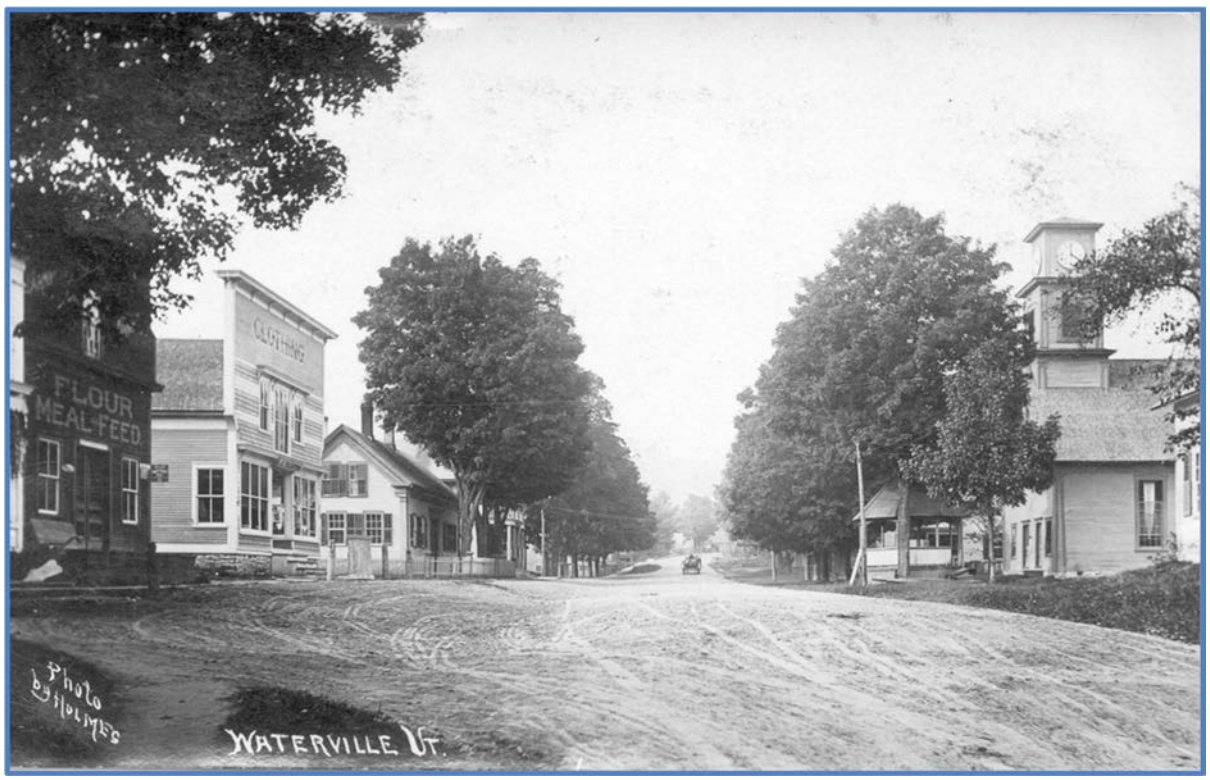
# WATERVILLE

# TOWN PLAN 2019 – 2027




*Waterville village with the Town Hall to the right. Photo courtesy of the Waterville Preservation Board.*

**Prepared by the Waterville Planning Board**

*Technical Assistance provided by: The Lamoille County Planning Commission*

**Adopted by the Waterville Selectboard on:** May 13, 2019

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# INTRODUCTION

## A Message from the Waterville Planning Board

In 2018 the Waterville Planning Board convened to update the Town Plan for Waterville as a revision of the Town Plan adopted in 2014. Waterville benefits by having a Town Plan in order to establish a vision for our community and to be eligible for other federal and state grant funds that allow us the opportunity to meet our goals.

We have worked closely with the Lamoille County Planning Commission in the development of the Town Plan and submission of Municipal Planning Grants since 2014. Below is a timeline of recent planning efforts.

2015 - The Town of Waterville renewed its Village Center Designation.

2016-2017 - The Waterville Planning Board, Emergency Management Director, and Selectboard worked with the Lamoille County Planning Commission to update and create a single jurisdiction Local Hazard Mitigation Plan for the Town of Waterville.

2017 - The Town of Waterville made improvements to the Library and Town Clerk's Office building including installing high efficiency windows, new doors, front entrance pillars, roofing, and siding.

2017 - The Town of Waterville was awarded a Municipal Planning Grant to develop a Flood Resilience and Water Quality chapter of the *Waterville Town Plan*.

2018 - The Waterville Planning Board and Selectboard worked with the Lamoille County Planning Commission to develop an Enhanced Energy Plan for the Town of Waterville in accordance with Act 174.

2018-2019 - The Waterville Planning Board met monthly to review and update the *Waterville Town Plan*.

2019 - The Waterville Selectboard met to review and adopt the *2019 Waterville Town Plan*.

Waterville has a rich history of community engagement and mobilizing efforts that allow us to enjoy, promote and improve our community. The members of the Waterville Planning Board are pleased to be able to make our contributions to our community, the latest of which is the revised 2019 *Town Plan for Waterville*.

## How is a Town Plan useful to the people of Waterville?

There are many ways in which a Town Plan can be used - from simply being a source of information to being a foundation for regulations. Ultimately, the residents of Waterville determine the uses of the Waterville Town Plan. Among the potential uses of the municipal plan are the following:

1. A source of information: The plan is a valuable source of information for local boards, commissions, citizens, and businesses. The information in a plan could serve to familiarize residents, potential residents, and development interests with Waterville and its resources.
2. A basis for community programs and decision-making: The plan is a guide for the recommendations contained in a capital budget and program, for any proposed community

development program, and for the direction and content of local initiatives such as economic development, recreation planning, and housing.

3. A source for planning studies: Few plans can address every issue in sufficient detail. Town Plans not only record and discuss what is known about the resources and residents of the town, but also what is not known. Therefore, many plans will recommend further studies to develop courses of actions on a specific need.
4. A standard for review at the state and regional levels: Act 250 and other state regulatory processes identify the municipal plan as a standard for review of applications. Municipal plans are important to the development of regional plans and regional and inter-municipal programs. In addition, state proposals must comply with Town Plans, including the purchase of state land for parks and recreation.
5. A long-term guide: The plan is a long-term guide by which to measure and evaluate public and private proposals that affect the physical, social, and economic environment of the community.
6. An eligibility requirement and/or positive factor for state and federal grants: In 2000, the state began requiring towns to adopt plans in order for communities to be eligible for most grants and low interest loans. Planning grants, water and wastewater grants, community development grants, and other key sources of funding all now require the municipality to have an adopted plan. While many other public and private funding sources do not require town plans in order to be eligible, having a town plan that documents the need for funding will generally strengthen the application.
7. A basis for regulatory action: The plan serves as a foundation and guide for the creation or amendment of zoning regulations, subdivision regulations, shoreland bylaws, flood hazard bylaws, and for the decisions made under these regulations.

## What is required in a town plan?

Vermont municipalities are authorized to create municipal development plans under 24 V.S.A. §4381. All local plans in Vermont, regardless of whether they are for rural or urban municipalities, must include the following twelve elements:

1. A statement of objectives, policies, and programs of the municipality to guide the future growth and development of land, public services and facilities, and to protect the environment;
2. A land use plan and map;
3. A transportation plan and map;
4. A utility and public facility plan and map;
5. A statement of the municipality's policies for the preservation of rare and irreplaceable natural areas, and scenic and historic resources;
6. An education facilities plan and map;
7. A recommended program for implementing the plan's objectives;
8. A statement of how the plan relates to adjacent municipalities' plans and the regional plan;
9. An energy plan, including policies and programs to implement those policies;
10. A housing element, including a recommended program for addressing low and moderate-income persons' needs as identified in the regional plan;
11. An economic development element that describes present economic conditions and the location, type, and scale of desired economic development, and identifies policies, projects, and programs necessary to foster economic growth; and
12. A flood resilience and water quality element.

Additionally, plans must strive to attain thirteen statewide planning goals, including: ensuring public participation during the planning process, planning development to maintain historic settlement patterns of compact village centers surrounded by rural countryside, and ensuring the availability of child care.

These represent the minimum requirements of 24 V.S.A. Chapter 117, the Vermont Municipal and Regional Planning and Development Act, which governs local land use planning and regulation in Vermont. Each Town Plan will be different depending on the unique qualities that exist in each community.

## How was the Town Plan developed?

This plan is the result of a revision of the 2014 *Town Plan for Waterville*. During the development of this 2019 plan, all Waterville Planning Board meetings were open to the public. Public participation was sought from citizens, the Waterville Selectboard, the Emergency Management Director, and other regional organizations. Finally, the Planning Board held a public hearing, as required by State statute, before submitting the plan to the Waterville Selectboard for consideration and adoption.

## Statement of Waterville's Planning Objectives and Goals

The objectives of the Waterville Town Plan are stated below. See Chapter 11 for a timeline and implementation schedule to achieve specific recommendations as related to these objectives.

Keep Waterville rural and preserve the personal, community, and natural qualities of life in our small town.

Encourage preservation of Waterville's natural resources and scenic beauty, including water resources, open land, mountaintops and ridges, forest and agricultural land, trails and views.

Seek to continually improve the quality of education in Waterville to prepare its citizens for lifelong learning.

Encourage preservation of the historic bridges and buildings owned by the Town of Waterville.

Promote the preservation of private structures and sites through the Historic District and the Designated Village Center programs as well as the National Register of Historic Places.

Encourage housing and transportation that allow the people of Waterville, especially young people and seniors, to remain in the community.

Encourage citizens to be informed and engaged in the Waterville community.

Coordinate local planning with neighboring towns and others with whom we share resources.

Research the future economic development of Waterville in ways that draw on the resources and work skills of the town.

## Introduction

Respect and protect the rights of the property owners, voters, and residents of Waterville.

Ensure that Waterville is a wonderful place in which to live, visit, and recreate.

Maintain and enhance Waterville's access to current technologies and opportunities.

# Chapter 1. Welcome to Waterville

## A Brief Waterville Town History[1]

The Town of Waterville is located in a small, low-lying valley between steep hills and mountains, and is situated in the northwestern part of Lamoille County (latitude 44° 33' north, longitude 76° 46' west). It is bounded by Bakersfield on the north and west, Cambridge on the south, Belvidere and Johnson on the east and Fletcher and Cambridge on the west. Most of the 15.44 square miles (9,882 acres) that make up Waterville drain into the Kelley River (also referred to as the North Branch of the Lamoille River).

Waterville was chartered as Coit's Gore on October 26, 1788 to James Whitlaw, James Savage, and William Coit. In 1795, there were seven families in the Gore. Early settlers squatted on Native American lands, eventually building houses on the hills, leaving the Kelley River and its valley to the Native Americans. The Town of Waterville was chartered on November 16, 1824 by Timothy Brown and held its first town meeting the same year. The village is not incorporated.

Initial settlement of the Town of Waterville was scattered throughout the region without a specific focal point of development. In the 1830s, development began to cluster in the southern end of the town near the waterfalls of the North Branch of the Lamoille River. Soon a village developed at this location, and many of the early settlers (or their descendants) moved from their homes in the rural landscape to homes in the growing commercial and industrial center of the village. The name "Waterville" was most likely selected in recognition of the most important geographical feature in the region, the North Branch of the Lamoille River.

Waterville's first saw and gristmills were built in 1796-97. Although the location of these first mills is no longer known, they are significant for having been designed by the well-known surveyor, millwright, builder, architect and civil engineer John Johnson (1771-1842). These early mills may have been constructed by Barnard Carpenter and were powered by what was later known as Peck's Mill Dam.

Waterville's population reached its peak in 1850 with 753 people. During the days of Waterville prosperity (1840s-1850s), many businesses flourished. Among these were: a friction match shop; a shop which made wooden rakes, grain cradles and various wood handles; a legging and belt lace factory; a knife and blade factory; a shingle and gristmill; sawmills; a boot factory which made 500 pairs of boots a year; a flannel mill which produced approximately 374,400 yards of flannel annually and employed 51 people; a starch factory which used 5,600 bushels of potatoes to produce 44,000 pounds of starch annually; a carding mill; a tannery which used 300 calf skins, 35,000 sheep skins, and 250 cords of bark annually; a sash factory which produced 50,000 window sashes per year; two cabinet shops; several blacksmiths; and two hotels. Waterville also had the Mountain Spring House, the Union House, and four stores.

There were three schoolhouses, a post office, and a cemetery. Waterville had two mines, which produced soapstone, talc and asbestos. Mining was done on a small scale and in 1936 Selectmen were

1 Material largely taken from *Log Cabin Days of Coits Gore and Waterville* by Mary Wilbur Wescot, printed 1975.

instructed to sell the rights for delinquent taxes. Gold and silver veins have been discovered in Waterville, but not in sufficient quantity to mine.

Early church societies in Waterville consisted of the Methodists, Congregationalists, Baptists, and Universalists. The Congregational and Methodist societies joined together in 1839 and in the same year built and dedicated the Union Meeting House. In 1870, the Universalist denomination joined with the United Church and built a meetinghouse. The Union Church building was apparently donated to the village by Moses McFarland about 1889, and converted to use as the town hall (Coit's Gore, pg. 39). One of Waterville's Baptist ministers was the Reverend William Arthur, father of Chester A. Arthur, the 21st President of the United States. In 1910, Chester A. Austin formed the Nazarene Society. The Catholic population attended church in Cambridge.

Several disastrous fires in the 1850s, combined with depressed business conditions, changed Waterville from a thriving manufacturing community to an agricultural hamlet. At the turn of the century, the population was down to 529 and by 1930 Waterville had 370 residents. In 1930, Waterville had a few businesses: a grain dealer; a lumber mill; a garage; a boat oar and canoe paddle manufacturer; four stores; and five gas pumps. It was mainly an agricultural town with farms dotting the hillsides. Waterville was known at that time for its apple trees that produced hundreds of barrels of cider. Fred McFarland ran an expert nursery where he developed a species of high bush blueberries that attracted attention from horticulturists and farmers around the state.

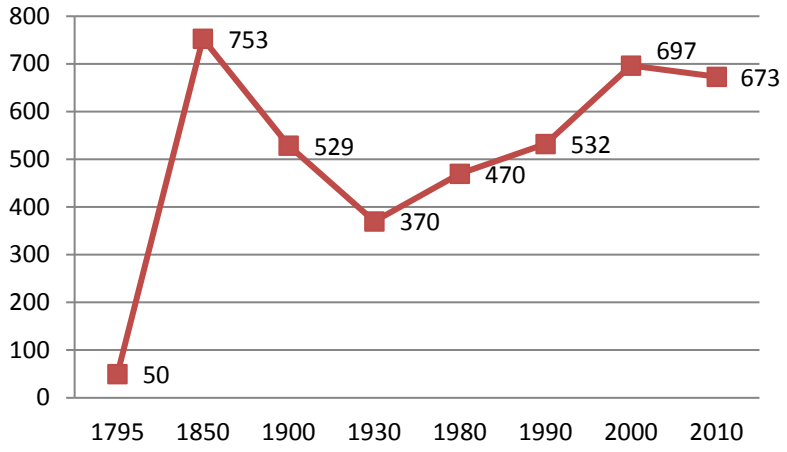
**Today**

There are few businesses located in Waterville that employ local residents. The majority (83%) of the working population is employed elsewhere (more information can be found in Chapter 8). Local employment includes a village market, a hairdresser, a wild game and meat processing plant, earthmoving and building contractors, maple sugaring, forest products, farming, and various cottage industries. The village of Waterville has many fine older homes, two churches, and the Town Hall. A village green is owned and maintained by the Waterville Land Trust and has a ball field and picnic area.

By the 2016 Census, Waterville's population was 705 residents. The 2010 U.S. Census population lists Waterville's population at 673. This indicates a 5% increase in population from 2010 to 2016. This is in line with Lamoille County's population, which grew 3% during the same time period.

The rural character of Waterville, the nature of the homes, population shifts, and land usage are determined, to a great extent, by many external economic and social factors. We have persevered into the 21st century as a sound community thanks to the forethought of prior generations

**Figure 1-1. Population of Waterville Through 2016**




*Source: U.S. Census 2010*

# Chapter 2. HOUSING AND DEMOGRAPHICS

**Waterville Housing Policies**

Waterville encourages safe, adequate, and affordable housing for all of its citizens, regardless of age, income, gender, race, or disability through the following policies:

- Encourages residential densities on the basis of topography, soil conditions, water tables, proximity to existing roads, watercourses and commercial centers, and efficient provision of public services;
- Encourages a variety of housing types to meet the various needs of the residents of the town including vacation homes, single family, multi-family, and mobile homes;
- Encourages residential development outside of the 100-year floodplain and encourages existing housing in the floodplain to be flood-proofed for the safety of the residents and the town as a whole, and all housing must comply with state requirements for wastewater treatment;
- Encourages affordable housing to minimize long-term living costs through high quality design, efficient construction, energy efficiency, and proximity to employment;
- Encourages land use patterns that are inherently more affordable through cost efficiencies associated with their construction (e.g. shorter access roads, smaller lots, proximity to utilities);
- Encourages housing that does not endanger future residents through exposure to substandard conditions, proximity to toxic substances, or proximity to high tension electric utility lines; and
- Encourages efforts to assist households and individuals with special housing needs to attain suitable housing and partnering with community-based service agencies in doing so.
- New and renovated housing developments should consider the effects of light pollution and install outdoor fixtures that minimize/centralize lit areas.

**Waterville Housing Recommendations / Action Items**

Waterville should work with Lamoille Housing Partnership to find ways to ensure residents have access to affordable housing, including working families and seniors.

## Population

Waterville's population has slightly increased between 2010 and 2016 and so has the number of households. In 2010, the number of housing units was 319 while the population was 673. In 2016, the number of housing units slightly increased to 321 and the population to 705. The expectation, therefore, is a need for more housing units as Waterville grows. There is less need for apartments, although some

smaller one to two bedroom units could fill the needs of many persons living alone. As would be expected from the needs stated above, nearly 87% of Waterville's occupied housing units in the 2016 Census were owner occupied, while the remaining 13% were rentals. This represents a 4% increase in owner-occupied housing from 2010.

There is more to Waterville's housing picture than simple supply. The nature and cost of housing and its ability to provide opportunities for a spectrum of means and needs must also be measured. Waterville is no different from other locations in the fact that housing affordability is a major concern. Housing prices have increased slightly and apartment costs continue to climb while regional income has not kept pace. There can be seen a future need for more housing options for Waterville residents in their senior years and persons with disabilities. Steep topography, limited access to water, internet (DSL), and the lack of cable and WIFI connections, pose a challenge to new housing development in Waterville. Addressing the above housing needs will require revitalization of existing structures and developed areas in Waterville.

**Household and Family Characteristics**

Housing needs differ based on household types. Of the 289 occupied households in Waterville in 2016, 232 (or 80.3%) were family households. The Census breaks families into three groups:

- Married Couple
- Other Family
- Non-Family

Over half of all households in Waterville (58.1%) were married family households[2], as measured by the Census Bureau in 2016. In 2016, 86.5% of Waterville residents owned their homes, versus 13.5% who rented. Thirty-three percent of Waterville's families had children in 2010. In 2016, that dropped to 30% of families with children.

The composition of single parent families has changed since 2010. In 2010, the single-household families, or other family category, was split with 12.1% having a female head of the household and 2.3% having a male head of the household. Single-parent families desire home-ownership but generally face more challenges than two-income households.

In addition to families, the Census Bureau counts non-family households, which include individuals living alone or with one or more non-relatives. In Waterville, there are currently 57 non-family households of which 32 were individuals living alone. This is a decrease from 2010 when there were 114 non-family households in which 93 were individuals living alone. Something to note is that the number of occupied households also decreased between 2010 (348) and 2016 (289).

2 The U.S. Census Bureau defines a "family household" as the householder plus an additional person related by birth, marriage, or adoption.

**Table 2-1 Households Occupancy Characteristics**

| Household | Number in Household | Percent of total |
|---|---|---|
| Family households | 232 | 80.3 |
| With own child under 18 years | 87 | 30.1 |
| Married couple family | 168 | 58.1 |
| Male householder, no wife present | 19 | 6.6 |
| Female householder, no husband present | 45 | 15.6 |
| Householder living alone | 32 | 11.1 |
| Householder living alone - 65 years and over | 9 | 3.1 |
| Total households | 289 | 100.0 |

*Source: U.S. Census 2016*

The size of a typical Waterville household in general is shrinking. Table 2-2 depicts a decrease in the average size of all households between 2010 and 2016 for the town, the county, and the entire state.

Important to look at is the age trend of Waterville residents. From 2010 to 2016 the overall population declined, especially in the under 5 years old range. However, the number of residents ages 60–64 increased greatly (by 55 people) which might be due to residents aging in place.

**Table 2-2. Average Size of Households, 2010-2016**

| | **Waterville** | **Lamoille** | **Vermont** |
|---|---|---|---|
| **Year** | Household | Household | Household |
| 2010 | 2.46 | 2.37 | 2.34 |
| 2016 | 2.39 | 2.21 | 2.20 |

*Sources: 2010-2016 Censuses of Population and Housing*

| Age Group | 2010 | 2016 |
|---|---|---|
| Under 5 years | 71 | 24 |
| 5 to 9 years | 37 | 41 |
| 10 to 14 years | 43 | 62 |
| 15 to 19 years | 52 | 37 |
| 20 to 24 years | 42 | 38 |
| 25 to 34 years | 100 | 72 |
| 35 to 44 years | 112 | 77 |
| 45 to 54 years | 129 | 127 |
| 55 to 59 years | 49 | 63 |
| 60 to 64 years | 33 | 88 |
| 65 to 74 years | 52 | 59 |
| 75 to 84 years | 50 | 14 |
| 85 years and over | 4 | 3 |
| Total Population | 774 | 705 |

*Source: U.S. Census 2010, 2016*

## Housing Stock Characteristics

### Type of Unit

According to the American Community Survey, the majority (84%) of the housing units in Waterville in 2016[3] were single-family homes. The second most common housing unit type in Waterville was mobile homes (8% of the total units).

The number of housing units in Waterville decreased by 20% between 2010 and 2016 from 386 to a total of 321. However, the population decreased by 10% between 2010 and 2016 from 774 people to a total of 705 people. (2012-2016 American Community Survey 5-Year Estimates)

### Occupancy Status

When comparing by occupancy status the number of units in ownership has increased over the past five years. The number of vacant units decreased from 2010 to 2016 as well. Since 2010, the number of

3 2016 American Community Survey. https://factfinder.census.gov/.

owner-occupied housing units increased, from 66% to 78% in 2016, with a decrease in renter-occupied housing. Another statistic to note is the rental vacancy rate in both 2010 and 2016 was 0%.

Compared with neighboring communities, Waterville has a relatively young housing stock. Over 70% of the housing units counted by the ACS in 2016 were built during or after 1970. Twenty-five percent of the housing units in town were constructed prior to 1940.

**Housing Costs**

The ACS also collects data for median housing values for homeowners and the median contract rent costs for those who rent in Waterville. Unfortunately, this is still the most accurate data of this type for Waterville. The median value of owner-occupied homes in Waterville in 2010 was $162,800, compared to $211,100 county-wide. It is estimated that as of 2016, 55% of owners have a mortgage. Individuals with a mortgage spent a median of $1,414 per month to pay the mortgage plus monthly owner costs, while those without a mortgage spent a median of $539. Renting households paid a median of $900 per month for rent, utilities, and other costs in 2016, on par with county-wide rents at $873.

**Home Prices**

Home sales price data is kept current for Waterville and all of Vermont. The State's property transfer data on all annual home sales is periodically analyzed and updated by the Vermont Department of Taxes. From 2012 to 2017, the number of primary residences sold in Waterville varied from 8 in 2012 to 11 in 2017.

Waterville's median price has been consistently below that of the county and the entire state. In 2012 Waterville's median price ($171,600) was 5% less than Vermont's ($180,000). Whereas in 2017 Waterville's median price ($123,000) was 55% less than Vermont's ($190,000). This might be because of a 40% decrease in the median price of a home in Waterville between 2012 and 2017.

**Table 2-4 Median Home Prices for Selected Locations 2012 and 2017**

| | Waterville | Vermont | Lamoille |
|---|---|---|---|
| **2012 Median Home Price** | $171,600 | $180,000 | $181,250 |
| **2017 Median Home Price** | $123,000 | $190,000 | $215,000 |

*Source: 2010, 2018, Vermont Dept. of Taxes, Property Transfer Data, as analyzed by Vermont Housing Finance Agency*

**The Need for Fair and Affordable Housing**

It would be ideal for all residents of Waterville to have fair and equal opportunity to secure affordable housing that meets their needs for shelter and accessibility. Common barriers to housing include low incomes, high housing costs, accessibility and self-care needs due to age and disability, and possible discrimination based on race and ethnicity, gender, familial status, and other factors.

The ability of this plan to formulate a permanent solution for fair and affordable housing in Waterville is very limited. However, the land use provisions of this plan can help create opportunities for others, namely housing developers and service providers, to do their part in the development and provision of fair and affordable housing options.

**Housing Affordability**

Housing is considered affordable if a household spends less than 30% of its income on housing-associated costs. As a general rule, the lower the income, the smaller the chance that available housing will be affordable. According to the 2012 Census, 32.3% of Waterville households were in unaffordable housing situations and were paying 30% or more of their household income on housing costs. Using more recent ACS data from 2016, 30.5% of Waterville households were in unaffordable housing situations.

It is possible to use more current annual average income numbers to provide some context, however. For instance, a Waterville household making the town's 2016 annual average income of $68,689, with no other income source, would have to pay no more than $1,717 on monthly housing costs to stay within the 30% affordability threshold. At the county's 2016 annual average income of $69,394, $1,735 would be the monthly affordability limit.

Table 2-5 attempts to determine whether or not local and regional income sources have been keeping up with home sale prices. Home sale prices are a primary driver of housing costs, and increases in average wages can affect all local households, regardless of how many earners may be present. However, this table does not take into account mortgage rates, utility costs, tax rates, and other non-wage income sources, including public subsidies.

**Table 2-5 Percent Change in Median Home Prices and Annual Average Income Increases**

| Time Period | Waterville Average Home Price | Lamoille Average Home Price | Waterville Jobs – Annual Average Income | Lamoille Jobs – Annual Average Income |
|---|---|---|---|---|
| 2010 – 2013 | 50% Decrease | 21% Increase | 9% Increase | 3% Increase |
| 2013 – 2016 | 29% Decrease | 5% Decrease | 23% Increase | 6% Increase |

*Sources: Vermont Dept. of Taxes, Property Transfer Data, and US Census*

**Special Populations Housing**

Within every community there are individuals or families with special housing needs. The elderly and families with children in poverty are examples of groups with special needs that are found in most communities. Persons with disabilities may also require special arrangements.

There are many types of special arrangements. Some individuals need only special construction (such as handicapped accessibility), while others need assisted living arrangements (visiting nurses, care specialists, volunteers, family and friends) while still others require full institutional care. Churches and civic organizations may also be capable of offering assistance.

Listed below are groups with special needs found in Waterville and an estimation of how well their needs are being met. With each generation, individuals are staying healthier longer and can live

independently later in life. In general, taking care of oneself and one's home can be more difficult as one ages and/or loses a spouse, partner, or supporter.

**Seniors Living Alone**
According to the 2016 Census there were 9 seniors living alone in Waterville, up 1 from 2012 (8 seniors). This group is important for social reasons, since being retired and living alone in Northern Vermont can be difficult. In many cases, opportunities to rent apartments in senior housing are desired. Waterville currently has no specified senior living.

**Seniors 70-84**
Most seniors between 65 and 84 continue to live independently. Many require some assistance, especially as they get older. There may be situations where seniors need transportation assistance or require home care. In Waterville there were 73 seniors in this age group in 2016. Refer to the Transportation chapter of this Plan for information on transportation services in Lamoille County.

**Seniors 85 and over**
Beyond age 85, seniors need more care. In the most serious cases, full institutional care is required. In 2012, there were 9 seniors in Waterville over 85. In 2016, there were 3. There are few individuals in this category, which may be due to the fact that one who requires assisted living is forced to move.

**Mobility and self-care limitations (disabilities)**
In 2016, 9.3% of Lamoille County residents under 65 years of age were identified as having at least one disability; compared to the state which reported 10.3% of residents under 65 years of age as having a disability in 2016. There are many types of disabilities, and it should be noted that many of those individuals reported a disability that likely affect their housing needs. Depending on the severity of the limitations presented by one's disability, human services, transportation services, or special construction (handicapped accessibility) may be required.

**Families, children, and seniors in poverty**[4]
According to the 2016 American Community Survey estimates, 9.1% of all Waterville families are living in poverty. This is higher than the County, which had 8.6% of all families living in poverty that same year. Of those Waterville families in poverty, 23.3% have children under 18 years of age. In the county, 15.7% of families in poverty had children under 18 years of age. While town data is not available, the Voices for Vermont Kids Project has identified a number of areas where Lamoille County has higher statistics indicating a greater poverty need than the state. One positive step is the decrease in families in poverty in Waterville in the past couple of years. From 2012 (11.6%) to 2016 (9.1%) there is a 2.5% decrease in families in poverty in Waterville. Families and individuals living in poverty have specific needs that can be difficult to meet, housing included. Federal programs provide housing under "Section-8" but none are currently available in Waterville.

4 The 2000 Census compared individual and household total income levels to poverty thresholds (based on aspects of a person or family's situation) to determine the number of individuals and families in poverty in 1999. Due to changes in the Census, this is no longer calculated.

The data does not provide a conclusive explanation for the changing poverty rates, which may be the result of many factors, including the increased prevalence of commuting in Waterville, changes in land values, and movement of families in response to job opportunities, rent, or transportation costs. Further, the small sample size may also affect the rates reflected here.

# Chapter 3. Historic Resources

**Waterville Historic Resources Policies**

Land use and development in Waterville should occur in a manner that preserves the use and condition of historic sites and structures.

**Waterville Historic Resources Recommendations/Action Items**

Historic resources efforts in Waterville would include the Historic Preservation Board, the Planning Board and Town residents. Some ideas include:

- Develop a strategy to renovate the old Elementary School.
- Work with private residents to enroll properties on the National Register
- Promote the benefits of the historic district and Designated Village Center for historic properties in town.
- Collect oral histories (audio recordings).
- Document one-room schoolhouses in Town.
- Develop a secure space to display historic artifacts.
- Collaborate with the Waterville Town Library and sponsor public events on Waterville's past.

## Historic Resources in Waterville

Many of Waterville's most recent community successes over the past several years have been efforts to document, preserve, and rehabilitate historic sites and structures in town. These places and buildings represent a window into Waterville's past. They are also important physical and cultural resources.

Examples of historic sites and structures in Waterville include the Town Hall, the old Elementary School, the various mill-related buildings in town and the three covered bridges. The bridges, the Jaynes Covered Bridge, the Montgomery Covered Bridge, and the Village Covered Bridge, were all built in 1877 and entered in the National Register of Historic Places in 1974. Many other historic buildings in town are included in the Waterville Historic District and recorded in the National Register. Their nomination to the National Register was the first in a very busy timeline of historic preservation activities in Waterville. The Waterville Village Historic District map and list of sites can be found at the end of this chapter.

The State of Vermont Division for Historic Preservation did an inventory of historic buildings in Waterville in 1990. A detailed inventory with photographs is available in the Town Clerk's office. Here is an excerpt from that inventory:

> The Waterville Historic District is significant as a well-preserved 19th century mountain village. Located in a steep river valley, just below a major mill site on the North Branch of the Lamoille River, it essentially developed in a linear pattern with two T-intersection side streets. The more important of the side streets, Bridge [Church] Street, runs

> westerly down to the river and a covered bridge. At the head of Bridge [Church] Street are the Town Hall and an octagonal bandstand, which, because of their positioning and the openness of the intersection, give the effect of a small common. To the southwest of this main intersection is a small commercial streetscape with three commercial facades in a tight common plane. The village as a whole is characterized by evenly spaced 1.5 story wood frame, clapboard houses. Greek revival and plain vernacular house types predominate.

The main components of the district are the commercial blocks, the Town Hall and bandstand, the United Church, the Italianate style Wilbur House, two nearly identical Classic Cottages, and the Leach-Villeneuve House. All of these are grouped around the main intersection, and all are architecturally significant and largely unaltered. Also important are the Village Covered Bridge (located on Church Street, on the National Register) and Baker House, with its axial relationship to the bridge.

In addition to the buildings in the Waterville Historic District mentioned above, there are 16 buildings listed with the State of Vermont Division for Historic Preservation as significant on a state level: Old Homestead Farm (Thomas Farm); the D.C. Pierce House (Pierce-McNally House); the old Waterville Central School; Morse's Store (Manchester Apartments); Central House (Armstrong House); Bierbrier Farm; Bressel House; Nathan Page Upper Farm (Page Summer Cottage); M. Wilbur House (Ackert House); LaFountain House; Avis Bennett House; Depot House; Central House Stable (Tobin Property); A. Fletcher Farm (Hemenway House); Schofield House; and the Joel Codding House (Leff House).

The next major developments in historic preservation in Waterville began in 2003. Waterville's latest planning efforts, including this town plan, find their root in these activities. A timeline of historic resource catalogue efforts is listed below.

**Timeline of Historic Resources Efforts in Waterville:**

1. On May 28th 2003 the Town of Waterville voted at a special meeting to restore the foundation in the Town Hall building. Work began in July 2003.
2. In 2004 the town was awarded $1,500 in funding through the Vermont Municipal Planning Grant Program to inventory and document the integrity of public historic structures. The result is the 2005 *Town of Waterville, Vermont, Historic Resources Plan*.
3. Also in 2004, the town was awarded a $40,000 Preservation Grant from the Preservation Trust of Vermont and the Freeman Foundation to cover a portion of the Town Hall restoration.
4. In 2005 the Town was awarded $1,000 from Downs, Rachlin, and Martin to create a Historical Photographic Record of the Waterville Town Hall and Village Center.
5. In 2005 the town was awarded $4,000 in funding through the Vermont Municipal Planning Grant Program to explore and obtain Village Center Designation and Certified Local Government certification.
    a. Village Center Designation was obtained in January 2006.

   b. Certified Local Government status was achieved in April 2006.

6. In 2006, the Waterville Historical Society transitioned to become the Waterville Historic Preservation Board as required in Certified Local Government guidelines.
7. Waterville was awarded $3,200 (40%) in funding through the Vermont Municipal Planning 2006 Grant Program and $4,800 (60%) in matching funds from VT Historic Preservation grants to hire a consultant to prepare a National Register Nomination application for the Waterville Historic District.
   a. Consultant Devin Colman was hired in November 2006, and the nomination was completed in 2007. The nomination describes an historic district with 54 buildings and structures.
8. On June 18, 2008, residents of Waterville voted to borrow up to $150,000 to continue the Town Hall repairs. The money, to be financed for up to 10 years, was used for work on the roof, steeple, and siding. Work was completed in 2009.
9. Waterville was awarded $40,993 from the Department of Public Service and Community Development Block Grant for energy efficiency renovations to the Town Hall and Town Clerk's Office, which were completed in 2011.
10. Efforts to digitize and produce an addendum and re-printing of Mary C. Wilbur's *Log Cabin Days of Coit's Gore and Waterville* were completed in 2011.
11. Renovations to the Town Hall kitchen were completed in 2012, including renovated flooring and upgrades to appliances and lighting. A new stage floor, stage curtain, and curtain rod were also installed.

In 2017, the Town of Waterville made improvements to the Library and Town Clerk's Office building including installing high efficiency windows, new doors, front entrance pillars, roofing, and siding.

## The Benefits of Waterville's Historic Resources Designations

As of 2014, Waterville is one of over 100 Designated Village Centers in Vermont. More unique is Waterville's standing as one of only 14 communities in Vermont with Certified Local Government status. Both programs give Waterville access to special programs and resources for the documentation, preservation, and rehabilitation of historic sites and structures in town.

**Certified Local Government** (CLG) status benefits the town in the following ways:

1. The ability to work more closely with state and federal agencies to identify and register historic structures in town, which includes nominations to the National Register of Historic Places.
2. Access to matching grants to
   a. produce studies and cultural resource inventories,

b. determine property eligibility for local and National Register of Historic Places designation,

c. perform building reuse and feasibility studies,

d. develop design guidelines and conservation ordinances, and

e. create publications to educate the public about the benefits of Waterville's historic resources.

3. Access to technical assistance for all of the above.

It was under Waterville's CLG status that the nomination for the Waterville Historic District to the National Register was approved in 2007.

The idea behind **Village Center Designation**, through the State-run Vermont Downtown Program, is that the best way to preserve historic buildings in a manner that depicts their roots is to keep them in use and maintain their relevancy today. Benefits include:

1. state and federal tax credits toward the rehabilitation of historic buildings,
2. tax credits for façade improvements,
3. tax credits for code and technology improvements, and
4. priority consideration for Municipal Planning Grant and Community Development Block Grant funds.

## Waterville Town Hall

Doug Porter, a private historical consultant with the Preservation Trust, did a site visit and prepared a preliminary assessment of building condition and preservation strategy for the Waterville Town Hall in November of 2000. In his report he indicated that the Waterville Town Hall was originally constructed as a Union Church about 1839. The Universalist Church was constructed seventeen years later. The mid-nineteenth century was a prosperous time for the village and by 1867 Waterville was home to two churches, two hotels, three schools, four stores, several mills and factories, and about sixty houses. The Union Church building was apparently donated to the village by Moses McFarland about 1889 and converted to use as the town hall. The bandstand on the west side of the hall was constructed about that time. The complete report by Doug Porter can be obtained at the Town Clerk's office.

The townspeople of Waterville have made a priority of renovating the town hall. On May 28th 2003 the Town of Waterville voted at a special meeting to restore the foundation in the Town Hall building. Work began in July 2003 and efforts are underway to secure resources for a complete renovation of the building. On June 18, 2008, residents of Waterville voted to borrow up to $150,000 to continue the Town Hall repairs. The money, to be financed for up to 10 years, was used for work on the roof, steeple and siding. The outside work was completed in 2009. In 2012, the kitchen and stage were renovated, thanks in large part to donated labor.

# Historic Resources

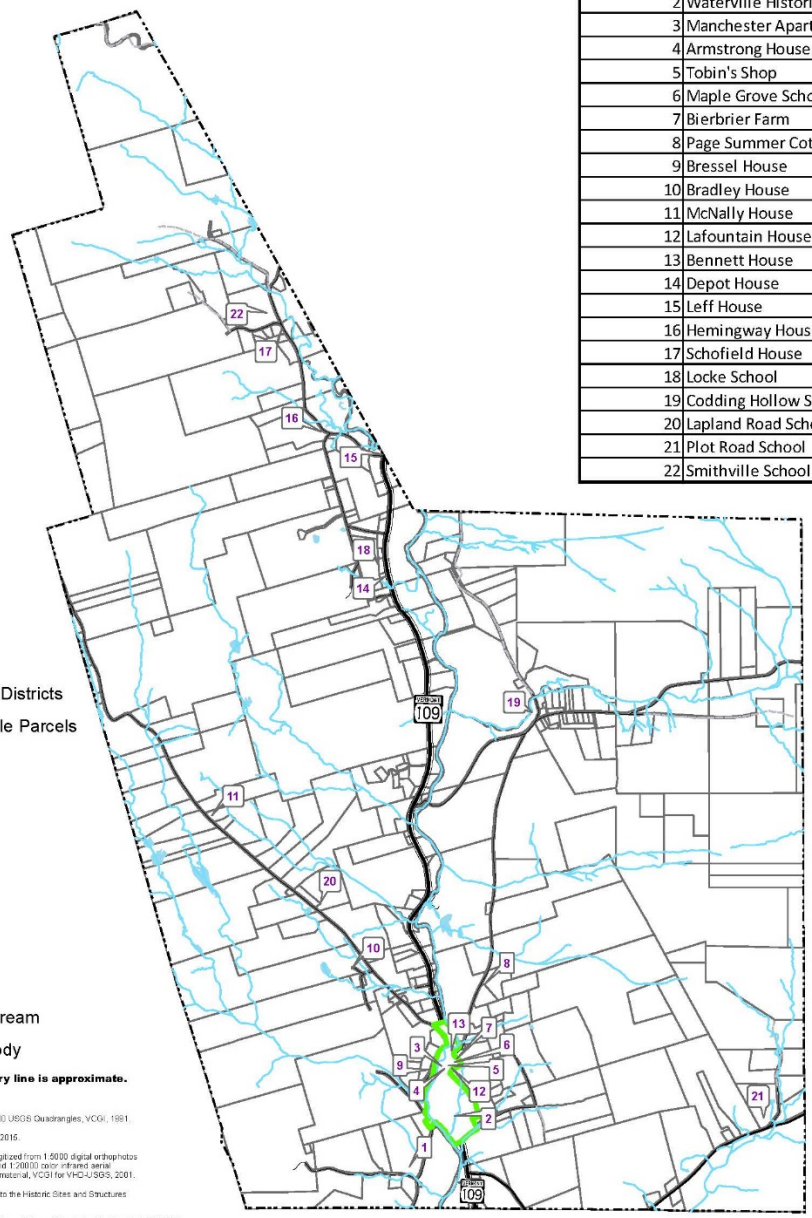
## Historic Sites Map

Waterville, Vermont

**Town Plan**

**Historic Sites List**

| Map Number | Structure Name |
|---|---|
| 1 | Thomas Horse Farm |
| 2 | Waterville Historic District |
| 3 | Manchester Apartment Block |
| 4 | Armstrong House |
| 5 | Tobin's Shop |
| 6 | Maple Grove School |
| 7 | Bierbrier Farm |
| 8 | Page Summer Cottage |
| 9 | Bressel House |
| 10 | Bradley House |
| 11 | McNally House |
| 12 | Lafountain House |
| 13 | Bennett House |
| 14 | Depot House |
| 15 | Leff House |
| 16 | Hemingway House |
| 17 | Schofield House |
| 18 | Locke School |
| 19 | Codding Hollow School |
| 20 | Lapland Road School |
| 21 | Plot Road School |
| 22 | Smithville School |




**Legend**

- Historic Districts
- Waterville Parcels

**Roads**

**CLASS**

- 2
- 3
- 4
- 9
- 30
- 99
- River/Stream
- Waterbody

**Note: District boundary line is approximate.**

DATA SOURCES:

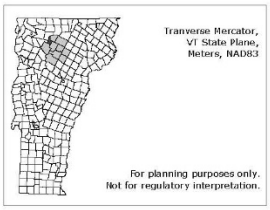
POLITICAL BOUNDARIES: 1:24000 USGS Quadrangles, VCGI, 1991.

ROADS: VTrans Centerline Data, 2016.

SURFACE WATER: On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VHD-USGS, 2001.

HISTORIC SITES: Numbers refer to the Historic Sites and Structures Survey for Waterville, 1980.

PARCELS: Tax maps from Dean Russell, Russell Graphics. Digitized by LCPC 2011.



Tranverse Mercator,
VT State Plane,
Meters, NAD83

For planning purposes only.
Not for regulatory interpretation.

N

0 0.275 0.55 1.1 Miles

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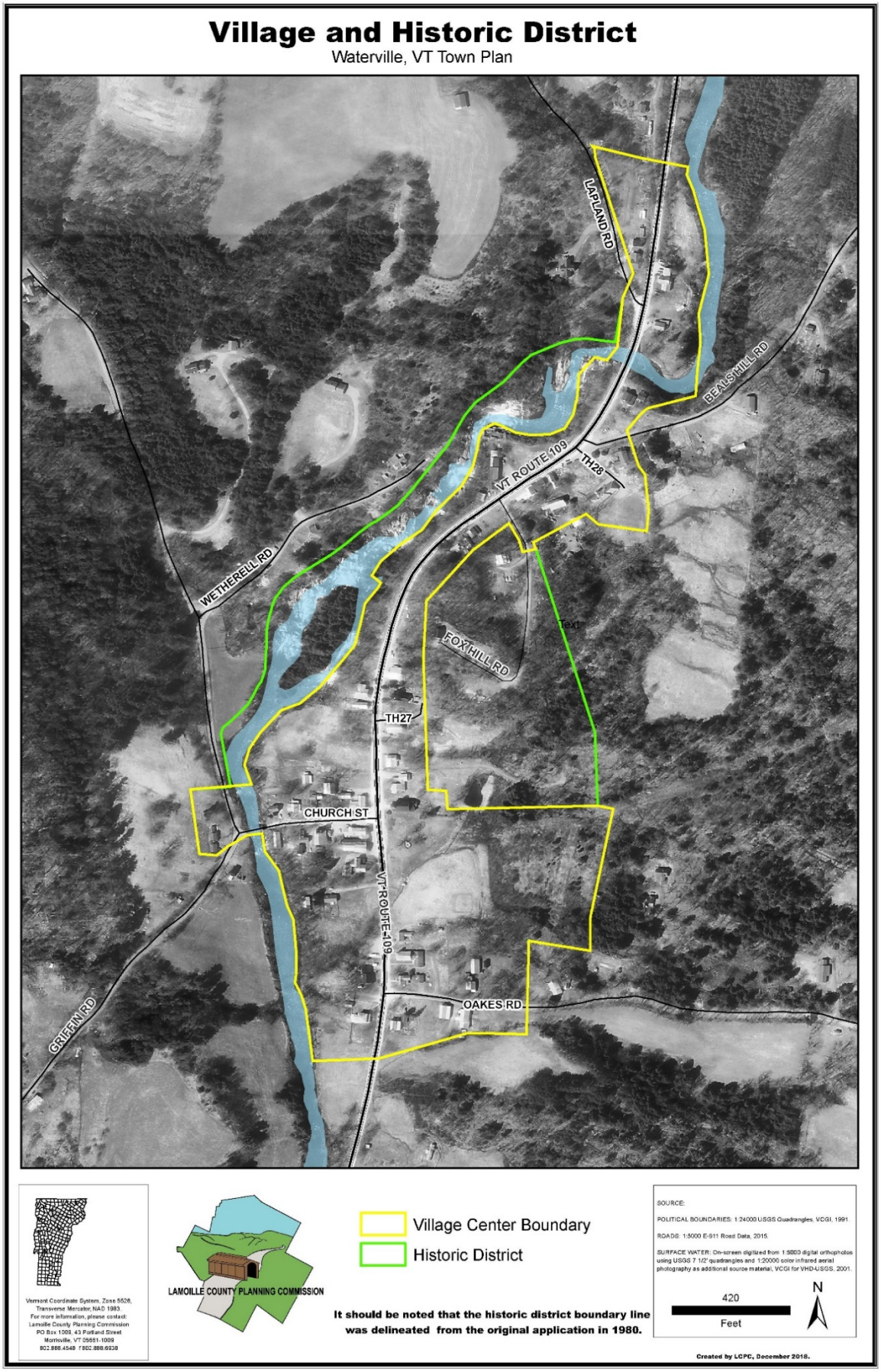
Created by LCPC, December 2018

# Historic Resources



# Chapter 4. LOCAL SERVICES & FACILITIES

This chapter highlights local services, utilities, and public facilities serving the Town of Waterville. Similar to many rural Vermont communities, Waterville contracts out with local and regional service providers to provide services such as utilities, public safety, solid waste management, and municipal roads maintenance. The Town of Waterville manages several public facilities and amenities located in the historic Village Center including the Town Hall, Town Clerk's Office, Public Library, and Town Green. The Town of Waterville strives to improve public facilities and accessibility, protect residents and visitors through public safety and emergency preparedness coordination, preserve historic character and amenities in the Village Center, and explore opportunities to enhance services such as cell phone coverage and high-speed internet. See below for policies and recommendations identified to work towards meeting these goals.

**Waterville Policies for Local Services & Facilities**

Any restoration to the Town Hall and other public buildings and structures should preserve their architectural/historical character.

Waterville is supportive of 100% coverage for cell phones and high-speed Internet connection in Town. Any plan to do so should benefit the entire community financially, aesthetically, and cooperatively.

Improvements to community services and facilities should consider public safety priorities in Town.

**Waterville Recommendations/Action Items for Local Services & Facilities**

- The Town of Waterville should continue to pursue local funding, grants, borrowed funds, fundraising, and volunteer energy to refurbish and make Americans with Disability Act (ADA) compliant public facilities while maintaining their architectural and historical character. Renovating the old elementary school, which includes the listers' office and library, should be a priority, considering its current condition.
- The Town of Waterville should continue its role in regional discussions on solutions for universal high-speed Internet and cell phone coverage in Lamoille County. Waterville residents should be given the chance to vote on joining any related financing agreements, should regional plans move forward.
- Conduct annual review of culvert and road erosion conditions in Town and prioritize culvert replacements and upgrades to reduce flooding impacts and improve public safety.
- Coordinate emergency preparedness for properly equipping emergency shelters and coordinating emergency warning systems between Waterville and adjacent Lamoille County towns.
- Collaborate with the Waterville Elementary School on emergency preparedness, operations plans, and flood proofing opportunities.
- Annually review and update emergency resources and vulnerable people's lists.

## Municipal Services

As might be expected in a small community, Waterville contracts with private operators or depends on other municipalities for most services. Few services are provided directly.

**Administrative Services**
The office of the Waterville Town Clerk, an elected official, provides for public records management and storage, the town treasury and tax collection, and licensing/certification services (e.g. marriage, pets, etc.). The Town Clerk's office is located in the old Waterville elementary school.

**Library**
Located in the old elementary school, the Waterville Town Library reopened in June 2011 after a major renovation that included sanding and waxing of floors and painting of walls and shelves. The Town of Waterville is beginning the process to evaluate renovation needs, costs, and repair options. Estimates to renovate this side of the old elementary school are expected to be in the hundreds of thousands of dollars. Due to budget issues, the library is only open seasonally, June through October, and is staffed by Library trustees and volunteers. Summer hours are Tuesdays, Wednesdays, and Thursdays from 9:30 AM to 2:00 PM and Saturdays from 10: AM to 2:00 PM. Other hours are available by appointment. All open hours are subject to change due to volunteers' schedules.

Interior updates to the library include new shelving and books. In 2017, the Town of Waterville approved a bond to make further improvements to the Library and Town Clerk's Office building including installing high efficiency windows, new doors, front entrance pillars, roofing, and siding (siding scheduled for completion in 2018). The library has subscribed to LibraryThing, an open access cataloging system, to create an online public access catalog of the library collection. Currently, 2077 volumes have been added to the catalog. Volunteers are still adding titles to the catalog in hopes of having an accessible record of all the library's holdings. Item types for adults include Fiction, Nonfiction, Biographies, Cookbooks, and Large Print. For children, items include Picture books, Easy readers, Chapter books, Biographies, and Nonfiction. Young Adult books are available in the YA room. The library holds a small collection of VHS video tapes. Three computer stations with high speed internet and Wi-Fi are available. Children's summer reading programs include the Champlain Read & Win program and the Lamoille County Field Days Read & Win program. The Vermont State Parks Library Pass and the Vermont State Historical Sites Pass are available for adults or families to check out. The library's online resources are available to patrons year-round. These include the Listen Up! Vermont digital Audio/eBook program and the Vermont Online Library. The library maintains a website, http://www.watervillelib.org and a Facebook page.

Local residents provide workshops for children, adults, and families. Volunteers are in the planning process to offer Story Hour to local daycares. Library trustees developed a library survey for residents as a beginning to the strategic planning process. The surveys were available at town meeting and currently at the town clerk's office, the post office, and the library.

The mission of the library is to become a community focal point with resources and activities for all ages and interest groups. Once refurbished, some of the future objectives and activities that the library will pursue are:

- Offering a current and relevant selection of reading materials.
- Offering Summer Story Hours for pre-school and school age children.
- Outreach to local childcare facilities and Waterville school summer program.
- Creating a puppet stage and a lending collection of puppets.
- Offering Story Telling Workshops and/or Storyteller appearances.
- Offering Technology Workshops.
- Forming book discussion groups.
- Offering seminars & presentations by outside speakers on a variety of subjects.
- Offering space for community meetings.
- Gradually increasing its hours of operation to include evenings and year-round.

Other changes, which will move the library toward Vermont Library Association (VLA) minimum standards and increased eligibility for grant funds, include:

- Developing a strategic plan and a long-range plan for the Waterville Town Library;
- Assess needed current building upgrades;
- Investigate grant opportunities for building improvement;
- Improve known building issues: front porch supports, ADA compliant entrance, restroom facilities and parking, leaks in plumbing in basement level, mildew in basement level, lighting for entryway and outdoors, front doors, low R factor large plate glass windows, old wiring, insulation;
- Investigate other building options;
- Investigate collaboration with town of Belvidere to provide library services for both towns;
- More visible signage, especially permanent sign with library hours; and
- Library hours to increase to a minimum of 14 hours per week year-round.

**Telecommunications**

Today's expectation for telecommunications, in addition to regular telephone service, is reliable cell phone service coverage throughout town and the availability of broadband Internet connection services for any household willing to pay. Digital Subscriber Line (DSL) broadband service has become available to most households in town and cell coverage is available in most places as well. Bringing complete cell and internet coverage to all households in town is necessary for a number of economic, social, and safety reasons, and involvement in projects is expected by Waterville officials. Any telecommunications proposals will be reviewed on a case by case basis.

## Public Buildings & Facilities

**Old Waterville Elementary School**
The old elementary school now houses the Town Clerk's office, Listers' Office, and the Town Library. There have been renovations in recent years to the Town Clerk's portion of the building but the exterior remains in disrepair. State funding should be considered for window replacements, exterior renovations, and other improvements as this project is estimated to be in the hundreds of thousands of dollars. See Chapter 3 for more information.

**Town Hall**
Waterville's Town Hall is located in the center of the village's Historic District on Vermont Route 109 and is listed on the National Register of Historic Places. The building has served as a center of community activity since its construction. It continues to be used for Town Meeting in March, as well as for a variety of public meetings and social functions throughout the year.

Since about 2000, the Waterville Selectboard and a dedicated group of concerned townspeople have spearheaded efforts to restore and renovate this valued structure. Such efforts have yielded significant progress. Renovations should meet current and future needs for this space.

In 2003 a complete, new poured concrete foundation and an upgraded heating and hot water system for the building were installed. In 2007 a new handicap accessible concrete entrance walkway, landing, and steps were added to the front of the building. In 2008 a new 24 gauge standing seam metal roof was installed on the entire building. Repair or replacement of all exterior wood siding, moldings, components, and a complete exterior paint job were completed. At that time renovation of the historic clock works and replacement of the three clock faces and wood louvers in the clock tower were completed.

Funding for these projects has come from historic preservation grants, a private foundation grant, a voter approved municipal loan, private donations, and a great deal of local fundraising.
It is the intention of all concerned that any work done to repair and restore the town hall will be accomplished by leaving the historical and architectural character of the building intact. See the section on Historic Resources in this document for a brief history of the Town Hall, and for further information.

**Town Green**
In 1989 the Waterville Land Trust bought the 7.7-acre Town Green parcel with donations. In addition to a ball field, picnic area and playground, the Town Green contains a permanent memorial for soldiers and veterans.

**Storm Drainage Facilities**
Other than the 151 culverts last inventoried in Waterville in 2013, there are no drainage or run-off management facilities in Town. The Waterville Selectboard conducted a review of the Culvert Inventory

map in 2017 during the update of the Local Hazard Mitigation Plan. Culvert replacements were noted during this review and an updated Waterville Culvert Inventory map was produced by the Lamoille County Planning Commission. The Vermont Agency of Natural Resources lists no Stormwater Impaired Watersheds or Sub-watersheds in Waterville.

**Cemetery**

Waterville's cemetery is located on Lapland Road. The Cemetery Association's funding comes from interest received from various funds, sale of lots, perpetual care, dues, donations, and the sponsorship of sections of fence. There are 40-50 single graves available. The Cemetery Association owns additional land on the east side of the road, but improvements would be needed before it could be used for plot space.

**Gravel Pit**

The Town bought 61 acres from the Wallace Coburn estate on Smithville Road in 1995 for $61,000 to be used as a gravel pit. While the gravel pit is being used, the Town also buys gravel from other sources.

**Sand Pile**

The winter road sand pile is located on nine acres owned by the Town on Route 109.

**Recreation Facilities**

Recreation facilities and organized sports are found in multiple locations in the village center. Outside the village center, recreation facilities are more informal, and opportunities for recreation can be found on public and private land.

There is a ball field and playground at the Waterville Elementary School, a basketball court at the old school/Town Clerk's Office/Library, and a ball field, picnic area, and playground at the Waterville Town Green.

The Long Trail passes through Waterville and can be easily accessed in multiple locations. Year-round parking is available at a Green Mountain Club parking area at the Codding Hollow access point. A parking area is located in Johnson, north of Route 15. Wayside pullouts are also available in Johnson on Hogback Road, just north and south of The Long Trail, along Prospect Rock Road, and Plot Road. These are for drop-off purposes and are not recommended for overnight parking.

There are numerous informal trails in town used by cross-country skiers, snowshoers, hikers, hunters, ATVs and snowmobilers.

There are currently no bike paths in Waterville so bicyclists use the shoulders of the road. Route 109 is a common loop for bicyclists, both locals and tourists, using Routes 15, 118, and 108 to access it. Numerous mountain biking trails have been set on private and public land although there is no formalized mountain biking trail network.

The Lamoille River is a popular recreation location for water activities. Canoeing, kayaking, fishing, and swimming are all appropriate activities along the Lamoille. Boat launches in Cambridge and Johnson lead boaters to or through Waterville.

**Street Lighting**
The village is the only area in Waterville that has street lighting. There is no known need for lighting in other areas at this time. Future lighting plans should include limits on light pollution.

**Educational Facilities**
Generally, Waterville and Belvidere children attend Waterville Elementary School. Pre-school is available at the Belvidere School. All 7th through 12th grade students are enrolled at Lamoille Union High School in Hyde Park. Education is addressed in more depth in Chapter 5: Education.

## Public Safety

**Fire Protection**
Waterville contracts fire services from the Johnson Fire Department. According to the 2016 Waterville Town Report, fire protection services for Waterville cost $19,790.14 for the year 2016 and was estimated to cost around $20,000 for the year 2017. This agreement may be renewed from year to year in writing by both parties stating any changes to the agreement or fees, and prior to December 31st of any year.

The town recognized the need to explore ways of slowing the acceleration of fire suppression expenses and has actively made efforts to increase the number of hydrants available in the community. Given the rural settlement pattern of residential development in Waterville and the lack of a municipal water supply, pressurized hydrants are not suitable. Dry hydrants are increasingly becoming the way to meet fire suppression coverage. A dry hydrant is essentially a 4.5–6 inch diameter threaded pipe capable of drawing water from a nearby pond or stream. The installation of these hydrants improves overall fire safety and also provides an added benefit to property owners in the form of lower insurance premiums.

Waterville currently has two dry hydrants located at Smithville and Rogers Roads and Wetherell and High Meadows Roads. A third was recently added over the Cambridge-Waterville boundary south of the Hogback Road on Route 109, off the state pull-out. The Town is currently working with the Waterville Emergency Management Director to explore locations for another dry hydrant on Plot Road.

**Police Protection**
Waterville contracts with the Lamoille County Sheriff's Department for 911 emergencies. According to the Waterville Town Report, in 2016 police and emergencies services provided by the Sheriff's Department cost $16,787.66 and were estimated to cost slightly less in 2017. The Sheriff's Department

then dispatches the appropriate service (fire, ambulance, police, etc.). Police service is provided by the Vermont State Police.

**Ambulance Services**
Ambulance services are provided by Northern Emergency Medical Services in Johnson. The 2016 and 2017 Waterville town budget allocated $17,949 for ambulance service.

**Emergency Preparedness**
Waterville has an elected Emergency Management Director to ensure the community is prepared for emergencies, responds effectively in an emergency, conducts recovery operations, and coordinates emergency management services. The Emergency Management Director is also a member of the Local Emergency Planning Committee.

In 2016 through 2017, the Waterville Planning Board and Emergency Management Director worked with the Lamoille County Planning Commission and Waterville Selectboard to update the Town's Local Hazard Mitigation Plan (LHMP) and transition it to a single jurisdiction planning document. The updated LHMP was adopted by the Selectboard on September 5, 2017 and received formal approval from FEMA on September 26, 2017. The Waterville Local Hazard Mitigation Plan addresses a range of risks and hazards (natural and man-made) the community is currently facing or may potentially face in the future. Mitigation action items are identified in the LHMP to mitigate impacts and damages caused by natural and man-made hazards. The 2017 Waterville Local Hazard Mitigation Plan can be viewed at: http://www.lcpcvt.org/vertical/sites/%7B3C01460C-7F49-40F5-B243-0CA7924F23AF%7D/uploads/Waterville_LHMP_Revised9_13_17(1).pdf. For discussion of flooding in Waterville and mitigation recommendations to reduce the impact of frequent floods, please refer to the Flood Resilience Chapter of the Town Plan.

Waterville has identified an emergency shelter at the Waterville Elementary School. The school is also the site of a Commodity Point of Distribution, to be used in the event of a catastrophic emergency to deliver supplies to residents. The Waterville Emergency Shelter is without adequate equipment including a generator. The Town should explore funding opportunities to adequately equip the emergency shelter in preparation for significant natural disasters and emergencies. Providing shelter for people in need during an emergency is a crucial component of emergency response.

The Federal Emergency Management Agency (FEMA) defines a floodplain as an area of land adjacent to rivers and streams that is subject to recurring inundation. Development within floodplains can have many potentially damaging consequences, as construction may obstruct the natural flow of water or displace soil and raise base flood elevations. Waterville is among a minority of communities in Vermont that has yet to have had an official FEMA flood insurance study published and, therefore, does not have Flood Insurance Rate Maps (FIRMs) for the town. Rather, Waterville's maps are approximate Flood Hazard Boundary Maps (FHBMs), which do not differentiate between tiers of floodplain (floodway, floodway fringe, etc.). This is likely due to the limited extent of floodplain that exists in Waterville,

consisting only of corridors along the Lamoille River. The Waterville Planning Board is willing to explore the possibility of adopting a flood hazard bylaw to allow the town to join the National Flood Insurance Program and enable residents to purchase federally-subsidized flood insurance.

The damage inflicted on Vermont by Tropical Storm Irene demonstrates that flooding and erosion threaten buildings and infrastructure far beyond the limits of mapped floodplains. In the coming years, Waterville may have access to mapped fluvial erosion corridors produced by Vermont Agency of Natural Resources, demonstrating potential stream movement and areas vulnerable to erosion. Whether or not Waterville elects to adopt flood hazard regulations, such maps could prove valuable resources to current and prospective property owners as they make long-term investment decisions.

## Other Services

### Electrical Utilities and Services

Waterville is served by the Vermont Electric Cooperative in Johnson for residential and commercial electricity needs. The electrical infrastructure in town includes 3-phase power lines running along Route 109 until Codding Hollow Road. Aside from residential solar panels and wind power turbines that could be installed by private homeowners, there is not yet any power generating facility in Waterville. These issues and more are addressed in more depth in Chapter 7: *Energy Plan*.

### Health Services

There are no health and human services headquartered in Waterville. Information on these services in Lamoille County and adjacent regions can be obtained by calling 211. More information on the health and human services available to Waterville residents is in Chapter 6: *Health & Wellness*.

### Solid Waste Disposal

The town of Waterville is a member of the Lamoille Regional Solid Waste Management District (LRSMD) and is represented by a resident who is elected by the voters for a 2-year term. Waterville joined the Lamoille Solid Waste Management District (LRSWMD) in 1988. This organization was formed by the ten towns of Lamoille County together with Worcester and Craftsbury to collectively solve solid waste disposal issues and to comply with Act 78, Vermont's body of solid waste and recycling regulations. The District is a chartered municipality under Vermont law and has the authority to assess the member towns for expenses, but is currently self-supporting through the collection of tipping fees from haulers and other user fees. According to 2017 meeting minutes, the Lamoille Regional Solid Waste Management District operates on an annual budget of around one million dollars.

As required by state law, the LRSWMD has devised a Solid Waste Implementation Plan (SWIP) for the management and disposal of all types of solid waste generated in its member communities. According to the Lamoille Regional Solid Waste Management District SWIP, residents of the 12-town district dispose of about 13,000 tons of waste annually. This translates into 2.2 pounds per person per day

(p.p.d.) well below the state's goal of 2.69 p.p.d. and represents a recycling rate of approximately 50%. Based on a survey conducted in 2016, about half of Waterville residents use a hauler to pick up their trash and recycling. The other half bring it to a drop off facility. Either way, Waterville's solid waste is disposed at the Northeast Waste Systems landfill in Coventry, Vermont. All recyclables are hauled to the Chittenden Solid Waste District Material Recovery Facility (MRF) in Williston to be processed, baled and sold.

The Lamoille Regional Solid Waste Management District currently has a long-term transportation and disposal contract with Casella. Trash from the LRSWMD facilities in Johnson and Worcester is brought to the Hyde Park transfer station. The trash from the remaining facilities is consolidated at the Stowe facility and shipped directly to the landfill in 50-foot trailers. The landfill's current capacity exceeds the contract length. There is no contract with the MRF as it is a passthrough facility with adequate capacity to service the state.

The LRSWMD operates 6 drop-off facilities providing for cost effective management of a long list of materials, including tires, e-waste, scrap metal, light bulbs, batteries, textiles, books, small propane tanks, film plastic, and food scraps. These facilities are located in Johnson, Eden, Morrisville, Stowe, Worcester, and Craftsbury. In October 2017, the LRSWMD opened a composting facility in Johnson named Lamoille Soil to accept food scraps generated by residents and brought to drop-off facilities.

The Towns of Cambridge and Wolcott also operate drop-off facilities. Two private drop-off facilities exist: Casella in Hyde Park and Lamoille Trash in Morrisville. These facilities are managed independent of the LRSWMD yet are required to conform to state and district rules.

Three household hazardous waste collection days are sponsored by the LRSWMD each year and are free to all Waterville residents. Waterville businesses that generate small quantities are able to participate for a fee. Hazardous waste collection days are typically scheduled in the spring and fall.

In addition to waste management, LRSWMD strives to educate the public about waste-related issues, including recycling, hazardous waste, computer disposal, and illegal disposal methods. With education, outreach, planning, and public participation, LRSWMD is addressing goals in 3 primary areas:

1. waste reduction,
2. reuse of goods, and
3. increasing the recycling rate for all materials.

However, solid waste management practices are changing. In January 2013, the Vermont Legislature passed Act 148 (H.485). This law institutes phased-in bans on recyclable and compostable materials, and requires parallel collection (collection of these materials in the same locations where trash is collected). It has been demonstrated that the recycling of materials conserves resources while reducing energy consumption and green-house gas emissions. The gradual phasing-in of mandatory recycling sends a clear signal to private and public sectors that the materials will be available, which provides an incentive

to invest in necessary infrastructure, and also provides time to construct infrastructure necessary to meet the demand. The schedule for implementation is as follows:

- 2014 for generators of more than 104 tons/year
- 2015 for generators of more than 52 tons/year
- 2016 for generators of more than 26 tons/year
- 2017 for generators of more than 18 tons/year

By 2020, all food residuals, including that from households, must be diverted with no provision for distance. Waterville will work with current waste haulers to create a system for its municipal and educational facilities and its residents to comply with this mandate. Education and training should be made available to ensure the transition is as smooth as possible. The Lamoille Regional Solid Waste Management District hosts educational workshops on composting and recycling and serves as the primary resource contact for questions regarding the implementation of Act 148. The closest composting facility to Waterville is located behind the Johnson Transfer Station. Local residents and businesses can drop off their compost at this site. Composting bins can be purchased through the Lamoille Regional Solid Waste Management District by contacting the District at 802-888-7317. For more information on the LRSWMD visit www.lrswmd.org.

In addition to composting, local businesses and residents can donate extra food to local food shelves and community meal sites in Lamoille County. Several local restaurants and grocery stores, including Price Chopper and Hannaford, donate to local food shelves on a regular basis. For a list of food shelves and community meal sites in the Lamoille Valley region visit: http://www.lcpcvt.org/vertical/Sites/%7B3C01460C-7F49-40F5-B243-0CA7924F23AF%7D/uploads/Food_Shelf_Brochure_11-17-17.pdf.

Disposal of solid waste materials by dumping (other than in a licensed landfill) or by burning is illegal under Vermont law. Enforcement at the state level has been unreliable except for the most public and notorious cases. Many towns in the region have enacted local ordinances to discourage these activities. The Waterville Selectboard adopted a burning and dumping ordinance for the benefit and protection of the people of the town.

**Water Supply**

There is no Town-wide water supply in Waterville and no plans to build one. Most houses in Waterville have individual springs or wells. There is a small water system, Waterville Fire District #1, which services 33 structures in the village area, including homes, churches, businesses, and the Town Hall.

According to the Waterville Fire District, in 2013 soil and groundwater contamination was detected by local tenants reporting fuel odor in tap water, and shortly after confirmed by water samples conducted by the water system operator. Water samples identified the presence of Volatile Organic Compounds (VOCs) in the drinking water. The Waterville Fire District and Town of Waterville worked closely with the Vermont Department of Environmental Conservation (VT DEC) to identify the source of VOCs. The investigation determined that the major source of gasoline contamination originated from the former

gasoline station located at 634 Route 109 and smaller quantities of gasoline contamination originating from the former gasoline stations located at 598 and 619 Route 109. Gasoline contamination was detected in the vicinity of the water main along Vermont Route 109. To address gasoline contamination of the District 1 water system, the Waterville Fire District recently replaced (spring/summer of 2017) waterlines along Vermont Route 109 between the Waterville Market and Waterville Garage. Approximately 400 feet of the old waterline was replaced with an environmental sound and rust proof pipe. System improvements also included the installation of 3 filtration systems to remove petroleum hydrocarbons from soil and groundwater. ATC Group Services, hired by VT DEC to investigate contamination issues, continues to monitor the new water system to ensure safety and effective operation.

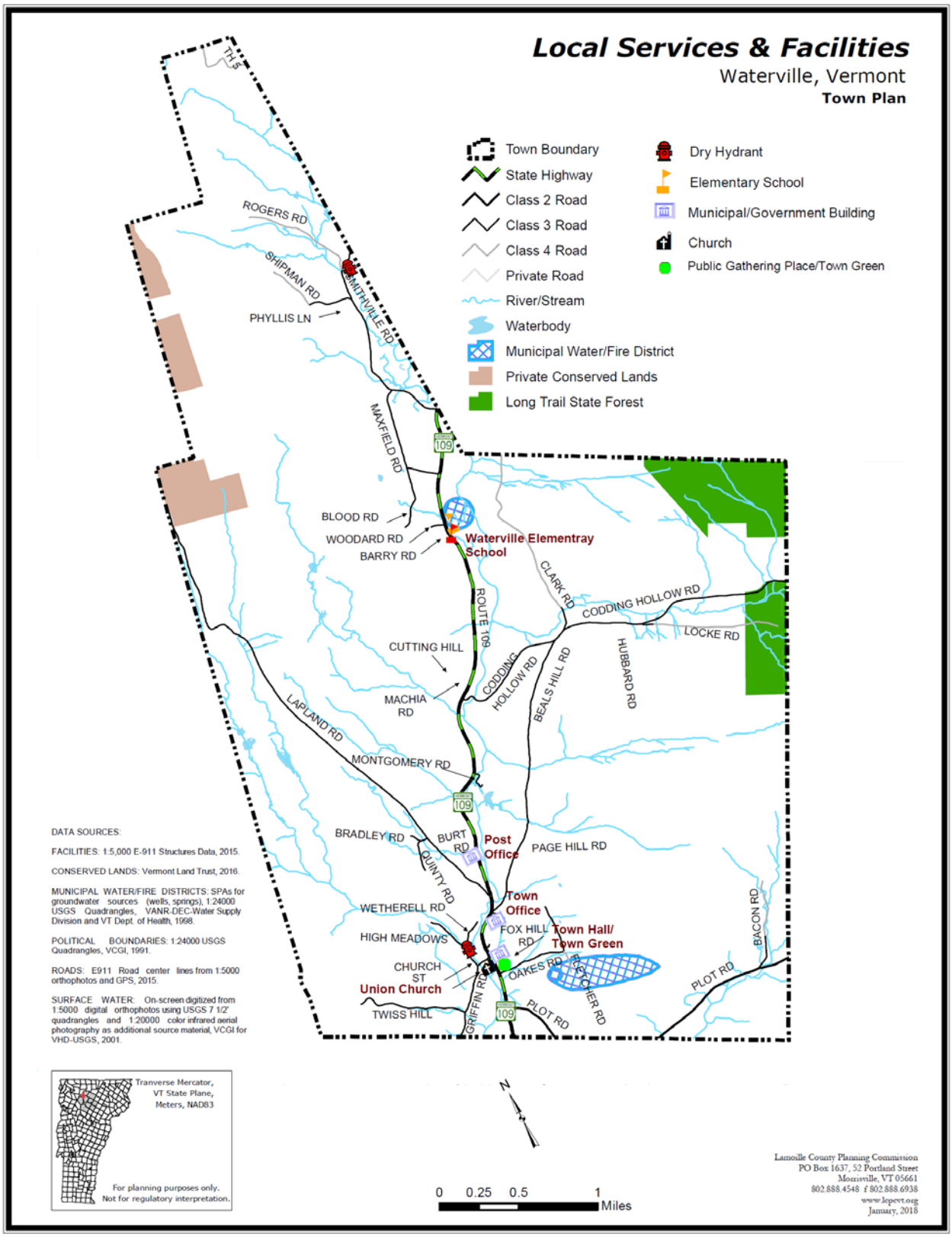
At this time, there are no further plans to expand this service area and no need to expand. The Fire District began as the "Waterville Water Co-op" in 1942, as locals looked to supply the town with a reliable, safe water source. The spring site of the original water source, located on the top of Oakes Road and dug out by hand, serviced just a few of the immediate households below. In the late 1940s a 1,500 gallon tank was installed, and water lines were put into place to service the immediate Waterville village area. In the 1970s, the water lines were extended northward to Walt Tobin's garage and Fox Hill Road. This system stayed in place until about 2004 when it began to fail. At this point, the Waterville Fire District #1 was formed with plans to revamp the system. Using low interest rates from state and federal agencies, the current system in service today was completed in August 2006. A new water treatment building housing two 4,500 gallon tanks is located on Oakes Road. Upgrades and improvements to this system will be evaluated on an as-needed basis, if necessary.

The Agency of Natural Resources Department of Environmental Conservation regulates all water supplies. For more information on water resources and water quality please see the Natural Resources and Flood Resilience Chapters in the Town Plan.

**Wastewater Disposal**

There is no town-wide wastewater disposal system in Waterville and no plans to construct a community system. Thus, the Agency of Natural Resources Department of Environmental Conservation regulates all on-site septic systems.

# Local Services and Facilities



# Chapter 5. Education

**Waterville Policy for Education**

Seek to continually improve the quality of education in Waterville to prepare its citizens for lifelong learning.

Support local apprenticeships and community educational activities.

**Waterville Recommendations / Action Items for Education**

- The Waterville Planning Board recommends working with the School Board to monitor enrollment trends at the Waterville Elementary School.
- If the need arises, the Town of Waterville should coordinate with its local School District representative to discuss capacity issues.
- Maintain communication with the School District Board representative from Waterville, and review the annual school budget and advertise information sessions.

## Schools

The current Waterville Elementary School (WES) building, constructed in 1995 and opened in 1996, is located on 16 acres along Route 109. In 2018, Waterville Elementary School joined the Modified-Lamoille North Supervisory Union which includes Waterville, Belvidere, Eden, Hyde Park, and Johnson. Students within each town attend one of four local elementary schools prior to advancing to Lamoille Union Middle and High Schools, which are located alongside the District's business office at a shared campus on Route 15.

The Elementary School budget for fiscal year 2018 was $1,098,838, a 30% decrease from the previous year. As a result of Act 46 (School District Merger), in 2018 the Town of Waterville voted to join the Modified- Lamoille North Supervisory Union School District. The Town of Waterville no longer owns the Waterville Elementary School building and property (parking lot, playground). The school facility is now owned by the Modified- Lamoille North Supervisory Union School District. Administrative operations of the Waterville Elementary School are now overseen by the School District. The annual Waterville Elementary School budget is now developed as part of the overall School District budget. Waterville has one representative serving on the School District Board.

Prior to 2013, the afterschool program at Waterville Elementary School was funded 100% through grant funding. A new grant was received running from 2013 to 2018, at only 50% of the previous amount, and the community was asked to supplement the funding. One measure of the school's success is statewide test scores. In 2012, Waterville students scored the highest in Waterville Elementary School history, with 67% of students reaching proficiency levels in math and 72% in reading. In 2017, test scores decreased

slightly with 61% of Waterville Elementary students grades 3-6 reaching proficiency levels in math and 62% in English.

Waterville residents are proud of the WES and their interest has led to many instances of individual and community support in the form of personal and financial assistance, making the school a true community effort. The Waterville-Belvidere Student Parent Organization has raised money through fundraising efforts. Funds have been used to purchase playground equipment and to offer other supplies, field trips, and activities for the WES students. Additionally, the Parent Organization wrote several grants and was awarded funds to help pay for new playground equipment, and to participate in the Farm to Plate Program.

The Elementary School grounds and ball fields are lighted thanks to a donation from the Vermont Electric Cooperative and grants applied for by parents and Deb Arel, school secretary. The grounds now host soccer and baseball fields, a basketball hoop, and a playground. The playground is the result of community members' donations of time and money. The building contains five classrooms, a library, a full-service kitchen, a gymnasium/cafeteria, and offices for special education, guidance, nurse, reception, and principal.

In 2004, the school welcomed students from the Belvidere School as part of the learning community. Enrollment has fluctuated, but has been fairly steady since Belvidere students started attending WES. Changes in enrollment can be seen in Table 5-1. As of the 2016 – 2017 school year, there are 62 Waterville students at the elementary school compared to 33 students from Belvidere.

All 7th through 12th grade students are enrolled at Lamoille Union Middle and High School in Hyde Park. Since 2006, enrollment has decreased (Table 5-2). Special Education, Early Essential Education, and services for students covered under the Individuals with Disabilities Education Act (IDEA) are provided at the Waterville Elementary School.

**Table 5-1 Waterville Elementary School Enrollment 2003-2017**

| Year | Pre- K | K | 1 | 2 | 3 | 4 | 5 | 6 | **Total** |
|---|---|---|---|---|---|---|---|---|---|
| 2016-17 | 13 | 15 | 13 | 10 | 11 | 12 | 11 | 10 | **95** |
| 2015-16 | 16 | 13 | 9 | 10 | 12 | 11 | 10 | 12 | **93** |
| 2014-15 | 16 | 10 | 9 | 12 | 11 | 9 | 11 | 12 | **90** |
| 2013-14 | 14 | 11 | 14 | 11 | 11 | 10 | 12 | 12 | **96** |
| 2012-13 | 13 | 12 | 11 | 10 | 10 | 12 | 13 | 10 | **91** |
| 2011-12 | 8 | 14 | 9 | 9 | 14 | 13 | 8 | 7 | **82** |
| 2010-11 | 12 | 11 | 9 | 12 | 16 | 7 | 8 | 10 | **85** |
| 2009-10 | 7 | 9 | 12 | 14 | 7 | 8 | 11 | 13 | **81** |
| 2008-09 | 8 | 11 | 15 | 10 | 8 | 14 | 13 | 12 | **91** |
| 2007-08 | 14 | 14 | 12 | 9 | 12 | 12 | 12 | 13 | **98** |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2006-07 | 10 | 12 | 8 | 10 | 12 | 11 | 13 | 11 | **87** |
| 2005-06 | 13 | 7 | 12 | 12 | 10 | 14 | 11 | 11 | **90** |
| 2004-05 | 13 | 10 | 12 | 8 | 13 | 11 | 11 | 18 | **96** |
| 2003-04 | 4 | 8 | 6 | 11 | 5 | 8 | 15 | 11 | **68** |

*Source: Vermont Dept. of Education Student Enrollment*

**Table 5-2 Lamoille Union Middle School and High School Enrollment 2003-2017**

| Year | LUMS total | LUHS total |
|---|---|---|
| 2016-17 | 221 | 537 |
| 2015-16 | 221 | 537 |
| 2014-15 | 239 | 545 |
| 2013-14 | 245 | 552 |
| 2012-13 | 256 | 576 |
| 2011-12 | 273 | 566 |
| 2010-11 | 284 | 574 |
| 2009-10 | 268 | 578 |
| 2008-09 | 270 | 592 |
| 2007-08 | 277 | 623 |
| 2006-07 | 280 | 618 |
| 2005-06 | 275 | 625 |
| 2004-05 | 302 | 593 |
| 2003-04 | 309 | 596 |

*Source: Vermont Dept. of Education Student Enrollment*

The School District oversees contracting with Lamoille Valley Transportation to provide busing services. Two 34-passenger buses are used. Because of changes in Belvidere's busing contracts, trips in Waterville have been consolidated. Formerly, seventh through twelfth graders were picked up along Route 109 and at the Village Store. More recently, high school students have been taking the bus to the elementary school and then taking another bus to Hyde Park.

In 2008, the School Board voted to offer a full-day kindergarten, which utilized the space previously used for Pre-K. Waterville students attend pre-K preschool programs at the Belvidere School, which runs for four mornings a week. Pre-K students who are 4 years old take the bus to the Belvidere School.

Public preschool is available for all Waterville and Belvidere children 3 - 4 years of age on or before September 1st. Current capacity is 16 children. Almost all children take a bus to and from school.

Inside and outside of school, Waterville students are active in sports, music, and community service. Many students participate in band and music programs. The Waterville Baseball Association sponsors teams for adults and kids, among other sports activities.

**Future Education Facilities**

At this time, the current facilities adequately meet the needs of Waterville and Belvidere. At such time as school and town officials begin to see a need to expand the facilities, the Town of Waterville should coordinate with its local School District representative to discuss capacity issues. To ensure facilities adequately meet the needs of Waterville and Belvidere, communication with the School District representative is encouraged to inform decisions made by the School District Board.

**Adult and Continuing Education**

Vocational and adult education is available at the Green Mountain Career & Technology Center (GMTCC) in Hyde Park. Continuing educational programs are available for adults in areas such as Licensed Nursing, Commercial Truck Driving, etc. High school juniors and seniors also have access to career training and educational opportunities at GMTCC. GMTCC offers technical programs in eleven areas of study plus two pre-tech programs and is accredited through the Association of New England Schools and Colleges. Noteworthy programs include automotive technology, culinary arts, business administration, plumbing, electrical, and heating ventilation and air conditioning (HVAC). The new campus of GMTCC in Hardwick houses the forestry and land management program. For more information on education programs at GMTCC visit https://gmtcc.info/.

Free educational programs for adults and out-of-school youth are available at the Central Vermont Adult Basic Education offices located in downtown Morrisville. Information on Central Vermont Adult Basic Education services is available online at www.cvabe.org/. The Family Center in Morrisville hosts "Families Learning Together" for families with children. This program, for adults up to age 25, focuses on high school completion and skill building. For information on Lamoille Family Center services visit www.lamoillefamilycenter.org/. Higher education opportunities are available at Northern Vermont University (Johnson campus), the Community College of Vermont, and the Vermont Studio Center in Johnson. Northern Vermont University offers a variety of graduate and undergraduate degree programs, as well as continuing education services. The University also holds numerous lectures, videos, and community events open to the public at low to no cost. Further, Vermont Interactive Technologies (VIT) is available at the Johnson Campus. VIT allows participants to engage in classes or meetings that are held off-site. UVM Extension, for example, offers Master Gardener courses through VIT. This technology allows for greater exposure to educational opportunities offered close to home. For information on Northern Vermont University programs visit www.northernvermont.edu.

The University of Vermont and several other colleges in the Burlington, Montpelier, and Northeast Vermont areas are within commuting distance.

# Chapter 6. Health and Wellness

**Waterville Health & Wellness Policies**

Waterville supports opportunities for residents of all ages to engage in physical and recreational activities, benefiting their health and wellness.

Waterville supports state-level efforts to put in place mechanisms that facilitate access to high quality and affordable child care.

**Waterville Health & Wellness Recommendations / Action Items**

- Waterville should seek funds and opportunities to promote health activities for residents.
- The Waterville Planning Board and Selectboard should work with local resources to address the opiate epidemic in Vermont.
- The Waterville Planning Board and Selectboard should explore non-regulatory planning for prevention opportunities to address drug and alcohol related concerns. See *A Primer on Planning for Prevention* at https://www.healthylamoillevalley.org/wp-content/uploads/Planning-for-prevention_Final.pdf.
- The Selectboard should consider appointing a Health Officer to act as a liaison to regional and state resources for addressing septic and composting concerns.

The health of our community and its citizens has a direct connection to our economic vitality. Our community can be measured in many ways including social, physical and behavioral health. We need to find ways to promote healthy lifestyles, support positive norms and perceptions around physical activity and substance abuse, and ensure access to community resources and services for our children and families.

## Health Services

Health and human service providers are limited in Waterville. The closest family medical practices are Morrisville Family Health Care in Morristown and the Cambridge Health Center in Cambridge Village, Vermont. Residents are likely to go to Cambridge for family practitioners, for example the Cambridge Health Center or Sunrise Physical Therapy. The closest hospital is Copley Hospital in Morrisville. This is a 25-bed full-service community hospital for acute, outpatient, and long-term care. Copley serves as an emergency care center, birthing center, and offers physical therapy, surgical services, and rehabilitation services. More specialized services are available in Burlington and across the state.

Other outpatient care is available at community clinics in neighboring towns. For example, Community Health Services of Lamoille County (CHSLV), also headquartered in Morrisville, is a federally qualified health center which offers quality medical, dental, and behavioral services to residents of Lamoille County both insured and uninsured. Their primary and specialty care practices include Morrisville Family

Health Care, Women's Center, The Behavioral Health & Wellness Center, and the Community Dental Clinic. Other local health service agencies include Lamoille Valley Mental Health Services, The Manor Nursing Home, The Lamoille Family Center, The Clarina Howard Nichols Center, and the Vermont Department of Health (Morrisville District Office). It should be noted that Morrisville is more than 30 minutes away from Waterville and Fletcher Allen Hospital in Burlington is an hour's drive.

Ambulance services are provided by Northern Emergency Medical Services in Johnson.

There are several long-term care homes in Lamoille County. Waterville is also served by Lamoille Home Health and Hospice, which provides residents with skilled home nursing, homemaker services, physical therapy, and hospice to help residents maintain themselves at home and independently. Over 500 visits were made to Waterville residents by home health nurses, licensed nursing assistants, therapists, and personal care attendants. Meals on Wheels is available to homebound residents on a daily basis. In 2016, three residents received over 103 meals through this program. In addition, the Lamoille County Council on Aging provides many programs, including free transportation for seniors to health care appointments and nutritional dinners. These services enable adults with disabilities and seniors to stay in their home and community. Central Vermont Community Action Council served 70 individuals in 26 families. This program supports Head Start, home weatherization, emergency fuel assistance, and provides family/ community support.

Vermont 2-1-1 is a simple three digit telephone number to dial for information about health and human service organizations in one's community. By dialing 2-1-1 Vermonters receive free access to community resources through information and referral. This access includes personal assistance by telephone or is online at www.Vermont211.org through a searchable database of services.

Rural Community Transportation (RCT) provides transportation for seniors one day a week by arrangement. In 2016, RCT provided 308 trips for 3 residents. In 2016, RCT trips for Waterville residents equated to approximately 7,468 miles.

**Child Care**

Quality child care matters and makes good economic sense in preparing young children for success later in life.

The Step Ahead Recognition System (STARS) is Vermont's quality recognition system for child care, preschool, and afterschool programs. Programs that participate in STARS are stepping ahead - going above and beyond state regulations to provide professional services that meet the needs of children and families. You can look to STARS as one indicator of quality when choosing child care. The more stars a program has, the more it is involved in a wide range of practices that support children, families, and professionals.

The Department for Children and Families, Child Development Division, oversees the child care industry and allows registered home care providers to serve 10 children: 6 under the age of six (of which 2 may be under two years of age) and 4 children of school age (5-13) during the school year.

Legally Exempt Providers are those adults who are caring for the children of no more than two families in addition to their own (this does not mean per day - it means in total) on a regular or continuous basis for less than 24 hours per day. By law, if someone is providing regular or continuous care for children of more than 2 families they are required to be a Registered Child Care Provider.

There is currently one registered home child care provider in Waterville.

For more information about available child care, the Lamoille Family Center provides assistance helping families find child care suited to their child's needs. For information on Lamoille Family Center services visit www.lamoillefamilycenter.org/.

*Important to maintaining a healthy community is access to recreation and physical activity. For more information on recreational activities in and around Waterville, see Chapter 4.*

# Chapter 7. Waterville Enhanced Energy Plan

Energy for light, heat, transportation, and the operation of equipment is essential for the economy and well-being of the community. This chapter describes how Waterville residents and businesses use energy in three different sectors–electricity, space heating, and transportation. This chapter also summarizes energy generated in Waterville and outlines Waterville's preferences for new energy generation facilities. The Energy Plan outlines steps that Waterville can take to align its current energy profile with state energy goals.

Two broad goals set by the State of Vermont are to reduce Vermont's energy consumption by one third by 2050 and to meet 90% of Vermont's energy demand by renewable resources by 2050 (90x50). Waterville today, based on data from Vermont Energy Dashboard, uses energy sources that are 31% renewable and 69% non-renewable. [5]

**Waterville Energy Policies**

Waterville supports the exploration and development of local, renewable energy sources for heating and power, including local wood/biomass, hydro power, solar and small scale residential wind power (10 kW or less). Waterville supports the following policies:

- Alternative sources of energy for personal and homestead use is encouraged. Larger and/or commercial energy developments need to be evaluated on a case by case basis with sensitivity to overall environmental and aesthetic impacts as well as quality of life issues for neighbors.
- Extraction of earth resources will be subject to best practices and conducted in a renewable and environmentally friendly manner.
- All residential, municipal, and commercial energy efficiency and conservation efforts are encouraged, as well as local initiatives to promote such efforts.
- New construction in Waterville should be developed with densities, square footage, and designs that optimize energy efficiency. Vermont Residential Building Energy Standards and EnergyStar guidelines should be followed and surpassed.
- The Town of Waterville encourages solar installation be considered for new development in Town.
- Waterville supports groups exploring the possibility of methane digestion as a source of energy on local and regional farms.

Energy Siting Policies:

- No commercial or utility scale energy development shall occur above 1,300 ft in elevation in the Waterville Conservation District, to protect fragile natural environments and the Town and regional water supply.

*5 Community Energy Dashboard; *http://www.vtenergydashboard.org,* 2015 Progress Report for Waterville

- No energy development shall occur in Ground Water Source Protection Area zones 1 and 2, to protect the Town's water supply.
- No wind development shall be sited on the scenic ridgeline of Laraway and Fletcher Mountain, to preserve fragile natural environments in the Conservation District, scenic assets, and low impact recreational uses.
- When possible, avoid siting commercial and utility scale energy projects on conserved properties in town, to preserve their ecological integrity and low impact recreational uses.
- The Town of Waterville supports roof-top solar development on municipal, residential, and commercial buildings.
- The Town of Waterville supports ground-mounted solar on old gravel pits and areas of town previously cleared for development, outside local and primary constraint areas identified in this plan.
- The Town of Waterville supports the development of neighborhood solar cooperatives that do not negatively impact local and primary constraint areas identified in this plan.
- The Town of Waterville supports small-scale residential wind systems outside the Waterville Conservation District and Laraway scenic ridgeline.
- The Town of Waterville supports biomass heating systems for residential, commercial and municipal buildings.
- Renewable energy development should be sited near existing roads and utility right of ways to reduce forest fragmentation and preserve high priority wildlife corridors and forest blocks.
- All energy development in Waterville shall avoid primary State (Known) and local siting constraints and consider avoiding and mitigating impacts to secondary (possible) constraint areas as identified in the Energy Siting section of this plan.

**Waterville Energy Recommendations/Action Items**

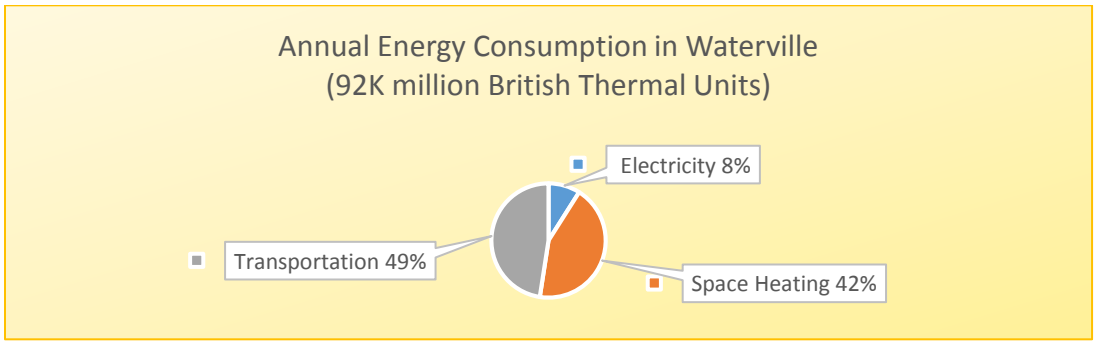
- The Waterville Selectboard should establish local points of contact or an Energy Coordinator to support and lead local energy conservation and development activities, interface with external resources, and pursue funding for local projects.
- The Planning Board should work to pursue grants that support energy efficiency and renewable energy development.
- The Town, Waterville Planning Board, and Selectboard should explore opportunities for rooftop solar on municipal and school district buildings and properties.
- The Waterville Planning Board should promote and educate residents on the following:
    - The Vermont Energy Code
    - Energy efficiency and weatherization assistance programs
    - Efficiency Vermont and local utility incentives (including rebates for air source heat pumps, and hot water heaters)
    - Solar assessor resources
    - Public transit in the region (Rural Community Transportation, Green Mountain Transit Authority) and electric vehicle incentives available to Waterville residents
    - State and local carpooling and ride sharing services

- The Planning Board should work with the Waterville Elementary School to explore opportunities for incorporating awareness on renewable energy, energy efficiency, and weatherization into the school curriculum.
- The Waterville Planning Board should explore Park and Ride locations in Waterville Village Center and applicable funding opportunities.
- The Planning Board should work with the Lamoille Housing Partnership as opportunities arise to promote solar and energy efficiency in affordable homes.

## Current Energy Consumption

There are various ways to measure energy consumption. Electricity consumption can be measured in kilowatt hours. Transportation fuel use can be expressed in gallons of gas or diesel. Heating fuel use can be tracked by tons of wood pellets, gallons of propane, gallons of fuel oil, etc. A common measure of consumption that can be calculated for any type of energy fuel is a British Thermal Unit.[6] While British Thermal Units (BTUs) may be harder to conceptualize in terms of the volume of energy fuel used, they allow for usage comparisons across all energy sectors.

The figure below shows Waterville's 2016 energy consumption in BTUs. Waterville's total annual energy use is about 92,000 million British Thermal Units, compared to the County which uses around 3.9 trillion British Thermal Units. Being home to the second lowest population per town in the county, Waterville has the second lowest annual energy usage compared to other towns in the county (ex: Belvidere uses about 51,000 million BTUs). Electricity accounts for approximately 8% (7,000 million BTUs) of the total consumption, transportation for 49% (44,846 million BTUs) and space heating for 42% (39,900 million BTUs) of total consumption.




*Source: Lamoille County Planning Commission (LCPC).*[7]

6 The British thermal unit (Btu or BTU) is a traditional unit of heat; it is defined as the amount of heat required to raise the temperature of one *pound* of water by one degree Fahrenheit. It is part of the British *Imperial* system of units.

7 The LCPC estimates are based on data sources that included the American Community Survey, the Vermont Agency of Transportation, the Vermont Department of Labor, Efficiency Vermont and the Vermont Department of Public Service.

**Municipal Energy Consumption**

Public facilities and services require significant expenditures of tax dollars for energy. In 2009, the Waterville Planning Board and Selectboard secured a grant from the Department of Public Service for an Energy Efficiency and Conservation Block Grant for efficiency upgrades to the Town Hall and Town Clerk's Office. In 2017, the Town of Waterville approved a bond to make additional improvements to the Library and Town Clerk's Office building including installing high efficiency windows and new doors to further improve energy efficiency of the building. Percent change in fuel oil and electricity spending for both buildings from 2009–2016 are shown in Tables 7-2 and 7-3. While there have been savings in fuel oil expenditures, it will take more years to realize the full extent of the cost savings. Fuel oil fill-ups do not happen regularly and seasonal weather patterns vary from year to year, causing variability in spending for both lighting and heating. During this time period, the Town Hall experienced a slight rise in electricity costs due to an increase in use of the building and rising electric rates. Improvements to the Town Hall, including the installation of a bathroom and handicap access, allowed the space to be rented out for meetings and events, increasing its use since 2009.

**Table 7-2 Municipal Building Spending – Fuel Oil, Percent Change from 2009-2016**

| Building | 2009 | 2016 | % Change, 2009- 2016 |
|---|---|---|---|
| Town Hall | $1,601 | $1,108.78 | -31% |
| Town Clerk's Office | $1,110 | $867.85 | -22% |

*Source: Waterville Town Clerk*

**Table 7-3 Municipal Building Spending – Electricity, Percent Change from 2009-2016**

| Building | 2009 | 2016 | % Change, 2009- 2016 |
|---|---|---|---|
| Town Hall | $779 | $1,031 | +32% |
| Town Clerk's Office | $873 | $1,361.84 | +56% |

*Source: Waterville Town Clerk*

Energy used by Town buildings represents a fraction of Waterville's energy profile. Today, all heating fuels used by the Town are petroleum-based. In 2016, the prices of petroleum-based prices were relatively low; see footnote for pricing comparisons.[8] The prices, however, will rise again so it makes sense to begin to explore alternative fuel technologies. If a vehicle is purchased or piece of equipment is replaced, a building renovated or a significant purchase made, the Town should give careful consideration to fuel economy and energy efficiency.

8 As compared to 2012, when residential fuel oil cost was $4.00 per gallon and propane cost $3.60 per gallon, the 2016 prices were $1.85 and $3.20 respectively. Gasoline cost $3.62 per gallon in 2012 and $2.17 in 2016. (Source: US Energy Information Administration)

## Energy Consumption by Sectors

**Electricity Use**
Historically, electricity used by Vermont residents and businesses has been produced by large generators, predominantly located beyond Vermont borders. Hydro Quebec and the Seabrook nuclear facility in New Hampshire are a couple of examples. Electricity produced by these plants was then transmitted to Vermont customers via a robust network of transmission lines. In recent years, Vermont has seen a rise of in-state energy generation and the state's vision is for this trend to continue. Reliance on out-of-state energy sources will remain essential for meeting Vermont's demand for electricity but the vision is that the out-of-state generation will be increasingly matched by Vermont-based generation plants utilizing renewable sources.

Electricity can be generated from a variety of sources including hydro, nuclear, and fossil fuels (coal, oil, or natural gas). Other sources of electricity include solar, wind, biomass (wood burning), and methane recovery (from landfills or farms).

Currently, there is no commercial electricity generating facility in Waterville. All power is purchased from other electrical facilities. The Vermont Electric Cooperative (VEC) supplies electric service in Waterville. The majority of VEC power supplied to Waterville consumers is purchased from Hydro Quebec. The Village of Enosburg Falls Electric Department shows a portion of its service area in Waterville although the area is unpopulated and there are no connections to households in town.

Three-phase power lines, which allow for the most efficient creation of rotating magnetic fields in electric motors and are conducive to industrial use, follow Route 109 through Waterville until Codding Hollow Road, at which point the lines split into 2-phase power. The old Laraway Saw Mill was likely one of the reasons for the 3-phase lines. Apart from heat, electricity is used by most, if not all, Waterville households for lighting, appliances, pumps, and electronics.

In 2016, Waterville's residents and businesses used approximately 2 million kilowatt hours (KWh) of electricity. Households utilized 86% of this amount and the remainder was used by businesses (14%).[9] Throughout the year, residents and businesses took steps to conserve energy and implement energy efficiency measures. Efficiency Vermont reports that in 2016, electric and thermal efficiency measures installed by Efficiency Vermont contractors in Waterville resulted in annual energy cost savings of $11,536 to homes and $7,073 to businesses. During 2016, Efficiency Vermont worked on 55 residential projects and 46 business projects. (Note: Efficiency Vermont defines a "project" as a collection of one or more energy efficient measures that have been implemented at a customer's physical location.) For residential customers, energy efficiency measures almost exclusively focused on the installation of efficient lighting hardwire fixtures and purchases of efficient light bulbs/lamps. The second most common efficiency project noted was upgrading electronics and appliances (ex: cooking ranges,

9 Efficiency Vermont

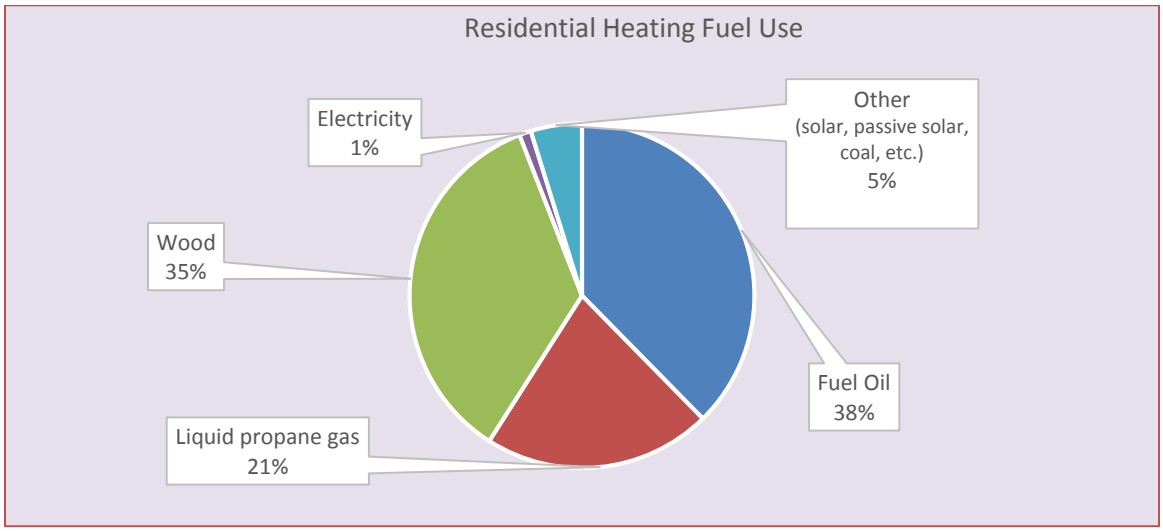
refrigerators, washers and driers). For business customers, improvements primarily focused on installing efficient lighting systems.

*Space Heating Energy Use*

The heating of homes and businesses is an important sector of energy plans, especially here in northern Vermont. Waterville households heat their homes primarily with fuel oil and propane (59% of households). Firewood and wood pellets are used in about a third (35%) of homes. A more detailed profile of heating fuels used in Waterville homes is shown in a figure below.

Waterville businesses and institutions heat spaces primarily with oil and propane (46%), electricity (45%), and to a lesser degree, wood (9%). [10] In 2016, there were 6 commercial and government establishments in Waterville. Together, these establishments consumed about 11 percent of space heating energy annually used in the town. [11]

Since over 50% of Waterville households use petroleum-based products (oil, kerosene, propane) to heat their homes, it is important to note that over time, prices of these fuels fluctuated significantly, causing substantial swings in home and business budgeting. In 2016, prices of petroleum-based fuels were the lowest since 2004. When the prices of crude oil products rise again, people and businesses in Waterville will pay significantly more money to obtain the energy they need to meet their demand.[12]




*Source: American Community Survey: 2011-2015*

10 Vermont Energy Investment Corporation (Long Range Energy Alternatives Plan model)

11 Vermont Department of Labor; http://www.vtlmi.info. (Note: Agriculture, logging, mining, and construction are not included in the count of commercial establishments).

12 Prices used to calculate energy expenditures are based on 2016 US Energy Information Administration data.

Waterville residents and businesses are encouraged to explore efficiency improvements to heating systems by installing modern wood heating systems and heat pumps. For information on home heating upgrades refer to the Energy Efficiency and Conservation section of this chapter or visit Efficiency Vermont's webpage at www.efficiencyvermont.com for available rebates. Vermont Electric Cooperative and Green Mountain Power also offer incentives to customers switching to the latest energy technologies.

**Transportation Energy Use**

Due to the rural nature of Lamoille County, transportation in Waterville is highly dependent on the personal automobile. According to the 2011-2015 American Community Survey, about 87% of Waterville workers commuted to work by car, van, or truck, driving alone. About 6% of workers carpooled. The rest, about 7% worked at home. Mean travel time to work was 38 minutes. The table below estimates the use of passenger vehicles and gasoline fuel in Waterville in 2016.

**Light Duty Vehicle Energy Usage in Waterville**

| | |
|---|---|
| # of Vehicles | 544 |
| Total Miles Driven | 8,704,000 |
| Usage in Gallons | 372,096 |
| Usage in million BTUs | 44,846 |

*Source: American Community Survey 2011-2015 and VTrans*

With more people in town and a large proportion of them commuting to work, the highways are becoming busier during the early morning rush. Adding to the growing problem, Lamoille County towns are experiencing an increase in commuter traffic passing through town. As gasoline prices fluctuate and automobile emissions continue to impact air quality, efforts need to be made to reduce the individual's dependency on the private automobile. The key to making improvements in transportation is with energy efficiency–by driving less, using more efficient vehicles, carpooling, using public transportation, and developing charging stations for electric vehicles.[*13] Siting future development in a manner that provides safe and convenient access to local employment opportunities and services is also important. All new road projects on paved state and town highways should consider pedestrian and bicycle safety and connectivity to other bike/pedestrian facilities (trails, sidewalks, wide road shoulders) as outlined in the 2011 Complete Streets Legislation.

13 The use of electricity as a transportation fuel is slowly increasing and as of July 2017, according to www.driveelectricvt.com, an estimated 20-39 electric vehicles and plug-in hybrids were registered in Waterville.

## *Energy Efficiency and Conservation*

**Energy Efficiency, Conservation, and Financing**
While the exploration of new, more local and renewable energy resources is needed, Waterville households, businesses, and municipal government entities should first look at energy efficiency measures, including weatherization, appliance conversion, upgrading heating systems, installing efficient lighting fixtures, improving insulation, replacing windows and doors, and moderating energy use. Local residents, businesses, and the Town of Waterville can take part in programs available through Efficiency Vermont (www.efficiencyvermont.com) including rebates on compact fluorescent bulbs and certain efficient appliances and heating systems, assistance with home energy audits, and consultation on EnergyStar compliance for new homes and commercial buildings. Additionally, Capstone Community Action provides weatherization services to low income Vermont residents at no cost. For more information on the Weatherization Program and qualification specifications please call 1-877-919-2299 or visit www.energysmartvt.com/about-us/cvcac/weatherization/.

Energy efficiency improvements on average can yield up to a 10-20% or greater return on your investment. Efficiency improvements in both municipal and private buildings not only save money on utility bills, but can improve indoor air quality and comfort. According to Vermont Energy Smart and the Vermont Energy Investment Corporation, returns on energy efficiency investments are greatest when addressing the building envelope first. In other words, sealing up your home, business, or a public building through proper insulation will give you the biggest bang for your buck.

**Financing for Municipal Efficiency Improvements**
Although energy efficiency improvements can yield significant long-term savings, upfront costs can be expensive. There are a variety of methods for financing efficiency improvements for municipal facilities and services (street lighting) including using grants, efficiency incentives, budgets/capital reserves, loans, bonds, performance contracts, and a tax-exempt lease purchase. Two potential funding sources for municipal building improvements include the Clean Energy Development Fund (CEDF) and Efficiency Vermont incentives described above. The Clean Energy Development Fund offers a grant program that finances cost effective environmentally sustainable electric and thermal (geothermal) energy technologies. CEDF grants are available to both individuals and organizations. For more information regarding CEDF grants please visit: www.publicservice.vermont.gov/energy/ee_files/cedf/ CEDF% 20Strategic%20Plan.pdf.

In addition, the New England Grassroots Environmental Fund offers small grants to community-based groups pursuing environmental work, such as community energy efficiency projects. NEGEF offers two types of grants; SEED Grants and Grow Grants. SEED Grants are targeted towards small community projects costing under $10,000. Small grants range from $250 to $1,000. Community groups may apply for SEED Grants at any time. Grow Grants are available for communities/local groups engaging in capacity building or program development for community-based environmental programs.

**Land Use, Transportation and Energy Use**

The nature of land use can also affect the efficiency of energy use. High residential density, by its very nature, is energy efficient, due to compact living arrangements and less necessity to use automobiles. High residential densities are few and far between along Route 109 in Waterville, but the location of new construction within walking distance of existing amenities and services could be encouraged. Also, the square footage for new residential buildings should be designed for efficiency, affordability and sensibility, and building to EnergyStar standards is highly encouraged. Use of passive solar design (to allow natural lighting and heating) is also encouraged in new construction or home rehabilitation.

There is also a role for local economic development in energy conservation. The creation of more local jobs could limit the need of residents to commute long distances to work, thus reducing vehicle miles traveled and fuel used.

Those planning to build should be mindful of State energy and ventilation codes. Failure to follow these codes in any new home or addition over 500 square feet must be disclosed as a defect upon sale of the structure. Vermont State Tax credits are available for businesses and rental property owners residing in Waterville's Designated Village Center to assist in bringing buildings up to code. Additionally, Historic Preservation tax credits and grants are available for implementing upgrades and code improvements to historic buildings. For available tax credits, visit the Vermont Agency of Commerce and Community Development's webpage at http://accd.vermont.gov. For more information on land use and transportation planning efforts to reduce energy consumption refer to the Transportation and Land Use chapters of this plan.

## Future Energy Use

Vermont has a bold goal to meet 90% of its energy needs through increased efficiency and renewable sources by 2050. In 2017, to model pathways towards this goal, the State, in partnership with Vermont Energy Investment Corporation (VEIC), utilized the Long-Range Energy Alternatives Planning model (LEAP) to project future energy demand in the state and its regions. Among the most notable trends projected by LEAP are:

- Despite a growing population and economy, energy use will decline by nearly 35 percent because of increased efficiency and conservation.
- Electricity use will increase with the intensified use of heat pumps as primary heating sources and the use of electric vehicles. Because those choices are powered by electricity, and electricity is three to four times more efficient compared to fossil fuels, overall energy use will decrease.
- Over time, the model projects a near complete elimination of our two principal transportation fuels, gasoline and diesel, as well as oil, currently the major fuel used for space heating in many parts of the state.
- The use of wood as a fuel is expected to increase dramatically due to its expanded use for space heating as wood pellets displace oil, propane, and natural gas in small residential buildings and efficient biomass district heating systems become more widespread.

**LEAP Projections for Waterville**

To demonstrate the magnitude of changes that would need to take place to align Waterville's energy profile with the state energy goals, the LEAP model offers specific targets to serve as a guide for Waterville's transitions in energy use and energy generation. The targets, listed below, project one way Waterville can achieve its 2050 energy goals. It is possible that a different modeling scenario, with different targets, could be developed. However, because the energy goals are ambitious, projected changes would always need to be significant, no matter what set of targets is developed.

There are many strategies that will help Waterville attain the state energy goals, but these strategies cannot be achieved by Waterville alone and require the action of the state agencies, regional organizations, public utilities, and private individuals. That said, there are measures that Waterville can take to conserve energy and switch from using fossil fuels to renewables. These measures are described in the Policies & Recommendations section of the plan.

*Target: Households in Waterville heated with wood*

| Year | 2015 | 2025 | 2035 | 2050 |
|---|---|---|---|---|
| # households | 95 | 116 | 139 | 213 |
| % households | 35% | 41% | 47% | 66% |

*Target: Businesses/Institutions in Waterville heated with wood*

| Year | 2015 | 2025 | 2035 | 2050 |
|---|---|---|---|---|
| % of establishments | 9% | 12% | 17% | 25% |

*Target: Households in Waterville heated with electric heat pumps*

| Year | 2015 | 2025 | 2035 | 2050 |
|---|---|---|---|---|
| # households | 0 | 9 | 21 | 46 |
| % households | 0% | 3% | 7% | 14% |

*Target: Households in Waterville weatherized*

| Year | 2015 | 2025 | 2035 | 2050 |
|---|---|---|---|---|
| # households | 14 | 59 | 143 | 321 |
| % households | 5% | 21% | 49% | 100% |

*Target: Businesses/Institutions in Waterville weatherized*

| Year | 2015 | 2025 | 2035 | 2050 |
|---|---|---|---|---|
| % of establishments | 7% | 16% | 31% | 61% |

*Target: Households equipped with upgraded (more efficient) electrical equipment (appliances)*

| Year | 2015 | 2025 | 2035 | 2050 |
|---|---|---|---|---|
| # of households | 22 | 110 | 190 | 315 |
| % of households | 8% | 39% | 65% | 98% |

*Target: Passenger electric vehicle use in Waterville*

| Year | 2015 | 2025 | 2035 | 2050 |
|---|---|---|---|---|
| # passenger vehicles | 2 | 62 | 229 | 574 |
| % passenger vehicles | 0% | 11% | 39% | 89% |

*Target: Renewable electrical generation from facilities located in Waterville*

| Year | 2016 | 2025 | 2035 | 2050 |
|---|---|---|---|---|
| Total Output (MWh) | 131 | 1,671 | 3,381 | 5,947 |

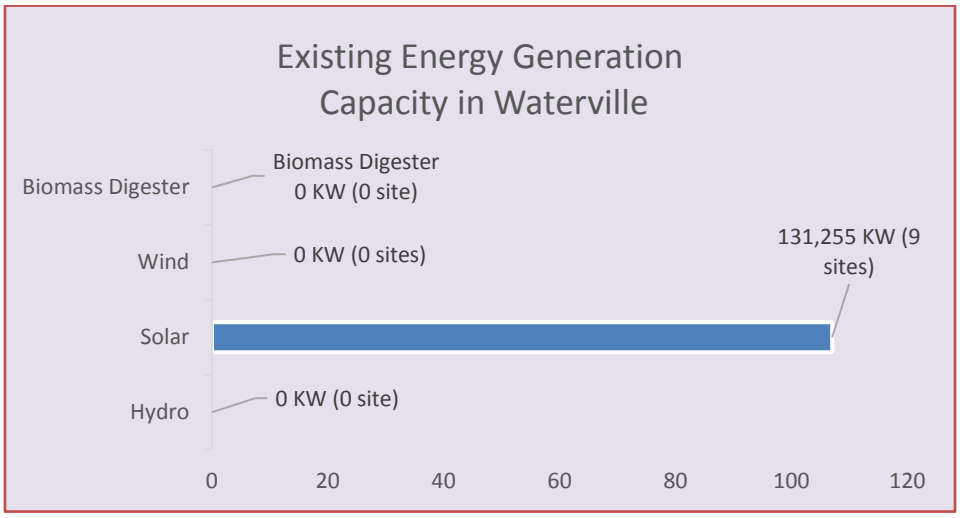
*Target: Transition to renewables by energy sector*

| Year | 2015 | 2025 | 2035 | 2050 |
|---|---|---|---|---|
| Heating | 25% | 33% | 44% | 73% |
| Transportation | 9% | 21% | 38% | 86% |
| Electricity | 28% | 54% | 73% | 94% |

*(Note: The targets shown above project an annual population growth of 0.4%).*
*Source: LEAP Model developed by VEIC, 2017.*

## Renewable Energy Generation

**Existing Renewable Energy Generation in Waterville**
Today, electricity generated from renewables in Waterville comes from solar generation facilities. At the close of 2017, Waterville was home to 9 solar sites with total generation capacity of 107 kilowatts (131,225 kWh). The majority of sites are roof-top residential installations with generation capacity between 2-15 KW. Currently, there are no hydro, wind, or biomass digester sites in Waterville. [14]




*Source: Vermont Energy Dashboard, November 2017*

**Future Energy Generation**

Waterville has opportunities to generate energy from various resources. Two resources that have the potential to most substantially contribute to meeting the state energy goal for Vermont-based

14 Existing generation data is based on information available via Community Energy Dashboard. As new facilities are added, the Energy Dashboard gets periodically updated; *http://www.vtenergydashboard.org*

generation are the sun and wind. Hydro, biomass, and even geothermal sources can be part of the energy production mix, but will not generate enough energy to meet the 2050 generation target alone.

**Energy Generation Target for Waterville**

The projected energy generation target for 2050 for Waterville–derived from the LEAP model - is to build generation facilities with total generation capacity of 5,816 megawatt hours, equivalent to 4.5 megawatts. Waterville supports the development of renewable energy generation facilities and envisions working toward the projected generation target by deployment of solar ground-mounted facilities and other alternatives. To demonstrate the impact of new generation facilities on land use, Lamoille County Planning Commission determined that it would take about 36 acres of land to accommodate this level of solar generation. Using today's solar panel installation technology, the LCPC estimated about 8 acres of land per 1 MW of solar installation.

The Solar and Wind Resource Maps show areas with energy generation potential based on presence of the resource (sun or wind) and environmental attributes of the resource areas. "Prime" areas are lands with available resource and no environmental constraints. "Secondary" areas also have the resource but contain environmental characteristics that may pose an obstacle to development, based on statewide regulations or designated critical resources.

In addition to the Solar and Wind Resource Maps developed on the basis of statewide regulations, Waterville Planning Commission identified local preferences to be considered in the planning of renewable energy facilities. Local preferences for sites for generation are shown on the Solar and Wind Potential Resource maps as "Preferred Sites". Areas unsuitable for generation, and areas where generation projects may face an obstacle due to a locally identified environmental constraint are shown on the solar and wind resource maps as "Local Constraints". See the Siting of Renewable Energy section below for a more detailed description of state primary/secondary constraints and local constraints.

The maps can be used for conceptual planning or initial site identification by those interested in developing renewable energy infrastructure. They should not take the place of site-specific investigation for a proposed facility.

**Solar Generation Potential**

The initial mapping analysis identified that there are 2,503 acres of land in Waterville that are potentially suitable for ground mounted solar power generation. Of this number, 216.2 acres (about 9%) are lands with prime solar potential and 2,286.8 acres (about 91%) are lands with secondary solar potential. The prime and secondary potential areas are shown on the Solar Potential Resource Map.

**Wind Generation Potential**

The initial mapping analysis identified 1,711 acres of lands potentially suitable for commercial wind energy generation. Of this number, 6.9 acres (about .4%) are lands with prime wind potential. Lands with secondary wind potential total 1,704 acres (about 99.6%). The prime and secondary potential areas are shown on the Wind Potential Resource Map.

Waterville has limited areas with wind speeds high enough to accommodate utility scale wind generation facilities. Ninety nine percent of areas in Waterville with potential for commercial wind speeds are situated in locations that are constrained by natural or physical conditions which can make wind development challenging, or where the impact on scenic view-sheds is of concern. The majority of secondary wind resource areas shown on the map are located in the Waterville Conservation District (above 1,300 ft in elevation) identified as an unsuitable area for commercial energy development.

**Woody and Non-Woody Biomass Generation Potential**

Electricity can also be generated from other renewable resources, including organic waste (such as manure, brewery waste, or food scraps) or woody biomass.

Organic waste is processed in bio-digesters. The digesters produce methane gas that fuels an engine to produce electricity. Currently, there are no bio-digester facilities in Waterville. Waterville is in support of partner and regional efforts to study the potential for methane production, including the possibility of utilizing waste from several operations, (farm and non-farm) at one bio-digester.

The burning of woody biomass also possesses energy-generation potential, especially at combined heat and power (CHP) facilities. CHP facilities burn wood to generate electricity and contain a mechanism to capture the excess heat associated with producing electricity. Such facilities represent a local, renewable source of heat and power. In order to be cost-effective, CHP facilities typically require a large consumer of heat. Due to the rural nature of Waterville and low population, small scale biomass heating systems (wood stoves, wood pellet stoves, wood burning furnace) are more practical. This plan supports small-scale biomass heating systems for residential, commercial and municipal buildings. For a depiction of woody biomass resource potential in Waterville see map on page 59.

**Hydro Generation Potential**

Currently, there are no active hydroelectric sites in Waterville. The Hydroelectric Resources map shows hydroelectric potential based on a 2007 study conducted by Community Hydro. The map shows one site in Waterville that could be converted into a hydroelectric facility. This site, formerly known as the Laraway Sawmill, has an estimated generation capacity of less than 50 kilowatts. In 2008 a grant from the Vermont Clean Energy Development Fund was awarded to Waterville to perform the preliminary site assessment and a feasibility analysis to determine the ability to produce power at this site. The 2008 micro-hydro study revealed that establishing a hydro power facility at the old sawmill would be costly, but it has the potential to produce a return on the investment. Infrastructure needs would have to be known before design, engineering, permitting, and construction could be pursued. Due to ecological and aquatic habitat concerns, the State of Vermont is no longer promoting the permitting of new hydro power facilities.

## Siting of Renewable Energy Facilities

In order to protect natural, scenic, and historic resources while encouraging renewable energy development, Waterville developed an inventory of areas that are suitable or unsuitable for renewable energy generation. These areas are described below.

**Areas Preferred for Renewable Energy Development**

Types of areas preferred for renewable energy development are the areas identified as preferred by the State of Vermont in Act 174. These areas include parking lots, brownfield sites, landfills, rooftop installations, and gravel pits. Specific preferred areas for renewable generation, shown on the Solar and Wind Potential Resource maps, are:

- Roof top solar on public buildings (Town Hall, Library/ Town Clerk's Office, Waterville Elementary School)
- Roof top solar on residential and commercial structures
- Ground mounted solar at old gravel pits
- Residential biomass systems (pellet stoves, wood stoves, wood furnaces, etc.)
- Biomass heating systems in municipal and school district buildings (Town Hall, Town Clerk's Office/ Library, School)
- Small-scale residential wind systems are supported (10 kW or less)

**Areas Unsuitable for Renewable Energy Development**

Certain types and sizes of renewable energy generation facilities shall not be supported. Areas where certain generation facilities are not supported are shown on the Solar and Wind Potential Resource maps and include:

- No commercial or utility scale energy development above 1,300 ft in elevation. The Waterville Town Plan identifies a Conservation District above 1,300 ft to protect fragile natural environments and the Town and regional water supply. For a detailed description of the Waterville Conservation District refer to the Natural Resources and Land Use chapter of this plan.
- No energy development in Ground Water Source Protection Areas to ensure protection of the town and regional water supply.
- No wind development on Laraway and Fletcher Mountains. These ridgelines are steep and predominantly sit above 1,500 ft in elevation, within the Waterville Conservation District. Laraway and Fletcher Mountains are noted in the Lamoille County Regional Energy Chapter, Potential Wind map as municipal ridgelines unsuitable for energy development. Laraway Mountain is home to the Long Trail and is a valued scenic and recreational resource. Similarly, Fletcher Mountain is recognized by the Town of Waterville as a scenic and recreational asset.
- Avoid commercial renewable energy development on conserved properties in Town (private and public - EX: VLT, State Forest near Long Trail) to preserve their ecological integrity, natural habitats, and low impact recreational uses.

**Areas Unsuitable (state primary constraints) for Renewable Energy Development**

This plan identifies some areas where renewable energy development, based on statewide regulations, will be unlikely due to their natural qualities or due to the importance of protecting our citizens from

potential natural disasters. The solar and wind resource maps name these areas as “solar likely unsuitable” or “wind likely unsuitable”. The areas include:

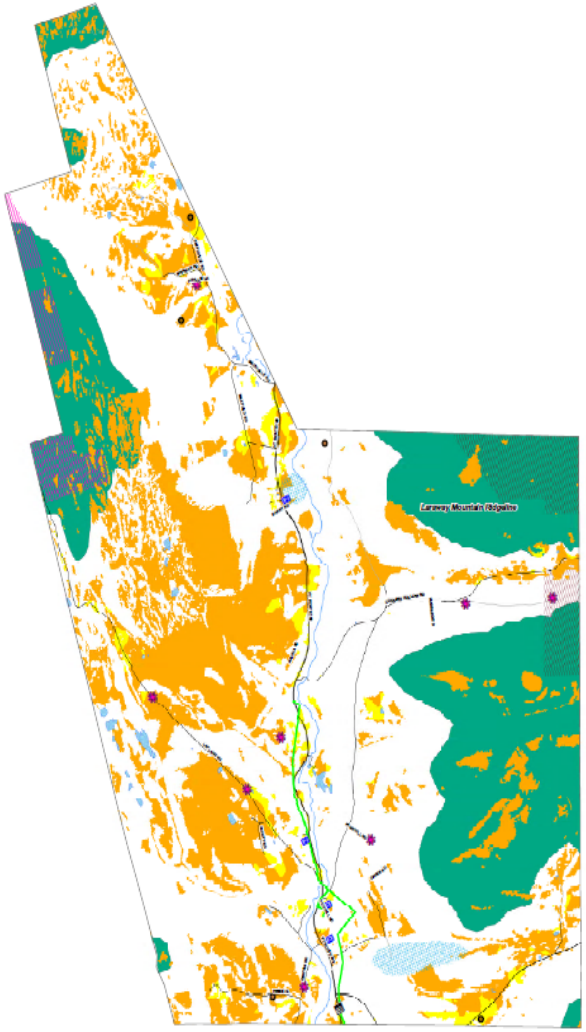
- Federal Emergency Management Agency identified floodways
- River Corridor Areas as identified by the Vermont Department of Environmental Conservation
- Class 1 and 2 Wetlands as noted in Vermont State Wetlands Inventory or advisory layers
- Vernal Pools (confirmed and unconfirmed)
- State-significant Natural Communities and Rare, Threatened, and Endangered Species
- Wilderness Areas, including National Wilderness Areas

**Areas Potentially Suitable (state secondary constraints) for Renewable Energy Development**

The Solar and Wind Resource Maps show areas with energy generation potential as based on presence of the resource (sun or wind) and environmental attributes of the resource areas. “Prime” areas are land with no environmental constraints. “Secondary” areas have possible environmental constraints that may pose a barrier to the development of renewable energy facilities, based on statewide regulations. In some cases, these constraints may prohibit the development and in others the development may be suitable. The secondary areas shown on the Solar and Wind Potential Resource Maps include the following environmental constraints:

- Federal Emergency Management Agency Special Flood Hazard Areas
- Prime Agricultural Soils
- Act 250 Agricultural Soil Mitigation areas
- Protected Lands (State Fee Lands and Private Conservation Lands)
- Deer Wintering
- Hydric Soils
- Vermont Agency of Natural Resources Conservation Design Highest Priority Forest Blocks

# Town of Waterville
# Renewable Energy Potential: SOLAR




0 0.5 1 2 Miles

**Methodology**

This map shows areas of resource potential for renewable energy generation from solar, i.e. locations where renewable energy generation would likely be most feasible according to the natural conditions of an area. This map also considers various other conditions, such as ecological zones, that may impact the feasibility of renewable energy development. These conditions are referred to as constraints.

**Prime Solar**

Areas with high solar potential and no environmental constraints.

**Secondary Solar**

Areas with high solar potential and environmental constraints that may pose an obstacle to development. These areas are shown on the map and include the following constraints:

- Agricultural soils (local, prime and statewide classifications)
- FEMA special flood hazard areas
- Protected lands
- Act 250 agricultural soil mitigation areas
- Deer wintering yards
- Highest priority forest blocks
- Hydric soils

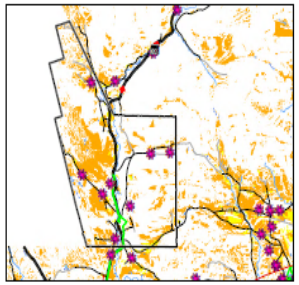
**No Solar**

Areas with low solar potential or envrionmental constraints likely to prohibit development. These areas have been removed and are not shown in any way on this map.These environmental constraints are:

- FEMA floodways
- River corridors
- Federal wilderness areas
- Natural Communities and Rare, Threatened and Endangered Species
- Vernal pools
- Wetlands class 1 and 2

This map was created as part of a Regional Energy Planning Initiative being conducted by Vermont Regional Planning Commissions and the Vermont Public Service Department.

**Created:** Lamoille County Planning Commission, March 2018.



**Key**

- Existing Solar Sites
- Substations
- 3 Phase Power Lines
- Transmission Lines
- Lakes/Ponds
- Rivers/Streams
- Prime Solar
- Secondary Solar
- White Area — No Solar

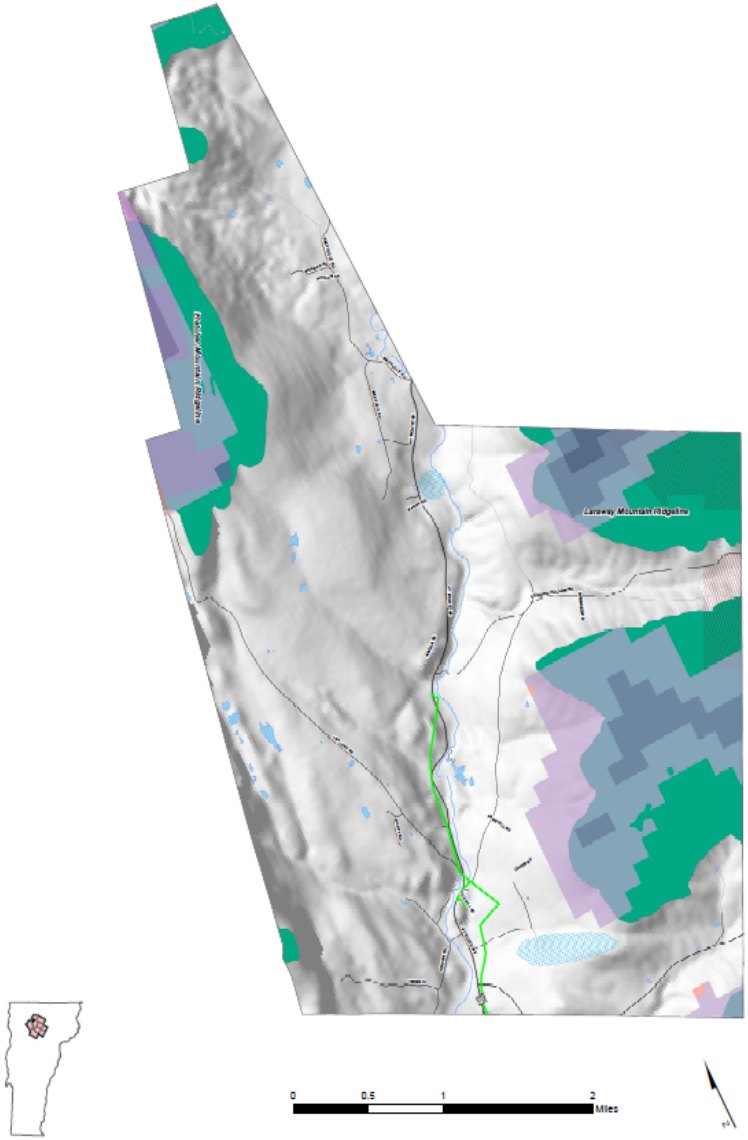
**Prefered Sites:**

- Gravel Pit
- Municipal Building

**Local Constraints:**

- Private Conserved Lands
- Long Trail State Forest
- Conservation District (Above 1,300ft)
- Ground Water Source Protection Area (Zones 1 and 2)

# Town of Waterville
# Renewable Energy Potential: WIND




**Methodology**

This map shows areas of resource potential for renewable energy generation from wind, i.e. locations where renewable energy generation would likely be most feasible according to the natural conditions of an area. This map also considers various other conditions, such as ecological zones, that may impact the feasibility of renewable energy development. These conditions are referred to as constraints.

**Prime Wind**

Areas with high wind potential and no environmental constraints.

**Secondary Wind**

Areas with high wind potential and environmental constraints that may pose an obstacle to development. These areas are shown on the map and include the following constraints:

- Agricultural soils (local, prime and statewide classifications)
- FEMA special flood hazard areas
- Protected lands
- Act 250 agricultural soil mitigation areas
- Deer wintering yards
- Highest priority forest blocks
- Hydric soils

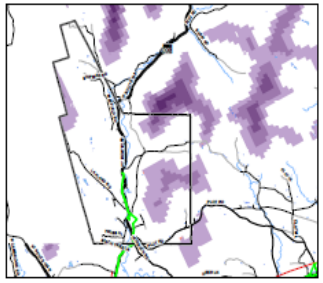
**No Wind**

Areas with low wind potential or envrionmental constraints likely to prohibit development. These areas have been removed and are not shown in any way on this map.These environmental constraints are:

- FEMA floodways
- River corridors
- Federal wilderness areas
- Natural Communities and Rare, Threatened and Endangered Species
- Vernal pools
- Wetlands class 1 and 2

This map was created as part of a Regional Energy Planning Initiative being conducted by Vermont Regional Planning Commissions and the Vermont Public Service Department.

**Created:** Lamoille County Planning Commission, March, 2018.



**Key**

- Existing Wind Sites
- Substations
- 3 Phase Power Lines
- Transmission Lines
- Lakes/Ponds
- Rivers/Streams
- Prime Wind
- Secondary Wind

Darker areas have higher wind speeds.

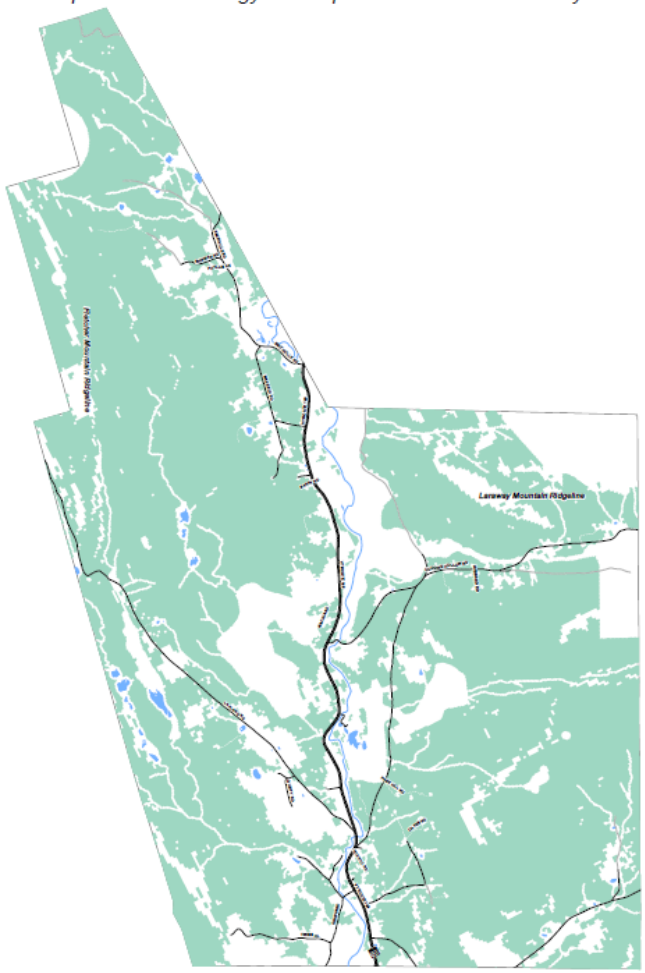
Background Area: No Wind

**Local Constraints:**

- Private Conserved Lands
- Long Trail State Forest
- Conservation District (Above 1,300ft)
- Ground Water Source Protection Area (Zones 1 and 2)

# Town of Waterville
## Forest Area with Biomass Potential

*This map illustrates potential for energy development but not necessarily suitability*




0 0.5 1 2 Miles

### Methodology

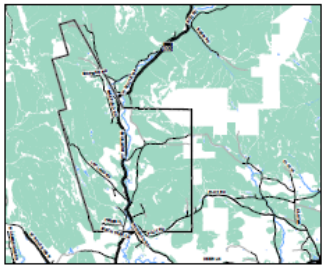
This map shows areas of potential for woody biomass harvest and potential locations for combined heat and power facilities fed by woody biomass. The map also illustrates conditions that may limit the feasibility of extensive harvesting of wood for energy use. These conditions are referred to as constraints.
Physical features (primary constraints) that make extensive harvesting infeasible which have been extracted from the biomass potential layer in this map include:
FEMA floodways, River Corridors, Class 1 and 2 Wetlands, Vernal Pools, State-significant Natural Communities, Rare, Threatened, and Endangered Species, and Wilderness Areas.
Secondary constraints not currently shown on this map may also pose limitations to biomass potential in these areas.
Secondary constraints include:
Agricultural soils (local, prime and statewide classifications)
FEMA special flood hazard areas
Protected lands
Act 250 agricultural soil mitigation areas
Deer wintering yards
Highest priority forest blocks
Hydric soils
Secondary constraints should be evaluated on a case by case basis for all energy projects.

Data has not been field verified and is subject to change.
Use for planning purposes only.

DATA SOURCES:
VT POTENTIAL WOODY BIOMASS AREA: VCGI, 2017
POLITICAL BOUNDARIES: 1:24000 USGS Quadrangles, VCGI, 1991.
ROADS: 1:5000 VTrans Road Data, 2015.
SURFACE WATER: On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VHD-USGS, 2001.

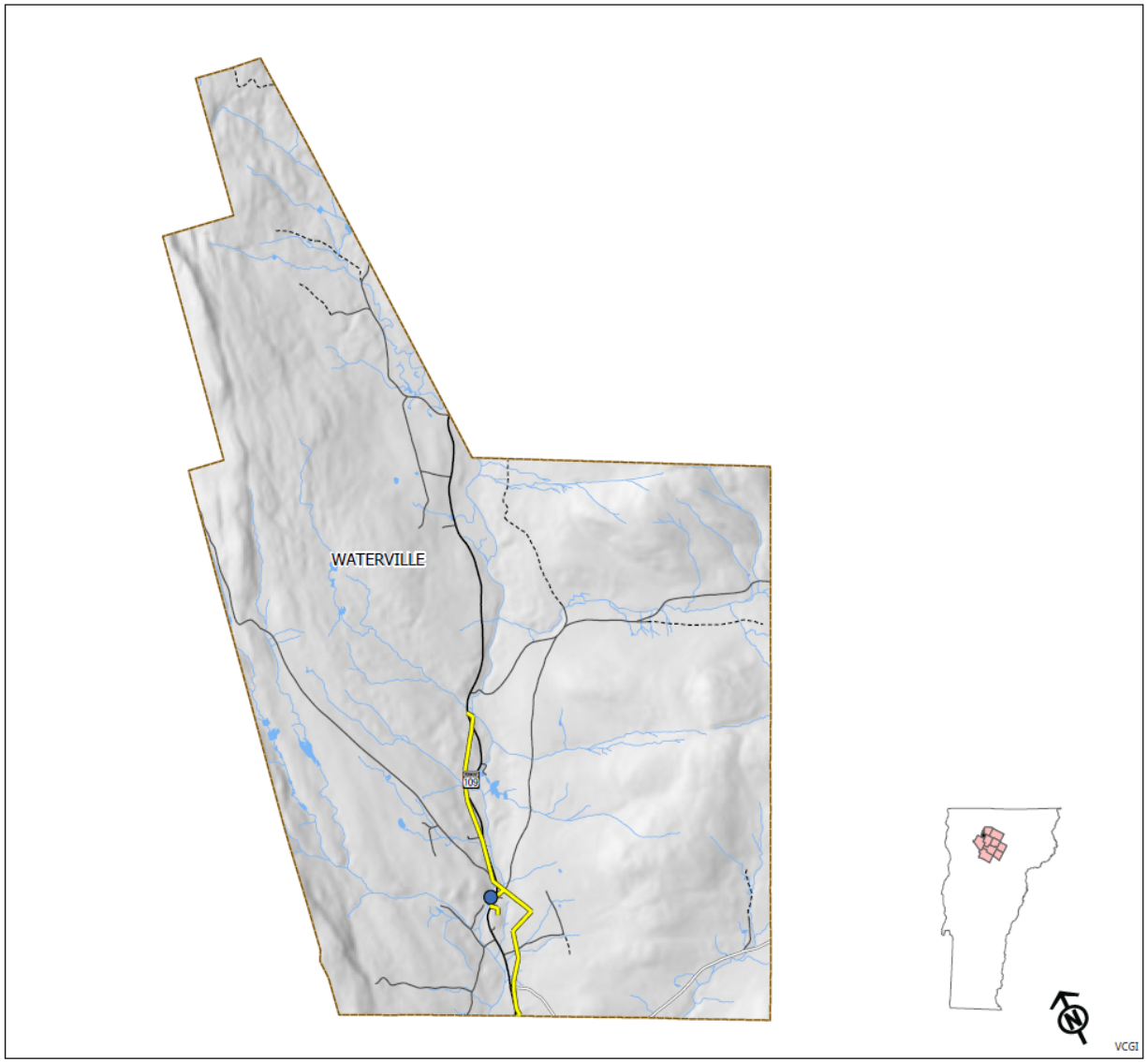
This map was created as part of a Regional Energy Planning Initiative being conducted by Vermont Regional Planning Commissions and the Vermont Public Service Department.

Created by Lamoille County Planning Commission, April, 2019.



**Map Key**
- State Highway
- Class 2 Road
- Class 3 Road
- Class 4 Road
- Private Road
- Lakes/Ponds
- Rivers/Streams
- Potential Woody Biomass Areas
- Town Boundary

# Enhanced Energy Plan




## Waterville Renewable Energy Potential: Hydroelectric

*This map illustrates potential for energy development but not necessarily suitability*

**Hydroelectric Facilities**

Operational Facilities

**Potential sites**

< 50 kW Capacity

> 50 kW Capacity

**Energy Infrastructure**

Substations

3 Phase Power Lines

Transmission Lines

3 Phase power line data for areas served by Morrisville Water and Light was not available.

**Hydroelectric Likely Unsuitable**

Areas with low hydroelectric potential or environmental constraints have been removed and are not shown in any way on this map.

Streams

Waterbodies

Town Boundary

State Highway

Class 2 Road

Class 3 Road

Class 4 Road

Private Road

Legal Trail

**Methodology**

This map shows areas of resource potential for renewable energy generation from hydroelectric, i.e. dams that could be converted into hydroelectric facilities as well as active hydroelectric sites. Existing hydroelectric dam information was extracted from the Vermont Dam Inventory, while potential hydroelectric sites were derived from a study conducted by Community Hydro 2007. Based on estimates conducted within the report, this map categorizes dams based on their potential hydroelectric generation capacity, and the downstream hazard risk that would be involved in hydroelectric production at each site.

Data Sources:
POTENTIAL HYDROELECTRIC SITES: VCGI, 2017
SUBSTATIONS: VCGI, 2017
3 PHASE POWER LINES: Data from town utilities and GreenMountain Power
POLITICAL BOUNDARIES: 1:24000 USGS Quadrangles, VCGI, 1991.
ROADS: 1:5000 VTrans Road Data, 2017.
SURFACE WATER: On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VHD-USGS, 2001.
Map created by LCPC, March 2018

**Data has not been field verified and is subject to change. Use for planning purposes only.**

0 2 Miles

# Chapter 8. Economic Development

## Waterville Economic Development Policies

- Economic development should draw on the resources and work skills of the Town.
- Ensure that Waterville is a wonderful place in which to live, visit, work, and recreate.
- The Town of Waterville supports opportunities for Waterville residents to work in Town, whether through local job creation, telecommuting, creating office space, or other means.

## Waterville Economic Development Recommendations / Action Items

- The Town of Waterville should continue to engage in regional conversations aimed at bringing high-speed Internet access to all Town residents.
- The Planning Board and other groups should engage in projects to ensure that public facilities, such as the Old Waterville Central School (now the Town Clerk's office), are fully functional and utilized throughout the year.
- The Planning Board and other groups should study the appropriate and sustainable utilization of Waterville's natural resources.
- The Planning Board and other groups should study the needs and capabilities for high-quality child care in Waterville.
- The Planning Board supports home-based industries and occupations.
- The Planning Board will continue to seek grant funding to explore local economic development opportunities. The Planning Board should also investigate any possible economic stimulus programs that can fund projects in Waterville.

### Overview

Waterville has very little in the way of local economic activity today. This has not always been the case. During the days of Waterville's prosperity (1840s-1850s), many businesses flourished. These historical businesses in Waterville included the following: a friction match shop; a shop which made wooden rakes, grain cradles, and various wood handles; a legging and belt lace factory; a knife and blade factory; a shingle and gristmill; sawmills; a boot factory which made 500 pairs of boots a year; a flannel mill which produced approximately 374,400 yards of flannel annually and employed 51 people; a starch factory which used 5,600 bushels of potatoes to produce 44,000 pounds of starch annually; a carding mill; a tannery which used 300 calf skins, 35,000 sheep skins and 250 cords of bark annually; a sash factory which produced 50,000 window sashes per year; two cabinet shops; several blacksmiths; and two hotels. Waterville also had the Mountain Spring House, the Union House, and four stores. Waterville had two mines, which produced soapstone, talc and asbestos. Mining was done on a small scale and in 1936 Selectmen were instructed to sell the rights for delinquent taxes. Gold and silver veins have been discovered in Waterville, but not in sufficient quantity to mine.

Waterville's economic past exhibits the small-scale local manufacturing and extraction industries typical of most Vermont towns. Today Waterville's economic fate exists at the whim of the larger region.

Having many residents that commute to other towns indicates that Waterville will likely rise and fall with the regional trends. Creating jobs in Waterville would stabilize tax bases and make the town more self-reliant. Barring the location of new businesses and industries in town, Waterville's economic development efforts could focus on cottage industries, business incubation, office space, and telecommuting.

Overall, economic development is a key aspect of planning because residents must have opportunities to earn a livable wage. Town policies must encourage and support, not discourage and hamper, business ventures. Land use regulations should be crafted to achieve their objectives while limiting the burden on the applicant. This section offers a substantial amount of data to paint the economic picture of Waterville.

**Waterville's Resident Labor Force**
The latest U.S. Census Bureau numbers show that Waterville's resident labor force was 372 strong in 2016. Though Waterville's labor force has decreased from 2012 (415) the number of residents 16 and over has as well. Employment has seemed to keep pace until 2015, when the labor force dropped 15%. The current number of residents in the labor force most likely reflects this drop.

Waterville's unemployment rate has traditionally been higher than the rates of Lamoille County and Vermont, but all three seem to be decreasing. Waterville's unemployment rate has dropped gradually since 2014 when it was 3.7%. As of 2016, Waterville's unemployment rate was 2.8% slightly higher than the county (2.7%) and slightly lower than the state (3.3%).

**Educational Attainment**
There are many different personal abilities, characteristics, skills, and other situational attributes that can determine if and where one is employed and what work is performed. However one of the only contributing variables measured comprehensively across the nation is educational attainment.

In 2012, Waterville adults tended to be more likely to have not attended high school (9.8%) when compared to 2016 when 0.0% of adults did not attend high school. The percent of the population who have attended college increased from 53.7% to 58% from 2012 to 2016 as well.

**Table 8-1. Highest Education Attainment of Waterville Adults 18+, 2012 - 2016**

| | Waterville | Waterville | Lamoille County | Vermont |
|---|---|---|---|---|
| | 2012 Total Population | 2016 Total Population | 2016 of Population | 2016 of Population |
| Total Population 18 Years and Older | 100.0% | 100.0% | 100.0% | 100.0% |
| …Less than High School | 9.8% | 0.0% | 11.2% | 9.6% |
| …High School Diploma or Equivalent | 31.7% | 30.0% | 34.5% | 28.7% |
| …Attended College | 53.7% | 58.0% | 50.6% | 49.4% |

| | | | | |
|---|---|---|---|---|
| ...Bachelor's Degree or Higher | 4.9% | 12.0% | 3.7% | 12.2% |

*Source: U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates*

**Place of Work**

Like many Vermonters, Waterville residents tend to commute outside of town to their jobs. According to the U.S. Census 2009-2013 American Community Survey Commuting Flows, Lamoille County's proportion of those who worked outside the county (more than 30%) surpassed state figures. One noteworthy figure is the proportion of Waterville residents working at home decreased slightly between 2012 and 2016 (12% to 8%). This share remains higher than in the county or state and could be an indicator of the potential for encouraging cottage industries and telecommuting in Waterville.

**Table 8-2. Waterville Labor Force 16+ Years Old, 2012 and 2016**

| | Waterville | Waterville | Lamoille County | Lamoille County | Vermont | Vermont |
|---|---|---|---|---|---|---|
| | 2012 | 2016 | 2012 | 2016 | 2012 | 2016 |
| Total workers 16 years of age and over | 391 | 340 | 12,791 | 13,150 | 319,359 | 319,484 |
| ... worked at Home | 47 | 29 | 1,040 | 860 | 22,600 | 21,562 |

*Source: U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates*

**Table 8-3. Place of Work for Lamoille County Labor Force 16+ Years Old, 2009-2013**

| | Lamoille County |
|---|---|
| Total workers 16 years of age and over | 64.8 |
| ... worked outside county of residence | 3,868 |
| ... worked outside Vermont | *181* |

*Source: Census Bureau, 2009-2013 5-Year American Community Survey Commuting Flows*

The more recent data in Table 8-4 does not depict a work-at-home dynamic, however. More than one quarter of Waterville workers commuted to these five towns (Morristown, Burlington, South Burlington, Montpelier, Barre) alone in 2011. Much of Waterville's workforce still commutes to Morristown but in smaller numbers. The workforce is now divided between a larger pool of towns.

**Table 8-4. Top five workplaces of Waterville's labor force, 2011**

| Work Town | Count | % |
|---|---|---|
| Morristown | 30 | 7.5 |
| Burlington | 22 | 5.5 |
| South Burlington | 18 | 4.5 |
| Montpelier | 17 | 4.2 |
| Barre | 16 | 4.0 |

*Source: U.S. Census Bureau, LED Origin-Destination Database, 2011*

**Type of Work Performed**

In 2011 most residents of Waterville were employed in private wage or salary positions (73.3%) while the remaining residents were self-employed (17.2%), or working for some level of government (9.5%). That same year there were 0 unpaid family workers. By 2016, those numbers had changed. Most of Waterville's workforce is still employed in private wage positions (72.5%), but the type of work has shifted. Government employment and self-employment are almost even now at 12.9% and 13.8%.

Tables 8-4 and 8-5 show the occupation and industry of residents of Waterville in the 2011 and 2016 Censuses. A manager of a construction company, for example has as his/her occupation 'management, professional and related occupations' while the industry is construction.

Table 8-5 shows that the plurality (36.7% in 2011, 38.2% in 2016) of Waterville's resident workforce worked in management and professional positions. Table 8-6 shows that the top three industry sectors for Waterville's resident workforce were educational services, health care, and social assistance (24.0% in 2011, 24.2% in 2016), manufacturing (21.9% in 2011), and arts, entertainment, recreation, and accommodation/food services (12.4% 2016). The previous Waterville Town Plan identified a concern with the high number of residents employed in manufacturing and construction during the economic recession. There now seems to be a shift from manual labor jobs to arts/recreation/accommodation services possibly because of an increase in tourism.

**Table 8-5. Waterville's Resident Labor Force by Occupation Category, 2011 and 2016**

| Occupation Type | Count 2011 | *% 2011* | Count 2016 | *% 2016* |
|---|---|---|---|---|
| Management, business, science, and arts occupations | 158 | *36.7* | 136 | *38.2* |
| Sales and office occupations | 85 | *19.8* | 67 | *18.8* |
| Production, transportation and material moving occupations | 75 | *17.4* | 33 | *9.3* |
| Natural resources, construction, and maintenance occupations | 46 | *10.7* | 70 | *19.7* |
| Service occupations | 66 | *15.3* | 50 | *14.0* |

*Source: U.S. Census Bureau, American Community Survey 2011 & 2016.*

**Table 8-6. Waterville's Resident Workforce by Industry Sector, 2011 and 2016**

| Industry Sector | Count 2011 | *% 2011* | Count 2016 | *% 2016* |
|---|---|---|---|---|
| Educational services, and health care and social assistance | 103 | *24.0* | 86 | *24.2* |
| Manufacturing | 94 | *21.9* | 37 | *10.4* |
| Construction | 35 | *8.1* | 31 | *8.7* |
| Retail trade | 29 | *6.7* | 31 | *8.7* |
| Agriculture, forestry, fishing and hunting, and mining | 43 | *10.0* | 22 | *6.2* |
| Other services, except public administration | 36 | *8.4* | 18 | *5.1* |
| Transportation and warehousing, and utilities | 15 | *3.5* | 11 | *3.1* |
| Arts, entertainment, and recreation, and accommodation and food services | 20 | *4.7* | 44 | *12.4* |

| | | | | |
|---|---|---|---|---|
| Professional, scientific, and management, and administrative and waste management services | 14 | *3.3* | 33 | *9.3* |
| Finance and insurance, and real estate and rental and leasing | 13 | *3.0* | 11 | *3.1* |
| Wholesale trade | 2 | *0.5* | 13 | *3.7* |
| Public administration | 10 | *2.3* | 8 | *2.2* |
| Information | 16 | *3.7* | 11 | *3.1* |

*Source: U.S. Census Bureau, American Community Survey 2011 & 2016.*

## Employment & Wage Characteristics within Waterville

**Businesses in Waterville**

Vermont Department of Labor figures indicated that in the first quarter of 2018, 10 businesses provided 14 jobs in Waterville. By comparison, the corresponding figures from a decade earlier in 2008 were 16 and 46, respectively. These job and employment figures cover businesses that pay into Unemployment Insurance (UI). These figures, therefore, do not count self-employed persons or other businesses exempt from UI.

Overall the number of businesses in the State reports have been slightly decreasing over the past decade and have now plateaued the last five years staying between 10 and 12 businesses.

It should be noted that agricultural and forestry related enterprises often provide secondary sources of income for rural residents. While agriculture and forestry may not employ someone full-time or even year-round, these industries do provide supplemental income for residents or reduce certain household expenses, such as food. This sector includes farming, haying land, maple sugaring operations, and small-scale livestock husbandry. Data is not available for many of these industries or is often underrepresented in state-wide statistical collection.

**Wages in Waterville**

The average annual wage paid by a job in Waterville in 2017 was $32,824 – a 15.7% increase from the previous year. Five years earlier, the average annual wage paid by a job in Waterville was $30,183. The increase from 2012 to 2017 was 8%. Waterville's wages have been increasing overall, as have the wages in the top five towns that employed Waterville's resident workforce. The stark difference between the Essex wages and Cambridge wages reveals the high and low wage potential of the Waterville employment region. While the "top five" workplaces have changed, comparing neighboring community wages offers Waterville a point of comparison.

For the past decade, Waterville's wages have largely kept pace with adjacent towns. Overall County and state wages have consistently been higher than Waterville's.

A more detailed look at wages (Table 8-7) reveals how different industries in Waterville compared in terms of wages in 2012 and 2017. The reader is reminded that these numbers do not include businesses not contributing to Unemployment Insurance. Furthermore, low numbers of businesses and employees in certain industries have forced the State to suppress some figures to maintain confidentiality.[15]

15 Data is not published that represents less than three private employers or where one private employer represents 80% or more of the data. In addition, Vermont does not publish data with fewer than ten private sector employees. All government data is publishable.

Government employment seems to provide the high reported wages in Waterville. These numbers may not reflect the true situation, however, due to the large amount of suppressed data for Waterville.

**Table 8-7. Waterville Employment and Wage Figures by Industry, 20012-2017**

| Industry | # Businesses 2012 | # Employees 2012 | Average Wage ($) 2012 | # Businesses 2017 | # Employees 2017 | Average wage ($) 2017 |
|---|---|---|---|---|---|---|
| Total | 11 | 35 | 30,183 | 11 | 28 | 32,824 |
| Goods Producing | 5 | C/S | C/S | 5 | C/S | C/S |
| …Construction | 5 | C/S | C/S | 5 | C/S | C/S |
| …Manufact-uring | 0 | None | None | 1 | 1 | C/S |
| Service Providing | 4 | C/S | C/S | 4 | C/S | C/S |
| Federal Gov't (Postal Service) | 1 | C/S | C/S | 1 | C/S | C/S |
| Local Government (School) | 1 | 23 | 28,601 | 1 | 12 | 28,601 |

*Source: Vermont Dept. of Labor, Quarterly Covered Employment & Wages report. 2012 and 2017.*
*Note: C/S means Confidential/ Suppressed to protect confidential information*

**Measures of Total Income**

In contrast with the State's average wage data, the U.S. Census Bureau measures total income (e.g. wages, dividends, public assistance, etc.) in its surveys. Generally Waterville incomes have been depicted lower than, but increasing with, county and state figures, as shown in Table 8-8.

**Table 8-8. Per Capita and Median Family Income, Waterville, Lamoille County and Vermont, 2011-2016**

| | Per Capita Income | | Median Family Income | |
|---|---|---|---|---|
| | **2011** | **2016** | **2011** | **2016** |
| Waterville | 21,852 | 27,755 | 52,396 | 67,813 |
| Lamoille County | 27,457 | 29,180 | 64,581 | 67,566 |
| Vermont | 28,376 | 30,663 | 66,340 | 71,465 |

*Source: U.S. Census Bureau, American Community Survey 2011-2016*

The median adjusted gross family income data from the Vermont Department of Taxes is also intended as a measure of total income and comes out much more frequently than Census data. However, it should be noted that tax data is subject to a multitude of intricacies, including periodical tax statute revisions, which may hinder their ability to represent local income situations.

## Measures of Livability

**The Livable Wage**
Aside from an analysis of trends, the Waterville wage and income data presented above means little without data with which to compare. Vermont statutes require the State's Legislative Joint Fiscal Office to release an annual study of baseline data of the cost of living in the state and the current wage levels within various sectors of the economy. The results of the study are estimates of a "livable wage" for various urban and rural family situations. A livable wage is the salary required in order to meet a family's needs, including food, housing, clothing, taxes, meager savings, and personal portion of health insurance[16]. The larger the family, the more income is required to fulfill those needs.

According to the 2012 data, a single person with no children needs to earn $32,732 per year ($15.74 per hour) to meet basic needs. This number is higher than Waterville's 2012 annual average wage of $30,183 (Table 8-7). As of 2012 Waterville's annual average wage was about 8% lower than the annual livable wage of a single person in Vermont. The health insurance coverage factor could make the difference however, since the annual average wage figures do not include that benefit.

One could use this simple analysis to explain why so many members of Waterville's resident workforce commute to towns with higher average wages. This could be brought a step further to conclude that Waterville needs more businesses and jobs in higher-paying industry sectors. However, before policy decisions are made based upon this data, the user must come to terms with the fact that data like these are based on many assumptions, and their application forces the comparison of averages to averages. These data are convenient and useful, but they will not substitute for exploring the issues and solutions with the affected community-members, themselves.

**Poverty**
An opposite condition of livability would be poverty. Table 8-9 shows that poverty rates have traditionally been higher in Waterville than in the surrounding county and state. Poverty rates seemed to have slightly increased in Waterville from 2012 to 2016, but they have done the same in the county and state as well.

**Table 8-9. Poverty Rates, Waterville, Lamoille County and Vermont, 2012-2016**

| Poverty Rate (%) | …of All Individuals | | …of Children (under 18) | |
|---|---|---|---|---|
| | 2012 | 2016 | 2012 | 2016 |
| Waterville | 14.0 | 13.8 | 17.5 | 24.3 |
| Lamoille County | 12.5 | 12.8 | 17.1 | 17.9 |
| Vermont | 11.6 | 11.6 | 14.4 | 15.1 |

*Source: U.S. Census Bureau, American Community Survey 2012 – 2016*

## Challenges and Possibilities

Economic development is vital to the future of Waterville. As we have become increasingly dependent on our neighboring communities for employment, residents are driving more and the town's grand list is becoming more reliant on residential properties to pay taxes. In the future, Waterville will need more commercial enterprises to diversify the tax base. Recognizing that economic development is a complex web, it will take a number of factors to improve incomes, the tax base, and the quality of life for Waterville residents. Some of these factors include: more economic use of the land, utilizing existing assets such as forests, mountains, and water, greater self-sufficiency for existing agricultural producers, access to broadband Internet, and identifying gaps in the economic base of Waterville, such as child care and poverty.

**Waterville and the greater community**
Waterville has been enjoying steady population growth, but many town-folk don't actually spend the majority of their day in town. What has developed over many years is the importance of a bigger community base that includes Waterville, Cambridge, and Johnson. Given the size of Waterville and its limited resources, it is important to think broadly, and realistically, about what is feasible for Waterville. There is a balance that needs to consider what is most cost effective for residents while keeping them rooted to a "community". What has evolved in Waterville is a trifecta of communities that support one another through economic growth, infrastructure, community development, and quality of life factors.

**Broadband Internet**
High-speed internet service can be delivered by one of several mediums—DSL, cable, fiber optic satellite, or fixed wireless (WISP). At the time of this plan's adoption, WIFI and fiber optic coverage was largely unavailable in Waterville. However, high-speed DSL service is accessible to most residences. Other alternatives are generally considered less-than-ideal, either on the basis of cost (satellite) or performance (dial-up). In the end, comprehensive statewide broadband coverage is likely to be achieved initially through a wireless network. The Town of Waterville recognizes that access to high-speed internet is a primary consideration for: home-based businesses, telecommuters, the cottage software and web development industry, the creative economy, or to informational and transactional resources commonplace in any business in the 21st century. Given Waterville's limited infrastructure capacity, improved broadband access has the potential to provide residents with close-to-home employment options. Access to a reliable, affordable Internet service provider could be an important piece for growing the economic base and the sense of community camaraderie in Waterville. Further, the use of social media can be a powerful tool for connecting individuals to one another, thus strengthening Waterville's need for hi-speed Internet.

**Home Occupations**
Given the limited economic activity in Waterville and the proliferation of broadband internet, home occupations have become an important economic opportunity for Waterville residents. The Waterville Planning Board encourages environmentally sound home occupations (also known as "cottage industries") in all areas of town. The benefits and cost savings of encouraging home occupations / home industries that adhere to applicable state and local regulations is important for bolstering the primary and secondary incomes of Waterville residents, while reducing impacts to the road network.

# Chapter 9. Transportation

**Waterville Transportation Policies**

In the area of transportation, the Waterville Planning Board supports the following policies:

- Major roadways, especially Route 109, should have limited road accesses to allow for smooth travel into and out of town.
- New and existing road and driveway accesses should have a suitable sight distance if feasible to avoid creating blind or hidden driveways.
- At this time, the town will not accept new private roads nor build new roads, and will only maintain class 3 and 4 roads per state standards.
- Land use and development activity must not adversely impact traffic safety and the condition of town roads and rights of way.
- Waterville supports efforts to provide transportation services to assist elderly and disabled residents who wish to remain in their homes.
- Carpooling and vanpooling by local commuters to reduce transportation costs and impacts is encouraged.
- Support Best Management Practices to address run off, erosion, and flood control on municipal roads.
- The Town of Waterville supports the use of ATVs on municipal roads.

**Waterville Transportation Recommendations / Action Items**

- Waterville should conduct a basic road surface management system (RSMS) inventory for use in scheduling and budgeting needed road repairs, and major improvements to be included in the town's capital budget and program.
- The Town, in coordination with the Vermont Agency of Transportation, should assess road and bridge conditions as part of the Local Highway Infrastructure Study update every three years to establish maintenance and repair priorities and maintain access to state grant match incentives.
- Waterville should continue to support the nonprofit organizations that provide transportation and health and human services at the regional level.
- The Selectboard should appoint a Road Commissioner to the Lamoille County Transportation Advisory Committee (TAC) to coordinate transportation planning, road maintenance and improvements with adjoining towns, and to ensure that the interests of the town are adequately addressed by the region and state.
- The Waterville Planning Board should promote and educate residents on public transit in the region (Rural Community Transportation, Green Mountain Transit Authority), available electric vehicle incentives, and State and local carpooling and ride sharing services.
- The Waterville Planning Board should explore funding opportunities to study bike/pedestrian safety in the Village Center and the feasibility of establishing a Park and Ride along Vermont Route 109.

- The Waterville Selectboard should annually review the Culvert and Road Erosion Inventory with the contracted Road Foreman to assess existing infrastructure, address re-occurring road washouts, and continue prioritizing culvert replacements to mitigate flooding impacts and improve road safety.
- Explore funding options to address sink holes on Shipman Road.
- Encourage Best Management Practices (BMPs-turnouts, proper crowning, stone line/vegetative ditches, check dams, proper road drainage etc.) on municipal roads in accordance with the Municipal Roads General Permit to direct sediment and runoff away from streams and reduce flooding impacts.

## Roads in Waterville

Waterville has 19.77 miles of state and town highway. State Route 109 goes through Waterville for 4.21 miles. The table below displays traffic counts for Route 109 and connecting municipal roads. Route 109 was resurfaced in 2004-2005.

**Table 9-1 Estimated Average Annual Daily Traffic volumes for Waterville Roads, 2009- 2017**

| Section | 2009 | 2010 | 2012 | 2015 | 2017 |
|---|---|---|---|---|---|
| VT 109 , Cambridge town line and Hogback Road | | 1,300 | 1,300* | 1,400 | |
| Hogback Road | | 1,800 | 820* | | |
| Plot Road, Johnson town line | | 840* | 850* | | 1,500 |
| Plot Road, east of VT 109 | 210 | | | 210 | |
| Codding Hollow Road, east of VT 109 | 110 | | | 90 | |
| Beals Hill Road, east of VT 109 | 190 | | | 170 | |
| Lapland Road, west of VT 109 | 270 | | | 250 | |
| VT 109, .1 mile south of Smithville Road | 950 | 840 | | 900 | |
| Smithville Road, west of VT 109 | 150 | | | 140 | |

**Actual count. All other counts are estimates. Blank boxes equal no traffic data available.*
*Source: Vermont Agency of Transportation, 2009-2017*

Hogback Road is classified by Vermont Agency of Transportation as a Town Highway Major Collector. Traffic data from 2010 to 2012 show a decrease in average annual daily traffic volumes. Traffic along VT 109 in Waterville, increased slightly from 2010 to 2015. Meanwhile, many municipal roads as shown in

table 9-1 above, experienced a decline in average daily traffic volumes. This may correlate to Waterville's population decline. Future studies could evaluate the changing traffic pattern in Waterville.

Waterville has a total of 15.56 miles of town highways, classes 2 and 3, all of which go uphill from Route 109. There are 1.39 miles of Class 2 and 14.17 miles of Class 3 roads, which are maintained by the town via a hired contractor. There are also 3.42 miles of Class 4 roads, which are subject to review by the Selectboard. Per the Municipal Roads General Permit (MRGP), gullies greater than 1 foot in depth will be required to be addressed on Class 4 roads. An updated Road Erosion Inventory in accordance with the MRGP can aid the Town in prioritizing road erosion projects on municipal roads. Currently, there are no state or federally designated scenic roads in Waterville at this time, but residents have identified locally scenic roads, such as Phyllis Lane. At this time, the Planning Board supports the current policy that Waterville not assume maintenance and/or ownership of additional roads due to budgetary constraints.

Waterville has a Road Commissioner who is elected by the voters each year. The Road Commissioner hires part-time help and subcontracts work out with the approval of the Selectboard. The Town owns no highway maintenance equipment.

**Table 9-2 Waterville Road/Highway Budget, Expenses, 2013-2017**

| Year | Budgeted ($) | Expended ($) |
|---|---|---|
| 2013 | 122,000 | 178,772.37 |
| 2014 | 120,000 | 172,439.66 |
| 2015 | 130,000 | 217,994.65 |
| 2016 | 125,000 | 159,814 |
| 2017 | 125,000 | 186,078.64 |
| Percent Change (2013 – 2017) | 3% | 4% |

**Includes work repairing damage from 5/29/12 flood.*

At present, one needs a vehicle in order to live in Waterville because major stores, services, recreation and work opportunities are generally located more than five miles away. The idea of carpooling and vanpooling has been discussed among residents, and it is hopeful that social media, such as Front Porch Forum, could be an outlet for advertising ridesharing opportunities. Waterville residents drive an average of 38 minutes to reach their workplace.

**Bridges and Culverts**

The three covered bridges in Waterville are listed in the National Register and are, therefore, protected. The three covered bridges, which are all town owned, are on Church Street, Codding Hollow Road, and Montgomery Road (see Transportation Map). The bridges are inspected regularly by the Vermont Agency of Transportation and upgrades are made when required.

The Town of Waterville maintains inventories of culverts and roadside erosion. The Town has implemented several projects identified in the initial 2014 Road Erosion Study. The Town of Waterville continues to work with the Lamoille County Planning Commission to update Road Erosion Studies to the latest standards. Maintaining an updated Road Erosion Study, is a key component of the new Municipal

Roads General Permit (MRGP). For information on the latest MRGP Guidance please visit Vermont DEC's webpage at http://dec.vermont.gov/watershed/stormwater/permit-information-applications-fees/municipal-roads-program. In 2013, a culvert inventory was conducted by the Lamoille County Planning Commission. At that time, there were 151 culverts on municipal roads in Waterville, not counting culverts on Class 4 roads. The condition of these culverts ranged from "critical" to "excellent". The 2013 inventory, observed that 56% of culverts at the time were in "Good" to "Excellent" condition. Meanwhile, 31% of culverts were in fair condition and the remaining 13% of culverts were in poor or worse condition. In April 2017, the Waterville Selectboard met with Lamoille County Planning Commission staff to update the culvert inventory map (see Waterville Bridge and Culvert Inventory map below) based on recent culvert replacement projects. The Town of Waterville continues to prioritize and replace culverts on municipal roads as funds are available. The Town of Waterville currently maintains culverts on Class 4 roads, but does not maintain the road surface.

**Parking and Sidewalks**

Parking in the village is available along Route 109 at the village store, Post Office, Town Clerk's Office, and at the Waterville Elementary School. There is parking available at the Town Hall and athletic field. However, when there is a large gathering, parking fills both sides of Route 109. In the future, additional parking may be needed in the village. Parking has been discussed during Town Meeting Day and some suggestions include expanding parking at the athletic field or purchasing vacant properties to turn into parking.

Recently the Town of Waterville installed sidewalks in front of the Town Hall to improve accessibility and make the facility ADA (Americans with Disabilities Act) compliant. Currently, there are no other sidewalks in the Town of Waterville. Residents utilize road shoulders when traveling on foot or by bicycle.

**Public Transportation**

Currently, Waterville has limited access to public transit. Rural Community Transportation (RCT) provides transportation to seniors one day a week by arrangement. The nearest commuter bus line is the Jeffersonville to Burlington route operated by Green Mountain Transit Authority. The commuter bus picks up passengers in Jeffersonville Village. For more information on local transit services visit GMT and RCT's website at https://www.riderct.org/; http://ridegmt.com/. Additional options for Waterville residents include carpooling and participating in ride share programs. For information on Vermont ride share programs visit www.connectingcommuters.org.

**Air Travel**

Burlington International Airport is the nearest major airport with commercial airline service. Morrisville-Stowe State Airport on Route 100 serves the County's private and charter aviation needs. For more information on air travel in northern Vermont, refer to the Lamoille County Regional Plan Transportation chapter available online at www.lcpcvt.org.

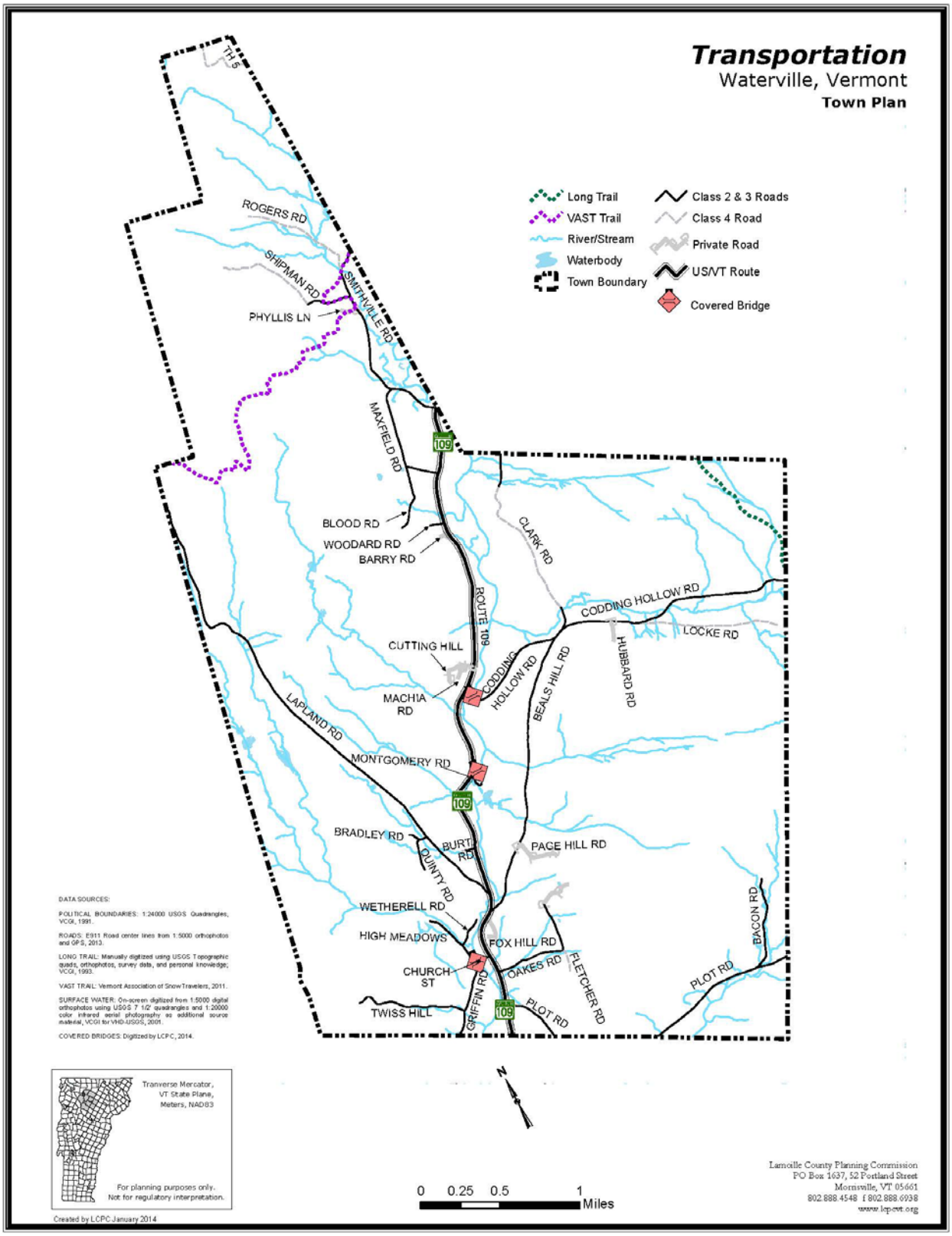
**Railroads and Ports**

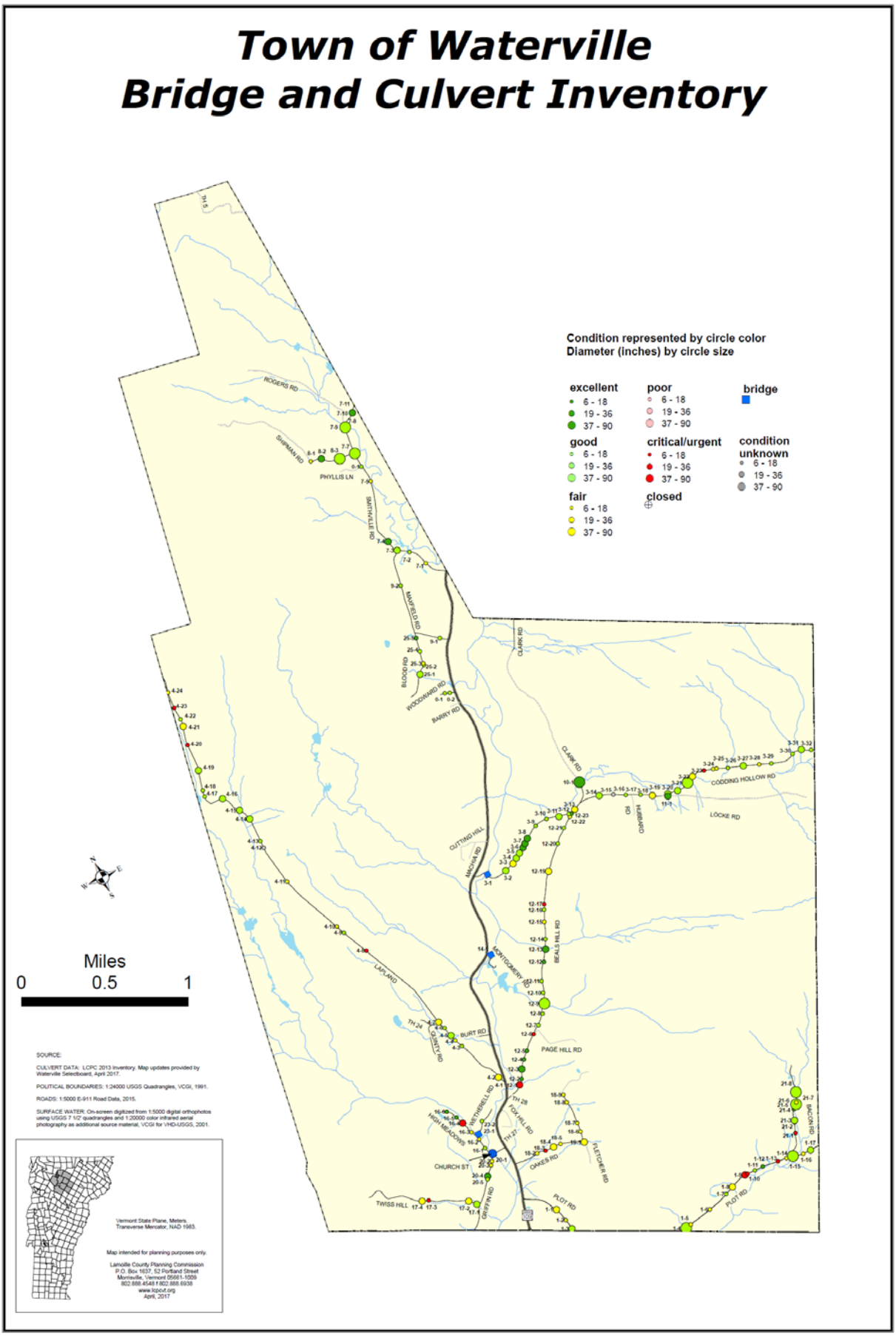
Waterville is equidistant from two operating passenger railroad stations, both about 30 miles away. The first is located in St. Albans. The second is a station in Essex Junction. The Amtrak regularly travels the state of Vermont north and south through both St. Albans and Essex Junction with its “Vermonter” line. The nearest ports are located in Burlington and Montreal.

**Bicycles**

Bicycling is not commonly used as a mode of transportation for most Waterville residents, given the distance to employment and services. Bicyclists must use the shoulder of the road as there are no dedicated bike lanes or bike paths. Most bicycling in Waterville is done for recreation and it is not uncommon to get bicycle tourists. Waterville residents and visitors can access the Long Trail to connect to the Lamoille Valley Rail Trail in the neighboring towns of Cambridge and Johnson. Direct trail access and parking is available at Cambridge Junction and the Old Mill Park in Johnson. Future construction should consider adding bike lanes or widening shoulders. Special consideration to bicycle and pedestrian safety should be given to project development in Waterville Village Center.

# Transportation




Town of Waterville
Bridge and Culvert Inventory
Condition represented by circle color
Diameter (inches) by circle size
excellent
6 - 18
19 - 36
37 - 90
good
6 - 18
19 - 36
37 - 90
fair
6 - 18
19 - 36
37 - 90
poor
6 - 18
19 - 36
37 - 90
critical/urgent
6 - 18
19 - 36
37 - 90
closed
bridge
condition unknown
6 - 18
19 - 36
37 - 90
Miles
0
0.5
1
SOURCE:
CULVERT DATA: LCPC 2013 Inventory. Map updates provided by Waterville Selectboard, April 2017.
POLITICAL BOUNDARIES: 1:24000 USGS Quadrangles, VCGI, 1991.
ROADS: 1:5000 E-911 Road Data, 2015.
SURFACE WATER: On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VHD-USGS, 2001.
Vermont State Plane, Meters, Transverse Mercator, NAD 1983.
Map intended for planning purposes only.
Lamoille County Planning Commission
P.O. Box 1637, 52 Portland Street
Morrisville, Vermont 05661-1009
802.888.4548 f 802.888.6938
www.lcpcvt.org
April, 2017
ROGERS RD
SHIPMAN RD
PHYLLIS LN
SMITHVILLE RD
MAYFIELD RD
BLOOD RD
WOODWARD RD
BARRY RD
CLARK RD
CODDING HOLLOW RD
LOCKE RD
HUBBARD RD
CUTTING HILL
MACHIA RD
BEALS HILL RD
MONTGOMERY RD
LAPLAND
TH 24
CURTIS RD
BURT RD
PAGE HILL RD
METCHEBELL RD
TH 28
FOX HILL RD
HIGH MEADOWS
TH 27
CHURCH ST
OAKES RD
FLETCHER RD
TWISS HILL
GRIFFIN RD
PLOT RD
BACON HILL

# Chapter 10. Natural Resources & Land Use

As a whole, Waterville's pristine natural resources are one of the town's greatest strengths. In order to ensure their continued existence and protection, it is incumbent upon the Town to describe and celebrate these resources. The following policies and recommendations were identified to promote continued protection of Waterville's natural resources and their multiple functions (habitat, flood control, recreation, filter pollutants etc...). For more information on water quality and flooding in Waterville please refer to the Flood Resilience and Water Quality, and Local Services and Facilities chapters of this plan.

**Waterville Natural Resources & Land Use Policies**

Land use and development in Waterville should occur in a manner that preserves the existence of natural and scenic resources, maintains the town's rural character, preserves the use and condition of historic sites and structures, and avoids the fragmentation of land.

Development in Waterville should consider protecting and maintaining priority wildlife connectivity and interior forest blocks. Roads, driveways, and utilities shall be designed to avoid the fragmentation of identified forest blocks and wildlife connectors.

Development in the Waterville Conservation District (elevations above 1,300ft) should be limited to outdoor recreational activities that do not involve major structures, and forestry that does not create erosion problems or harm unique and fragile areas.

In order to protect our ground water, no habitation or waste disposal should occur in areas where the ground water is at a depth of zero to 48 inches.

Per State regulations, withdrawal of groundwater should not exceed the recharge rate over a reasonable period of time. No form of waste disposal or storage of possible contaminants should be permitted in high-water table and groundwater recharge areas.

Any development related to wetlands shall adhere to state regulations.

Ensure all construction provides adequate erosion control per state guidelines and regulations.

Agriculture and forestry must abide by State Guidelines (Required Agricultural Practices and Acceptable Management Practices).

Promote the use of locally grown food products in Waterville.

Extraction of natural resources in Waterville shall comply with federal and state laws for resource extraction and mining.

**Waterville Natural Resources & Land Use Recommendations / Action Items**
In the area of natural resources and land use, the Town of Waterville supports the following:

- Consider adopting Flood Hazard Regulations to limit damage to property and loss of life for flood prone areas. Once Flood Hazard Regulations are adopted the town can enroll in the National Flood Insurance Program. Residents living in flood hazard areas will be able to obtain flood insurance. Flood regulations also allow access to increased state funding for disaster recovery.
- Explore the possibility of developing and implementing subdivision bylaws to ensure the preservation of the town's rural character and to avoid the destruction of natural areas and resources through land fragmentation and abuse.
- Explore the adoption of a vegetated buffer zone for all streams subject to review in accordance with state guidelines and recommendations (see footnote [10] below).
- Where possible, encourage tree plantings and buffers along the North Branch of the Lamoille River to mitigate flooding and improve water quality.
- Explore grant opportunities to complete Phase 2 Stream Geomorphic Assessment work on the North Branch of the Lamoille River, Judevine Brook and encourage the implementation of priority projects identified in these studies.
- Annually review and prioritize fixes for streambank failure and road erosion areas.
- Share river corridor resource maps with local residents, business owners and prospective property owners (post on town website, have a river corridor map available at the Town Office).
- Review all Act 250 and Section 248 applications for their compliance with this land use plan. Where the application is determined to not conform to this chapter or to any goal or policy, the Planning Board shall participate in the Act 250 and Section 248 process in order to ensure the concerns of the town are addressed.
- Promote Vermont Use Value Appraisal programs (Ex: Current Use Program) to Waterville property owners to encourage landowners to have a Management Plan and consider the long-term management of priority forest blocks and habitat connectors (Wildlife Corridors).
- Work with partner organizations (regional, state, federal) to host and participate in educational outreach opportunities (public meetings, forums, Lamoille TAC, posting resources etc.) to enhance residents' knowledge of new standards for reducing phosphorus (EX: Municipal General Roads Permit, Required Agricultural Practices, Stormwater permitting, Acceptable Forestry Management Practices) and local professional resources available to assist in implementing standards (Ex: NRCS, the Conservation District, LCPC, ANR, VTrans etc.). Support Conservation and River Corridor Easements in Waterville and help connect land owners with local professional resources (Vermont Land Trust, The Nature Conservancy etc.).

## Natural Resources in Waterville

### AIR QUALITY

The United States Environmental Protection Agency sets National Ambient Air Quality Standards (NAAQS) which set acceptable levels of various types of criteria air pollutants. Areas whose air meets these standards are considered "in attainment", while areas that do not are considered "out-of attainment." Vermont is currently the only state in which no area is currently designated as non-

attainment for the NAAQS. However, Vermont is located in the Ozone Transport Region, and as such must meet additional requirements to reduce levels of ozone and ozone forming pollutants.

Chittenden County is very close to being out of attainment for ozone and fine particulate matter. Despite its rural nature, Lamoille County occasionally experiences “bad-air days” due to high levels of fine particulate matter, especially in winter months when “cold-air inversion” traps emissions in low lying valleys. Local sources of ozone and particulate matter come primarily from transportation and wood combustion, though a good quantity of this and other pollutants migrates to Vermont from other areas of the country. The exact proportion of air pollution generated locally is difficult to quantify. If the county were designated as “non-attainment”, the state would need to develop regulations that will require the area to take additional actions to reduce emissions of target pollutants.

As noted above, two primary sources of local air pollution include woodstoves and motor vehicles. Newer woodstoves are now mandated by the EPA to contain pollution control equipment that significantly reduces particulate emissions. Replacing older woodstoves and furnaces will have a positive impact on air quality over time. Motor vehicles are a second local source of air pollution. Strategies such as: reducing driving miles, cleaner burning engines, carpooling/ridesharing, and using alternative-fuel vehicles all would reduce automobile pollution. Increasing local employment opportunities may also reduce the need to commute.

## Land Resources

### Winter Deer Range

Waterville has many acres of mostly forested wild life habitats, including over 660 acres of suitable characteristics to serve as winter deer range. Deer require specific winter habitat to survive the seasonally severe weather and heavy snowfall. Winter deeryards provide shelter that is important to whitetail deer survival. Wintering areas do not change significantly between years and can be used by generations of deer over several decades if appropriate habitat conditions are maintained. Not only are these areas critical to deer, but nearly half of Vermont’s vertebrate wildlife species rely on coniferous forests for at least part of their life. These areas are outlined the *Significant Habitat* map.

Such sites are usually at low to moderate elevation and are characterized by mature softwood trees of various types. Since there are no alternative sites available for winter deer range, it is recommended by the Agency of Natural Resources that existing sites need protection from intensive human usage, particularly permanent intrusion such as housing developments.

### Rare Plants and Animals

There are two plants with federal *Endangered* status in Vermont and one plant on the federal *Threatened* list.[17] None of these has been sought or identified in Waterville.

17 Endangered: Barbed-bristle bulrush (plant), Jesup's milk-vetch (plant) Threatened: Small whorled pogonia (plant). List current as of 15 November 2012.

The Vermont Agency of Natural Resources lists three locations of state or federal rare, threatened, or endangered species (animal and natural communities/wetlands) in Waterville.[18] See the Natural Resources map for a depiction of these locations.

*Woodsia glabella*, a rare fern that hasn't been spotted since 1880, was sighted by botanists in Waterville in 2008. Local residents have also seen rare plants such as lady's slipper, trillium, jack-in-the-pulpit and Dutchman's breeches.

**Riparian habitat and buffers**

Vegetation—in the form of trees, shrubs, grasses and herbs situated along stream banks and river corridors—provides food and shelter for many wildlife species. The Lamoille River corridor, for example, supports essential deer habitat. These and other riparian corridors should be preserved as a matter of wildlife protection as well as for the purposes of preventing sedimentation and maintaining stream bank stability. Vegetative buffers can also play a key role in maintaining native plant corridors and allowing for the migration and protection of native plant species.

**Act 171 and Preventing Forest Fragmentation**

In 2016, Act 171 was passed requiring language in Municipal and Regional Plans to highlight priority forest blocks and habitat connectors (Wildlife Corridors). Act 171 amended Vermont Planning Statutes (Chapter 117) to encourage and allow municipalities to address protection of forest blocks and habitat connectors, while supporting the local forestry industry. In accordance with Act 171, the following section highlights the importance of maintaining and improving forest blocks and habitat connectors and identifies strategies for preventing future forest fragmentation. See chapter policies and recommendations above for actions the community can take to reduce forest fragmentation, enhance forest health, and support essential ecological functions. For more information, please refer to the Act 171 Guidance document on ANR's (Vermont Agency of Natural Resources) website: http://anr.vermont.gov/sites/anr/files/Act171Draft%20121417.pdf.

**Wildlife Connectivity**

In addition to the well-known White Tailed Deer, Moose, Black Bear, Fisher, Red and Gray Fox, Turkey, Blue Heron, Beaver, Mink, a wide variety of birds can be found in Waterville. Maintaining habitat for these species is important for their survival. For example, a bear mast has been identified atop the Fletcher Range. According to the Vermont Fish and Wildlife Department (2017), Black Bears have a 30 square mile home range. Habitat connectivity is one way to maintain wildlife habitat and biodiversity.

Connecting habitat is land that links large patches of habitat within a landscape, allowing the movement, migration, and dispersal of animals and plants. Riparian habitat along streams and rivers, strips of forest cover between developed areas, and even hedgerows and fencerows all represent potential connecting

18 According to online ANR *BioFinder*, *January 2018;* http://anr.vermont.gov/maps/biofinder.

habitat. Often these areas are called "wildlife corridors or habitat connectors", even though they are not always linear, as the term implies. Habitat connectors act as lifelines for isolated populations as they:

- Allow wildlife to move freely across their range and connect to larger contiguous habitat blocks (priority forest blocks)
- Allow wildlife to colonize new habitat as climate change, succession, or other ecological processes force them to migrate, reduce the risk of population isolation
- Ensure the exchange of genetic information among populations
- Facilitate seasonal movements (migrations) to essential range or habitat
- Allow adult animals to interact with potential mates, thus improving reproductive success and genetic fitness.

Maintaining habitat connectors and contiguous habitat blocks sustains a healthy forest yielding multiple benefits including:

- Supports recreation and tourism
- Supports local sustainable forestry industries
- Provides clean water and air
- Enhances public health
- Acts a flood control
- Maintains biological diversity
- Provides wildlife habitat
- Mitigates climate change impacts
- Preserves cultural heritage

Reduced connectivity between habitats as a result of the fragmentation caused by roads and development has serious impacts on wildlife populations at a variety of spatial scales. In the short term, habitat fragmentation can restrict species access to seasonal habitat. Roads can act as a barrier between necessary habitats, restricting access or genetic flow between populations.

Prominent ridgelines, including the Fletcher Range along the Franklin and Lamoille County border, provide a scenic background to Waterville, both within Town and on major approaches from neighboring communities. In addition to their scenic values, these features offer other natural resource values. Undeveloped ridgelines are parts of important core habitat, provide important corridors for wildlife, and often also contain head waters of local streams, seeps, and ground water recharge areas. It is possible to locate development in the uplands in a manner that preserves scenic qualities by careful placing of structures below the top-of-ridge and minimizing site clearing and grading.

**Strategies for Reducing Forest Fragmentation**

One way to maintain connectivity involves conservation or protection of critical linkages and priority forest blocks through easements or outright purchases of land. Other mitigation measures include retrofitting existing underpasses or culverts to allow wildlife passage, or simply installing wildlife crossing signs to alert motorists. The Natural Resources map below depicts priority connectivity and interior forest blocks in Waterville. For more information regarding priority forest blocks visit the BioFinder at http://anr.vermont.gov/maps/biofinder.

A burgeoning area of biological study is in the movement of flora. It is important to remember that plants migrate and move in the same way as animals, although at a much slower pace. Soil bridges ease plant migration and facilitate safe movement of wildlife. Flora migration is particularly evident as climate change affects the ability of flora and fauna to survive in their natural habitats. Maple trees, for example, are predicted to move further north to adapt to warming southern climates.

The **Northern Appalachians Staying Connected Initiative** is working to help safeguard wide-ranging and forest-dwelling wildlife such as bear, moose, lynx, marten, and bobcat from the impacts of habitat fragmentation and climate change by maintaining and restoring landscape connections across the Northern Appalachians region, which includes the Worcester and Green Mountain ranges in northern Vermont. The network between Northern Vermont and into Maine is a key connection for wildlife across the northeast. Organizations such as this provide an opportunity for both the Town and private residents to get involved with education and proactive wildlife management.

Similarly, the **Cold Hollow to Canada Forest Link Project** is a partnership of community members working together toward the common goal of land stewardship and wildlife habitat conservation through education and outreach, and coordination between local conservation commissions and public entities, and non-profit organizations that share the vision of healthy forests and wildlife for future generations. Waterville is included in the geographic range of Cold Hollow to Canada and the Town and private residents may also consider more active involvement in the group, which has a strong presence to the west in Franklin County and in Craftsbury, to the east. The group is involved in monitoring, sighting, and tracking wildlife movement in important habitat connectors (wildlife corridors).

**Regulatory considerations**

On a regulatory basis, Act 250 criterion 8(A) mandates that development activity must not “imperil necessary wildlife habitat or endangered species in the immediate area.” According to the Vermont Natural Resource Board, the habitat must be critical to a life stage of a species and be clearly identifiable—as in the case of the mapped deer wintering and bear habitat. Places identified in this Plan will be used as the basis for Waterville comments for any potential conflict between Act 250 applications and the Plan.

## Natural, Fragile, and Conserved Areas

As noted above, there are two natural wetlands communities located near the southern border of Waterville that are currently listed on the Rare, Threatened and Endangered Species list (see Natural Resources map). At the eastern corner of Waterville’s boundary is a section of land conserved by the

Vermont Department of Forests, Parks, and Recreation where the Long Trail passes through the Long Trail State Forest. Adjacent to that tract is a permanent easement owned by the Green Mountain Club.

There are two other areas that have been privately conserved through easements with the Vermont Land Trust. They are along the northwestern border of the town. Conserved lands represent 3% of Waterville's acreage (see the Utilities & Facilities map, Chapter 4).

Additionally, much of Waterville's land is enrolled in the Use Value Appraisal Program, also known as "current use". The State of Vermont Current Use Program is a series of four State sponsored tax abatement programs which use financial incentives to encourage agricultural and forestland to remain in production. In each program, the property must remain in agriculture or be managed for forest use to receive tax abatement benefits. The major benefit to the landowner is that the landowner pays property tax on the "use value" instead of the "fair market value" of the property. If the property is developed, the owner pays a land use change tax. So that the Town does not lose property tax revenues, the State of Vermont provides reimbursement to the Town for the difference between the "use value" of the property, and its fair market value. According to the 2016 Annual Report from the Vermont the Department of Taxes, 53 (14%) of the 385 taxable parcels in Waterville are enrolled in the Current Use Appraisal Program.

**Invasive Species**

According to the Vermont Agency of Natural Resources, the second greatest threat to biodiversity and the survival of native plants and animals in Vermont, is the proliferation of invasive species. Invasive species are organisms (plant, animal, insect, fungus or bacteria) that are not native and have negative effects on the economy, environment and public health. Non-native, invasive terrestrial plants are one of the greatest threats to the health of forests throughout the Northeast United States. Invasive species can have significant negative impacts on native plant and animal populations by encroaching on native species habitat or killing off individual species through bacterial or fungal infections. Many invasive species historically have been introduced by European settlers. Invasive plants such as Knot Weed and Rock Snot, tend to take over recently disturbed areas along roadsides ditches, trail ways, and riverbanks. Invasive plants spread fast, quickly out competing local native plant communities. When overcrowding near structures, these invasive plants can cause damage to the exterior of buildings. Proper maintenance and control, where possible, of invasive plants is vital to the survival of native plant species and the wildlife and aquatic life that rely on them for food and habitat.

Invasive insects including the Asian longhorned beetle, emerald ash borer, and hemlock woolly adelgid are of great concern to Vermont forests. These pests have already killed millions of trees in the U.S and Canada, racking up substantial ecological, recreational, and commercial costs. They alter the availability of habitat, shade, and shelter for wildlife. Invasive insects also disrupt the food web, water cycle, and carbon cycle in forest ecosystems.

Invasive species also pose a serious threat to Vermont's lakes, ponds, and rivers. Invasive plants such as Eurasian watermilfoil and water chestnut can quickly reach nuisance levels, choking out swimming holes and crowding out beneficial native species. Small organisms like spiny waterfleas and Asian clams can

drastically impact aquatic foodwebs and limit fishing opportunities for brook trout, smallmouth bass, and other Vermont sportfish. Zebra or quagga mussels, can also cover lake bottoms with a layer of sharp shells creating a safety hazards at local swimming holes.

For information on invasive species and control practices visit vtinvasives.org or http://anr.vermont.gov/about_us/special-topics/invasive-species.

## Scenic Resources

The quality of life of all Waterville residents is greatly enhanced by the abundant, spectacular and peaceful scenery in Town. The value of this resource cannot be gauged in economic terms alone. The educational, spiritual and recreational value of these special areas should be valued. For example, many areas of town afford views of Mount Mansfield, Laraway Mountain, Old Round Top, Burnt Peak, Shattuck Peak, Cranberry Mountain, Peaked Mountain, Belvidere Mountain, Fletcher Mountain, King's Hill Mountain, and the Cold Hollow Mountains.

It is the agreement of the Waterville Planning Board that no commercial energy generation projects should be located above 1,300 feet. If such development occurs, service and access roads shall utilize existing woods roads and trails whenever possible in order to limit the amount of forest fragmentation, and clearing around turbines shall be limited to what is necessary to provide for safe operation of the facility. Any warning lights installed on the facility shall utilize motion sensors so as not to disturb the night sky when aircraft are not present.

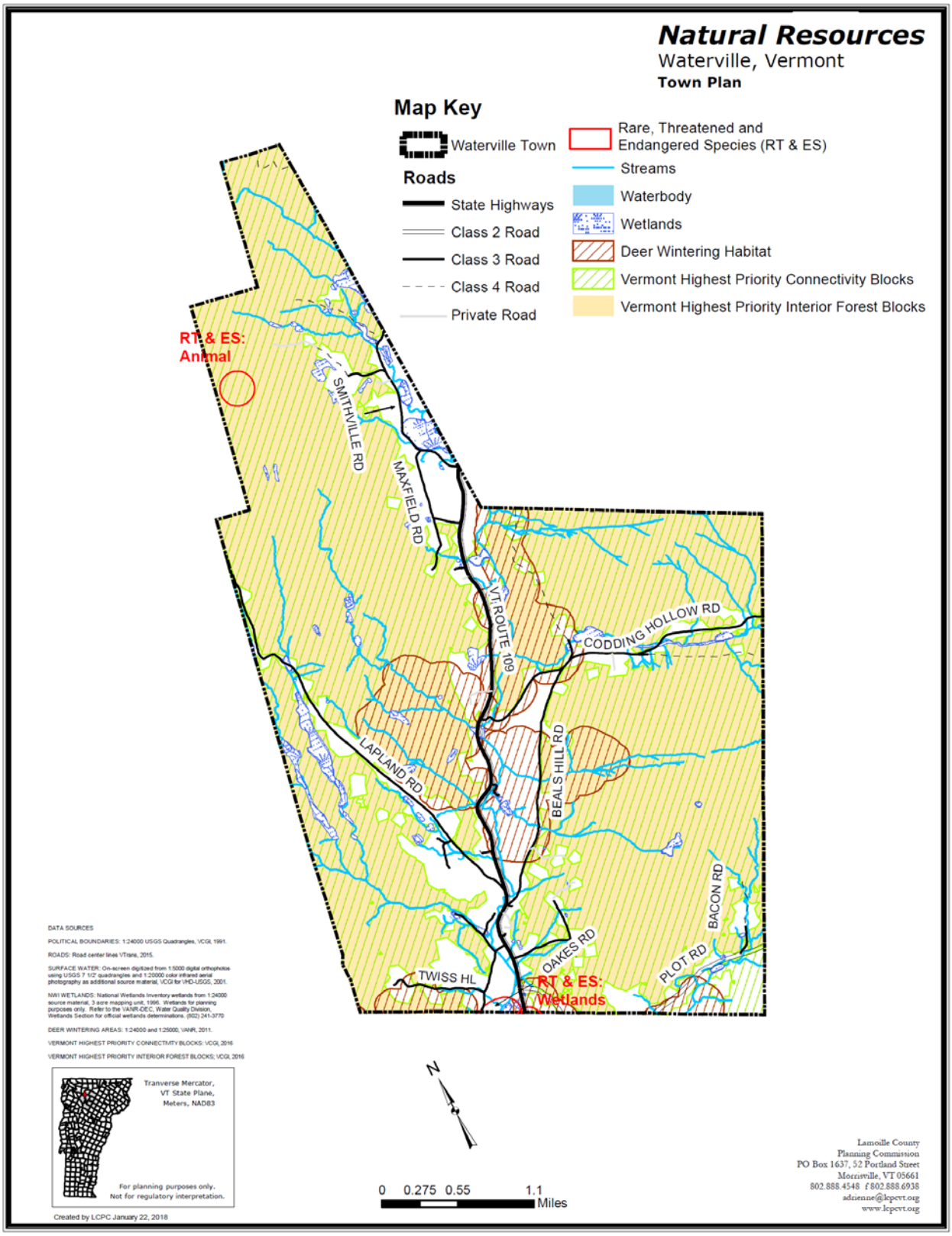
## Agriculture and Forestry

The use of the land for agricultural purposes plays an important role, both directly and indirectly, in Waterville's economy. It also supports the community's traditional settlement pattern by providing a diversity of land uses and open space. Contrasting with the farmland in the low lying areas, the forested hills and mountains add a dramatic backdrop to the Town. Completing the mosaic of land uses are the village and residential areas that are nestled between and within these landscape features.

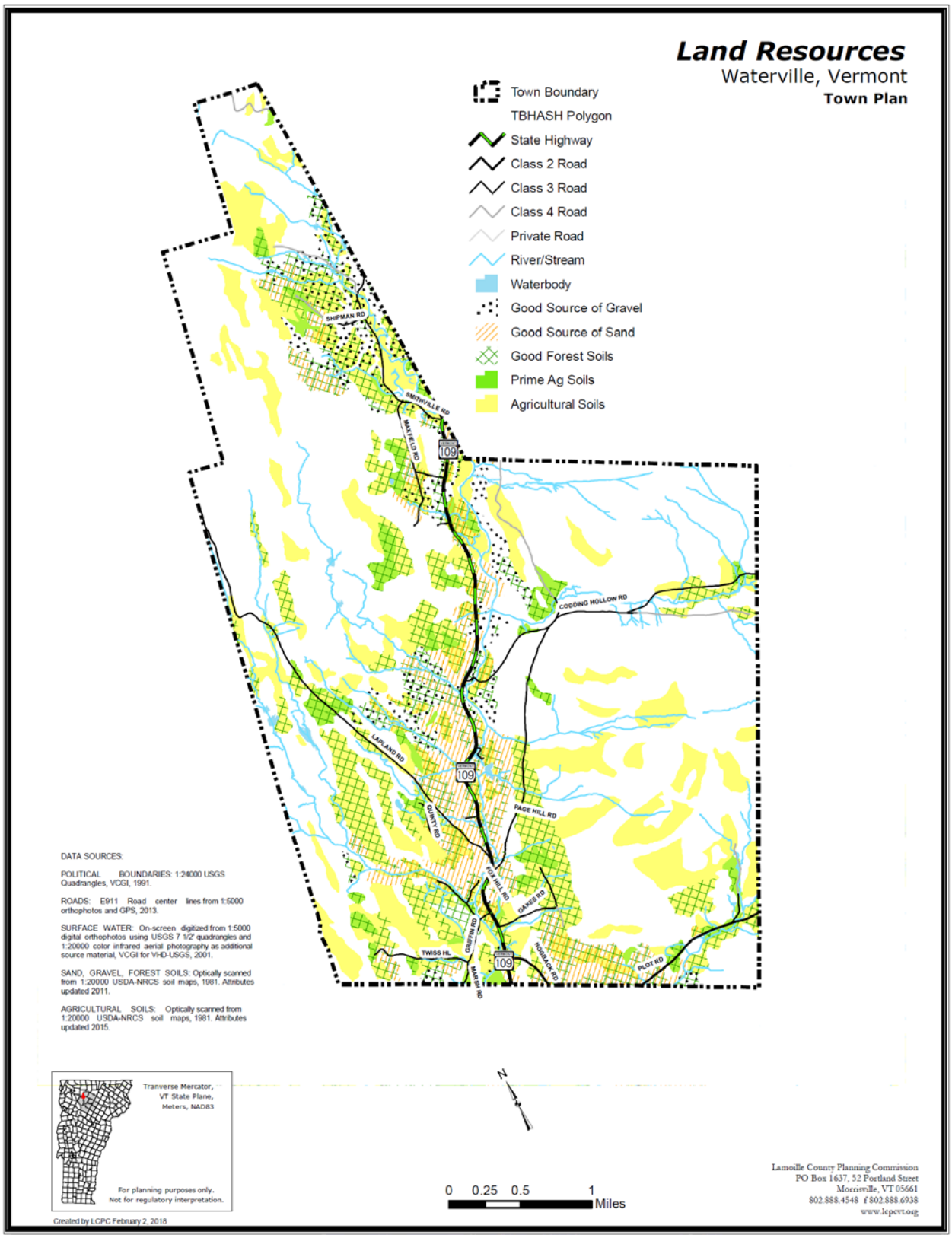
Planning for, and supporting the working landscape, is critical to maintaining this balance. Working landscapes, like farming and forestry, contribute to the Town's overall beauty, its economy, and its history. Conserving working landscapes is more than purchasing land and development rights. Conserving our traditional land uses involves a commitment by the community to ensure that the economic foundation that supports this way of life is maintained into the future.

The protection of agricultural resources is key if we are to retain the present character of the community. Land use planning efforts must consider the economic and social factors of agricultural operations. While traditional methods for land preservation can be effective in directing development away from important farmlands, they do not guarantee that the land will be farmed.

# Natural Resources and Land Use



# Natural Resources and Land Use



A viable agricultural economy should protect the working landscape and the family farm. Self-sustaining agriculture and soil regeneration is encouraged through the use of Required Agricultural Practices (RAP)[19]. For information on RAPs visit http://agriculture .vermont.gov/rap. Agricultural soils are identified on the map *Land Resources*. In addition to farm enterprises themselves, a vibrant agricultural economy relies on the availability of appropriate infrastructure, including roads, utilities, processing, and storage capacity.

There is no way of knowing what farming will look like in ten or twenty years. Over the past decade, it has become necessary for local farms to increase in size. While 300 head of cattle was the exception in 1992, it is now becoming the norm for conventional dairy farms. At the same time, some specialty farms are finding profitable ways of raising herds of 10 head of cattle or less through use of direct marketing and value added products. Waterville must remain flexible to the changing face of farming.

Any policies that impact farming will need to be reviewed regularly to ensure they do not place an undue burden on the farmer.

Assuming environmental standards are met, the Town of Waterville recognizes the need for our agriculture to grow and adapt to contemporary economic conditions. Consequently, the Town does not wish to place any municipal impediments to farm operations of various types and sizes.

Forestland is a dominant land cover in the community - covering approximately 80% of the Town (National Land Cover Dataset, VCGI 2011). However, this number does not indicate what proportion of that woodland is being managed for productive purposes.

Waterville's forest resources contribute directly to the economy through the timber industry and the production of maple syrup. Some of the less quantifiable benefits derived from Waterville's forest resources include habitat for game/non-game species such as deer, bear, and moose; specially adapted plant communities which are important to maintaining wildlife; water resource protection; and recreational opportunities for both residents and visitors. The beautiful colors displayed in the fall are an attraction for visitors who in turn contribute to the local economy.

*Timber Harvesting*

Total timber harvest has declined over the last decade in Lamoille County and the State as a whole. (Town level data is not available.) According to the U.S. Forest Service, statewide increases in the volume of growing stock are twice that of harvesting rates. Past harvesting practices have selectively removed only the highest quality stems (high-grading) resulting in roughly 15% of northern Vermont's growing stock being of such poor quality that it is of little or no commercial value. Long term management, including culling of unhealthy stands, is needed to encourage the regeneration of native

19. For example, the Vermont Agency of Natural Resources recommends a riparian buffer of at least 50ft for all streams. Required Agricultural Practices (RAPs) recommend buffers of perennial vegetation 25 feet from the top of a streambank on cropland and 10 feet from the top of the bank at points of runoff including ditches. Crop fields with a 10% or greater slope shall maintain a vegetative buffer of 100 feet from the top of a streambank. For more information on RAPs visit http://agriculture .vermont.gov/rap.

species and to improve overall forest quality and value from both economic and ecological points of view.

*Wood for Energy*

In addition to timber, wood is also harvested for energy. There has been an overall increase in demand for wood energy, recognized at both the commercial and institutional level. According to the Vermont Energy and Climate Action Network, by 2010 46 schools in Vermont were utilizing wood heating systems. Personal consumer demands have also increased over the last decade, with one recent study (2010 State Forest Resource Assessment) depicting a residential firewood consumption increase from 275,000 cords per year in 1997 to 315,000 cords per year in 2008. According to the Vermont Department of Forests, Parks and Recreation (2016 Vermont Residential Fuel Assessment), during the 2014-2015 heating season 38% of Vermont households burned wood for space heating. Use of wood for energy represents an opportunity to continue to manage Waterville's forests despite the poor timber market and lower quality growing stock as some wood that may not be suitable for timber may be suitable for wood chips, wood pellets, or cordwood. It should be noted that cordwood is a major medium by which invasive species spread. Currently, Waterville's forests are relatively free of many invasive insects. Better marketing of locally cut cordwood to residents of Waterville and surrounding communities, as well as visitors to nearby parks and resorts could increase opportunities for Waterville forestland owners, while also preventing the spread of unwanted pests.

*Maple Products*

While timber harvesting and the wood products industry appear to be in decline, the use of Lamoille County's forest for maple products is growing. Lamoille County has witnessed a significant expansion within the maple products industry over the past decade, characterized by the growth of existing small and medium scale maple sugaring operations as well as the addition of new operations. Both the number of taps and the total amount of syrup produced in Lamoille County have increased significantly over the last decade (again, town level data is not available). Lamoille County is second highest in maple syrup production in Vermont. Through the Lamoille County Planning Commission's 2011 Forest Stewardship Project, several consulting foresters reported that land previously managed for timber production is now being managed for maple syrup production.

*Forest Product Manufacturing*

The forest products industry once employed a much larger segment of Waterville's population than it does today. Over the last several decades, many of the large sawmills in the Lamoille County Region have closed, including the Bell Gates Lumber Mill, formerly located in Jeffersonville. Currently, much of the timber produced in Lamoille County is exported to Canada for milling. Increasing the amount of forest products processed nearby could provide employment in support industries such as equipment and vehicle services and providers, sawmills and other processing facilities such as wood chippers, pellet production, and other value added manufacturing facilities. It may no longer be economical to operate a traditional sawmill in Waterville on a large commercial scale. However, small "backyard" mills, portable mills, fire wood suppliers, and cottage furniture makers and wood turners all represent potential opportunities to create local employment while adding value to raw timber materials produced in Waterville.

*Forest Soils*

The United States Department of Agriculture's Natural Resource Conservation Service has identified the best soils to support commercial forestry, including many upland soils that are too shallow, rocky, or steep to support other types of development. As a result, primary forestry soils are generally less threatened by development but are more sensitive to site disturbance and erosion. To help prevent soil erosion, the State has adopted acceptable management practices (AMPs) to prevent soil erosion and maintain water quality on logging jobs. The Acceptable Management Practices (AMPs) for forestry in Vermont were first stipulated when the Vermont Department of Forests, Parks, and Recreation developed the 1987 guide titled "Acceptable Management Practices for Maintaining Water Quality on Logging Operations in Vermont." Occasionally also referred to as "Best Management Practices," the AMPs are intended to prevent mud, sediment, petroleum products, and woody debris from getting into streams, ponds, lakes, and rivers. AMPs also help maintain natural water temperatures by requiring that trees be left along streams and water bodies. They are scientifically proven methods for loggers and landowners to follow for maintaining water quality and minimizing erosion. While AMPs are voluntary, they have the force of law: a violation occurs when there is a discharge to State waters and the AMPs are not in place. Any foresters in Waterville interested in obtaining more information or assistance on the AMPs at their sites should contact the Vermont Department of Forests, Parks and Recreation AMP Program or visit http://fpr.vermont.gov/forest/vermonts_forests/amps Forest soils are identified on the following page.

## Water Resources

Waterville is fortunate to have extensive water resources. The waters are valuable as a source of drinking water, absorption of floodwaters, wildlife habitat, recreation, aesthetic enjoyment, and power generation. The value of these resources is diminished through pollution, over usage, and treatment.

**Fishing Resources**

Taylor, Codding, and Streeter Brooks, along with smaller streams, feed the Kelley River (North Branch), which runs through Waterville to the Lamoille River, as does the Judevine Brook. These waters provide excellent brook, rainbow and brown trout fishing and habitat for spawning and young fish. In addition there are many beaver ponds found throughout the town. Natural vegetation of stream and riverbanks in Waterville consists of alder, black willow and silver maple. Removal of bank vegetation causes elevated water temperatures and increased stream sediment, both resulting in deterioration of cold-water fisheries and spawning. Vermont waterways and their uses are governed by the policies and procedures of the Vermont Department of Water Resources in the Agency of Natural Resources.

**Rivers and Streams**

Rivers and streams are valuable resources which can help prevent water pollution, preserve wetlands, and provide wildlife habitat, open space and scenic beauty. The Town may wish to preserve such areas for public usage and education. Extensive development on the river will have a detrimental effect on area fishing.

The Vermont Agency of Natural Resources lists one priority river in Waterville; the North Branch of the Lamoille River-Kelley River. The North Branch-Kelley River flows southerly into the main stem of the Lamoille River in Johnson, Vermont. Sediment has polluted this section of the river. The Laraway Dam was once sited in this same location. While the dam has breached, the natural falls, and much of the infrastructure, remain.

Planning should contain measures for pollution prevention, stream and riverbank stabilization, protection of water habitat and protection from erosion. The Planning Board supports the adherence to a buffer zone in accordance to state guidelines[20] on both sides of the Kelley River and Taylor, Codding, Judevine and Streeter Brooks. Vegetative buffers where possible, are also encouraged in Waterville along the North Branch of the Lamoille River.

**Wetlands**

The term "wetland" is used to identify areas otherwise referred to as swamps, marshes, bogs or fens. Generally, wetlands share three basic characteristics:

1) The presence of water at or near the ground surface;

2) The presence of water-dependent plants occurring on site; and

3) Common types of soil.

Wetlands serve many important functions including stormwater retention, erosion control, and flood mitigation; they filter pollutants, recharge ground water, and provide wildlife habitat. Wetlands throughout the country have been inventoried by the U.S. Department of the Interior, producing a set of National Wetland Inventory maps for each municipality. These maps were created using aerial photographs and are useful in determining the general character of a broader area. However, in cases where detailed wetland characteristics for individual parcels are desired, a site visit and survey are usually necessary.

Wetland regulations were first adopted in Vermont in 1990, later consolidated into legislation under Act 115 in 2004 and last amended effective August 1, 2010. The current system establishes a three-tier wetland classification system. Designated Class I wetlands are considered the most environmentally significant and therefore receive the highest level of protection under state law, requiring a 100-foot vegetated buffer between any adjacent land development. There are currently no Class I wetlands located in Waterville. Rather, most local wetlands are designated as Class II—protected from development by a 50-foot buffer. There are numerous Class II wetlands scattered throughout Waterville. Refer to the Water Resources Map for the location of Class II wetlands. Development should be limited on and around wetlands in Waterville. Lastly, Class III wetlands are those wetlands with no delineated buffer. There are no Class III wetlands in Waterville.

20. The Vermont Agency of Natural Resources recommends a 50ft riparian buffer of all streams.

Property owners with existing designated wetlands may expand the area classified as a wetland by contacting the Agency of Natural Resources, Watershed Management Division, (802) 828-1835 or www.vtwaterquality.org. Property owners who choose to designate wetlands on their property understand that the value a protected wetland brings to the ecosystem may come with potential limitations on the property's use.

## Protection of Water Resources

### Water Table

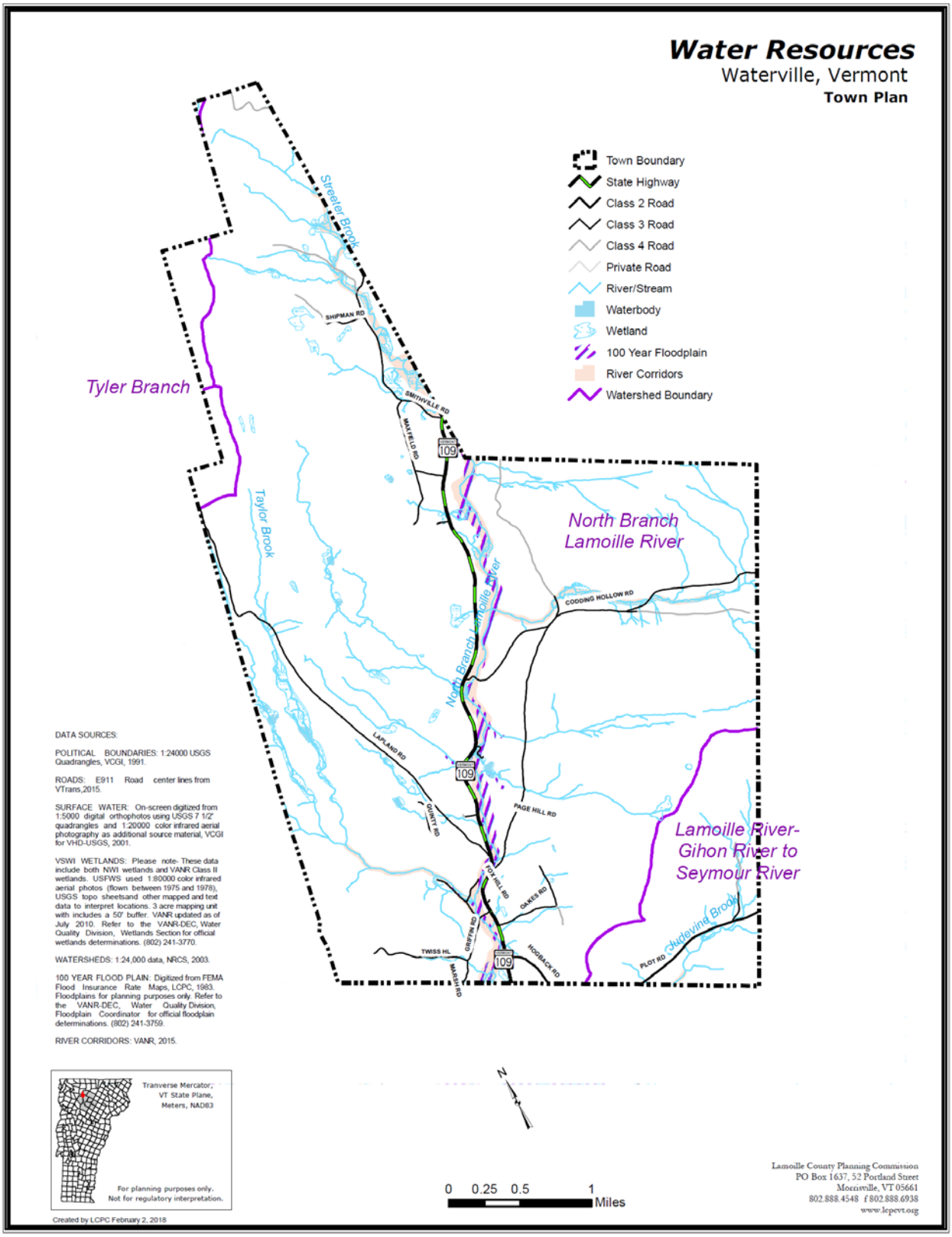
In order to protect our ground water, the Planning Board recommends no habitation or waste disposal in areas where the ground water is at a depth of zero to 48 inches. No alterations may be made which interfere with the natural flow of water to surface water, as detailed in Vermont State rules and regulations. For more information on waste disposal and ways to reduce waste disposal including composting, please refer to the Solid Waste Management section in the Local Services and Facilities Chapter.

### Water quality

As a byproduct of Waterville's well-preserved landscape of mountains, fields and forests, the town enjoys excellent water quality. All residents and businesses derive potable water from groundwater wells and springs. Accordingly, it is critical for the town to monitor those activities that introduce contaminants into the ground, such as underground storage tanks, septic fields and agricultural activities (in the form of fertilizers and animal waste). Ultimately, substantial impacts to rivers, streams, wetlands and public water systems are subject to a range of state and federal regulations, as described within this plan. While Waterville does not enforce local development bylaws, the town does retain the right to participate in Act 250 proceedings and comment on development proposals—such as those impacting local water quality—based on the policies established throughout this plan.

Water contamination of private wells and springs is a potential problem during flood events. The town has no public water supply however the Village operates its own co-op. The Village co-op well is monitored by Ross Environmental Associates based out of Stowe. Beaver dams have also caused some flooding concerns and water quality issues near the Waterville Road Commissioner's Garage. These issues have been temporarily fixed. Primary concerns for water quality near the Waterville Garage stem from the property's former use as a gas station and years of leaking fuels. The Town and State worked with the current property owner to address water quality concerns. The Waterville Fire District recently replaced waterlines from the Waterville Market to the Waterville Garage to address gas contamination from the former gas station site. Continued monitoring and implementation of best practices as appropriate at this location are encouraged to improve water quality. For more information on recent waterline replacements along Vermont Route 109, please refer to the Water Supply section of the Local Facilities and Services chapter. For more information on water quality and related flooding concerns in Waterville, please refer to chapter 11; Flood Resilience and Water Quality.

# Natural Resources and Land Use



**The Role of Soils**

General soils information available from the Soil Conservation Service indicates that much of the land area of Waterville has soil limitations of some type and to some degree for sub-surface sewage disposal and/or foundation construction. Some of these soil limitations which can cause problems and should be carefully investigated when considering development of a parcel of land include: (1) shallow depth of bedrock; (2) excessive wetness; (3) soils which do not adequately absorb moisture; and (4) unstable soils. Despite the generally poor soil conditions in Waterville, pockets of suitable soils can be found in scattered locations throughout the town. Existing soils can be protected through organic agricultural practices.

In general, soil conditions in Waterville will require a low to moderate density of development within selected areas for more intense or clustered development. Much of the land areas with soil limitations are relatively inaccessible.

Soil erosion can be minimized by limiting the creation of impermeable surfaces (e.g. roads and parking lots) and managing stormwater run-off.

**Wastewater System Regulation**

The State of Vermont has all authority over the regulation of potable water supplies and wastewater management systems statewide. In Waterville there are concerns about the State's responsiveness to failed septic systems and overall ability to prevent the discharge of wastes into the community's precious water resources.

One option that Waterville could explore is Municipal Delegation. This is a process through which a municipality can create a regulatory and administrative process that meets the rigor of the State statutes. This possibility could be explored through contacts with Vermont towns that have assumed Municipal Delegation and in following the guidelines and materials offered by the Vermont Department of Environmental Conservation.[21]

Another option to consider is to designate a Health Officer for the Town and adopt health ordinances. The Health Officer would be the liaison between the town and the State. The Health Officer, as identified in Vermont State statute, would be able to conduct investigations into conditions that may be public health hazards, prevent, remove, or mitigate significant public health risks, and enforce certain health rules, including ticketing property owners with failed septic systems and other violations. Health Officers report to the State upon discovery of violation or public health hazards/risks that involve a public or private water and wastewater system, food or lodging establishments, rental housing complaints, animal bites, and other matters as identified by the Vermont Department of Health.

21 Municipal Delegation Website: http://www.anr.state.vt.us/dec/ww/mundeleg.htm

**Groundwater Source Protection Areas**

Groundwater Source Protection Areas (SPAs) are established to prevent contamination of public water supplies and are regulated by the Vermont Agency of Natural Resources. There is one SPA established for the Waterville Elementary School in the north end of town and another for Waterville Fire District #1 in the south end of town.

**Underground Storage Tanks**

Underground storage tanks, whether existing or removed, can be potential locations for hazardous wastes that can seep into ground and surface waters. The Vermont Agency of Natural Resources lists two underground storage tanks in Waterville.

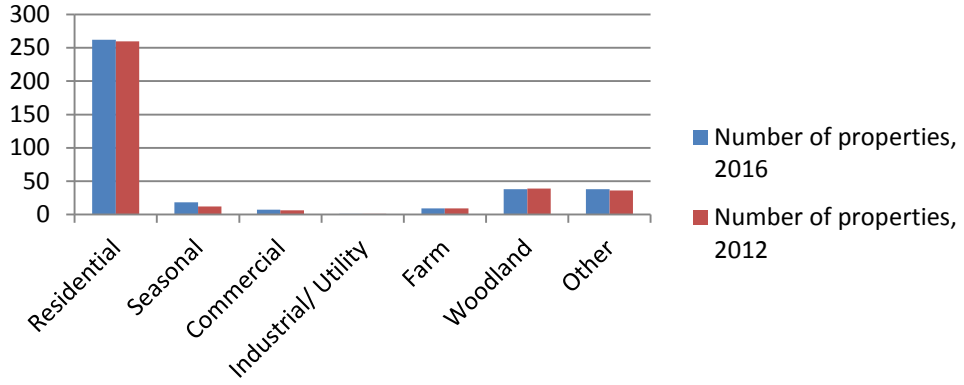
**Hazardous Waste Sites**

Hazardous waste sites need to be identified and managed for clean-up and to limit the damage done to natural resources, especially ground and surface waters. There are no known high priority hazardous waste sites in Waterville. The Vermont Agency of Natural Resources is monitoring three low-medium priority sites in Waterville; the third was closed in early 2013. These sites involved small spills of hazardous substances at a farm and two defunct gas stations.

## Planning for Land Use and Development in Waterville

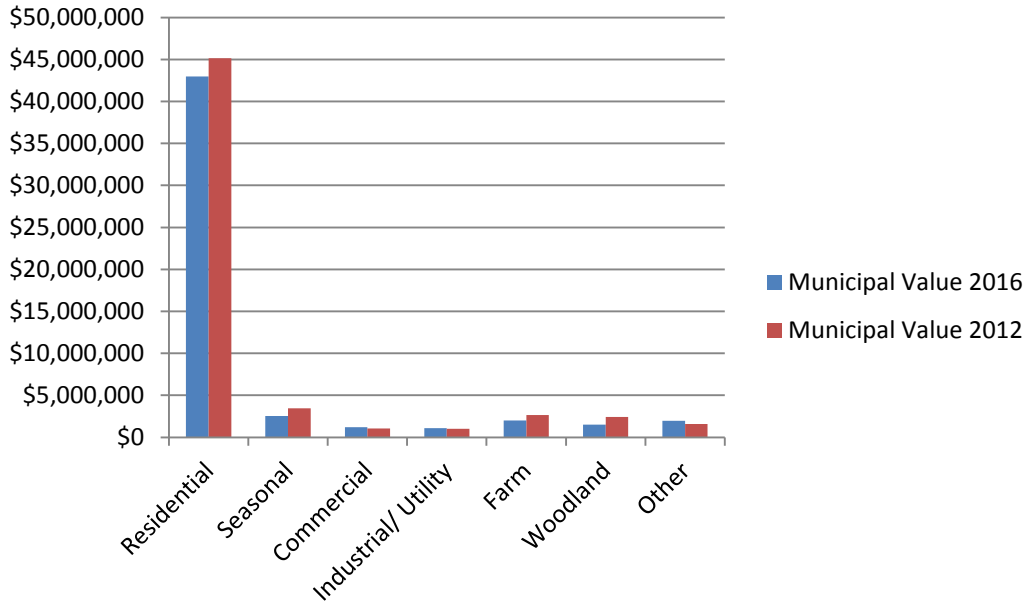
The vast majority of Waterville's property and property values are for residential use, as shown by Tables 11-1 and 11-2.

**Table 11-1 Number of Waterville properties by type, 2012 and 2016**




*Source: Waterville Grand List, Form 411, 2016.*
*Note: Residential category includes mobile homes. Commercial category includes commercial apartments.*

**Table 11-2 Assessed value of Waterville properties by type, 2012 and 2016**

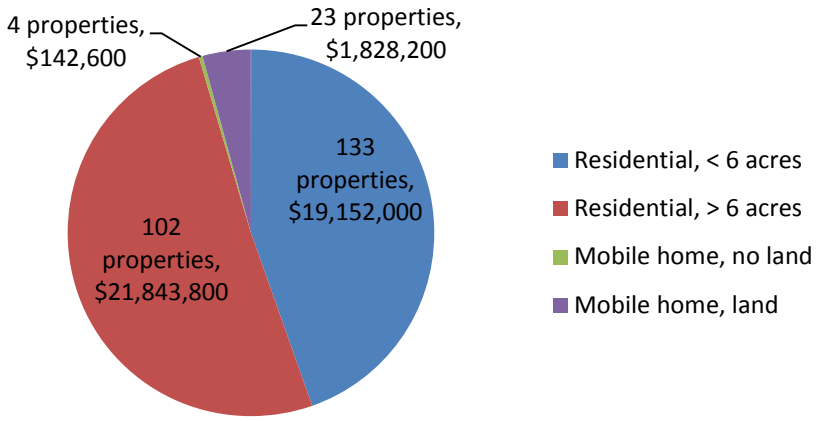



*Source: Waterville Grand List, Form 411, 2016.*
*Note: Residential includes mobile homes. Commercial includes commercial apartments.*

While the numbers of properties increase by 10 from 2012 to 2016, the total value decreased by 7% in all parcel types. Meanwhile, the value of commercial properties increased by 14.5% (1 additional commercial property added to Grand List). However, woodland properties experience a decrease by 37% (one less woodland property in 2016 Grand List) in value during this time. Still, all other land uses only equal about one-quarter of the total value of residential property in Waterville.

In 2016, residential properties totaled over $42,966,600 in assessed value for Waterville, representing a decrease in assessed value since 2012 ($45,000,000). Figure 11-1, below, shows how residential land uses are further broken down. Residential properties include those less than six acres, those more than six acres, mobile homes with land, and mobile homes without land. Residential properties with land greater than six acres dominate all other land uses in Waterville. This should be kept in mind when making any long-term decisions regarding land use in Waterville. Large lot properties can be vital to maintaining an agricultural and forest economy as well as providing for wildlife habitat movement. Breaking up large lots may have other implications.

**Figure 11-1 Residential properties by number and assessed value**




*Source: Waterville Grand List, Form 411, 2016*

## LAND USE AREAS

The Planning Commission recommends that appropriate density of further development in Waterville and the following land use categories are defined based on physical attributes of the land, including slope, soil type, ground water, location of aquifer recharge areas, existing springs, wells and surface water. Development should occur with the availability of the municipality to provide services. The *Land Use* map shows land use areas.

**Agricultural/Rural Residential Area**

The purpose of the rural residential / agricultural area is to provide for residential and other compatible uses in densities appropriate with the physical capability of the land and the availability of community facilities and services on lands outside of village areas. Certain areas of Waterville have particular suitability for agriculture and forestry. Most of those areas are presently used as such. Once developed, good agricultural and forestry lands cannot easily be returned to production. However, residential development can be accommodated in such a way as to maintain capability between uses. Agricultural use, planned residential developments, open space preservation, and techniques for preserving the rural character of these areas are encouraged. Development should take place in such a way that any irreplaceable, unique, scarce resources and natural areas are not harmed, but rather enhanced.

Although future uses of these lands will depend primarily on regional economic trends, their continued use for agricultural and forestry purposes should be encouraged. Future land use areas may choose to separate agricultural lands and forestry lands according to soil productivity and other characteristics (see the *Land Resources* map at the end of this section).

**Village District**

The purpose of the village district is to support the role of the village as the focus of many social and economic activities in the community and to provide for residential, commercial and other compatible

development that serves the needs of the community. Such development should occur at densities and uses that will maintain the traditional social and physical character of the village, including its historic, recreational, and scenic resources, and that will not exceed the capability of the lands, waters, services, and facilities. Appropriate uses for this district include: residential, commercial, recreation, civic, some light industry, low impact agriculture, and historic preservation.

The Village District includes the Waterville **Historic District** and **State-Designated Village Center**. The Waterville Historic District was entered into the National Register of Historic Places in 2007 and allows the Town to access historic preservation funds through the Certified Local Government program. The State-Designated Village Center was renewed in 2015 and allows access to state and federal tax credits for private landowners to rehabilitate and maintain historic buildings. The boundaries of both village areas match closely and run along both sides of Route 109 from just south of Oakes Road to just north of the Route 109 bridge (see Chapter 3: *Village Historic District* map).

**Conservation Areas**

The purpose of the conservation district is to protect high elevations (1,300 feet or higher) that have shallow soils and fragile vegetation and that provide significant recharge to the ground and surface water supplies of the municipality and the region. It also is to protect the watershed to the village water supply. Because of the fragile resources and limitations to development, no community facilities and services will be provided to these areas. Limited, compatible land uses such as outdoor recreational activities that do not involve major structures and forestry that does not create erosion problems or harm unique and fragile areas, could be permitted in this district. No commercial energy generation projects should be sited in this district. Because of the steep terrain, preservation practices are encouraged at all levels.

**Flood Hazard Area**

Waterville has an area identified by the Federal Emergency Management Agency (FEMA) as a Special Flood Hazard Area (see *Land Use* map). The Waterville Planning Board proposes the town establish a local flood hazard area for all areas in the 100-year floodplain along the North Branch of the Lamoille and other waterways in Town. The purpose of the flood hazard area is to prevent flooding caused by the development of lands in flood hazard areas and to minimize losses due to floods. Uses within these areas will be restricted to agricultural, outdoor, recreational, and conservation uses. Examples of regulations for this area could include: prohibition of new structures, no extension of public water and sewer facilities or roads to these areas, elevation of structures, and a limit on filling. If this area is adopted, the Planning Board recommends establishing a vegetated buffer area between developments and waterways.

The Town of Waterville should research the benefits of enrolling in the National Flood Insurance Program so residents living in flood hazard areas can obtain flood insurance. If participation in the NFIP is sought, Waterville will need to identify a flood hazard area, develop floodplain management ordinances, and appoint an administrative officer to administer the program. Federal flood insurance would then be available to residents and business owners in high-risk and moderate-to-low risk areas. Insurance is often required for buildings in high-risk areas that have loans from federally regulated or

insured lenders. This requirement extends to disaster assistance loans from the federal Small Business Administration. Premiums vary according to the level of risk. The community would be responsible for maintaining the Flood Insurance Rate Maps (FIRMs) that identify risk areas and other pertinent information, such as flood elevations. NFIP is overseen by the FEMA with state coordinators available to assist municipalities in administering the program and regulations.

The benefit of establishing a Flood Hazard Area would mean the town could take steps towards enrolling in the National Flood Insurance Program (NFIP). Changes to federal flood insurance regulation in 2012 call for increased insurance premiums on structures with flood insurance and mandatory flood insurance on real estate transactions for properties located within a 100-year flood plain (the Special Flood Hazard Area). Federal flood insurance is only available to participating municipalities.

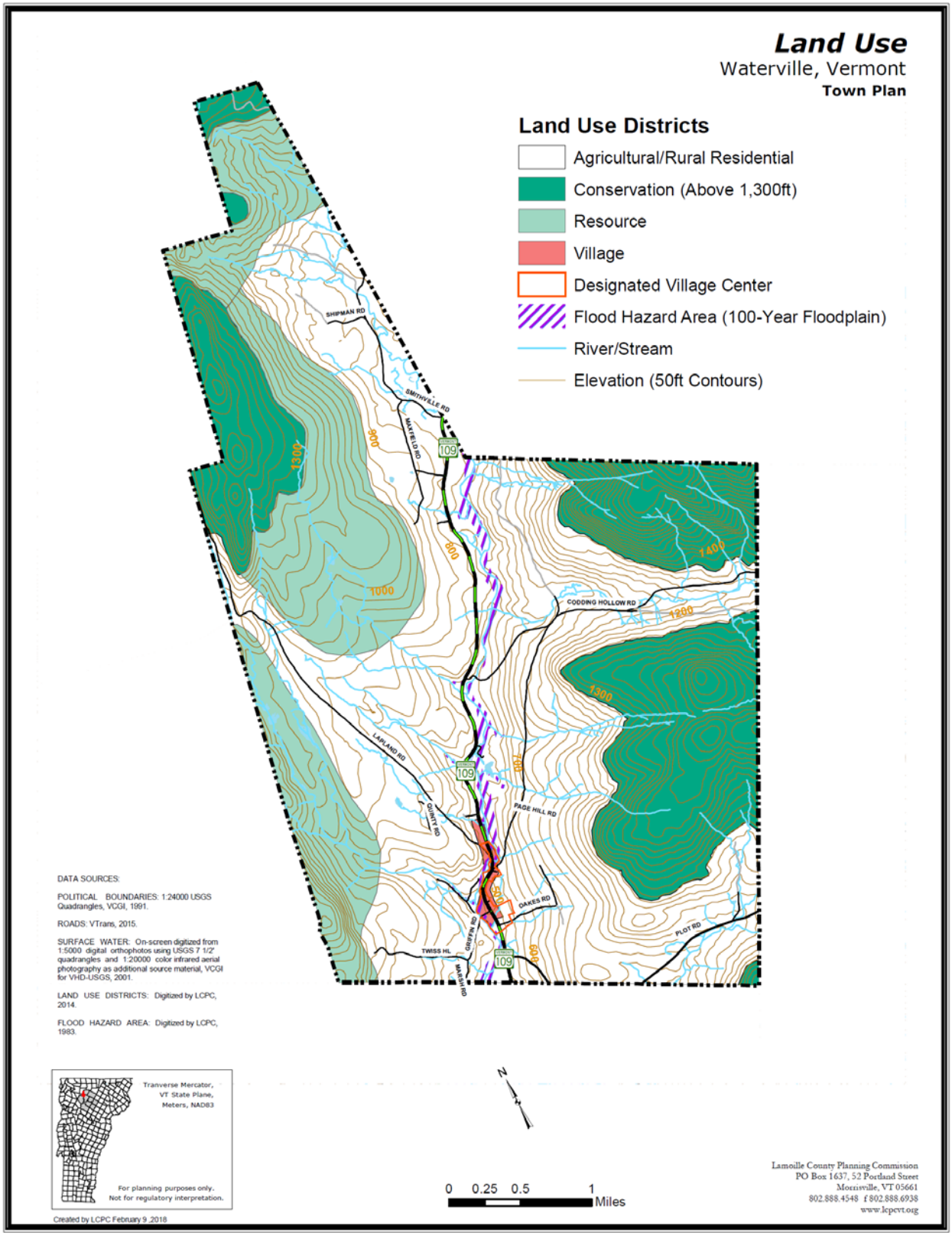
**Resource Area**

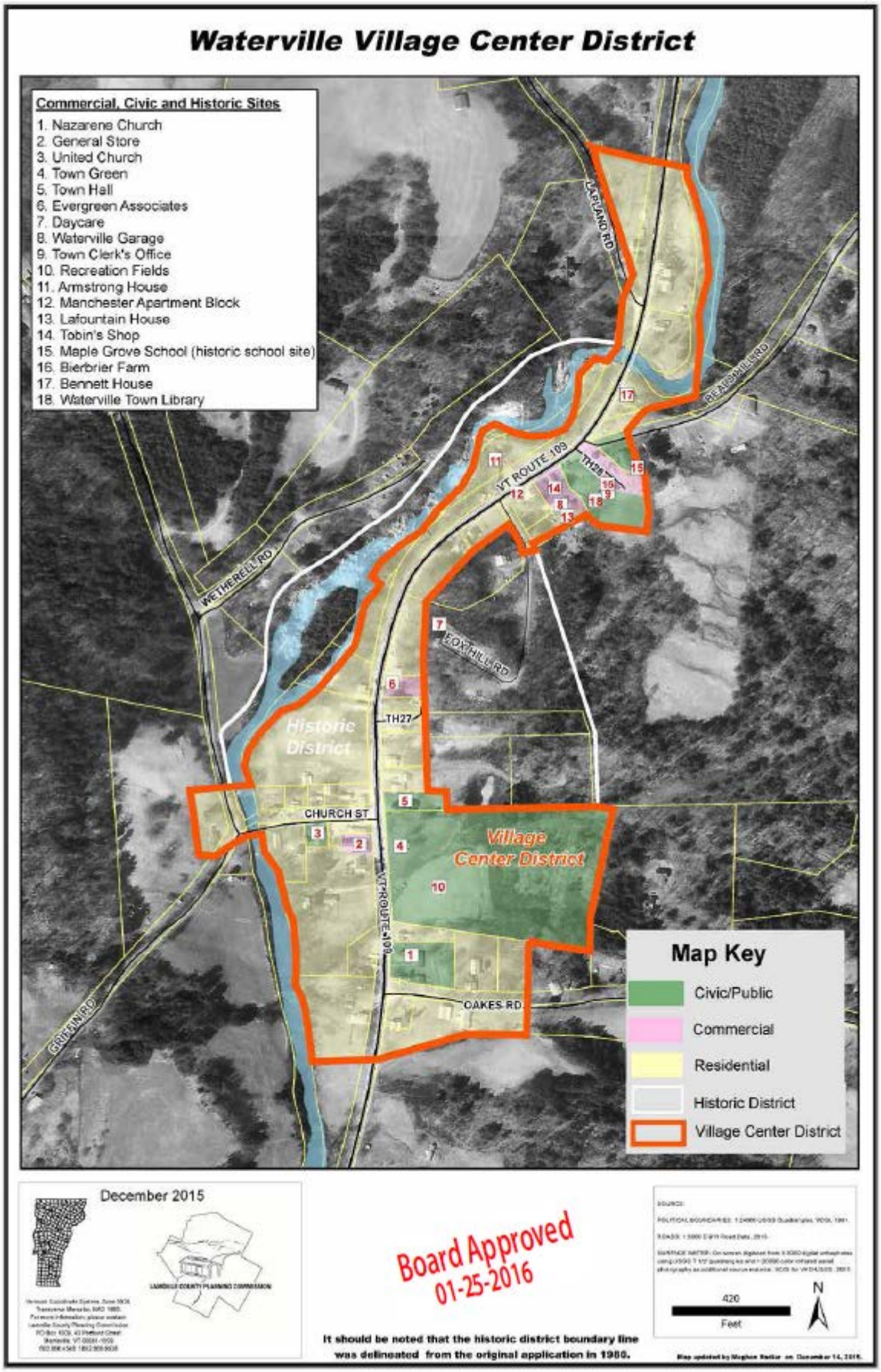
The purpose of a resource area is to protect the natural resource value of lands that are essentially undeveloped, lack direct access to arterial and collector roads, are important for wildlife and wildlife habitat, have high potential for commercial forestry use, are unsuitable for land development, or include irreplaceable, limited, or significant natural, recreational or scenic resources. Suitable wildlife habitat is included in this area for protection. No public sewer and water facilities are planned for these areas and the areas are not suitable for septic potential based on the soils. Due to the limited facilities and services proposed for the district and the critical resources located within it, only certain uses would be supported. These are: low density residential development, limited outdoor recreational uses, agriculture, conservation uses, and forestry practices that are compatible with the area purposes and do not require additional facilities and services beyond those planned.

**Agricultural Area – a district for future consideration**

In the future, the Town could consider designating a standalone agricultural area. The purpose of the agricultural area would be to protect lands with an economic capability for agriculture that are primarily undeveloped except for uses associated with agriculture or forestry. In this area, planned residential developments and land uses that do not remove the potential of the land for agricultural production such as open space, conservation, and certain forms of outdoor recreation are encouraged. Further road development and the extension of public water supply and sewage disposal systems are not planned for this district. Uses that are not low density residential and recreational development, that do not utilize existing facilities and meet the district guidelines, would be discouraged.

# Natural Resources and Land Use




Waterville Village Center District
Commercial, Civic and Historic Sites
1. Nazarene Church
2. General Store
3. United Church
4. Town Green
5. Town Hall
6. Evergreen Associates
7. Daycare
8. Waterville Garage
9. Town Clerk's Office
10. Recreation Fields
11. Armstrong House
12. Manchester Apartment Block
13. Lafountain House
14. Tobin's Shop
15. Maple Grove School (historic school site)
16. Bierbrier Farm
17. Bennett House
18. Waterville Town Library
LAPLAND RD
BEAUSHELL RD
VT ROUTE 109
TH28
WETHERELL RD
FOXHILL RD
TH27
Historic District
CHURCH ST
Village Center District
VT ROUTE 109
OAKES RD
GREEN RD
Map Key
Civic/Public
Commercial
Residential
Historic District
Village Center District
December 2015
LAMOILLE COUNTY PLANNING COMMISSION
Board Approved
01-25-2016
It should be noted that the historic district boundary line was delineated from the original application in 1980.
420
Feet
N

## Land Use Considerations

### Light Industry

Light industry provides employment opportunities in manufacturing, warehousing, research, and development. It enables commercial uses that specifically serve the industries or their employees. Light industry is encouraged. However, Waterville will not be able to provide water supplies, sewage disposal facilities or roads to the site. Light industry must meet the conditions for development for the specific area in which it is located. Light industry considerations may include fumes, noise, and unenclosed storage. Appropriate industries for Waterville can include value-added food production or natural resource processing.

### Accessory Apartments

Accessory apartments are encouraged in all districts in Waterville in order to provide needed income for homeowners and to offer a diverse mix of housing options. While State law defines an accessory apartment as an efficiency or one bedroom apartment, communities are also free to allow larger accessory apartments (for example, two bedroom units) if they so choose. Doing so may increase the supply of rental housing meeting the needs of young families and empty nesters in rural areas.

### Slope

Slope is the amount of vertical rise over a horizontal distance. The percent of slope is determined from the number of feet of vertical rise over 100 feet of horizontal distance. Steep slopes tend to erode once disturbed and present problems in terms of road construction and maintenance. They are, therefore, unsuitable for intense development. The following provides an overview of development appropriate for different slopes:

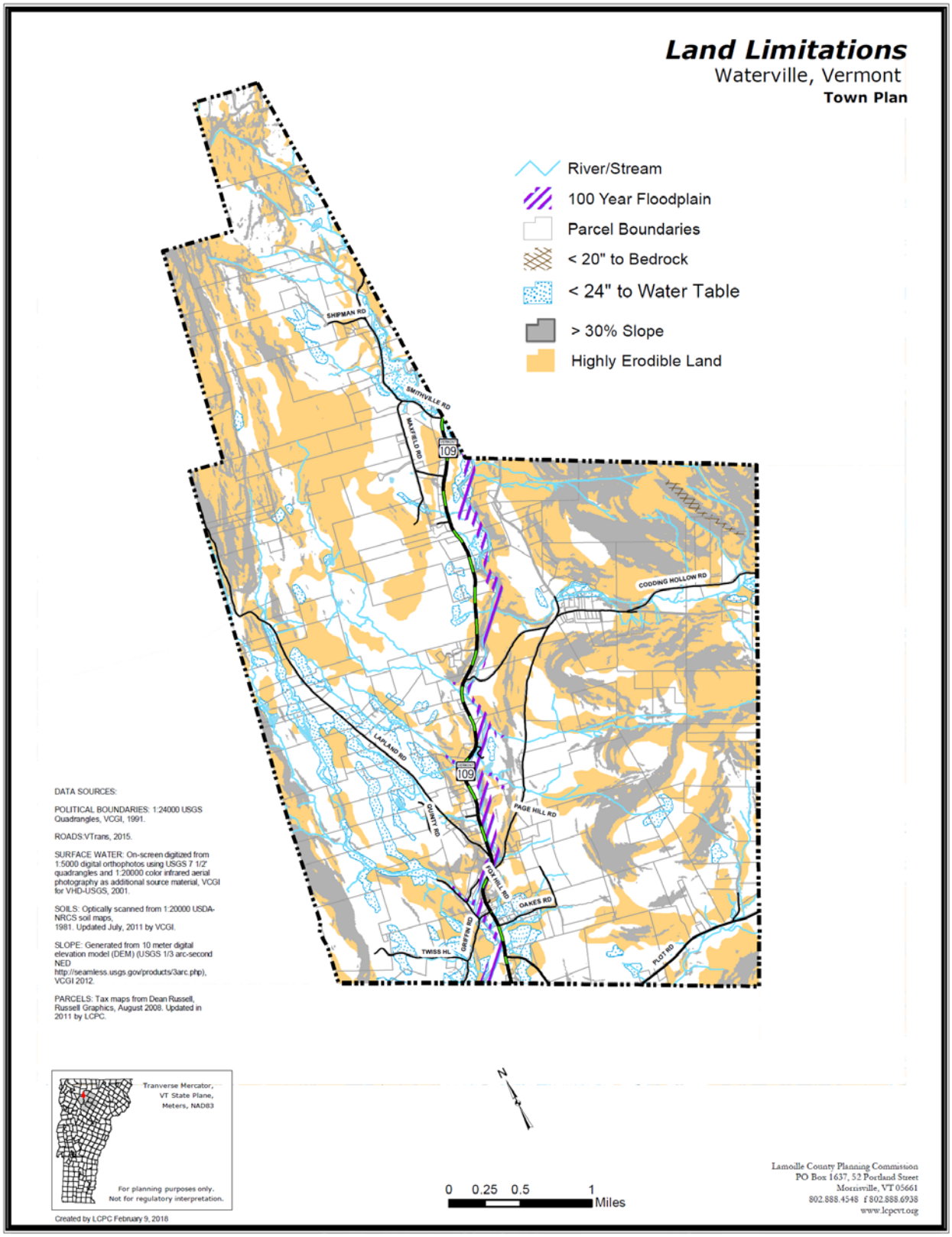
**0-3% Slope**: Suitable for almost all types of construction, especially larger buildings. Since it is level to nearly level, there may be some drainage problems.

**3-8% Slope**: Suitable for single family homes on small and medium lots, multi-family housing, secondary and minor roads, and smaller commercial and industrial buildings. These slopes provide a minimum of restrictions.

**8-20% Slope**: Suitable for single family homes on large lots, as well as low density, multi-family housing. Where necessary, terracing, retention ponds, retaining walls, and other engineering techniques will be required to prevent runoff and erosion.

**20-30% Slope**: Construction becomes very costly on these slopes. In addition, rapid runoff and erosion problems are likely. These slopes are unsuitable for most onsite sewage disposal systems. Therefore, we recommend no on-site sewage on slopes over 20%.

**Over 30% Slope**: All construction should be avoided on these slopes because of the likelihood of environmental damage and high construction costs.


Land Limitations
Waterville, Vermont
Town Plan
River/Stream
100 Year Floodplain
Parcel Boundaries
< 20" to Bedrock
< 24" to Water Table
> 30% Slope
Highly Erodible Land
SHIPMAN RD
SMITHVILLE RD
MAYFIELD RD
109
COODING HOLLOW RD
LAPLAND RD
QUINTY RD
PAGE HILL RD
FOX HILL RD
OAKES RD
GRIFFIN RD
TWISS HL
PLOT RD
DATA SOURCES:
POLITICAL BOUNDARIES: 1:24000 USGS Quadrangles, VCGI, 1991.
ROADS:VTrans, 2015.
SURFACE WATER: On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VHD-USGS, 2001.
SOILS: Optically scanned from 1:20000 USDA-NRCS soil maps, 1981. Updated July, 2011 by VCGI.
SLOPE: Generated from 10 meter digital elevation model (DEM) (USGS 1/3 arc-second NED http://seamless.usgs.gov/products/3arc.php), VCGI 2012.
PARCELS: Tax maps from Dean Russell, Russell Graphics, August 2008. Updated in 2011 by LCPC.
Tranverse Mercator, VT State Plane, Meters, NAD83
For planning purposes only. Not for regulatory interpretation.
Created by LCPC February 9, 2018
N
0 0.25 0.5 1 Miles
Lamoille County Planning Commission
PO Box 1637, 52 Portland Street
Morrisville, VT 05661
802.888.4548 f 802.888.6938
www.lcpcvt.org

Due to mountainous and hilly terrain in Waterville, much of the land area has a slope in excess of 15%. Among areas that are generally steeply sloped, however, lands can be found that are fairly level and suitable for development. Since the most steeply sloped areas are relatively inaccessible, it is expected that little development will occur in these areas in the future.

**Options for Influencing Land Use and Development in Waterville**
The goals for influencing land use and development in Waterville are to:

- Preserve Waterville's rural nature and the experience to enjoy natural environments for generations to come.
- Match growth to the Town's ability to provide services and maintain facilities.
- Prevent the degradation of Natural and Historic Resources.
- Maintain the compatibility of proximate land uses.

## Non-Regulatory Options

There are many options for influencing land use in a small town, and not all are regulatory in nature. What follows are some common examples, a few of which already exist in Waterville.

**Funding for Development**
**Grant funding** in the form of Community Development Block Grants, USDA Rural Development grants, and more can be used to directly develop housing or revolving loan funds for the same. When a Town applies for these grants, it has a certain measure of control over what is developed and where and how. Another option is **tax credits** for certain approved projects undertaken by developers and property owners. Waterville's **State-Designated Village Center** and **Certified Local Government** status allows access to many grant programs and other funding sources.

There are many other applicable state grant programs. Some programs are available annually, such as the Vermont Clean Energy Development Fund, and others, such as the **Vermont Community Climate Change Grant Program**, are offered when funding is available. The Climate Change Grant Program was established by the Department of Environmental Conservation to enable Vermont communities to implement measures to improve energy efficiency and reduce Greenhouse Gas emissions. Waterville received one of these grants, which was available up to $12,000 to Vermont municipalities and non-profit organizations to support community based projects. This grant program was intended to assist with implementation of projects planned or identified by town energy committees and local energy groups. Waterville utilized this grant program for energy retrofits in town buildings.

Also related to issues of energy and efficiency is the **Vermont Clean Energy Development Fund**. The goal of this fund is to increase the development and deployment of cost-effective and environmentally sustainable electric power resources – primarily with respect to renewable energy resources, and the use of combined heat and power technologies - in Vermont. It can be used to fund the development of special projects in municipalities, like "micro-hydro" electrical generation.

**Collaboration with Public and Private Partners**
The Town always has the option of collaborating with developers, nonprofit organizations and others on projects that meet the land use and development goals of all involved. Often connected with the Town's ability to apply for the types of funding options listed previously, a municipality can join in on housing developments, historic rehabilitation projects, conservation programs, the development of public lands, and more.

**Infrastructure Development**
When a municipality has a goal of attracting development to denser areas of town in order to preserve more rural areas outside, infrastructure is often a much more important factor than regulation. Towns that wish to concentrate growth in more appropriate areas of the community can find success in the development of transportation infrastructure (streets, sidewalks, bike lanes, traffic calming) and water and wastewater management (drainage/stormwater management and septic/sewer solutions). Siting development projects to utilize shared utilities and infrastructure not only decreases building costs but encourages clustered development.

**Purchase of Development Rights (PDR)**
Purchasing agricultural land or forestry development rights ensures land will not be developed by paying the landowner for foregoing the right to develop. Generally, some combination of public and private non-profit entities- a town, a land trust, the Department of Agriculture and/or the Housing and Conservation Board- purchase and hold the rights to develop the land. A conservation easement is then placed on the land restricting the use of the property to farming and compatible activities. The farmer continues to own and manage the land for agriculture or farming. This is a particularly useful tool for family operations as older generations of farmers can continue to earn income from the farm while keeping the costs minimal for new farmers. PDRs are voluntary programs where the property owner enters into a legally binding contract at his or her own free will. The landowner is compensated for any real or perceived loss of value from the land; the assumption is that farmland or forestland is less valuable than that which could be broken into multiple lots or where a large estate could be built.

## Regulatory Options

Ultimately, the local and state regulatory environment is a determining factor in locating businesses and residences. To this point, Waterville has not elected to adopt any land use regulations. However, development proposals that exceed specified thresholds are subject to state review under Vermont's land use law, Act 250. Proposals for the installation of various forms of infrastructure, energy generating systems, and telecommunications facilities are also subject to review by the Vermont Public Utility Commission (PSB), under the Section 248 statute. The Town of Waterville has the opportunity to participate in both Act 250 and Section 248 hearings to advocate for the interests of the town and its residents. The goals and policies set forth in this plan are considerations in both the Act 250 and Section 248 processes. Therefore, it is important for the town to maintain a plan that incorporates specific language, expressing the community's position on how Waterville can grow and develop. As the economy continues to evolve, periodic public input should be collected and reviewed regarding these

positions so that Waterville is prepared to accommodate the character and scale of development desired by its residents.

**Road and Driveway Access Ordinances**
Another regulatory tool is road and driveway access ordinances governing the frequency and density of driveway access or "curb cuts" to town roads. Waterville could exert a degree of control over the amount of development, or at least limit traffic impacts, by developing an ordinance that limits and guides the ability of new driveways to access major town roads.

**Flood Hazard Regulations**
Waterville has 1% (also referred to as 100-year flood plains) flood plains along the North Branch of the Lamoille River. Without flood hazard regulations, flood damage within these areas, or anywhere in town, would not be covered by insurance. In order for Waterville residents to access flood insurance, the municipality must enroll in the National Flood Insurance Program (NFIP). To enroll in NFIP, the town would have to adopt flood hazard area regulations (FHRs). FHRs heavily regulate and protect development in FEMA-designated flood hazard areas in a community. The regulations would essentially enforce the policies for the Flood Hazard Area described in this section of the Plan. Conversely, flood hazard areas are normally ideal as open space, outdoor public gathering spaces, or recreational facilities. The Waterville Selectboard has considered this option.

**Subdivision Regulations**
Waterville does not have subdivision regulations as of the writing of this plan. Subdivision regulations control the pattern and manner in which land is divided. Whenever a large lot is broken into smaller lots, subdivision regulations are the tool for towns to ensure that the shape, size, and location of the lots and the nature of the topography and geology within accommodate the community's land use goals. These regulations also ensure that the design of a lot is compatible with infrastructure and services such as roads, utilities and emergency response.

There are four provisions required in State statute for subdivision bylaws:

1. Procedures and requirements for design, submission, and processing of plats (maps of the new lots);
2. Standards for the design and layout of all public facilities;
3. Standards for the design and configuration of parcels or lots; and
4. Standards for the protection of natural and cultural resources and open space.

In addition to these provisions, a town must allocate the resources for the administration of the regulations, including the hiring of an administrative officer.

This tool should be considered as a way to prevent the excessive fragmentation of rural areas, open space, and forest land in town. Subdivision regulations can also be used to avoid many of the impediments that growth and development can represent to a small town's ability to provide municipal services.

**Zoning Regulations**

Waterville does not have zoning. Zoning is used to regulate the location, type, and density of development within a community through the delineation of one or more zones or zoning districts, as depicted on a zoning map. Zoning is an involved and multi-faceted process that allows for the most control of growth and development of any regulatory option. Other than limiting development by use, zoning can also set specific performance impacts separate from use, such as amount of noise or traffic generated. Zoning can also include design review guidelines that can be used to preserve the historic nature of buildings in an area.

Like subdivision regulations, zoning includes an administrative component that would require the allocation of Town resources. If the community did pursue the zoning option, it would also need to include subdivision regulations.

**Act 250 and Section 248 Statewide Regulation**

Development proposals that exceed specified thresholds are subject to state review under Vermont's land use law, Act 250. Under Section 248 of the Vermont State Statutes, the Vermont Public Service Department, through the Public Utility Commission, regulates energy generation siting and telecommunications facilities. Both Act 250 and Section 248 proceedings recognize and consider what is contained in a municipal plan.

In Act 250 proceedings, a District Environmental Commission reviews the compatibility of certain types of subdivisions and development with 10 statutory criteria. The criteria are that the development:

1. Will not result in undue water or air pollution.
2. Has sufficient water available for the needs of the subdivision or development.
3. Will not unreasonably burden any existing water supply.
4. Will not cause unreasonable soil erosion or affect the capacity of the land to hold water.
5. Will not cause unreasonably dangerous or congested conditions with respect to highways or other means of transportation.
6. Will not create an unreasonable burden on the educational facilities of the municipality.
7. Will not create an unreasonable burden on the municipality in providing governmental services.
8. Will not have an undue adverse effect on aesthetics, scenic beauty, historic sites or natural areas, as well as wildlife habitat or endangered species in the immediate area.
9. Conforms to the Capability and Development Plan.[22]
10. Is in conformance with any local or regional plan or capital facilities program.

22 Includes (A) the impact the project will have on the growth of the town or region: (B) primary agricultural soils; (C) productive forest soils; (D) earth resources; (E) extraction of earth resources; (F) energy conservation; (G) private utility services; (H) costs of scattered developments; (J) public utility services; (K) development affecting public investments; and (L) rural growth areas.

In Section 248 proceedings, before the Public Utility Commission issues a Certificate of Public Good (effectively approving a project), it shall find that the purchase, investment or construction[23:]

1. Will not unduly interfere with the orderly development of the region with due consideration having been given to the recommendations of the municipal and regional planning commissions, the recommendations of the municipal legislative bodies, and the land conservation measures contained in the plan of any affected municipality;
2. Is required to meet the need for present and future demand for service which could not otherwise be provided in a more cost effective manner through energy conservation programs and measures and energy-efficiency and load management measures;
3. Will not adversely affect system stability and reliability;
4. Will result in an economic benefit to the state and its residents;
5. With respect to an in-state facility, will not have an undue adverse effect on aesthetics, historic sites, air and water purity, the natural environment and the public health and safety, with due consideration having been given to specific criteria;
6. With respect to purchases, investments, or construction by a company, is consistent with the principles for resource selection expressed in that company's approved least cost integrated plan;
7. Except as to a natural gas facility that is not part of or incidental to an electric generating facility, is in compliance with an approved electric energy plan;
8. Does not involve a facility affecting or located on any segment of the waters of the state that has been designated as outstanding resource waters by the water resources board;
9. With respect to a waste to energy facility, is included in a solid waste management plan adopted pursuant to 24 Vermont Statutes Annotated § 2202a, which is consistent with the state solid waste management plan; and
10. Except as to a natural gas facility that is not part of or incidental to an electric generating facility, can be served economically by existing or planned transmission facilities without undue adverse effect on Vermont utilities or customers.

In light of these criteria, Act 250 could be considered a comprehensive de facto form of growth and development regulation for Waterville. In communities without zoning, like Waterville, Act 250 jurisdiction is limited to, and triggered by, certain thresholds in Waterville, including:

1. The construction of improvements for a commercial, industrial, or residential use above the elevation of 2,500 feet;
2. The construction of improvements for any commercial or industrial purpose on more than one acre of land;
3. The construction of 10 or more housing units within a radius of 5 miles, or the construction or maintenance of mobile homes or trailer parks with 10 or more units; and

23 For current, detailed information and explanation on the criteria for energy siting projects, visit the Public Utility Commission website, http://psb.vermont.gov.

4. The subdivision of land into 6 or more lots of any size within a continuous period of five years.

Under Act 250 Criteria 10 and Section 248 Criteria 1, the Waterville Town Plan has a regulatory role. The Waterville Planning Board should review all Act 250 and Section 248 applications for their compliance with this municipal plan. Where the application is determined to not conform to this chapter or any goal or policy, the Planning Board should participate in the Act 250 and Section 248 processes in order to ensure the concerns of the town are addressed. For Section 248 projects, this plan does not allow commercial energy projects above 1,300 feet in elevation.

If a project is subject to Act 250 Review, the District Commission should not find a development out of conformance with the Town Plan simply because it contains housing types or densities that differ from surrounding neighborhoods. The District Commission should not impose conditions to meet other Act 250 review criteria that result in increased housing costs.

# Chapter 11. Flood Resiliency and Water Quality

Water resources serve a variety of forms and functions. Lakes and rivers support numerous recreational and economic activities, such as swimming, fishing and boating; groundwater and reservoirs supply homes and businesses with potable water; and wetlands store flood waters, while filtering natural and man-made contaminants. Bodies of water also provide irreplaceable habitats for a variety of aquatic and riparian plant and animal communities. Water systems also serve as repositories for runoff and seepage, including (potentially) leaching septic systems and underground storage tanks. Pollutants can be introduced to the water through a variety of avenues including illegal dumping of chemicals and runoff and sediment transport during flooding events. Such contaminants can negatively impact and produce high fatality rates among aquatic species (Ex: fish and plants), destroy existing and potential drinking water supplies, and limit recreational activities. Water resources also have the potential to impact human built structures and infrastructure through flooding and erosion. This chapter aims to address flooding and water quality concerns in the Town of Waterville through highlighting areas of existing and potential impact, measures to promote flood resiliency and emergency preparedness, and areas for water resource protection.

**Waterville Flood Resilience and Water Quality Policies**

*Overall Policy:* For Waterville's water resources, including its ponds, streams, rivers, wetlands, groundwater, and associated habitats, to be preserved, and, where degraded, improved in order to ensure water quality for drinking, recreation, and the environment. Policies related to various water resources are outlined below:

- **Rivers and Streams:** To ensure Waterville's rivers and streams contain clean water, a healthy riparian habitat and stable stream banks.
- **Lakes and Ponds:** To encourage maintenance of the overall health of our ponds for recreation and environmental purposes.
- **Wetlands:** To preserve and protect wetlands from pollution, filling, and any other uses or activities that will result in their degradation or a reduction in its capacity to provide wildlife habitat, flood control and water storage.
- **Flood Hazard Areas and River Corridors**: To protect the health, safety and welfare of the residents of Waterville by discouraging new development in flood hazard areas and river corridors.
- **Groundwater**: To encourage maintenance of the quality and quantity of local groundwater supplies, per state regulations.
- **Water Quality:** To maintain and, where degraded, improve the water quality within the town.
- Existing floodplain encroachments caused by the transportation network should be mitigated when technically and financially feasible. This may involve upsizing bridges and culverts and/or restoring floodplain areas disturbed by past infrastructure investments.
- Upland forests should be maintained and managed to attenuate floodwaters.

*Specific Policies:*

- Encourage Best Management Practices (BMPs) on municipal roads to direct sediment and run off away from streams and reduce flooding impacts including turnouts, proper crowning/road drainage, stone line or vegetative ditches and check dams.
- Where possible, encourage tree plantings and vegetative buffers to mitigate flood impacts along the North Branch of the Lamoille River including near the Waterville Elementary School.
- Any development related to wetlands shall adhere to state regulations.
- Ensure all construction provides adequate erosion control per state guidelines and regulations.
- Continue to monitor water quality and encourage the implementation of best practices as needed at the Waterville Garage.

**Waterville Flood Resilience and Water Quality Recommendations/ Action Items**

- Complete Phase 2 Stream Geomorphic Assessment work on North Branch of the Lamoille River and Judevine Brook and encourage the implementation of priority projects identified in these studies.
- Explore the adoption of a vegetated buffer zone for all streams subject to review in accordance with state guidelines and recommendations.
- Share (post on Town website/at Town Office) river corridor resource maps with local residents, business owners and prospective town property owners.
- Annually review and update emergency resources (residents with special equipment (ATVs, snowmobiles, kayaks etc..) and vulnerable people's lists, to improve accessibility to isolated areas and response time to residents in need of medical assistance during a power outage.
- Develop a list of properties located in the 100-year floodplain to contact directly to warn residents of flooding events and potential impacts.
- Upsize and replace culverts in poor condition to withstand a 500-year flood event.
- Annually Review the Culvert Inventory to assess existing infrastructure and continue prioritizing culvert replacements and upsizing projects to mitigate flooding impacts.
- Explore funding opportunities to upsize priority culverts to reduce flooding impacts in flood prone areas of town.
- Annually review and prioritize fixes for stream bank failure and road erosion areas.
- Consider adopting Flood Hazard Regulations to limit damage to property and loss of life for flood prone areas. Once Flood Hazard Regulations are adopted the town can enrolled in the National Flood Insurance Program. Residents living in flood hazard areas will be able to obtain flood insurance. Flood regulations allow access to increased state funding for disaster recovery.
- Coordinate emergency preparedness and emergency warning systems in Waterville and with adjacent Lamoille County towns to notifying residents of flooding events and natural disasters.
- Collaborate with the Waterville Elementary School on emergency preparedness, operations plans, and flood proofing opportunities (raising utilities, anchoring fuel tanks).
- Consider relocating EOC to the Waterville Elementary School/Emergency Shelter (more space and equipment funding available for EOCs) and explore grant opportunities to properly equip the emergency shelter including installing a generator.

## Flooding and Emergency Preparedness

Unlike many communities in Lamoille County, The Town of Waterville has few existing structures (19 total) located in the floodplain (See Map X). However, certain locations in Waterville do experience flooding impacts. In more recent years flooding impacts have occurred on a more localized scale in Town near the Waterville Elementary School and recreation fields, south of Hogback Road on VT-109, and on Plot Rd towards Route 15. Along the North Branch of the Lamoille River near the Elementary School, property owners have experienced a reduction in agricultural land due to flooding and fluvial erosion impacts. To alleviate flooding impacts in this area, the culvert upstream before Maxfield Road should be prioritized for replacement and upsized to withstand localized flooding. Plot Road has especially experienced recent flooding due to smaller existing culverts not able to withstand increasing precipitation and flood events. To prevent future flooding damage on Plot Rd, culverts should be prioritized for replacement and upgraded in size. Flooding has also been a concern along Rogers Road in the north part of town near Streeter Brook. The Town should explore funding opportunities to convert the existing culvert at the stream crossing to a bridge appropriately sized to handle flood waters. Additional flooding impacts experienced recently in Waterville include the flooding of basements during spring flooding events in homes located towards the end of Church Street.

The Waterville Local Hazard Mitigation Plan contains extensive background and data regarding flooding and other natural hazards. In 2017, the Town of Waterville updated its Hazard Mitigation Plan and transitioned to a single jurisdiction plan. Planning goals, priorities and key flood residency information from the Waterville Local Hazard Mitigation Plan are incorporated into this Plan. The list below summarizes major flood and storm events that have impacted the Town of Waterville since 1990. Note that this is not an exhaustive list, and may not include information about more localized weather events. Since 1990 Waterville has received public assistance funding from FEMA for the following natural disasters:

| | |
|---|---|
| January 1996 (DR 1101) | $4,965 |
| July 1997 (DR 1184) | $15,713 |
| July 1998 (DR 1228) | $18,766 |
| August 2004 (DR 1559) | $19,911 |
| July 2008 (DR 1784) | $11,860 |
| May 2012 (DR-4066) | $63,000 |
| April 15, 2014 (DR-4178) | $68,127 |

**January 1996**: Mid-winter flood event brought statewide destruction of private and public property with eleven Vermont counties included in the declared disaster area. This event left more than 150 communities eligible for public assistance (FEMA-1101-DR-VT).

**July 1997**: Excessive rain in several northern Vermont counties caused flash flooding and destruction of public and private property (FEMA-1184-DR-VT). High velocity waters damaged many roads in Belvidere.

**July 1998**: Eleven of the fourteen Vermont counties experienced severe damage from excessive rainfall (FEMA-1228-DR-VT). The torrential rains came in much the same pattern as they had in the summer of 1997, but occurred further south than the 1997 floods. The flash flooding left many homes destroyed, roads and bridges damaged, and communities cut off from the rest of the state. Waterville suffered flood damage to road surfaces, culverts and ditches.

**August 2004**: (FEMA-1559-DR-VT): Severe thunderstorms on August 12, 29 and 30 caused flooding and washed out roads. A federal disaster was declared in Addison, Caledonia, Chittenden, Franklin, Lamoille, Orleans and Windham counties. The Town of Waterville received more than $19,911 in federal share funds for public assistance projects related to debris removal, brush cutting and chipping.

**July 2008: (**FEMA-1784-DR-VT): Severe storms (tornado) and flooding struck Waterville on July 18th. A federal disaster was declared on August 15, 2008. Waterville received $11,860 in federal public assistance funds to repair damage and debris removal resulting from a tornado.

**May 29, 2012**: Flash flooding, thunderstorms, heavy rain, and strong winds struck parts of Vermont, including Lamoille County, causing a federal disaster declaration (DR-4066) for Addison, Lamoille, and Orleans counties. Public Assistance funds were allocated to repair roads, bridges, and culverts. Waterville received $63,000 in Public Assistance funds for six road and highway projects.

**April 15, 2014:** Heavy rainfall and snowmelt caused widespread minor to moderate flooding across Lamoille County, mainly along and west of Route 100 (DR 4178). Numerous highways were flooded and there was widespread damage to gravel roadsides and many culverts failed in Johnson, Belvidere, Cambridge and Waterville. In Stowe, the recreation path sustained damage. Total public assistance provided by FEMA to the State to repair damages was $1,844,155. Elmore did not request FEMA public assistance funds.

Additionally, declared disasters regarding the following winter storms impacted the Town of Waterville and Lamoille County area. The hazard definition for a winter storm disaster is “severe winter storms bring the threat of heavy accumulations of snow, cold/wind chills, strong winds, power outages and property damage”. Two winter storms that resulted in FEMA disaster declarations since 2011 occurred in December 2013 (DR 4163) and December 2014 (DR 4207). The storms had a primary impact on utilities serving Lamoille County and caused damages estimated at $390,000 and $230,000, respectively.

Preparation is an important element of flood resiliency. Waterville maintains an up-to-date Emergency Operations Plan to ensure that public officials and emergency responders are prepared for flooding and other emergencies. The Town of Waterville additionally maintains a list of vulnerable people in town that require immediate assistance during an emergency.

## Flood Resiliency and Water Quality

Adequately protecting homes, businesses, and critical community facilities against future flood damage requires a pool of contractors and design professionals with specialized skills in flood mitigation techniques, knowledge of FEMA rules and regulations, and experience working with "flood resistant" building materials. While there are few structures in Waterville located within the floodplain, there are many structures vulnerable to flooding in nearby communities such as Johnson and Jeffersonville. The growing demand for flood proofing may create a potential "niche" for local contractors with these specialized skills. Developing a list of skilled contractors and residents with emergency response equipment (Ex: ATVs, kayaks/boats, snowmobiles etc...) in Waterville was identified as a priority action item in the Local Hazard Mitigation and is reflected in the Goals, Policies and Recommendations section of this chapter. The Waterville Planning Board supports educational training opportunities on flood proofing and tips to reduce flooding impacts to residences and local businesses. Additionally, the Waterville Emergency Management Director is exploring opportunities to flood proof key critical facilities located in flood prone areas including raising utilities and anchoring fuel tanks at the Elementary School. While flooding in the past has yet to make it past the school recreation fields, a major flood event or ice jam upstream could result in flooding impacts to the new school building as well.

While skilled local contractors can assist in responding to flooding impacts and provide flood proofing services for current residents, it is important to address and mitigate potential areas of isolation in town during a major flooding event. Map X identifies critical and urgent culverts located on town roads which would leave residents isolated if the culvert was to fail during a flooding event. Potential areas of isolation are located along Bacon Road, Codding Hollow, Twiss Hill, Oakes Road, and High Meadows Road. See Map X for a detailed depiction of isolation areas. To mitigate isolation of Waterville residents during flooding and natural disasters, the Town of Waterville should develop a schedule and prioritize the replacement of existing critical culverts within the vicinity of potential isolation zones.

When it comes to flooding and emergency response, sheltering capacity for local residents and visitors is a key component of emergency preparedness. The Elementary School and Town Offices serve as the town's Emergency Operations Center and emergency shelters; however, neither has an emergency generator. Having access to necessary shelter equipment including a generator is key to meeting sheltering needs in town during a major flooding event or natural disaster. Installing a generator in the Waterville Elementary School that serves as the Town's primary emergency shelter, is a priority action item identified in the 2017 Waterville Local Hazard Mitigation Plan.

In the case of flooding or natural disasters, notification is the most critical component to survival. To enhance emergency preparedness the Town of Waterville seeks to develop an emergency warning system for contacting residents regarding flooding events or natural disasters. An effective warning system would allow the town to contact residents, encourage steps to prepare and reduce impact to life and property or warn residents to evacuate when necessary. The Town seeks to promote higher participation in Vermont Alert to warn residents of storms coming. On a town scale a future emergency warning system may be comprised of a variety of communication methods including calling trees, email list serves, community forum or municipal website postings, and radio broadcastings. For more information on emergency preparedness please refer to the Public Safety Section in Chapter 4: Utilities and Facilities.

### Rivers and Streams

Rivers and streams are valuable resources which can help prevent water pollution, preserve wetlands and natural flood control mechanisms, and provide for wildlife habitat, open space and scenic beauty. The Town may wish to preserve such areas for public usage, education, flood mitigation, and to improve water quality. Extensive development on the river will have a detrimental effect on area fishing.

According to the Vermont Agency of Natural Resources, the Town of Waterville is home to one priority river, the North Branch of the Lamoille River-Kelley River. The North Branch-Kelley River flows southerly into the main stem of the Lamoille River in Johnson, Vermont. Over the years, sediment has polluted the North Branch of the Lamoille. The Laraway Dam was once sited along this section of river. While the dam has breached, the natural falls, and much of the infrastructure, remain. Waterville is also home to several brooks including Taylor, Codding, Judevine and Streeter Brook, many of which flow southerly into the Lamoille watershed. The Lamoille watershed is part of the Lake Champlain drainage basin and contributes to water quality in Lake Champlain.

Future planning efforts should contain measures for pollution prevention, stream and riverbank stabilization, protection of aquatic habitat and protection measures to prevent erosion. The Planning Board supports the adherence to a buffer zone in accordance to state guidelines on both sides of the Kelley River and Taylor, Codding, Judevine and Streeter Brooks. Vegetative buffers where possible, are also encouraged in Waterville along the North Branch of the Lamoille River. Currently the Vermont Agency of Natural Resources recommends a riparian buffer of 50 feet for all streams. Required Agricultural Practices (RAPs) recommend buffers of perennial vegetation 25 feet from the top of a streambank on cropland and 10 feet from the top of the bank at points of runoff including ditches. Crop fields with a 10% or greater slope shall maintain a vegetative buffer of 100 feet from the top of a streambank. For more information on RAPs visit http://agriculture .vermont.gov/rap.

### Lakes and Ponds

The Town of Waterville is largely comprised of rivers and streams when it comes to water bodies. Waterville does not contain lakes or ponds of a notable size. Smaller ponds exist in some areas on private property. Existing ponds and lakes are not large enough in acreage to trigger the Shoreland Protection Act. This act took effect on July 1, 2014 and regulates creation of cleared area or impervious surface within 250 feet of the mean water level on lakes greater than 10 acres in size. These smaller water bodies are generally undeveloped, or have limited development along the shoreline. Existing water bodies support wildlife habitat, fishing, swimming and other forms of recreation. For existing water bodies please refer to the Water Resources Map in Chapter 10; Natural Resources and Land Use.

### Wetlands

The term “wetland” is used to identify areas otherwise referred to as swamps, marshes, bogs or fens. Generally, wetlands share three basic characteristics:

1) The presence of water at or near the ground surface;

2) The presence of water-dependent plants occurring on site; and

3) Common types of soil.

Wetlands serve many important functions including stormwater retention, erosion control, and flood mitigation; they filter pollutants, recharge ground water, and provide wildlife habitat. Wetlands throughout the country have been inventoried by the U.S. Department of the Interior, producing a set of National Wetland Inventory maps for each municipality. These maps were created using aerial photographs and are useful in determining the general character of a broader area. However, in cases where detailed wetland characteristics for individual parcels are desired, a site visit and survey are usually necessary.

Wetland regulations were first adopted in Vermont in 1990, later consolidated into legislation under Act 115 in 2004 and last amended effective August 1, 2010. The current system establishes a three-tier wetland classification system. Designated Class I wetlands are considered the most environmentally significant and therefore receive the highest level of protection under state law, requiring a 100-foot vegetated buffer between any adjacent land development. There are currently no Class I wetlands located in Waterville. Rather, most local wetlands are designated as Class II—protected from development by a 50-foot buffer. There are numerous Class II wetlands scattered throughout Waterville. Refer to the Water Resources Map in Chapter 10 for the location of Class II wetlands in Waterville. Development should be limited on and around wetlands in Waterville. Lastly, Class III wetlands are those wetlands with no delineated buffer. There are no Class III wetlands in Waterville.

Property owners with existing designated wetlands may expand the area classified as a wetland by contacting the Agency of Natural Resources, Watershed Management Division, (802) 828-1835 or www.vtwaterquality.org. Property owners who choose to designate wetlands on their property understand that the value a protected wetland brings to the ecosystem may come with potential limitations on the property's use.

### Riparian Habitat and Buffers

Vegetation in the form of trees, shrubs, grasses and herbs situated along stream banks and river corridors provides food and shelter for many wildlife species. The Lamoille River corridor, for example, supports essential deer habitat. Riparian corridors and existing vegetative buffers along rivers and streams should be preserved for wildlife protection, flood control as well as for the purposes of preventing sedimentation and maintaining stream bank stability.

### Floodplains

The Federal Emergency Management Agency (FEMA) defines a floodplain as an area of land adjacent to rivers and streams that is subject to recurring inundation. Development within floodplains can have many potentially damaging consequences, as construction may obstruct the natural flow of water or displace soil and raise base flood elevations. Waterville is among a minority of communities in Vermont that has yet to have had an official FEMA flood insurance study published and, therefore, does not have Flood Insurance Rate Maps (FIRMs) for the town. Rather, Waterville's maps are approximate Flood Hazard Boundary Maps (FHBMs), which do not differentiate between tiers of floodplain (floodway, floodway fringe, etc.). This is likely due to the limited extent of floodplain that exists in Waterville, consisting of a small area surrounding the North Branch of the Lamoille River along Vermont Route 109.

In 2017, the Waterville Planning Board identified exploring participation in the National Flood Insurance Program as an action item in the Local Hazard Mitigation Plan. The first step to participation would include developing and adopting a flood hazard bylaw to allow the town to join the National Flood Insurance Program (NFIP). Participation in NFIP enables residents to purchase federally-subsidized flood insurance. In the past, the Town has elected not to participate in the National Flood Insurance Program for a variety of reasons. First and foremost, there are few existing structures located within the 100-year floodplain. As such, the potential benefit to residents may be outweighed by the likely cost of administration and enforcement. Adopting a Flood Hazard Bylaw would assist in promoting flood proofing of existing, renovated or new structures located in the 100-year floodplain. New development is discouraged in the 100-year floodplain. Rehabilitation of existing structures in the Designated Village Center are encouraged. Renovations of structures located in the Village Center and Floodplain should consider building/ renovating within the same building footprint as the existing structure and avoid further encroachment towards the river. New growth should be encouraged outside the floodplain when possible. Safer locations for new development in town outside flood prone areas may include the area along the hills of Lapland Road. Some open space exists on the right prior to the Montgomery Bridge.

### River Corridors

While the FEMA mapped floodplain is primarily related to inundation hazards, most flood related damage in Vermont is caused by fluvial erosion rather than inundation. Fluvial erosion occurs as rivers and streams meander across the landscape, and can range from gradual bank erosion to drastic changes in river channel location and dimensions during a large flood event. The area in which a river or stream is likely to meander is referred to as a “River Corridor.” The VT Agency of Natural Resources has delineated “River Corridors” for all rivers and streams in Vermont. It should be noted that these maps were developed at a course, statewide level. As a result, the State mapped river corridors may over-depict the actual erosion hazards in some areas and under-depict them in others. Unless more accurate maps are developed, these river corridor maps should not be used for regulatory purposes, though they may serve as a useful guide for identifying areas for further study. The Vermont Agency of Natural Resources is currently working on inputting phase 2 stream geomorphic assessment data as available to improve the accuracy of river corridor boundaries. When considering regulatory uses of river corridors towns should work closely with their area River Scientist to assist with field verification of river corridor boundaries. The Lamoille County Planning Commission is available to provide technical assistance in making administrative mapping adjustments to river corridor boundaries.

### River Corridor Management Plans and Stream Geomorphic Assessments

In 2007, an initial phase 1 Stream Geomorphic Assessment was conducted by Bear Creek Environmental for the North Branch of the Lamoille River and Judevine Brook. The Phase 1 assessment utilized the Stream Geomorphic Assessment Tool (SGAT) to model potential points of fluvial erosion impact along the river and brook, and map existing valley walls. Further assessment and field verification is needed along the North Branch of the Lamoille and Judevine Brook to identify notable areas of fluvial erosion and site specific project (Ex: streambank stabilization, riparian buffer plantings, conserving floodplain access areas) opportunities to mitigate flood impacts and enhance wildlife habitat. Implementing projects identified in a Phase 2 assessment would reduce sediment and nutrient loading to downstream receiving waters such

as the Lamoille River and Lake Champlain as well as reduce the risk of property damage from flooding and erosion, and enhance the quality of in-stream habitat. Since many of these areas along the Lamoille and Judevine Brook are privately owned property, coordination and collaboration with property owners will be especially important to implement identified conservation projects. Phase 2 Stream Geomorphic Assessments generally also identified undersized bridges and culverts that may be constricting the natural flow of water. Along the Lamoille River in Waterville, opportunities for conservation easements are limited due to existing loss of agricultural lands from fluvial erosion and the potential further reduction in cropland. Easements to increase access to floodplain storage may be more viable along upland tributaries. The protection and creation of vegetative buffers along all rivers and streams should be encouraged to mitigate flooding impacts. This option is likely to be a more feasible one along the Lamoille River and areas of town that are more developed.

### Road/River Conflicts

The term "Road/River Conflict Area" refers to areas where the natural flow of a river comes into conflict with the transportation network. Areas located in the 100-year floodplain or river corridor pose a higher risk for road/river conflicts. During a major flood event, these road segments may be overtopped with water or subject to washout which can disrupt the flow of traffic, frustrate rescue efforts, and strand residents. Road/River conflicts can also cause significant damage to both the river and the roadway. For example, when a culvert is undersized, water may pond close to the road and undermine the roadbed. Undersized bridges and culverts may result in downstream erosion that destabilizes stream beds and banks and may even change the path of the stream, possibly damaging other roadways. Rivers may meander into roads, while roads may transport sediment and other contaminates into nearby rivers and streams. Areas of known river/road conflicts coincide with locations impacted by recent flooding events including, but not limited to, Hogback Road, Plot Road, and Vermont 109 south of Hogback Road.

The Town of Waterville maintains inventories of culverts and roadside erosion and is working to reduce Road/River Conflicts. Bridges and culverts experiencing dramatic flood damage and fluvial erosion could be either retrofitted or replaced to reduce conflicts with the river and flooding impacts. Before undertaking an effort as large as retrofitting and replacement of a bridge or culvert, the community will need to weigh if it is the most effective means of addressing the issue or if there are other actions that are more cost effective. While the Town has implemented several projects identified in the initial 2014 Road Erosion Study, additional project opportunities noted in this study may exist that can reduce river/ road conflicts. Several of these project opportunities are listed in the Vermont Watershed Projects Database managed by the Department of Environmental Conservation. This database can be accessed at https://anrweb.vt.gov/ DEC/IWIS/ARK/ProjectSearch.aspx. As Waterville engages in phase 2 Stream Geomorphic Assessments, further projects will be identified to reduce river/road conflict.

### Upland Forests

While discussions of water quality and flood resiliency usually focus on areas immediately adjacent to rivers, streams, lakes, and ponds, upland forests play a critical role in attenuating floodwaters. Forested land can absorb, filter and hold water much more effectively than cleared or developed land. Maintaining upland forests is an important component of both water quality and flood resiliency. Due to limited development and its rural nature, the town of Waterville is comprised of several privately owned forested properties that serve as valuable upland forests. Currently, approximately 3% of total acreage in Waterville is comprised of conserved land including a portion of the eastern corner of town, conserved by the Vermont Department of Forests, Parks, and Recreation where the Long Trail passes through the Long

Trail State Forest. Two other areas along the northwestern border of the town have been privately conserved through easements with the Vermont Land Trust.

### Water Quality

As a byproduct of Waterville's well-preserved landscape of mountains, fields and forests, the town enjoys excellent water quality. All residents and businesses derive potable water from groundwater wells and springs. Accordingly, it is critical for the town to monitor those activities that introduce contaminants into the ground, such as underground storage tanks, septic fields and agricultural activities (in the form of fertilizers and animal waste). Ultimately, substantial impacts to rivers, streams, wetlands and public water systems are subject to a range of state and federal regulations, as described within this plan. While Waterville does not enforce local development bylaws, the town does retain the right to participate in Act 250 proceedings and comment on development proposals—such as those impacting local water quality—based on the polices established throughout this plan.

Water contamination of private wells and springs is a potential problem during flood events. The town has no public water supply; however the Village operates its own co-op. The Village co-op well is monitored by Ross Environmental Associates based out of Stowe. Beaver dams have also caused some flooding concerns and water quality issues near the Waterville Road Commissioner's Garage. These issues have been temporarily fixed. Primary concerns for water quality near the Waterville Garage stem from the property's former use as a gas station and years of leaking fuels. The Town and State worked with the current property owner to address water quality concerns. The Waterville Fire District recently replaced waterlines from the Waterville Market to the Waterville Garage to address gas contamination from the former gas station site. Continued monitoring and implementation of best practices as appropriate at this location are encouraged to improve water quality. For more information on recent waterline replacements along Vermont Route 109, please refer to the Water Supply section of the Local Facilities and Services chapter. In the case of a major flooding event, other flooding concerns pertain to the potential for damage to the two town spring boxes (4500 gallons each) which could release a fair amount of water downstream and cause infrastructure damage along Oakes Road.

# Chapter 12. Implementation and Adjacent Regions

## Implementation of the Plan

The implementation of the municipal plan is often more important than the plan itself. If the stated objectives of the plan are never acted upon, then the plan has no more value than the paper it is printed on. At the beginning of each chapter, there is a list of policies and recommendations. This municipal plan will be implemented through those policies and recommended actions. In order to implement the Plan, participation from the Planning Board, Selectboard, and Waterville residents will be vital. Unless otherwise noted, the Planning Board will be the lead organization to oversee implementation. The plan has identified actions to guide the town's decision-making over the next eight years.

There are several ways that a town can implement a municipal plan. A few of these include:

- Action by citizens' groups
- Capital budgeting
- Education and outreach
- Zoning and subdivision regulations
- Impact fees
- A program to purchase development rights
- Tax policies
- Individual projects and studies
- Other ordinances such as road policies

Waterville currently focuses on many non-regulatory implementation options. This plan has called for:

- ✓ studies of important issues,
- ✓ the pursuit of funding and other resources,
- ✓ organizational partnerships,
- ✓ and the exploration of potential new Town policies and rules.

**Selectboard and Planning Board Roles**

There are two local entities in the Town of Waterville with primary roles in the implementation of this plan overall: the Selectboard and the Planning Board. Each board has duties subscribed to it by State law in Vermont Statutes under Title 24, Chapter 117. The statutory text may be revised from time to time, but the basic roles remain:

The **Selectboard** executes the legislative functions of the Town of Waterville, including final adoption of the Town Plan, capital budget or any regulations drafted by the Planning Board. The Selectboard may also put these tools to a full town vote. The Selectboard also appoints the members of the Planning Board and other local boards.

The **Planning Board** is charged with drafting and revising the Town Plan and possible land use rules, including zoning and subdivision regulations, if deemed necessary by the Town. This is considered a "quasi-legislative" role. Once the Planning Board has approved its work in drafting plans and regulations, they are submitted to the Selectboard for final adoption. The Planning Board can also pursue its own non-regulatory initiatives and activities, such as applying for village center designation or planning

grants or drafting a capital budget, with the cooperation of the Selectboard. Most recommendations of this Plan present the Planning Board with activities in its non-regulatory roles.

### Implementation of this Plan

Each of the chapters in this Town Plan establishes a set of recommendations to accomplish the goals and objectives. There is no way each and every task can be completed; however, the Planning Board and the Selectboard will strive to tackle the issues as funding and resources become available between now and the next Plan amendment.

Implementation can take place in big and small steps. Some steps will take significant time and resources, such as exploring flood hazard regulations. Other steps, such as conducting energy audits or providing educational resources to community members, are smaller and can be achieved quickly.

## How this Plan Relates to the Region and Adjacent Municipalities

**Adjacent Towns**

The Town of Waterville is surrounded by five other towns, Belvidere, Johnson, Cambridge, Fletcher and Bakersfield. Route 109 represents a corridor connecting Waterville to Cambridge on the south and Belvidere on the north. Other town roads also connect these three towns. Town roads are the only connection between Waterville, Cambridge, Johnson, and Bakersfield. Waterville has limited transportation connection to Fletcher.

Waterville is also connected to these other towns via mountains, rivers, woods, air, and other natural and wildlife resources. In fact, it is forests and mountains that connect Bakersfield and Fletcher with Waterville. Land uses in Bakersfield and Fletcher are compatible with the land uses identified in Waterville's plan. Severe development constraints, such as slope, make development in Bakersfield nearly impossible. Future land uses for these two towns are identified as either Conservation & Forest Resource Lands or Rural Residential. This provides an opportunity for collaboration among the three communities to protect the abundant natural resources.

Waterville relies on Cambridge and Johnson for employment, public safety, emergency response, civic opportunities, and cultural enjoyment. Land uses are compatible and the communities are in contact about current and future issues. The connections among these three communities are strong. Waterville is aware it must monitor the development and growth trends of Cambridge and Johnson in order to maintain the goals established in this plan. There is minimal development pressure coming from Belvidere.

It is the opinion of the Waterville Planning Board that this plan and its policies and recommendations do not conflict with the plans or regulations of the surrounding towns. This plan recognizes the transportation corridor connecting Waterville to the north and south and recommends moderate development along this connection, where appropriate. This plan advocates the preservation of rural working landscape along other transportation connections to other towns, e.g. town roads. This plan also advocates for the preservation of natural landscape, open land, and ecosystem functions in the

areas where towns are connected by natural areas.

**Regionally**

Waterville borders another region – Franklin County (which, along with Grand Isle County, makes up the Northwest Vermont Region). Growth and development in this region may not likely have an impact on future land use in Waterville given the topographical constraints.

The *Lamoille County Regional Plan* (2015-2023), drafted and adopted by the Lamoille County Planning Commission is based on the principle of local control. Future compatibility with regional planning efforts will be assured through the work of the Waterville Planning Board.

The Regional Plan is guided by three overall objectives listed below. These regional objectives are compatible with the Land Use Areas defined earlier in the Waterville Town Plan.

1. **To guide growth into compact settlements**, whether historic or new, for efficient land use and development. The Regional Plan refers to these as "Center and Enterprise Areas."
2. **To protect the region's natural and working landscapes** by promoting thriving, compact village centers surrounded by rural countryside.
3. **To guide growth that promotes sustainability of the region's rural natural systems**, valuable agricultural and silvicultural resources, and recreation amenities.

The 2019 *Town Plan for Watervill*e is not in direct conflict with the regional plan and will not have a negative effect on any future implementation of the regional plan. The Waterville Planning Board is willing to work with the Lamoille County Planning Commission to address any concerns they may have. There are opportunities for Waterville and the Lamoille County Planning Commission to work together to achieve the goals identified in each plan, such as housing affordability and renewable energy.