureau Decennial Census

