



# **BRIDPORT TOWN PLAN**

***2017 - 2024***

JANUARY 2017



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table of contents

INTRODUCTION \_\_\_\_\_ 1

HISTORY \_\_\_\_\_ 2

POPULATION \_\_\_\_\_ 9

HOUSING \_\_\_\_\_ 11

ECONOMY \_\_\_\_\_ 18

EDUCATION \_\_\_\_\_ 21

COMMUNITY FACILITIES, SERVICES AND ORGANIZATIONS \_\_\_\_\_ 24

PUBLIC UTILITIES AND ENERGY \_\_\_\_\_ 32

TRANSPORTATION \_\_\_\_\_ 37

NATURAL RESOURCES \_\_\_\_\_ 41

LAND USE \_\_\_\_\_ 53

COMPATIBILITY \_\_\_\_\_ 60

IMPLEMENTATION \_\_\_\_\_ 63

TABLE OF MAPS \_\_\_\_\_ 63

APPENDIX A \_\_\_\_\_ 76



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**t a b l e o f m a p s**

- 1. AERIAL PHOTOGRAPHY 2012**
- 2. POPULATION DENSITY**
- 3. UTILITIES FACILITIES & EDUCATION**
- 4. ROAD NAMES & TRANSPORTATION VOLUME**
- 5. TRANSPORTATION SAFETY CONCERNS**
- 6. AG RESOURCES**
- 7. ELEVATION & LANDFORM**
- 8. WATER RESOURCES**
- 9. NATURAL RESOURCES**
- 10. LAND USE REGIONS**
- 11. RIVER CORRIDORS AND FLOODPLAINS**
- 12. MAJOR WATERSHEDS**



**GENERAL DESCRIPTION**

The Town of Bridport is located in west central Vermont along Lake Champlain. Bridport is in the southern portion of Champlain Valley and has an area of around 28,000 acres or roughly 44 square miles. It is bounded on the north by Addison, on the south by Shoreham, and on the east by Weybridge and Cornwall. Its village center is located off Vermont Route 22A near the intersection with Route 125.

**INTRODUCTION AND PLAN HISTORY**

The Bridport Town Plan is designed to serve as the primary reference when making community decisions and provide guidance to local officials when setting public policy. It establishes policies that will help shape the future of the town as Bridport faces potential change over the next eight years.

Bridport’s Selectboard first adopted a Town Plan in 1971 under the authority of the Vermont Planning and Development Act, (“the Act”), Title 24 V.S.A., Chapter 117. The plan was implemented through the adoption of zoning and subdivision regulations. The Bridport plan has been revised several times since its creation, including in 1989, 1999, 2005 and 2010.

In 2004, the town received a Municipal Planning Grant from the Vermont Department of Housing and Community Affairs to assist with revisions to its plan. In 2010 and 2014, no grant monies were used.

**ORGANIZATION OF THE PLAN**

The plan begins with a description of the evolution of the town, its people and landscape over the past 250 years. It characterizes the current state of the town

across a range of topics including housing, the economy, community facilities and the environment. Each topic has associated policies that will chart the town’s direction.

The plan ends with a conclusion that outlines steps the town should follow to implement the policies of this plan over the next eight years, and reviews the plan’s compatibility with the plans of its neighboring municipalities and the region.

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## history

The Town of Bridport was chartered on October 9, 1761 by the English governor Benning Wentworth, as one of many “New Hampshire Grants.” Bridport’s boundaries remain to this day as originally deeded, a tract of land six miles long, from north to south, and seven miles broad from east to west, bounded on the west by the waters of Lake Champlain. The first permanent colonial settlement began in 1768 when Philip Stone arrived from Massachusetts to improve the land he had purchased.

The first 20 years of Bridport’s history were characterized by conflict. There were land disputes between the governors of New Hampshire and New York, both of whom were issuing grants to the same land in what would become Vermont. There were ongoing hostilities between the settlers and Native Americans.

Finally, the Revolutionary War led to the abandonment and destruction of what buildings and fields the town’s early settlers had managed to construct or clear. The British forces and their Native American allies plundered and burned settler’s properties throughout the war and in November of 1778 a final raid destroyed nearly every remaining structure in Addison County. Only one home constructed before the war in Bridport was standing by its end.

### **EARLY SETTLEMENT**

Following the war, the settlers returned and development of the town began in earnest. By 1791, the year of the first federal Census, the town’s population was recorded as 450. While Bridport was and remains a predominately agricultural community, in its early history the town had a variety of manufacturing, commercial and shipping enterprises mainly located along Lake Champlain. Before significant road improvements and construction of the railroad, Lake Champlain was an essential corridor for trade and travel. Lakeshore towns boomed in the early part of the 1800s.

As the settlers cleared their lands, trees were burned and the ash was manufactured into potash, which was shipped on Lake Champlain and sold to markets in New York and Canada. Despite the available timber, there was little lumbering as the town lacked waterpower for large mills. As the town’s farmers began to clear and cultivate fields in excess of what was needed for subsistence crops, they grew wheat for sale that was also shipped to market by boat.

### **COMMERCIAL DEVELOPMENT**

The period between 1810 and 1830 was a time of considerable commercial growth in Bridport. The center of commercial activity was located at “the Corners,” the present intersection of VT Route 22A, then a major north-south stage route, and Middle Road, where goods brought by canal boat to Bridport were distributed. Commercial buildings like Paris

Fletcher's general store sprang up at this intersection. Other businesses that were in close proximity to the Corners between 1825 and 1830 were a tannery, three blacksmith's shops, a carriage and wagon shop, a cabinet shop, a hatter and a tailor.

### **AGRICULTURE**

By the 1820s, Bridport's land had been sufficiently cleared for grazing and sheep farming became the town's primary agricultural activity. About 1825 the first flock of over 600 Merino sheep was brought to Bridport. The breeding and raising of Merino sheep quickly became the economic engine of agricultural communities throughout Addison County. The area became well known for the high quality wool produced from its Merino sheep. By 1840, there were more than 27,000 sheep in Bridport or around 18 sheep for every resident.

Agriculture in Bridport began changing just before the Civil War as area residents began to migrate westward and market for wool, then the town's primary agricultural product, declined. Several factors led to a decline in the profitability of sheep farming in the mid-to late-1800s. Addison County Merinos were exported to newly opened lands in the west and places around the world including Australia. At the end of the 19<sup>th</sup> century, technological changes such as new mechanical spinning machines made the fine Merino wool less marketable.

In the decades after the Civil War, the town's agricultural economy shifted to dairy production. At first milk was manufactured into butter and cheese, products that could be stored and shipped more easily. Cheese began being manufactured in Bridport by local farmers during the Civil War. Then in the 1880s, a

cheese factory opened along Route 22A near the village that operated into the early 1900s. Following the closure of that plant, another was opened by a group of farmers in West Bridport on Crown Point Road, which operated into the 1930s.

With development of the railroad, some of Bridport's raw milk was shipped by rail to cities in southern New England. Milk continued to be shipped by rail until the mid-1900s. In the 1930s, a creamery and condensery began operation in Bridport near the intersection of 125 and 22A. It continued under several ownerships through the 1950s. Milk from the plant was shipped to Boston where a premium price was paid for Grade A milk, making dairying more profitable than other livestock agriculture in Bridport.

After World War II changes in regulations, the rising costs of farm machinery and the lack of farm labor led to the loss of a number of the town's small, marginal farms. As farms began to go out of business, the remaining farmers bought land and buildings to expand their operations. This trend continues to the present day.

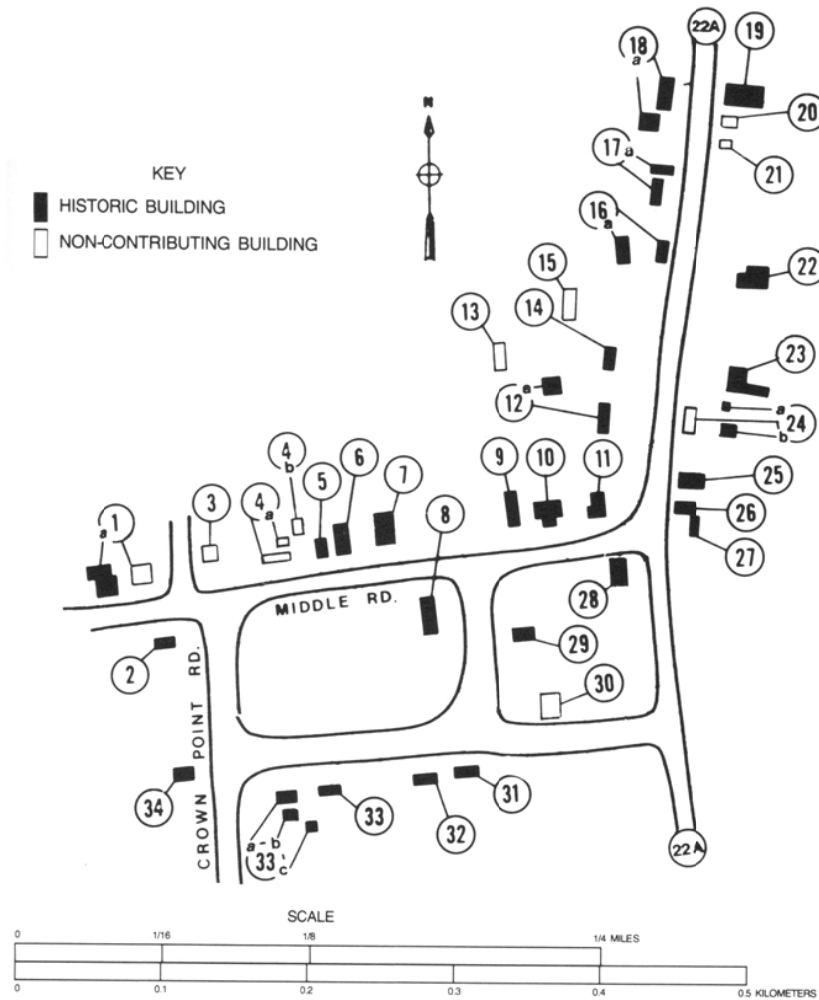
### **TRANSPORTATION**

Bridport's early history and development was partially due to its role as transportation corridor. The Crown Point Military Road was cut through what would become the Town of Bridport in 1759.

Numerous ferries operated along Bridport's shoreline; three ferry licenses were granted in 1820 alone. The opening of the Champlain Bridge between Chimney Point in Addison and Crown Point, NY in 1929 brought an end to most ferries crossing Lake

# A BRIDPORT VILLAGE HISTORIC DISTRICT MAP

(Numbers correspond to Register listing that follows.)



SOURCE: VT. MAPPING PROGRAM ORTHOPHOTOS, 1975.

Champlain. The last ferry connecting Bridport to Crown Point, NY ceased operation in the 1930s.

During October of 2009, the Crown Point/Champlain Bridge was closed and eventually destroyed. A temporary ferry landing was constructed and a new bridge was opened on November 7, 2011.

As vehicle traffic seems to increase from year to year, Bridport has established a small “Park and Ride” area. Located in the village, it provides space for both the traveler and the visitor. Because of the small population and rural nature of the town, there has been limited demand for transportation projects in and around the village area for pedestrians and cyclist. We will continue to monitor this use of our highways and support the planning of any needed improvements when this type of traffic increases and before safety issues become a public concern.

## COMMUNITY FACILITIES

One of the primary concerns of Bridport’s first settlers was for the education of their children. Discussion of constructing and paying for schools was heard at Bridport’s earliest town meeting. By the early 1790s, there were five schools operating in Bridport and by the end of the 1830s the number had grown to 13. Schools had to be located so as to be within walking distance for children and by 1820 there were over 650 students enrolled in schools located throughout the town. The village school was built in 1869 and served a secondary function as town hall. In the mid-1950s, town voters approved consolidation of the remaining school districts and all students were transported to the new central school built inside the village. The village

schoolhouse was adapted to a combination town office and fire department building.

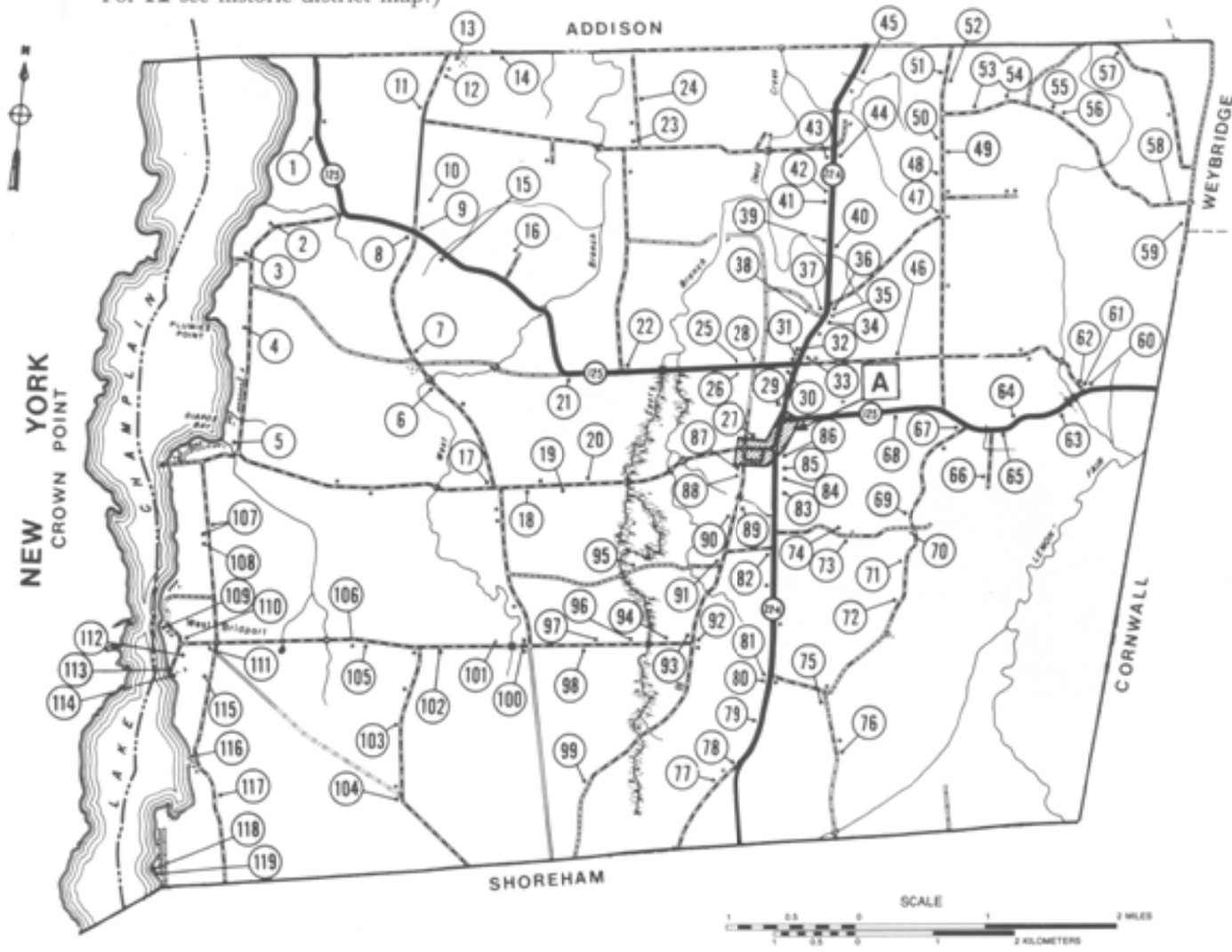
Bridport's first post office was established in 1805 in a hotel and store located near the lake on what is now Route 125. The location of Bridport's post office has varied since. Generally, it was located in the home or business of the postmaster. The post office was located in the brick store on Route 22A in the 1860s and remained there into the early 1900s. The current post office was built in 1958.

During the 1960s, Bridport and surrounding communities experienced several years of severe drought that dried up streams and farm ponds. Farmers throughout the Champlain Valley sought help to provide water to their herds. In 1965, the federal Aiken-Poage Rural Water Bill was passed to provide grants and loans to finance water systems in rural communities throughout the nation. In late 1964, voters in Addison, Bridport and Shoreham formed a consolidated water district. By the end of 1967, lake water was being pumped, treated and delivered through over 100 miles of mains to homes and farms in the three towns. It should be noted that this rural public water utility was the first of its kind in the United States and is appropriately named Tri Town Water District #1.

By 2016, the Water District has over 1,600 customers and is pumping over 331 million gallons of water a year. It should be noted that 10% of their largest customers, mostly dairy farmers, use over 60% of the water pumped, fulfilling their original purpose.

# TOWN OF BRIDPORT MAP

Sites Listed in the State Register of Historic Places  
 (Numbers correspond to Register listings that follow.  
 For **A** see historic district map.)



- A1: House, 1952
- A1a: Barn, c. 1880
- A2: House, c. 1880
- A3: Garage, 1949
- A4: Mobile Home, c. 1972
- A4a: Shop, 1950
- A4b: Garage, 1953
- A5: Hearse House, c. 1890
- A6: Church, 1891
- A7: Church, 1941
- A8: School, 1869
- A9: Fraternal Hall, 1891
- A10: Church, 1891
- A11: House, c. 1840
- A12: Tavern, 1819
- A12a: Barn, c. 1900
- A13: Mobile Home, c. 1970
- A14: House, c. 1860
- A15: Garage, 1953
- A16: House, c. 1820
- A16a: Barn, c. 1890
- A17: House, c. 1880
- A17a: Garage, c. 1920
- A18: House, c. 1870
- A18a: Carriage Barn, c. 1880
- A19: Grange Hall, 1932
- A20: Garage, c. 1935
- A21: Post Office, 1958
- A22: Barn, c. 1870
- A23: Barn, c. 1885
- A24: Mobile Home, c. 1965
- A24a: Privy, c. 1880
- A24b: Granary, c. 1880
- A25: House, c. 1810/c. 1825
- A26: Store, 1826
- A27: Shop, c. 1910
- A28: Church, 1941
- A29: House, c. 1840
- A30: Shed, c. 1980
- A31: House, c. 1840
- A32: House, c. 1794/c. 1810
- A33: House, 1829
- A33a: Carriage Barn, c. 1890
- A33b: Garage, c. 1910
- A33c: Chicken Coop, c. 1890
- A34: House, c. 1840

## Town of Bridport State Register of Historic Places Listing (Village sites listed on previous page.)

1: House, c. 1835	17: House, c. 1830	35: House, c. 1820	51: House, c. 1880	66: Farm	76: Farm	93: Farm
2: House, c. 1804	17a: Barn, c. 1915/c. 1940	35a: Stable, c. 1880	51a: Barn, c. 1890	66a: House, c. 1880	76a: Barn, c. 1910/c. 1960	93a: House, c. 1885
3: House, c. 1815	17b: Carriage Barn, c. 1900	35b: Barn, c. 1890	51b: Barn, c. 1885/c. 1965	66b: House, c. 1850/c. 1860	76b: Granary, c. 1880	93b: Barn, c. 1915
4: Farm	17c: Early Barn, c. 1850	36: House, c. 1845	52: Farm	66c: House, c. 1845	76c: Shed, c. 1935	93c: Ground Stable Barn, c. 1950
4a: House, c. 1810	17d: School, c. 1850	37: House, c. 1810	52a: House, c. 1860	66d: Barn, c. 1875	76d: Garage, c. 1940	93d: Chicken Coop, c. 1930
4b: Granary, c. 1890	18: House, c. 1840	38: House, c. 1870/c. 1865	52b: Granary, c. 1880	66e: Barn, c. 1880	76e: Shed, c. 1960	93e: Chicken Coop, c. 1915
4c: Granary, c. 1880	a: Barn, c. 1890	39: House, c. 1860	52c: Shed, c. 1880	66f: Barn, c. 1890	76f: Shed, c. 1965	93f: Barn, c. 1940
4d: Barn, c. 1875/c. 1960	19: House, c. 1825	39a: Barn, c. 1900	52d: Carriage Barn, c. 1890	66g: Barn, c. 1900	76g: House, c. 1975	93g: Garage, c. 1940
4e: Granary, c. 1860	20: Farm	39b: Stable, 1910	52e: Barn, c. 1880/c. 1920	66h: Early Barn, c. 1860	77: House, c. 1860	94: House, c. 1870
4f: Shed, c. 1900	20a: Barn, c. 1885	40: Farm	53: School, c. 1850	66i: Barn, c. 1885/c. 1900	77a: Granary, c. 1890	95: House, c. 1810
5: Farm	20b: Milkhouse, c. 1910	40a: House, 1867	54: House, c. 1842	67: House, c. 1800	77b: Chicken Coop, c. 1935	96: House, c. 1870
5a: House, c. 1870	20c: Ground Stable Barn, c. 1945	40b: Barn, c. 1875	55: House, c. 1840	67a: Corn Crib, c. 1890	77c: Early Bank Barn, c. 1880/c. 1952	97: House, c. 1870
5b: Barn, c. 1900	20d: House, c. 1850	40c: Barn, c. 1920	56: House, c. 1840	67b: Barn, c. 1910	77d: Shed, c. 1950	98: Barn, c. 1850
5c: Shed, c. 1950	21: House, 1889	40d: Shed, c. 1900	56a: Barn, c. 1890	68: Farm	78: House, c. 1845	98a: House, 1796
5d: Carriage Barn, c. 1870	21a: Ground Stable Barn, c. 1920	40e: Shed, c. 1910	56b: Barn, c. 1910	68a: House, c. 1845	79: Farm	98b: Barn, c. 1885
5e: Granary, c. 1890	21b: Pumphouse, c. 1915/c. 1940	40f: Shed, c. 1900	57: House, c. 1860/c. 1865	68b: Shed, c. 1910/c. 1975	79a: House, c. 1850	99: House, c. 1880
5f: Chicken Coop, c. 1920	21c: Milkhouse, c. 1920	41: House, c. 1830	58: House, c. 1828	68c: Granary, c. 1880	79b: Stable, c. 1890	99a: Ground Stable Barn, 1936
5g: Shed, c. 1930	22: House, c. 1870	42: Farm	59: Farm	68d: Chicken Coop, c. 1930	79c: Barn, c. 1920/c. 1952	100: House, c. 1865
6: House, c. 1875	22a: Garage, c. 1920	42a: House, c. 1830/c. 1850	59a: House, c. 1830/c. 1845	68e: Shed, c. 1900/c. 1940	80: House, c. 1860	100a: Chicken Coop, c. 1910
7: Farm	23: Farm	42b: Barn, c. 1880	59b: Barn, c. 1900/c. 1920	69: House, c. 1870	81: Ground Stable Barn, 1942/1963	100b: Barn, c. 1865
7a: House, c. 1845	23a: House, c. 1860	42c: Barn, c. 1880	59c: Shed, c. 1910	69a: Barn, c. 1900	81a: Garage, c. 1930	101: House, c. 1820
7b: Ground Stable Barn, c. 1952/c. 1965	23b: Shed, c. 1900	42d: Milkhouse, c. 1910	59d: Shed, c. 1900	69b: Stable, c. 1870	81b: House, c. 1928	102: Early Barn, c. 1860
7c: Barn, c. 1880	23c: Granary, c. 1890	42e: Ground Stable Barn, c. 1880/c. 1920	59e: Mill, c. 1920	69c: Chicken Coop, c. 1925	81c: Chicken Coop, c. 1940	102a: Barn, c. 1920
7d: Barn, c. 1890	23d: Early Bank Barn, c. 1880/c. 1940	42f: Shed, c. 1880	60: Farm	70: House, c. 1820	81d: Shed, c. 1950	102b: Shed, c. 1890
7e: Shed, c. 1910	23e: Carriage Barn, c. 1890	43: House, c. 1840	60a: House, c. 1805/c. 1820	70a: Garage, c. 1925	82: House, c. 1825	102c: House, c. 1860
7f: Milkhouse, c. 1910	23f: Barn, c. 1900	44: House, c. 1840	60b: Granary, c. 1880	70b: Barn, c. 1880	83: House, c. 1870	103: House, c. 1870
8: School, c. 1880	23g: Garage, c. 1925	44a: Barn, c. 1850	60c: Carriage Barn, c. 1885	70c: Chicken Barn, c. 1870	83a: Shed, c. 1935	104: House, c. 1800/1828
9: Farm	24: Farm	44b: Barn, c. 1870	60d: Shed, c. 1910	70d: Stable, c. 1850	83b: Chicken Coop, c. 1940	105: House, c. 1875
9a: House, c. 1865	24a: House, c. 1862	44c: Barn, c. 1890	60e: Chicken Coop, c. 1900	71: House, c. 1870	83c: Ground Stable Barn, c. 1950/c. 1975	106: House, c. 1840
9b: Barn, c. 1890	24b: Carriage Barn, c. 1890	45: Farm	60f: Late Bank Barn, c. 1880	72: House, c. 1880	84: House, c. 1810	107: Farm
9c: Milkhouse, c. 1910	24c: Late Bank Barn, 1888	45a: House, c. 1830	60g: Barn, c. 1940	72a: Barn, c. 1880	85: House, c. 1870	107a: House, c. 1870
9d: Cheese House, c. 1885	24d: Granary, c. 1870	45b: Garage, c. 1935	61: House, c. 1870	73: Farm	86: Tavern, c. 1818	107b: Barn, c. 1875
9e: Early Barn, c. 1880/c. 1962	24e: Garage, c. 1920	45c: Springhouse, c. 1890	62: House, c. 1870	73a: House, c. 1875/c. 1900	86a: Carriage Barn, c. 1890	107c: Garage, c. 1920
10: House, c. 1810	25: House, c. 1920	45d: Granary, c. 1870	62a: Chicken Coop, c. 1910	73b: Ground Stable Barn, 1958	86b: Garage, c. 1910	107d: House, c. 1810
11: House, c. 1810	26: House, 1932	45e: Barn, c. 1860	62b: Stable, c. 1890	73c: Barn, c. 1890	87: House, c. 1870	107e: Barn, c. 1850
12: Farm	26a: Barn, c. 1850/c. 1925	46: House, c. 1835/c. 1865	63: Farm	73d: Garage, c. 1920	88: House, c. 1840	108: House, c. 1850
12a: House, c. 1870	26b: Granary, c. 1910	46a: Granary, c. 1880	63a: Barn, c. 1900	73e: Barn, c. 1880	89: House, c. 1868	109: House, c. 1830
12b: Ground Stable Barn, c. 1925	26c: Ground Stable Barn, c. 1938/c. 1980	46b: Chicken Coop, c. 1920	63b: House, c. 1812/c. 1835	73f: Early Barn, c. 1840	90: Farm	110: House, c. 1890
12c: Early Barn, c. 1870	27: House, c. 1810	46c: Carriage Barn, c. 1880/c. 1860	63c: Milkhouse, c. 1900	74: Early Bank Barn, c. 1870	90a: House, 1825	111: School, 1837
12d: Milkhouse, c. 1910	28: House, c. 1840	46d: Early Barn, c. 1870/c. 1959	63d: Granary, c. 1890	74a: Carriage Barn, c. 1880/c. 1955	90b: Barn, c. 1885	112: House, c. 1847/c. 1895
12e: Granary, c. 1880	28a: Garage, c. 1890	47: House, c. 1803/c. 1838	63e: Carriage Barn, c. 1900	74b: House, c. 1830	90c: Garage, c. 1910	113: Camp, c. 1930
12f: Ground Stable Barn, c. 1950	28b: Carriage Barn, 1860	47a: Carriage Barn, c. 1885	64: House, c. 1795/c. 1812	74c: Chicken Coop, c. 1920	90d: Granary, c. 1890	114: Camp, c. 1940
13: House, c. 1825	28c: Pumphouse, c. 1900	47b: Granary, c. 1890	65: Farm	75: Farm	90e: Chicken Coop, c. 1890	115: Ground Stable Barn, c. 1920
14: House, c. 1903	29: House, 1803	48: Farm	65a: House, 1804	75a: House, c. 1870	90f: Ground Stable Barn, 1928	116: Camp, c. 1920
15: Farm, 1889	30: House, c. 1820	48a: House, 1869	65b: Barn, c. 1910/c. 1920	75b: Tenant House, c. 1860	91: House, c. 1870	117: Lapham Farm
15a: House, c. 1890	31: House, c. 1845/c. 1900	48b: Granary, c. 1900	65c: Barn, c. 1860	75c: Ice House, c. 1880	91a: Granary, c. 1890	117a: House, c. 1800
15b: Carriage Barn, c. 1890	32: Farm	48c: Carriage Barn, c. 1910	65d: Early Bank Barn, c. 1870	75d: Shed, c. 1965	91b: Milkhouse, c. 1920	117b: Barn, c. 1860
15c: Pumphouse, c. 1900	32a: House, c. 1840	48d: Ground Stable Barn, c. 1915/c. 1974	65e: Pumphouse, c. 1900	75e: Barn, c. 1900	91c: Ground Stable Barn, c. 1955	117c: Barn, c. 1910
15d: Barn, c. 1890/c. 1940	32b: Barn, c. 1850	49: House, c. 1845/c. 1945	65f: Shed, c. 1900/c. 1960	75f: Privy, c. 1880	92: House, c. 1875	118: Camp, c. 1945
16: House, c. 1870	32c: Granary, c. 1860	50: Farm	65g: Chicken Coop, c. 1890	75g: Ground Stable Barn, c. 1925/c. 1965		119: Camp, c. 1940
16a: Carriage Barn, c. 1890	32d: Ground Stable Barn, c. 1920	50a: House, c. 1820	65h: Sugarhouse, c. 1940			
16b: Early Barn, c. 1870/c. 1969	32e: Barn, c. 1860	50b: Stable, c. 1890	65i: Privy, c. 1890			
16c: Barn, c. 1900	33: House	50c: Barn, c. 1870	65j: Milkhouse, c. 1890			
	34: Barn, c. 1890	50d: Barn, c. 1880/c. 1870				
		50e: Ground Stable Barn, c. 1920				

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**p o l i c y**

1. *To maintain and protect Bridport’s historic resources as vital, actively-used components of the community, which define the town’s unique character, maintain community heritage and are a source of pride for residents.*
  - a. Encourage efforts to restore and maintain historic sites and buildings in a manner that retains their integrity while allowing for their continued use.
  - b. Support adaptive reuse of historic structures, including those in the village center and historic agricultural buildings throughout the town.





In 1791, Bridport's population was counted in the first federal census as 450 people. The town grew quickly, reaching a peak population of 1,774 in 1830 that has yet to be surpassed. The population then began an almost steady decline for the next 130 years, reaching a low of 653 in 1960. Growth began in Bridport during the 1960s and continues to the present. In 2010, the Census counted Bridport's population at 1,218.

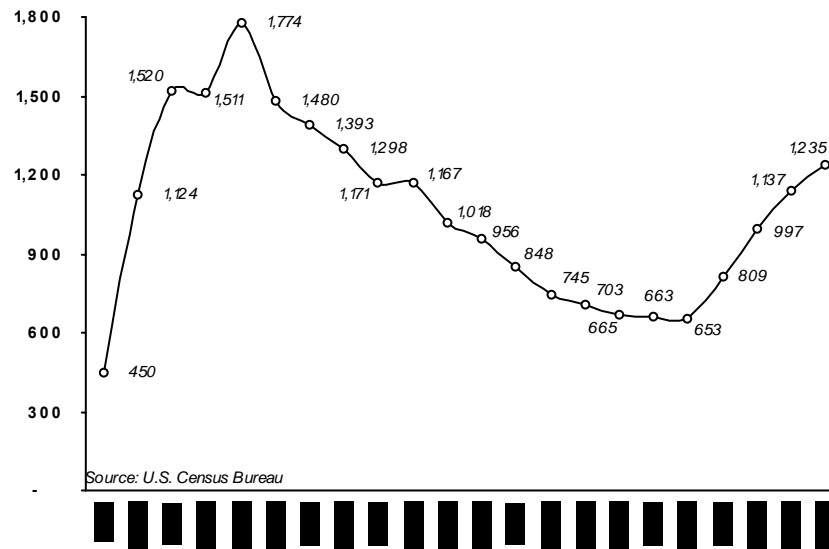
Bridport grew most rapidly during the 1960s and '70s. Since the 1970s, most of the population growth occurred because of natural increase, which is calculated by subtracting the number of deaths from the number of births. In both the 1980s and 1990s, the amount of natural increase exceeded the population growth indicating that slightly more people were actually leaving town than were moving in. (See Figure 2.)

Future growth projections estimate Bridport's population to be in the range of 1,500 to 1,700 by 2025. It is difficult to predict future population levels in Bridport. The rate of growth has slowed steadily since the 1960s and if it continues to decline, the projections will be too high. However, Bridport's northern neighbor, Addison, experienced significant growth in the 1990s. We believe the State of Vermont's parameters for accepted soil types concerning residential and commercial wastewater permits have become constrictive. This alone will have the biggest impact on our immediate future growth.

**DENSITY**

Bridport's overall population density in 2010 was approximately 28 people per square mile. This represents an increase of nearly 10 people per square mile since 1970. Obviously, the population is not evenly spread out across the town. There are several areas of higher density settlement including the village center with a density of approximately 275 people per square mile. There are several higher density settlements along the lakeshore including Giard's Bay with a density of around 250 people per square mile. (See Population Density Map).

**Figure 1: Bridport's Historic Population 1791 - 2000**



**AGE**

By 2010, 32% of Bridport’s population was in the 45 to 64 age group and the percent of the population under age 10 had declined noticeably. The 2010 census showed the continuing trend of increase in the percentage of the elderly population. Over the next decade, the “baby boomer” generation, the largest age group in Bridport, will reach retirement age. With improved medical care and healthier lifestyles, the average lifespan continues to increase. Given these factors, Bridport should expect to see greater numbers of elderly residents in ensuing decades.

**HOUSEHOLDS**

Bridport had 485 households in 2010 with an average size of 2.51 people. Household growth is the result of

two factors, population change and change in household size. In the past 30 years, Bridport’s population has increased and the household size has declined leading to significant increases in the number of households. In 1970 the average household in Bridport was 3.77 people, while in 2010 it was about one person smaller at 2.51 people.

Over the past 20 years, the composition of Bridport’s households has also changed. In 1980, nearly 44 percent of households were married couples with young children. In 2010, such couples made up only 25 percent of the town’s households or 123 households. The percentage of one-person households has increased from 10 percent in 1980 to nearly 20 percent or 97 people living alone in 2010.

**Figure 2: Bridport's Vital Statistics 1986 - 2004**



The amount and type of housing that Bridport’s residents will want is highly influenced by the character of their households. As people grow older, they may want a home that is smaller, easier to maintain and closer to needed services. People living alone or in non-family types of households may want to rent rather than own a home. People with young children may want space for their growing families. The characteristics of the population and of households change over time and the policies guiding future growth and development should reflect the changing needs of the town’s residents.

According to the Census, there were 612 dwelling units in Bridport in 2010. The number of homes in Bridport has nearly tripled from the first time the Census counted dwelling units in 1940. Virtually no new homes were built in Bridport during the 1940s and 1950s. Construction took off in the 1960s with more than 130 homes being built in that decade alone. The pace of construction slowed, but around 110 homes were built in the 1970s. During the 1980s and 1990s, the rate of new home construction continued to decline. During the 1990's, Bridport issued an average of seven permits for new homes per year. Now that rate has trended down to only two.

**HOUSING TYPES**

Much of the housing in Bridport is single-family and owner-occupied. In 2010, there were 368 owner-occupied homes and 117 rental units. The number of rental units in Bridport has increased significantly over the past 30 years from 36 in 1970 to 117 in 2010. However, there was no change in the number of rental units during the 1990s.

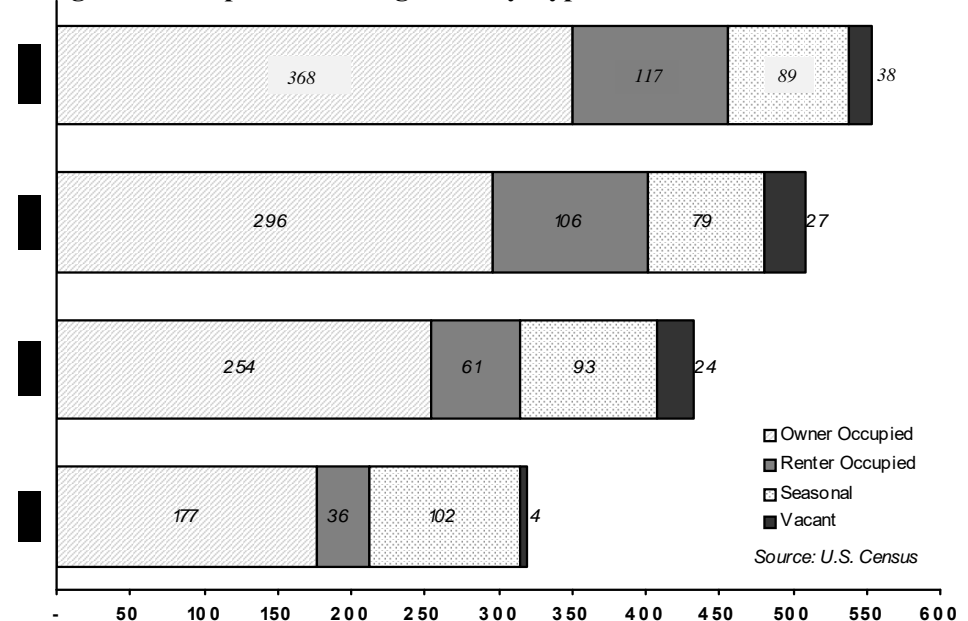
There were 462 single-family homes, 26 multi-unit homes and 63 mobile homes in Bridport according to the 2000 Census. Over the past 20 years, nearly all the housing growth has been in the single-family category. Some disparity does exist between the Census count and town records. The Census reports more dwelling units than the town Grand List. According to Bridport's 2010 Grand List, there were 397 year-round homes, 58 mobile homes and 63 vacation homes in town. Some of the difference between the two

information sources is due to the difference between how structures are classified.

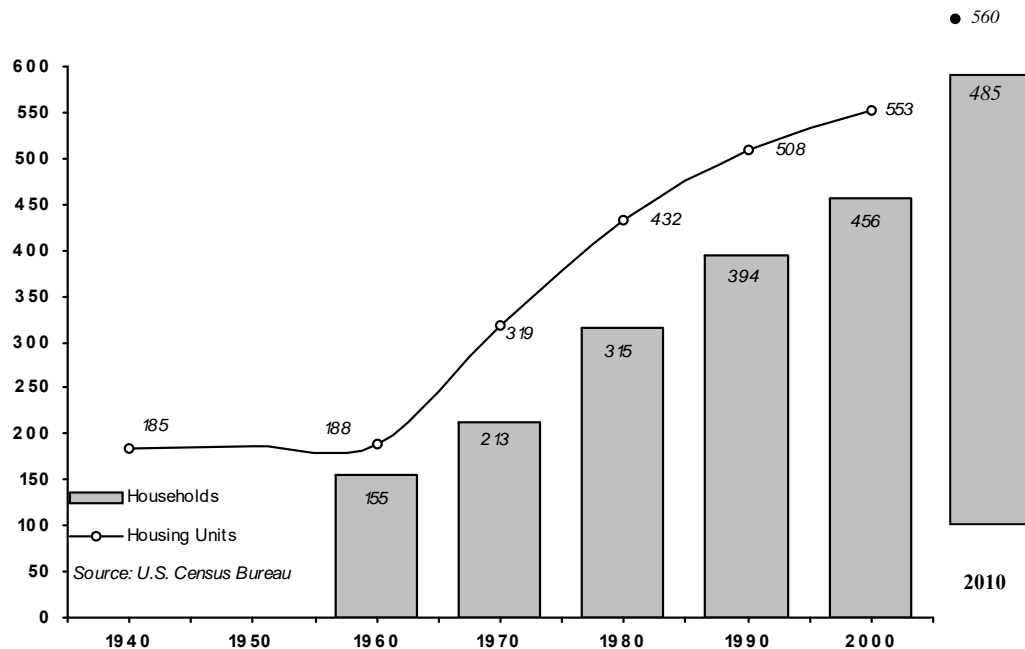
**SEASONAL AND LAKESHORE HOUSING**

Of Bridport's 518 dwelling units from the grand list in 2010, 455 were year-round homes and 63 were seasonal residences. The percentage of seasonal homes has declined since 1970 when nearly one-third of residences in Bridport were seasonal. By 2000, that figure was just below 15 percent. A few camps were built on the lakeshore before 1950, but most were constructed during the 1960s. Most of these camps were built on small lots by town residents. Since the 1980s, there has been a trend of converting seasonal

**Figure 3: Bridport's Housing Units by Type 1970 - 2010**



**Figure 4: Bridport's Households & Housing Units 1940 to 2010**



camps into year-round homes. In 2004, about 40 percent of the residential properties with lake frontage were classified as being year-round homes in the town’s Grand List.

At the same time as camps were being converted, new homes were built along the lakeshore. While some of the newer homes are built on lots greater than 10 acres in size, over 80 percent of the shoreline residential properties were less than 2 acres in size according to the 2004 Grand List. The continued conversion of camps on small lots and the construction of additional homes along the lake could lead to issues arising from more intensive use of lakeshore land including the potential for failed septic systems and erosion due to removal of shoreline vegetation.

**FARMS AND HOUSING**

Bridport is a community with a strong agricultural base and the town’s grand list indicates that there were over 40 farms in 2003. Nearly 16.7 percent of Bridport’s working residents work in town. A significant portion of them, 22 percent, work in farming. Over the past 50 years as farms have consolidated and grown larger, more farms depend on the labor of hired hands and other non-family farm employees. Farm employers have traditionally provided housing to those workers, a practice that the town should continue to support.

As additional residential development continues to be built in proximity to the town’s working farms and farming operations become larger and more intensive, the potential for conflict between farmers and their non-farming neighbors increases. The Town of Bridport supports the right of farmers to conduct their operations in compliance with accepted agricultural practices. However, the town also recognizes that changing farm practices including larger farms, use of heavy equipment and processing of farm products on-site have the potential to impact neighboring property owners.

Additionally, new residential development and people moving into town who are unfamiliar with rural life increase the likelihood of conflicts. The town encourages future residents considering moving into town to take a good look at the community and realize that the scenic beauty of the agricultural landscape that may be attracting them to Bridport is also a working landscape with qualities that are not always as pleasant as the views.

### **SEPTIC CONCERNS AND HOUSING**

During the past several decades, new housing was built in Bridport mainly by taking advantage of an exemption in the state’s wastewater regulations, which did not require state wastewater permits for residences on lots larger than 10 acres in size. Given the clay soil that predominates in Bridport, much of the town’s land area would not have been developable under the state rules. As a result there are currently approximately 65 residential lots in Bridport that are 10.1 to 10.9 acres in size. Around another 55 lots are 11 to 25 acres in size.

In 2002, the state revised its wastewater regulations. The changes to the regulations have had a significant negative impact on the potential for additional housing development in Bridport, at least in the near-term.

While the minimum site conditions have been made less restrictive, two-thirds of Bridport’s land area has soils that are still classified as marginally suited for septic systems and most of the other third is unsuitable. Additionally, most of the alternative septic systems that the regulations were supposed to allow have not yet been approved for use in Vermont. The 2002 rules changed how state regulators, engineers, site technicians and septic system installers do business. Clearly, the 10-acre exemption was promoting development on larger lots than necessary, but at what levels do state regulations actually prohibit healthy growth? Add to the equation the cost of an approved system, the permitting process, and what you have is an average resident left with fewer alternatives and options. Respondents to the 2004 and 2010 planning surveys and questionnaires made it clear that the number one septic concern is affordability. Respondents on questions regarding community and

/or village systems are undecided whether we should consider or will even need a larger scale sewage treatment area in the future. As growth levels have declined, our current village facilities have continued to perform.

### **BRIDPORT’S VILLAGE CENTER**

Bridport’s traditional village center contains approximately 40 homes, many of which were built in the mid- to late-1800s. This traditional village center is recognized on the Vermont State Register of Historic Places as the Bridport Village Historic District. The village center also contains a number of public buildings and former commercial structures.

Most of the residential lots in the village center are less than two acres in size and many are less than one acre. The entire village area comprises less than 100 acres and its small lots are bounded on all sides by large farm parcels. While not all land within the village center is currently developed, there is little room for additional development due to lot configuration and the amount of land in public ownership.

Over the past several years, the owners of the large farm parcels that surround Bridport’s village center have begun to sell their development rights to conservation organizations. These sales have had a positive effect on the village center by ensuring the preservation of the agricultural character of the community and preventing strip development along Route 22A in the vicinity of the village.

Recently however, as more of the large parcels around the village center have been conserved, a concern has been raised that in the future the village will not be able to grow if it is entirely ringed by conserved farmland. Forty-one percent of people responding to

the 2004 Planning Survey thought that the village center was an appropriate place for future development in Bridport. The only way such future development will be able to happen is if there is room for the village center to expand. Currently, three sides of the village are constrained by conserved land and careful consideration needs to be given to the future of the village center before any additional land adjacent to it is conserved.

### **HOUSING COSTS**

In 2000, the average assessed value of a year-round home in Bridport was around \$94,000. Three years later, that value had risen to \$139,000. Following the 2010 reassessment, that figure is currently about \$205,000 with the largest up shift reflected in the lake shore district.

One general measure of affordability is to compare housing cost. For homeowners that is considered mortgage, insurance and taxes compared to household income. Typically if housing costs exceed 30 percent of household income, housing is described as not being affordable. According to the Census, housing costs for approximately 46 percent of Bridport's homeowners with a mortgage exceeded 30 percent of their household income.

The state definition of affordable housing is based on what a household earning 80 percent of the county median family income could afford while spending 30 percent or less of their gross income on housing.

Housing and land costs are on the rise in Bridport. This leads to concerns about the affordability of housing, especially for elderly residents and for younger families in or moving into town.

### **SPECIAL NEEDS HOUSING**

There are currently no elderly housing facilities in Bridport. Over the next 20 years, it is likely that there will be greater demand for housing that meets the needs of elderly residents. Bridport's existing homes can be made more accessible for older or disabled residents, allowing people to remain in their community. As new housing is constructed, it can be built to be accessible.

1. *To continue to provide a range of housing opportunities that will meet the needs of Bridport's current and future residents.*
  - a. Maintain a mix of housing types and values by encouraging developments that contain a mix of housing styles, sizes or sale prices.
  - b. Encourage maintenance and repair of existing homes to ensure that the town's housing stock remains of high quality.
  - c. Promote affordable housing and increase the availability of rental housing by allowing for apartments in existing homes or the conversion of large single-family homes into multi-family homes.
  - d. Support the provision of housing that will allow elderly residents to continue to live in the community.
  - e. Promote the construction of universal homes, with handicap access and features that will serve residents throughout their lifespans.
  - f. Encourage the continued use of existing lakeshore camps as seasonal residences.
  - g. Allow flexibility for farm employers providing housing to their workers, and ensure that such housing is safe and adequate.
  - h. Work to ensure that septic technologies are allowed in Vermont that will enable housing, and other projects to be built in Bridport that are affordable to residents, protect water quality and do not require unnecessarily large lots.

2. *For the sense of community among Bridport residents to remain strong and the village to continue to be a vital center with homes, businesses and public spaces that promote public gathering and interaction between people.*
  - a. Promote preservation and use of historic structures in the village center in a manner that enhances the community's small-town character and maintains the architectural integrity of its buildings.
  - b. Allow for a mix of residential, commercial and public uses appropriate in scale and character in the village center.
  - c. Work to keep the village center pedestrian-friendly and provide outdoor spaces for public gathering and recreational use.
  - d. Encourage tree planting, landscaping and development of additional parks or green space to enhance the small-town character of the village center.
  - e. Promote additional development within the village center that is appropriate to the existing pattern and scale of development, as well as its historic architectural character.
  - f. Work to ensure that enough land in the vicinity of the village center will remain developable to allow for reasonable future expansion of the village.

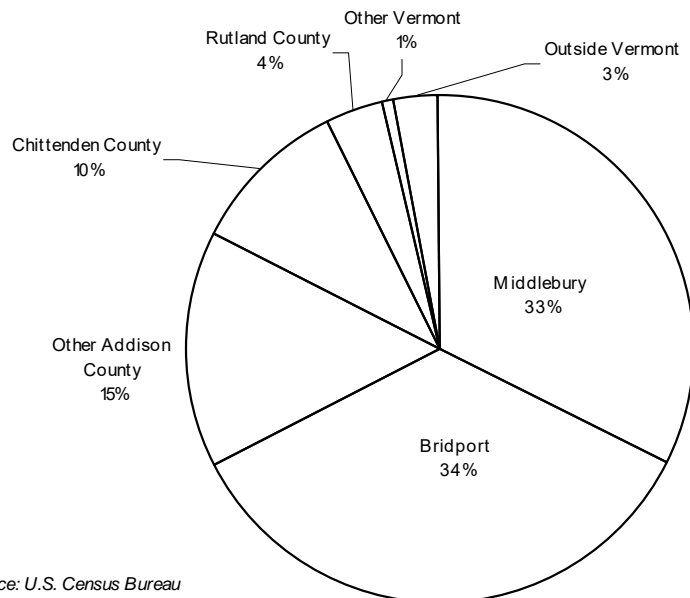


3. *To remain an agriculturally-based community with a significant amount of working farmland, where non-farming residents continue to respect the right of neighboring farmers to farm following accepted agricultural practices.*
  - a. Encourage development that locates new housing on the smallest lots that can adequately provide water and septic in order to conserve high quality farmland.
  - b. Allow incentives for developments that use the town's planned unit development (PUD) provisions or that cluster homes while preserving agricultural land.
  - c. Promote education for town residents and people building or buying homes in Bridport on the town's agricultural economy, typical agricultural practices and the community's support for the continuing vitality of its farm operations.
  - d. Support residential development in agricultural areas that is compatible with or complements surrounding agricultural activities such as developments that provide horse facilities and trails, or community garden plots.
  - e. Encourage new residential development to locate near areas of existing settlement to prevent further fragmentation of the town's agricultural land.
  - f. Continue to uphold a farmer's right to farm using generally Accepted Agricultural Practices (AAPs).

**PLACE OF WORK**

According to the 2010 Census, approximately two-thirds of Bridport’s working residents work either in Bridport or in Middlebury. In 1980, over 80 percent of the town’s workers were employed in Bridport or Middlebury. Over the past 20 years, there has been an increasing diversity in the places Bridport residents work. While the vast majority continue to work within Addison County, there is noticeable growth in the number of people commuting to jobs in Chittenden County. Approximately one-third of Bridport’s working residents work in town. The percentage of Bridport’s working population employed in town has remained fairly stable over the past two decades.

**Figure 5: Place of Work for Bridport Residents 2000**



Source: U.S. Census Bureau

**INCOME**

According the 2010 Census, the median household income in Bridport was around \$61,602. Over the past 30 years, income levels have been rising in Bridport and after adjusting for inflation the median household income has increased by nearly \$28,000.

**ECONOMIC ACTIVITY**

There are approximately 330 people employed in Bridport, 230 of whom are Bridport residents. While a significant proportion of people employed in Bridport are working in agriculture, there has been a trend toward more small home-based businesses. Nearly 20 percent of Bridport households reported some self-employment income on the 2000 Census.

**Agriculture**

According to the 2002 Census of Agriculture there were 44 farms in the 05734 zip code, 41 of which were the principle occupation of their operators. In 1997, the Agricultural Census counted 57 farms in the 05734 zip code. As farms have gone out of business, much of the land has been acquired by other farms and remains in agricultural production.

Most farms in Bridport are between 50 and 2,000 acres in size. The number of farms with more than 1,000 acres increased between 1997 and 2002 from five to seven. In 2006, about 30 farms reported sales of dairy products. Currently, there are about 16 farms in operation, 13 of which consist mainly of dairy cows. The number of cows milked has remained about the same.

***Home-Based Businesses***

There are a wide variety of nonagricultural businesses in town. Bridport residents operate most of these from the property on which they live. Operating a business from residential property is a traditional practice in rural areas where the dominant economic activity, farming, could be described as a home-based business.

The town should continue to support the ability of residents to work from home as those residents may be more likely to be involved in town, are reducing the amount of commuting traffic on local roads, and are generating economic activity within the town.



1. *To build upon Bridport’s existing diverse economic base of agricultural operations and small businesses to develop a vibrant local economy that employs a significant percentage of town residents.*
  - a. Encourage small- to medium-sized businesses that complement the quality of life and values of the town’s residents.
  - b. Create an economic climate that retains and attracts economic activity that will improve the quality of life in the community.
  - c. Support new economic opportunities that are compatible with Bridport’s rural character, utilize the skills of local residents and support the town’s goals related to the continued viability of agriculture.
  - d. Allow for adaptive reuse of existing structures, including former agricultural buildings, for small businesses, industries or home occupations.

**FACILITIES**

The Bridport Central School is a 15,500 square foot building constructed in 1954. The building has been added on to several times with a final addition built in 1988. The school also has a playground that is currently being rebuilt to comply with safety standards. Within the last two years, there have been several upgrades made to the interior of the school such as removing asbestos flooring, improving the ventilation and electrical as well as a new roof.

The school has served students from kindergarten through eighth grade. Beginning in the 2004-2005 school year, Bridport’s seventh and eighth graders are attending the union middle school in Middlebury.

Bridport belongs to the Addison Central Supervisory District along with the towns of Cornwall, Middlebury, Ripton, Salisbury, Shoreham and Weybridge. There are two union schools, a middle and high school, located in Middlebury. Bridport students can also take classes at the Hannaford Career Center, a vocational and technical school located in Middlebury.

Continuing education courses and technical training are available to all Bridport residents through the Vermont State College system. Such classes are offered at the Hannaford Career Center and the Community College of Vermont site in Middlebury.

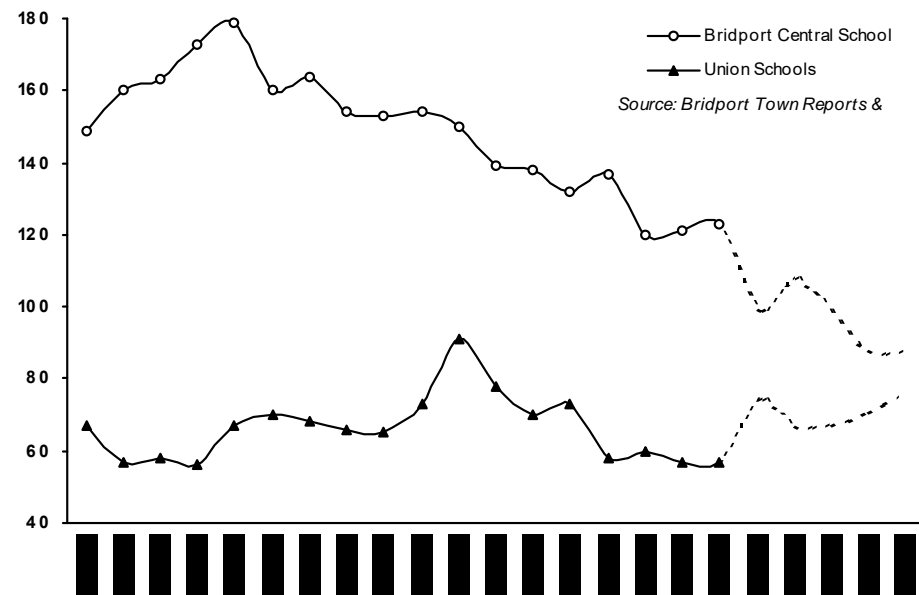
Families with young children in Bridport have access to a variety of early childhood education programs in the area. The Addison Central Supervisory Union has an early education program for children beginning at 2½ years old. Champlain Valley Office of Economic

Opportunity (CVOEO) runs a Headstart program based in Middlebury. While there is only one childcare provider in Bridport at this time, there are several accredited childcare providers with early education programs in the area. In addition, area schools offer after-school and summer programs. Most of these services are located in Middlebury. There is a Pre-K program being offered at the Bridport Community School. Unless population trends change, there seems little need for growth in this area.

**ENROLLMENT**

In December of 2015, there were 79 students enrolled at the Bridport Central School and 107 Bridport

**Figure 6: Enrollment by Bridport Students**



students attending the union high school in Middlebury. Enrollment at the Bridport Central School peaked in the early 1990s with an enrollment of 176 in December of 1994. Since then, enrollments have declined fairly steadily with a sharp drop of more than 95 students in the 2010 school year. During the 2014-2015 school year, Bridport was home to 92 students representing Pre K through grade 6.

Based on the number of Bridport births in recent years, the number of students attending the Bridport Central School is projected to level out at around 80 by the end of the decade. Since the 2004-05 school year on, the school has two fewer grades, accounting for some of the projected decline. The Bridport Central School has had a pre-school program since the 1998-99 school year, serving between 5 and 10 children a year. Given the current low levels of enrollment and the recent decision to send seventh and eighth graders to the union middle school, Bridport's school building should have sufficient capacity for the foreseeable future.

### **EDUCATION COSTS**

From a land use planning perspective, the cost of education and the implication to local taxpayers is perhaps the most important education issue. When making decisions related to permitting new development or revising zoning regulations, the potential number of students and the cost to the community of educating them often becomes a hotly debated item.

In Bridport, expenses at the elementary school in 2016 average around \$16,594 per student each year.

In reality however, education financing is more complicated. Some education costs are fixed and others, such as special education expenses, are beyond the control of local boards and administrators. Currently, state funding to local schools is on a per pupil basis and local land use patterns do not affect tax rates as directly as under previous funding systems.

The enrollment in small local schools, such as Bridport's, can fluctuate significantly from year-to-year based on the movements in or out of town of a relatively small number of families. Tracking new home construction, births and number of students enrolled each year can provide indications of likely trends in student populations over a five- to ten-year period.



1. *To utilize the Bridport Central School as a site to provide high-quality, cost-effective education to the town's children and to serve as the hub of community life.*
  - a. Support access to and use of the school for a broad range of education opportunities including early childhood and continuing education for Bridport residents.
  - b. Promote use of the Bridport School during non-school hours to provide space for adult education, community meetings, recreation and similar activities.
  - c. Foster connections between the school and the town by supporting programs that increase student participation in the community.
  - d. Encourage citizen participation in the local school decision-making process.
  - e. Monitor housing, population and demographic changes in Bridport in order to more accurately project the impact of these changes on the town's education system and its budget.

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## community facilities, services and organizations

Throughout its history Bridport has been a town with a strong sense of community. The town has a number of community facilities and organizations, most of which came into being and continue to exist through the commitment of local residents volunteering their time, contributing to local fundraisers and voting to support them each year at town meeting. There has always been a great deal of community pride displayed in and a lot of volunteers stepping forward to support the following facilities, services and organizations.

### **TOWN-OWNED LAND AND STRUCTURES**

The Town of Bridport owns the following properties and structures (See Community Facilities Map):

1. Town Clerk's Office, Fire House and Town Green
2. Carl Norton Highway Facility (Town Garage)
3. Salt and Sand Shed
4. Community and Masonic Hall
5. Hearse House
6. Recycling Shed and 10 acres
7. 1 acre on Lover's Lane
8. Barrows Park
9. Tennis Court
10. Jones Lighthouse Lot
11. Jones Dock Road and 1 acre
12. Central Cemetery
13. Pine Hill Cemetery
14. Town Line Cemetery
15. Wells Cemetery
16. 16 acres at the intersection of Crown Point Road and Short Street

17. Crown Point Road ferry landing
18. Port Franklin (Champlainside Drive)
19. Witherell Landing

Three of the structures listed above stand out as the town's major assets and provide facilities for day-to-day town functions. The firehouse, community hall and town garage have all played important roles in Bridport. Over time their functions have changed, and they will likely change in the future to meet the community's needs. These structures should remain important public buildings for the town and their character should be preserved.

### **TOWN OFFICE AND FIREHOUSE**

After construction of the consolidated school in the 1950s, the former village school was converted to serve dual functions as town office and firehouse.

The Bridport Town Office is the center of town administrative and legislative activity. In addition to office space for two employees, there is now an expanded meeting area that can comfortably accommodate over 15 people, although board meetings regularly draw larger, "standing room only" crowds. The office also contains the vault that stores the town's land and vital records. The quantity of paperwork that must be recorded seems to increase every year and the storage system within the vault has recently been reconfigured to provide sufficient capacity for the near future.

The Bridport Fire Department uses the rest of the former school building. The downstairs has been reserved for garage space, in which two vehicles are



parked and the upstairs remains reserved for BFD and Town Line First Response Squad.

**COMMUNITY HALL**

The Community Hall, which is still commonly called the Masonic Hall, serves dual functions in Bridport. The building was originally built by the Masons in 1892 and continued in their ownership until March 21, 1990. The current name, Masonic Community Halls, was adopted when the Town of Bridport acquired the building for use as a town hall. In the agreement, the Masons retained ownership of the second floor.

A combination of historic preservation funds and community fund raising enabled restoration of the building. This project involved many town residents and rekindled a sense of community that still endures. On March 25, 1992 with restoration almost complete, a fire destroyed the southeast corner and burned the entire roof to the eaves. Once again, town residents rolled up their sleeves and raised the additional money needed to fully restore the hall. The structure was rebuilt to look essentially as it did before the fire and it continues to serve both the community at large and the Masons.

Currently, there is an ongoing project to restore the scenic stage curtains. Although plays, formal dances, eighth grade graduation exercises and the like no longer take place in the hall, many public and private meetings, as well as wedding receptions, family gatherings and holiday bazaars continue the building’s original social function.

**TOWN HIGHWAY GARAGE AND ROAD EQUIPMENT**

One of the most important services provided by the town is the maintenance of roads and highways.

During recent years, the town went to work on a new facility for our local highway departments. The Town of Bridport and the State of Vermont approved the construction of two new buildings on the corner of Short Street and Crown Point Road.

Initially, the State completed and eventually shared a new salt and sand shed. This shed is now used exclusively by the Town of Bridport. Meanwhile, the town constructed a new garage and small office for the town highway equipment. This has been appropriately named “The Carl Norton Highway Facility” after our former highway commissioner’s dedicated years of service.

The previous town garage was totally demolished and rebuilt providing a new home for our Volunteer Fire Department.

The final shift of these facilities made way for a long awaited town office expansion at the place of the original fire hall. This step by step process took forethought, patience, perseverance and cooperation by many individuals, groups and organizations. It’s also a true testimony of our community’s newest shared assets.

**OTHER COMMUNITY BUILDINGS**

Bridport has additional community buildings including the Grange Hall, Catholic and Protestant churches both with social halls. There is a lack of off-street parking at the Grange Hall on 22A where the seniors hold meals twice a week and have meetings. There are also community suppers held throughout the colder months once a week.

### **COMMUNITY ORGANIZATIONS**

Bridport has had a rich history of community organizations and a number continue to have active membership including the Historic Society, Ladies Auxiliary, Masons, Grange, 4-H and scouts. There are some other interesting groups in town that meet less regularly including the Thief Detection Society and the Bridport Gentlemen's Club.

### **FUTURE NEEDS AND CAPITAL BUDGETING**

Bridport is regularly faced with equipment purchases since all town equipment also has a limited lifespan.

A capital budget would help the town prioritize its facility and equipment needs and better prepare to finance large expenditures. It would also allow Bridport to implement impact fees on or require phasing of new large-scale development if it is deemed prudent. Currently, the Planning Board does not play an active role in the Capital Budget process.

### **FIRE SERVICES**

Fire, rescue and first response services are provided by a dedicated group of residents who volunteer hundreds of hours responding to calls, training and maintaining equipment. Without their generous donation of time and energy, the Town of Bridport would not have the following services available.

The Bridport Volunteer Fire Department provides firefighting services throughout the town. The department currently has a roster of 24 active members, 2 auxiliary members, and 7 life members for a total membership of 33 people.

As in most rural towns, the fire department is the

town's primary first response entity. In addition to putting out fires, the department's volunteers are called upon to respond to motor vehicle accidents, hazardous materials spills, natural disasters and other emergencies. The department receives an average of 10 to 15 fire calls per year in town and around 5 mutual aid calls from neighboring communities. The department is more frequently called to motor vehicle accidents and medical assists than to fires. On average the department responds to 40 to 50 non-fire calls each year. The department's volunteers average a total of more than 400 hours of response time and more than 700 hours of training time each year.

The Bridport Volunteer Fire Department meets monthly. In addition to emergency response and training, the department's volunteers participate in fundraising activities like the annual chicken barbeque, fire prevention education for schoolchildren, and other community service activities.

Bridport has a rural fire insurance rating of Class 8, which means the community's fire-protection system includes a dispatch center, a fire department and a water supply that meet the standards for credit under ISO's Fire Suppression Rating Schedule. The classes range from 1 (representing exemplary fire protection) to 10 (indicating that the area's fire-suppression program does not meet ISO's minimum criteria). Insurance companies use these ratings to help establish premiums for fire insurance, generally offering lower premiums in communities with better protection.

The recent construction of five dry hydrants in Bridport insures a year round supply of water for fire fighting. The department is appreciative of the land

owners that allow the use of their property.

The recent addition of the new fire station solved a critical space issue and allowed the consolidation of fire equipment. The original station is used as a meeting room and provides space for two pieces of apparatus.

The department has the following major equipment: A 2016 Ford Engine, a 1987 Peterbilt 1250 gal/min pumper, a 1996 Peterbilt tandem tanker, a 1985 International tandem tanker, a 1987 Ford tandem tanker, a 1996 Volvo Utility vehicle and a 1988 Ford mini pumper. The original 1949 pumper has been fully restored and is used for parades and other public functions. The upgrading of vehicles and gear is an ongoing process.

#### **EMERGENCY MEDICAL SERVICES**

Town Line First Response responds to medical emergencies in the towns of Bridport and Addison. It is a very active first response squad with highly trained and well-equipped personnel to aid local residents until Middlebury Regional EMS can arrive to treat and transport patients to either Porter Medical Center in Middlebury or Fletcher Allen Medical Center in Burlington. The volunteers are capable of basic and advanced life support, as well as providing for pediatric emergencies.

The squad currently has 17 active members. Town Line First Response is called out 150 to 200 times annually between the two towns. There are 3 EMTs, 8 AEMTs, (First Responders), 3 EMRs and 3 retired members. Volunteers must commit to extensive training. Currently the Town Line First Response has acquired their own radio frequency. Due to the

difficulty of the work and the level of training required, it is always a challenge to maintain adequate numbers of active volunteers.

#### **POLICE PROTECTION**

Police protection in Bridport is provided by a local constable and the State Police, with contract services available from the Addison County Sheriff's Department. The crime rate in Bridport is significantly below regional and state levels. The crime rate in town has actually been declining in recent years, suggesting that levels of police protection currently offered in Bridport are sufficient.

#### **911 EMERGENCY SERVICE**

In the early 1990s, Vermont recognized that emergency dispatch radio system used by the state was severely outdated and in need of modernization. The state began to explore a system of consolidated dispatch centers and development of a statewide Enhanced 911 system began. In 1998, Bridport's local emergency dispatch was consolidated into the newly built Public Safety Answering Point in Williston when the E-911 system became operational statewide.

Enhanced 911 provides everyone in Vermont with 911 service and provides emergency responders with information about the source of the 911 call. Implementation of E-911 required renaming or renumbering of local roads to conform to naming standards. All structures were given new 911 addresses and new structures are addressed following the 911 conventions. Vermont's system is also capable of processing calls that originate from cellular service providers. As the technology in the actual phones has improved, the system can now locate where some cell phone calls into the system originate from, which

greatly improves the ability to respond to an emergency call from a cell phone.

### **SOCIAL AND HUMAN SERVICES**

Bridport residents have access to a variety of social and human service organizations, most of which are nonprofits located in Middlebury. Organizations including the Addison County Community Action Group, Addison County Home Health and Hospice, Addison County Transit Services, Champlain Valley Agency on Aging, the Counseling Service of Addison County, Elderly Services, Hospice Volunteer Services, the Open Door Clinic, Vermont Adult Learning and WomenSafe receive a small amount of funding annually from the town to support the services that are available to Bridport residents.

### **WATER SUPPLY**

The Tri-Town Water District serves a significant portion of the Town of Bridport, as well as the neighboring towns of Addison and Shoreham. Tri-Town began operating in 1965. The system draws water from Lake Champlain at a facility in Addison. The system has a potential capacity of around two million gallons per day. The current maximum daily flow is around one million gallons per day. The district has two reservoirs; one in Addison that holds 625,000 gallons and another in Shoreham with a capacity of 750,000 gallons.

In Bridport, mains exist along both state highways as well as along many local roads, and hook-up privileges are extended to virtually all those who request it. This water supply appears to be an important factor in determining the location of new residential growth. Originally set up to serve farm needs, it has brought

development into Bridport's prime agricultural land, while leaving more marginal farmlands, generally in the east, unserved. The district is an autonomous organization whose policies have significant planning impact.

The district purchased the former McLamb property on the corner of Crown Point Road and State Route 22A in the late 1990s. That property has been converted into the district's offices.

### **SOLID WASTE**

Bridport is one of 19 municipalities in the region that belong to the Addison County Solid Waste District. Local trash disposal is provided by private rubbish haulers and local residents can either contract for curbside pick-up or drop-off their trash at the town recycling center at specified times. Licensed haulers transport the trash to a transfer station in Middlebury. District waste is disposed of outside the region at a contracted landfill.

The district has a mandatory recycling ordinance and waste haulers who operate in the district are required to offer recycling services. In addition, Bridport has a local recycling center which is open on Saturdays. Recyclables in Bridport do not have to be separated out by type, since the district has contracted with a single-stream facility that separates the materials after they are collected.

Bridport had a municipal landfill that was closed in 1994. That site has been covered and is being monitored periodically in compliance with state requirements.

**CEMETERIES**

There are a number of cemeteries owned and maintained by the Town of Bridport. The town’s largest cemetery – Central Cemetery – recently reached capacity and the town voted in 1996 to purchase additional land for an expansion to the north ensuring that the cemetery will serve the community into the future. Other town cemeteries include the Town Line, Pine Hill and Wells cemeteries.

In response to the deteriorating condition of the town’s cemeteries, a cemetery association was created to manage all of the town’s cemeteries. The Board of Cemetery Commissioners oversees the layout of new plots in Central Cemetery and the maintenance of all four town cemeteries. In addition to ongoing maintenance like mowing, the board prioritizes repairs of gravestones.



1. *To continue to support the provision of community facilities and services.*
  - a. Encourage and recognize the value of volunteerism in the provision of community services and the longstanding tradition of Bridport residents working together to meet community needs.
  - b. Achieve a rate and pattern of development that is consistent with the town's ability to assimilate new residents without overburdening community facilities and services and negatively impacting the town's fiscal condition.
  - c. Explore opportunities for coordinating services with neighboring towns and sharing resources such as equipment and personnel in a manner similar to the fire department's mutual aid system.
  - d. Support and continue to actively participate in the planning efforts of the Addison County Solid Waste Management District.
  - e. Continue to support high quality fire and rescue services in town and ensure that new development is constructed in a manner that will allow adequate access for emergency responders.
  - f. Encourage projects, including improvements to the town's water system and installation of dry hydrants, which would increase the effectiveness of the fire department in its ability to extinguish fires.
  - g. Explore the possibility of community septic systems that would serve high-density settlement areas in town.

2. *To work to ensure that Bridport's public buildings can continue to accommodate the services needed by residents and actively plan to meet future demand for community facilities.*
  - a. Maintain Bridport's village as a community center that provides administrative and public facilities including town offices, fire and rescue services, school and post office.
  - b. Ensure that necessary changes to the function of Bridport's community buildings do not negatively impact their character and role in maintaining the town's unique identity.
  - c. Support future projects to construct, rehabilitate and maintain Bridport's public buildings that are cost-effective to taxpayers, promote the viability of the village center and conform to the goals of this plan.
  
3. *To maintain Bridport's existing public access points to Lake Champlain and seek opportunities to improve public access to the lake and to other recreation sites and activities.*
  - a. Identify and map the town's existing public lands, access points and rights-of-way.
  - b. Educate town residents about the town's public access resources and promote their responsible use and stewardship.
  - c. Encourage private landowners to continue to allow public access on their land for recreational purposes.
  - d. Ensure that the town retains possession of its existing public lands, access points and rights-of-way.
  - e. Encourage town residents to continue to use the public recreational areas available to them; such as the town green for softball games, large private gatherings, wedding parties, etc. and the small park in front of the school for winter skating, hockey, summer tennis and horseshoes.
  - f. Support plans for future land acquisition to improve public access in our lakeshore region.

**TELEPHONE SERVICE**

Waitsfield-Champlain Valley Telecom provides local wired phone service in Bridport. Wireless phone service in Bridport is spotty – some areas have an excellent signal while others have none. Respondents to the 2004 Planning Survey were generally satisfied with their wired telephone service. However, a significant percentage rated wireless service in town as poor. Depending on what cell phone carrier you use, it’s debatable as to whether cell phone service has improved over the years.

High-speed internet access is generally available throughout Bridport with DSL (digital subscriber line) service from Waitsfield-Champlain Valley Telecom. Since there is no cable television infrastructure in Bridport, provision of high-speed access over cable is not available.

**COMMUNICATION TOWERS**

There are currently no telecommunications towers located in Bridport. Telecommunications infrastructure can be incorporated into the town’s existing built environment in a manner that has virtually no visual impact. The cell phone antennas installed on top of silos throughout the region are an excellent example of such “stealth technology.” Most people driving by these silos would not be aware that they were also serving as cell phone towers. Any company seeking permits for such infrastructure should have to prove that no existing structure in town meets their needs before being allowed to construct a tower. The town should further encourage use of existing structures by

making such projects much easier to permit than construction of a new structure.

**ELECTRICITY**

Electricity is supplied to Bridport by Green Mountain Power (GMP) after it bought CVPS in June of 2013. GMP is owned by GAZ Metro, a Canadian Company. Their main sources of electricity are market purchase, which are about 53%, and various large hydro-projects, which prove 23% of the total power. The remaining 26% is provided by new sources, such as solar, wind and others.

**ENERGY RESOURCES**

Energy is being or could be generated from resources in Bridport including solar, wind and biomass.

***Solar***

On average, the energy equivalent of over five megawatt hours of solar energy falls on each acre of land in Vermont annually. Despite long winters and a variable climate, there is a relative abundance of sunshine and potential for utilizing solar energy. The challenge to using solar energy in Vermont is the seasonal difference in the amount of daylight hours between summer and winter. Given current technology, it would probably not be feasible to rely solely on solar energy as a power source in Bridport.

The simplest use of sunlight is passive use for lighting and heating. Properly insulated buildings oriented so that their long axis is within 30 degrees of true south with unobstructed south facing windows can offset their space heating costs by 15 to 50 percent. Taking



this one step further, floors and walls can be built of materials that will capture and store warmth from the sun. In many cases, passive solar buildings can be constructed at little or no extra cost, providing free heat and light – and substantial energy cost savings – for the life of the building.

Solar water heating is another cost-effective solar application. Water heating is one of the largest energy costs for the town’s households. A water heating system that utilizes solar energy can reduce energy costs by up to 65 percent. A solar water heater cannot generally supply all the hot water needed year-round because of the climate and weather, so a back-up system is required. Consumers currently heating their domestic hot water with electricity would see the largest energy cost savings.

New developments in photovoltaic cell (PV) technology, which converts solar energy into electricity, has led to PVs that are smaller, less expensive and more consumer-friendly – trends that will likely continue into the future. Photovoltaic cells come in a wide range of sizes and applications, from large collectors for utility-sized power plants to tiny cells built into consumer appliances.

Because solar power is currently a fast growing alternative source of electricity, Bridport has developed a standard for all commercial or community scale solar projects proposed within the town. See page 63.

**Wind**

Wind power was a resource commonly used by farmers in the 19<sup>th</sup> century for a variety of purposes including pumping water and grinding grain. A one-

time Bridport resident, the Reverend Leonard H. Wheeler, invented the Eclipse windmill in 1867. Manufactured from the 1860s to the 1920s, the regular pattern Eclipse windmills were a common feature on farms throughout the country until World War I.

There are no locations in Bridport that meet the current criteria required for large-scale wind power generation, but smaller scale wind turbines have already been constructed and are generating power for residents. Small wind turbines, designed for individual residential or business use, usually generate under 15 kW. They have two or three blades usually with a diameter of eight to 24 feet. They are often mounted on a guyed monopole or a freestanding lattice tower ranging in height from about 80 to 120 feet. Turbines need to be 40 to 60 feet above nearby trees or other obstructions for optimum efficiency.

The 2004 Planning Survey asked Bridport residents about wind turbines and those who responded generally expressed support for them. Few respondents felt that wind turbines would negatively affect the value of neighboring properties. While about half felt that turbines have a visual impact and should be carefully placed, many thought that aesthetic issues alone should not prevent turbines from being constructed in town.

**Biomass**

Biomass consists of renewable organic materials, including forestry and agricultural crops and residues, wood and food processing wastes, and municipal solid waste. All these products or waste products can be used as energy sources. The benefits of these resources are that they are local, sustainable and often waste materials. Some biomass materials, such as wood,

have been traditionally burned to provide heat. However, these materials can also be used in more efficient ways, such as producing gas that can then be burned to generate heat or power or by using airtight wood stoves with catalytic converters.

During recent years, the Blue Spruce Farm has incorporated a methane digester as part of their facility. In an enclosed concrete anaerobic digester, the farm's raw manure is converted into biogas and biosolids creating "green energy" and byproduct. This project has been well received by the public and promoted by Vermont Departments of Agriculture and Public Service. The project is also expected to grow within the farm and with the newest efficiency updates. Blue Spruce will be able to increase their energy output from 275 kilowatts per hour to around 400 kph while still producing bedding and compost for their own farm as well as other dairy operations and local markets. As the manure to energy process technology becomes more refined, it may also lend itself to smaller operations.

### **ENERGY USE**

Energy consumption is essential to human society and at the same time threatens the environment that sustains us. The challenge for the future will be to reduce our overall energy consumption and to shift demand towards energy sources that are renewable and have an overall low environmental impact.

#### ***Residential***

Household energy use represents approximately 30 percent of total statewide energy consumption. Almost 80 percent of domestic demand is for space heating and domestic hot water. The remaining 20 percent runs

miscellaneous appliances, lighting, cooking, drying and air conditioning. Space heating and hot water heating are affected by building design and construction. Other energy uses are affected primarily by personal choices and habits. The most common sources of heat in Bridport homes are oil, propane and wood.

#### ***Transportation***

According to the 1994 Vermont Twenty Year Energy Plan, nearly half of the energy used in Vermont is for transportation. Almost half of that transportation energy is consumed by commuters, shoppers, recreationists and others traveling in private automobiles. Public transit represents a very small portion of the energy used for transportation. This is certainly true in Bridport since limited public transportation serves the community.

Over the past 20 years, the percent of Bridport's workforce commuting alone rather than carpooling has increased almost 20 percent to nearly 70 percent of all workers. The average commute has lengthened by about five minutes to nearly 22 minutes.

#### ***Energy Conservation***

While energy policy and fuel prices often seem abstract or completely beyond the control of local government and consumers, energy conservation is the simplest way for individuals to take action. If the potential of energy conservation were fully realized, it would go a long way towards solving our nation's energy problems.

Homeowners can reduce the energy consumed in their homes in a variety of ways. Basic, inexpensive

measures such as turning off lights in empty rooms or replacing light bulbs with new, more efficient bulbs can substantially reduce energy usage. According to Efficiency Vermont, if every household in the state changed one light bulb, Vermonters would save enough electricity to light 14,500 homes for a year. Using timers to regulate lighting, heating or cooling in a home can also significantly decrease energy consumption. Energy audits of public and private dwellings are offered by non-profit organizations for a minimal fee. The town should complete an energy audit for all town buildings and make appropriate changes as recommended.

Bridport's homeowners can take steps to weatherize their homes or to replace older, inefficient appliances or mechanical systems that can result in significant reductions in energy use and expense for heating and cooling. The Champlain Valley Office of Economic Opportunity provides a weatherization service that assists income-qualifying households in the region with taking steps to increase the efficiency of their homes and reduce their energy bills.

Over the past several decades, improved materials and techniques have greatly increased the efficiency of and reduced the energy required in new homes. The town should research and consider requiring all new construction in town to meet the standards of the Vermont Energy Star Homes program.

### **ENERGY AND LAND USE**

Land use and energy are closely related. Land use patterns exert a strong influence on major end uses of energy, including transportation, heating and cooling of buildings, and the energy used in developing infrastructure. Development that is clustered provides

for greater energy efficiency. Clustering means fewer miles of road are needed to connect the homes or commercial buildings, school buses and snow plows travel shorter distances, and electric utility lines need not extend as far. Carefully considered placement of a building on a lot adds to the efficiency of any new structure by increasing passive solar gain and decreasing wind pressures.

While the clustering of development helps decrease transportation costs, it is not the only answer. The majority of Bridport's residents travel to work outside of town. Twenty years ago there were more than twice as many Bridport residents carpooling to work than there are today. Carpooling would be beneficial for those residents who work out of town not only in fuel conservation, but also in reduced wear and tear and maintenance on vehicles. Other options that should be supported include vanpools and development of park-and-ride areas near key town road intersections with state highways.

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## **p o l i c y**

1. *To provide access to state-of-the-art communications technology from infrastructure built to blend into its surroundings.*
  - a. Support provision of cellular phone service throughout Bridport.
  - b. Ensure that new infrastructure blends into its surroundings by developing regulations that encourage utilization of existing structures rather than the construction of new towers.
  
2. *To foster resource conservation by promoting energy efficiency, small-scale generation and local distribution of energy.*
  - a. Ensure that the town's regulations do not restrict the installation of wind generators, solar panels and other energy generation technology designed to produce power for residential or similar small-scale uses.
  - b. Promote alternative energy generation and renewable fuel sources that would reduce energy costs for Bridport's farmers and provide additional markets for agricultural products.
  - c. Encourage winterization and efficiency measures when structures are being renovated.
  - d. Promote use of energy-efficient building practices for new construction.

**PUBLIC ROADS AND HIGHWAYS**

Bridport’s transportation network is comprised of two state highways and 57 miles of Class 3 town-maintained roads.

***Route 22A***

Route 22A runs 6.3 miles through Bridport north to south from the Addison to Shoreham town lines. Route 22A is an important north-south highway in western Vermont and has been experiencing increased truck traffic in recent years.

Traffic volume on this highway continues to increase with an average of more than 3,000 vehicle trips per day counted on Route 22A in Bridport in 2002. (See Transportation Map). Traffic at the Bridport-Addison town line is up about 50 percent since 1986. At the Bridport-Shoreham line, there were around 30 percent more trips per day than in 1986.

A traffic count conducted by Addison County Regional Planning in October of 2004 on Route 22A south of Pratt’s store returned a traffic volume of 4,000 vehicle trips per day and an average speed of 55 miles per hour.

Route 22A is essentially Bridport’s “main street” and increasing safety along this stretch of the highway is a central component of creating an inviting village center that will attract residents, businesses and visitors to the community. One of the most recent improvements to Rte 22A is the addition of blinking caution and stop lights at both junctions of Rte 125.

***Route 125***

Route 125 runs 8.1 miles through Bridport west to east from the Addison to Cornwall town lines. Route 125 is one of a few east-west highways in Vermont. It connects to New York State via the Crown Point/Champlain Bridge area, and runs through Middlebury up into the Green Mountains. A significant amount of the traffic on Route 125 in Bridport is traveling between the bridge and Middlebury.

Traffic volume on this highway has also been increasing with an average of 2,000 vehicle trips per day counted on Route 125 in Bridport in 2002. (See Transportation Map). Traffic at the Bridport-Addison town line is up about 70 percent since 1986. At the Bridport-Cornwall line, there were around 50 percent more trips per day than in 1986.

**PRIVATE ROADS AND DRIVES**

Private roads and driveways are a significant part of Bridport’s transportation system. While the construction and maintenance of these roads is not the responsibility of the town, it is important that private roads and drives are constructed to minimum standards that provide safe use of the road by both vehicular and non-vehicular traffic, access by emergency and delivery vehicles, and prevent erosion and water pollution.

Private roads and drives need to accommodate access from the main road to the house for at least one fire truck and one ambulance. Emergency vehicles should be able to turn around at the house, thus eliminating

the need to back down the road or drive. Fire departments in rural areas use a method called the “rural hitch,” which involves stationing one truck adjacent to the house and supplementing the water supply through use of trucks and hose from a more distant location. This is possible when the trucks can be located within roughly 1,000 feet of each other. If private roads or drives are longer than 1,000 feet, there need to be pull-off areas wide enough to park a fire truck and let another pass.

Gravel roads and driveways are significant contributors of sediment and phosphorus to lakes and streams. Every road or driveway can become a conduit for rainwater or snowmelt, eroding the road material and dumping it into nearby streams or lakes. Private roads and drives need to be constructed and maintained to prevent run-off and erosion from damaging town roads and reducing water quality in Lake Champlain and all the town’s water bodies.

There are two programs in Vermont that provide recommendations for construction and maintenance of private roads and drives. The Vermont Local Roads Program’s *Developing a Highway Access Policy: Guidelines and a Model Ordinance* contains minimum standards for the design, construction and maintenance of residential driveways and private roads. The *Vermont Better Backroads Manual* from the Better Backroads Program recommends techniques and actions that can be used to improve the maintenance of graveled roads and drives. Bridport’s private roads and drives should be constructed and maintained to the standards described in these publications.

### **ACCESS MANAGEMENT**

Even with stepped up enforcement and our town’s employment of the Addison County Sheriff’s Department, speed and overall increasing numbers of traffic can be moderately managed in other ways. New and preexisting intersections, driveways and entrances have the potential for risk. With the adoption of good access management techniques, we can lessen driver confusion and increase traffic safety and efficiency. One of the most basic access management strategies is to limit the addition of new access points being added along roads and encourage use of shared drives. Other simple access management techniques include:

- Locating driveways away from intersections
- Locating driveways on side roads, where appropriate
- Establishing a minimum spacing distance between driveways
- Consolidating driveways and connecting parking lots, where applicable
- Increasing the minimum lot frontage

### **PUBLIC TRANSPORTATION**

Some of the alternative routes of the Addison County Transit Resources (ACTR) currently serve Bridport. This situation could change if ACTR establishes a route to a park-and-ride facility in the vicinity of the Champlain Bridge area. This project is not on ACTR’s immediate horizon, but has been suggested and remains a possibility in the future. Such a route would mainly serve commuters from New York working in Middlebury or Vergennes, but it would also pass

through a number of towns in the region that currently do not have transit service and could make one or more stops in Bridport.

ACTR does provide “demand response” service in Bridport. Volunteer drivers who transport elderly or disabled residents to healthcare or social service appointments provide this service.

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**p o l i c y**

1. *To provide and maintain a transportation system that is safe, efficient and affordable.*
  - a. Continue to work with the state to slow traffic and increase safety through Bridport's village center.
  - b. Allow continued use of farm vehicles on Bridport's public roads.
  - c. Review the town's current standards for private roads and codify them as necessary to ensure that emergency access is possible for all properties on these roads.
  - d. Support needed improvements to and use of public roads in Bridport for pedestrian and bicycle use.
  - e. Work to minimize the number of curb cuts onto Bridport's public roads.



**LANDFORM**

Bridport is part of the Champlain Valley Lowland region with its lowest point being about 100 feet above sea level along the shoreline and its highest, at the southern extension of Snake Mountain locally known as Gale’s Ledge, at about 670 feet. Most of the town’s terrain is below 300 feet in elevation. (See Elevation Map)

The town's scenic, rural character is attributable to the combination of its landform and its primary land use – agriculture. These two factors allow for sweeping views over open agricultural fields of the Champlain Valley to the Green and Adirondack Mountains from many locations and roads throughout town.

**CLIMATE**

Bridport's location in the Champlain Valley substantially influences its climate. The western section of town is only a few miles from the eastern foothills of the Adirondacks with elevations of 1,000 to 2,000 feet above sea level. The eastern side of town is less than 20 miles from the Green Mountains. The mountains to the west create a rain shadow that keeps the valley’s precipitation levels among the lowest in Vermont. The valley also provides a channel for wind flow and a fairly steady light to moderate breeze is typical in Bridport year-round.

The climate of the Champlain Valley is generally warm and dry. Heat storage by Lake Champlain during the summer helps modify fall temperatures prolonging the growing season as compared to upland areas. Annual rainfall averages from 28 to 38 inches and the growing season from 130 to 150 days. The

weather patterns in Bridport vary from west to east with Route 22A marking the division between the two.

The United States Department of Agriculture Hardiness Zone Map has put Bridport in Zone 4b, which has an average annual minimum temperature of between -20 and -25 degrees Fahrenheit. As Bridport residents are well aware, even a modest change in elevation can result in significantly different weather patterns, especially in the winter when a few degrees separate rain, sleet and snow. Because of its setting, climatic extremes are not as great in Bridport as in the foothill and upland areas adjacent to the valley.

**GEOLOGY**

The geological history of the Champlain Basin is a complicated account of continental forces coupled with the more recent effects of glaciations. Indeed, at one point the entire town was underneath the waters of “Lake Vermont” and then partially submerged under the so-called “Champlain Sea.” Both of those water bodies resulted from the recession of stages of continental glaciations.

The Champlain Valley Lowland, of which Bridport is a part, is a broad basin bordered on the west by the Adirondacks and on the east by the Green Mountains. Thrust faults provide relief within the lowland, but the Cambrian and Ordovician rock strata that predominate, lie nearly flat. The bedrock geology of the Champlain Valley is composed of calcareous limestones, dolomites and shales. Some of the oldest rocks in the northeast are found in the Champlain Valley including fossil trilobites, snails, corals and algae indicating an early marine origin.

The southern extension of the redstone range crosses into northern Bridport. Redstone is a sedimentary rock formed from sand deposited in shallow water along the continental margin of an ancient ocean. It is a reddish-purple rock called Monkton Quartzite composed of nearly horizontal layers, marked by different colors, minerals and grain sizes. In communities north of Bridport, redstone quarries were active until the 1930s and many of Burlington's buildings were built with this stone. Elsewhere in town and in communities to the south and east, white to gray marbles and limestones are the dominant rock types.

The limestone and other calcareous rocks formed from marine deposition eventually produce the rich, calcareous soils that support a variety of natural communities in the Champlain Valley. Gravel, sands, fine silts and clay sediments deposited by ancient seas, lakes and rivers, as well as the till deposits left by glaciers, all influence the soils, drainage and natural communities of this region.

The Bridport landscape has little topographic relief except for the southern part of Snake Mountain and a string of rocky hills extending south from there. Those rocky hills, like Hemingway Hill, are limestone cobble hills that rise out of the clay-plain covering the Champlain Valley floor. These rocky hills remain largely forested, as they were never conducive to agricultural use, and have historically been cut to provide firewood, building materials and timber for sale.

Bridport has few, if any, earth resources that would support commercial extraction. The town's limited supplies of such resources should be used primarily to

meet local needs. The extraction of earth resources should be carried out in a manner that minimizes negative impacts such as erosion, loss of significant habitat or that increases truck traffic. There should be plans for properly closing a site once its use is discontinued.

## **SOILS**

Currently, there is no extraction of earth resources in Bridport, and there has not been any for many years.

The heavy soils deposited by former glacial lakes and inland seas provide Bridport with some of the state's richest agricultural lands. Approximately 20,250 acres (72 percent of the town's land area) are classified as prime agricultural land (See Agricultural Resources Map). These soils in combination with Bridport's low-lying and relatively level terrain and the comparatively moderate climate, have supported agricultural activities since the time of colonial settlement. Despite the intensity of farm use that continues to characterize Bridport, these soils are heavy, making them difficult to work and slow to drain.

The town's soils have implications for everything from road building and foundation construction to the design of in-ground septic systems. The heavy clay soils are simply not well suited for any of those development activities. This fact alone will continue to limit residential, commercial and industrial development, particularly at higher densities or intensities without municipal or community wastewater treatment systems. As discussed in the section entitled "Septic Concerns and Housing" above, Bridport is one of the communities in Vermont most affected by the recent changes to the state wastewater

rules. Figure 7 describes soil conditions in relation to the state’s septic suitability classification.

The few areas in Bridport that have soils well suited to treat wastewater have other limitations or features that could impact the feasibility or desirability of development. Most of the better-suited soils are found on the line of hills beginning with the southern extension of Snake Mountain in the northeast corner of town and running southwest to Hemingway Hill. The

sides of the hills are fairly steep in many locations further complicating development. Development on steep slopes increases the likelihood of erosion and generally results in roads and driveways that are difficult to navigate, especially for large vehicles like fire trucks. Additionally, the hills are largely forested and represent the only significant large blocks of forest remaining in Bridport.

**Figure 7: Septic Suitability Classification of Bridport Soils**

		<b>Acres</b>	<b>% Town</b>
<b>Well Suited</b>	Soils with rapid permeability	18	0%
	Soils with rapid permeability and limited slope	1	0%
	<b>Total</b>	<b>19</b>	<b>0%</b>
<b>Moderately Suited</b>	Soils with moderate depth to bedrock	616	2%
	Soils with slow permeability	375	1%
	Soils with moderate depth to bedrock and limited slope	359	1%
	Soils with slow permeability and limited slope	180	1%
	Soils with moderate depth to seasonal high water table (SHWT)	53	0%
	Soils with rapid permeability and steep slope	3	0%
	<b>Total</b>	<b>1,586</b>	<b>6%</b>
<b>Marginally Suited</b>	Soils with marginal depth to SHWT and gentle slope	11,935	43%
	Soils with marginal depth to SHWT and limited slope	3,783	14%
	Soils with marginal depth to SHWT and moderate slope	2,211	8%
	<b>Total</b>	<b>17,929</b>	<b>64%</b>
<b>Not Suited</b>	Soils not suited due to excessive wetness	6,002	21%
	Soils not suited due to limited depth to bedrock and steep slope	805	3%
	Soils not suited due to very limited depth to bedrock on moderate slope	210	1%
	<b>Total</b>	<b>7,017</b>	<b>25%</b>
<b>Not Rated</b>		<b>1,440</b>	<b>5%</b>

## **WATERSHED PLANNING**

### ***Watersheds***

Bridport's land is divided among three watersheds or drainage basins, all of which are part of the larger Lake Champlain Basin. The far western portion of town is in the Lake Champlain Direct Watershed and drains directly to the lake. The center portion of town is in Dead Creek Watershed and the easterly portion of Bridport is part of the Lemon Fair River Watershed. The Lemon Fair River and Dead Creek are tributaries of Otter Creek, which flows into Lake Champlain north of Bridport in the Town of Ferrisburgh.

Watershed boundaries are formed around the basic principle that water flows downhill. Every creek, river, pond and lake has an area of land defined by topography that supplies water to it from surface runoff as well as groundwater percolation. Thinking about land in terms of watersheds is extremely important when planning for water quality because all that water flowing downhill is picking up and carrying substances with it and in Bridport all that "stuff" ultimately ends up in Lake Champlain, the source of drinking water for most town residents.

### ***Basin Planning***

As part of its Watershed Improvement Project, the Vermont Agency of Natural Resources (ANR) is writing a comprehensive plan for protecting and improving water quality in the Otter Creek Watershed. The Otter Creek Watershed (or basin) is the area that drains into the Otter Creek and its tributaries, including the Dead Creek and Lemon Fair River. This basin encompasses approximately 1,100 square miles

and includes portions of Chittenden, Addison, Rutland, and Bennington Counties.

The Otter Creek Watershed planning process will identify watershed communities' issues and concerns regarding water quality. As part of the Otter Creek Watershed Plan, ANR and other partners will develop a proposal for the long-term management goals for all waters in the basin, including rivers, streams, lakes and ponds. The two fundamental purposes of the basin planning effort are to protect high quality waters (those waters that continually exhibit good water quality conditions) and to restore or improve waters that may be affected by pollutants or are considered "impaired" (meaning that they consistently do not meet Vermont Water Quality Standards). The focus of the current Vermont Watershed Planning Initiative is on non-point source pollution, the more diffuse runoff from developed areas, residential areas, and from agricultural and forest land.

The major cause of water quality degradation in the Otter Creek Basin is sedimentation, which is the primary cause of impaired waters not meeting water quality standards. The second major cause is pathogens from wastewater treatment outfalls, animal waste runoff and failing septic systems adjacent to surface waters. The third major cause is nutrient enrichment, which is most likely a result of agricultural runoff.

Although the Watershed Planning Initiative was developed to maximize public involvement and participation, there are several statutory obligations that the process must fulfill. In 1998, Vermont enacted legislation that requires ANR to develop water quality

management plans for the 17 major river basins in the state by 2006. These plans must address the impaired waters in each basin.

More recently, Vermont has required towns to develop a flood resiliency element to their Hazard Mitigation Plans. See Town of Bridport Single Jurisdiction All Hazards Mitigation Plan on page 63.

***TMDL***

A Total Maximum Daily Load (TMDL) is a calculation of the amount of a pollutant that a surface water body can receive and still meet State Water Quality Standards. A TMDL plan identifies the amount a given pollutant that needs to be reduced in order to meet the standards. The plan outlines how these reductions should be achieved.

Under Section 303(d) of the Federal Clean Water Act, all states are required to develop lists of impaired waters. The list includes impaired lakes, ponds, rivers and streams that do not meet Water Quality Standards. The Federal Clean Water Act further requires TMDLs to be developed for waters on the list.

A TMDL has been established for phosphorus in Lake Champlain and one will be established for portions of Otter Creek by 2009. The Otter Creek Basin is one of the top three Vermont watersheds targeted for significant phosphorous reduction. Otter Creek is one of the nine phosphorous management segments listed in the impaired waters category due to phosphorous pollution. The Lake Champlain Phosphorus TMDL calls for a 6.12 metric ton reduction in phosphorous from Otter Creek by 2009. To meet this target, work will need to be done to restore the natural functions of stream corridors and reduce human-induced

sedimentation, stream bank erosion and nutrients that are contributing to excessive phosphorous loading in Lake Champlain from the Otter Creek and its tributaries.

**SURFACE WATER**

There are two major creeks in Bridport, Dead Creek and the Lemon Fair River, and numerous smaller streams that feed them or flow into Lake Champlain (the direct drainage). The State of Vermont Water Quality Division considers all of these surface waters Class B waters. Class B waters are managed to be safe for swimming, fishing and boating. They must be treated, filtered or boiled before drinking, however.

***Dead Creek***

The Dead Creek has its source in Bridport as a narrow stream with adjacent wetlands. It is a tributary to Otter Creek. It flows at an almost imperceptible pace most of the year northward into Addison where it becomes the central feature of the Dead Creek Wildlife Management Area. The WMA was established in the 1950s and the state has installed a series of water control structures to manipulate the depth of the creek. The creek no longer dries up during summer months and the entire management area of approximately three thousand acres provides marsh, field and woodland habitat for a variety of bird and wildlife species. While the WMA does not include any lands in Bridport, the creek still provides habitat for a variety of species and recreation opportunities within the town.

***Lemon Fair River***

The Lemon Fair River flows from Shoreham through the southeast corner of Bridport into Cornwall. It is also a tributary to Otter Creek. Throughout most the year in Bridport, the Lemon Fair River is a humble,

10-foot wide, barely flowing stream. However each year, snow melt and spring rains spill its waters onto the broad clay flats and create lake-like conditions often one-half mile in width.

Looking at an aerial photo of the town shows the Lemon Fair meandering through fields. Along most of its banks, there is no riparian vegetation although there is one area where an approximately 140-acre patch of wooded land surrounds the river. The state has purchased a buffer strip along the river in two locations in recent years and is allowing natural riparian vegetation to re-establish itself in those areas along the river. Such buffers help reduce the amount of sediment, associated nutrients, and pollutants entering the river. The Natural Resource Conservation Service in coordination with the state Department of Agriculture offers several incentive programs for farmers to create vegetated buffers along streams and fence off streams to keep animals out.

#### **WETLANDS**

A 1,100-acre wetland area surrounds the Lemon Fair forming the largest wetland area in Bridport. The state recently acquired approximately 600 acres within this Class II wetland. Numerous smaller wetlands abound in Bridport along the Dead Creek and elsewhere throughout town.

#### **LAKE CHAMPLAIN**

Lake Champlain is an extraordinarily important environmental, recreational and economic resource for the Town of Bridport and the State of Vermont. Lake Champlain's water serves as drinking water for the area. The lake with its aesthetic beauty continues to

draw residents, tourists and businesses to the region. Preventing further degradation in water quality is critical for the lake to continue as the major regional drinking water supply and to sustain a healthy fishery and activities such as swimming and boating. There are a number of distinct and unique planning issues and opportunities related to the lakeshore environment and the management and use of the lake resource itself.

#### ***Erosion Pollution and Flood Resiliency***

Bridport implements many strategies and remedies to prevent and control the effects of erosion, pollution, and flooding. Some areas fall under the jurisdiction of State or Federal agencies. Areas such as the Lemon Fair Floodplain are subject to Wildlife Management practices, while the majority of brooks, streams and overflows are within agricultural lands overseen by NRCS (Natural Resource Conservation Service). To help maintain water quality the state helps by setting up parameters for municipal roads, culverts and bridges. As an additional planning measure the Single Jurisdiction All-Hazards Mitigation Plan is completed and now included in our town Plan as Appendix A.

To preserve lakeshore character and reduce sedimentation and runoff carrying nutrients like phosphorus and pollutants into the lake, bank stabilization is critical. Bridport's clay soil and the surface water drainage patterns contribute to the problem of lakeshore erosion. Over recent decades property owners have literally lost ground to the lake. While erosion is a natural process, its pace has been accelerated and its impacts worsened by development and land management practices along the shoreline.

Many lakeshore property owners have spent considerable time and effort to stabilize the shoreline with riprap and other engineered methods. At the same time other owners have removed shoreline vegetation to improve their view of the lake. The best long-term solution to slow the rate of shoreline erosion is retaining and planting woody shoreline vegetation. Such vegetation stabilizes soil and prevents erosion, thus reducing sedimentation and improving the clarity of the water. Shoreline vegetation provides food for fish and habitat for wildlife, screens buildings and preserves the natural character and look of the shoreline. It is also an important aesthetic element.

Other solutions for limiting shoreline erosion include using proper stormwater management techniques during and after construction, limiting the amount of impervious surface generating runoff, and keeping development set back from the shoreline. Techniques for preventing shoreline erosion can be found in *The Shoreline Stabilization Handbook for Lake Champlain and Other Inland Lakes*, which is available for review in the Bridport Town Office.

Another technique for preventing erosion and pollution is to reduce the amount of impervious surface created for new development. Impervious surfaces include all areas that generate runoff including building roofs, paved and gravel roads, and driveways and parking areas. As land is developed, the amount of impervious surface increases causing the amount and rate of stormwater runoff to increase. This in turn increases erosion, flooding hazards downstream and reduces recharge of groundwater supplies. The amount of pollutants entering surface waters also increases as more stormwater flows into them.

Over the past several decades, Bridport’s farmers have changed their management practices to reduce the amount of nutrients running off into the lake. Soil conservation and ecologically sound farm management practices are being actively supported and implemented through the activities of the Natural Resource Conservation Service (NRCS). One of the major components of the NRCS program is the establishment of riparian buffers along streams and the planting of woody vegetation in them. These buffers serve a number of purposes including holding down soil to reduce erosion, filtering pollutants from runoff, shading the stream and lowering water temperature, and providing wildlife habitat and corridors.

Additionally, farmers are being encouraged to fence off streams in order to keep their livestock out of the water, preventing both sedimentation from the breaking down of the stream bank and the deposition of animal waste directly into the water. Continuation of these programs and the participation of Bridport’s landowners in them are supported by this plan.

Another important consideration for the reduction of phosphorus and the prevention of water-related health hazards is the replacement of failed or substandard septic systems. In Bridport, there remain a number of seasonal camps and cottages built on small lots directly on the lake. These seasonal homes were not constructed with water and wastewater systems designed to function year-round. As these camps are converted to year-round use, it is important to ensure that their existing infrastructure is adequate or that it is upgraded to meet the increased demands of a year-round home.

Given soil characteristics in Bridport, there may be existing on-site septic systems that cannot meet the state's current standard of keeping all effluent six inches below ground, especially in the spring when the water table is high. Given the town's relatively low residential density and large lots, historically such conditions have not been considered a threat to human health or a cause of water pollution. However, the experience of Shoreham's village points to how a cluster of substandard systems led the state to require that the town take action and construct a municipal wastewater treatment facility. The Town of Bridport should be looking at the higher-density areas in town and beginning to plan for the possibility that wastewater treatment infrastructure may be required or desirable for them in the future.

The town should also continue to pressure the state to approve on-site systems that would be safe and cost-effective for Bridport's rural homeowners. There are technologies available that have been used successfully for many years in other states that could work to reduce the potential of pollution from poorly functioning septic systems. The slow pace at which the state is approving alternative systems, the high cost of permitted systems, and the requirement that all effluent remain six inches below ground, despite its level of treatment, remain barriers for Bridport's current and future property owners.

#### ***Aquatic Nuisance Invasive Species***

Another threat to Lake Champlain is the proliferation of aquatic nuisance invasive species. There are a number of such plants and animals currently found in the lake, which are causing a range of problems including out competing or attacking native species,

interfering with the functioning of water treatment plants, reducing the ability of people to use the lake for recreation and affecting water quality. Invasive species causing problems in Lake Champlain include:

1. Zebra mussels are small barnacle-like mollusks. They have caused some very serious economic and environmental problems in many areas. They are highly prolific and able to form dense colonies out-competing native species. They feed by filtering plankton out of the water which impacts water clarity and alters the food web. By improving water clarity, the zebra mussels have created a better environment for aquatic plants, which now receive more light.
2. Eurasian water milfoil is a stringy, submerged plant that quickly proliferates. It is highly invasive and aggressively competes with native plant communities reducing biodiversity. Dense mats clog propellers, impair swimming, restrict boating and fishing accesses, and affect water quality. The clearer water created by the zebra mussels and the elevated nutrient levels in the lake have worked together to create an ideal environment for milfoil in the southern part of the lake. Due to plant infestation most of Bridport's shoreline is now unusable for swimming and it is even difficult to launch boats from many properties.



3. Water chestnut is a glossy, green, triangular-leaved plant that can easily choke the waterbodies it invades, out-compete native plants, and reduce oxygen levels which can increase the potential for fish kills. Dense, nearly impenetrable water chestnut growth can make fishing, hunting, swimming, boating, and other recreational activities nearly impossible. Its sharply spined fruits wash ashore and can be hazardous to people who step on them. Water chestnuts are not as common along the shoreline in Bridport as they are elsewhere. However, if they continue to spread unchecked, it is likely that they will infest Bridport's shoreline as well.

The proliferation of invasive species in the lake continues to increase costs to Bridport residents who receive their drinking water from the Tri-Town Water System, which has had to take measures to prevent zebra mussels from blocking their water intake pipes.

#### ***Public Access***

Under the Public Trust Doctrine, public waters of the state are to be maintained with a minimum of hazards and accessible to all. In 2010, members of the Planning Board visited all of Bridport's public lake access areas and shared ideas on how to improve them. These areas are identified as: Witherell Landing, Port Franklin, Champlain Side Drive, Crown Point Road ferry landing, Jones Dock Road and Light House Lot. Respondents to the 2004 and 2010 Planning Surveys indicated that access or public beach is desirable.

#### **VEGETATION AND WOODLANDS**

There are approximately 5,850 acres of wooded land (20 percent of the town's land area) in Bridport. However, most of this wooded area is in small patches of less than 25 acres. There are less than a dozen forested blocks larger than 100 acres.

Bridport is primarily an open landscape of pasture and cropland punctuated with a few forested hills and remnant woodlands or woodlots. For close to 200 years, the agricultural areas of the Champlain Valley had a very stable land use pattern. The original native forest had been largely cleared and turned into farmland by the early 1800s. Hilltops, wet areas and other places not as useful for growing crops or pasturing herds were left as woodlots, which provided firewood, lumber and a potential source of income in time of need. Hedgerows defined the fields, running along the edges of roads, property lines and small streams. The hedgerows were, and continue to be, essential to the survival of some of the native forest species as they form a natural corridor that allows for connections and movement between the relatively small woodlots.

This pattern began to change in the 20<sup>th</sup> century as some of the less viable farmland was abandoned. This was followed by the transition to larger farm machinery, which led to the merger of smaller fields, often resulting in the elimination of hedgerows. The woodlot ceased to be a necessary part of a farm and thus often became the most expendable land to be sold for development. Over the second half of the century, residential development began to occur in and around the edges of wooded areas in Bridport and throughout the Champlain Valley. In Bridport, most of the land

best suited for development in terms of the ability of soils to treat wastewater is on the forested hills.

So despite increases in the total amount of woodland over the past century, the ecological functions of the forest have in many places declined. Restoring the connections between forested areas and considering the implications of development in wooded areas will be necessary to ensure that the forests can continue function ecologically in the future.

### **FISHERIES AND WILDLIFE**

Lake Champlain and its tributaries are known as some of the best freshwater fishing spots in the country with a combination of warmwater and coldwater species that attracts scores of anglers each season. In addition to the bass, pike, salmon and trout, there's a variety of other species such as pickerel, walleye, perch and other panfish. In the winter, people fish for smelt, perch, pike, lakers and landlocks from shanties that dot the ice on Lake Champlain.

Throughout the Champlain Valley, migrating birds utilize the many wetlands bordering Lake Champlain for food and resting spots. Forested areas support a range of songbird species, wild turkey and many mammals including the white-tailed deer, gray squirrel and small rodents. Amphibians breed in vernal pools and three rare reptiles, the timber rattlesnake, five-lined skink, and spiny softshell turtle are found in the valley.

Typical of other agricultural communities around the lake, Bridport abounds with small game, including a wide variety of small mammals from opossums to raccoons. The presence of extensive open lands

bordered by wooded patches creates edge habitats in which many animal and bird species thrive. One such species that has increased in numbers significantly over the past several decades is the wild turkey. Groups of ten or more turkeys are frequently seen foraging in open fields adjacent to wooded areas (at all times of the year except hunting season of course). Closer to the lake, large birds of prey are becoming more common including bald eagles, owls and hawks.

The extent of open land has limited deer habitat and Bridport has a relatively small deer herd. There is a small area of winter deer range identified by the Vermont Department of Fish and Wildlife in the northeastern corner of town. Bridport currently has a resident bear and people catch glimpses of bobcats. An occasional moose has even wandered into Bridport, but for the most part the populations of such larger mammals are small due to the limited amount of forested habitat in town.

1. *To conserve and where possible enhance Bridport's natural environment.*
  - a. Maintain healthy populations of all Bridport's native species and work to prevent the spread of invasive species.
  - b. Preserve, strengthen and increase the connections between community types that are essential to supporting Bridport's wildlife populations.
  - c. Maintain connectivity between and minimize the impacts of development on the town's wooded areas.
  - d. Encourage landowner participation in programs that are intended to aid in conservation of important species, habitats and natural communities.
  
2. *To maintain and, where necessary, improve the quality of Bridport's ground and surface waters and wetlands.*
  - a. Encourage landowners to maintain or establish protective buffer vegetation in the riparian zone of surface waters and wetlands.
  - b. Continue to be involved in the basin planning process and voice the concerns and interests of Bridport residents.
  - c. Support efforts to provide information about and assistance for implementing land management techniques that can help improve water quality.
  - d. Require adequate management of stormwater from construction sites, developed lands, roads, drives and parking areas so that surface waters, shorelines and wetlands are not negatively impacted by stormwater discharge.
  - e. Support landowner participation in state and federal wetland and water-quality conservation programs.

- f. Work to control the infestation of invasive aquatic species that are limiting Bridport residents' enjoyment of Lake Champlain.
3. *To work to ensure that wastewater treatment options are available to property owners that will protect environmental quality and human health, allow for affordable housing and promote the land use pattern called for by this plan.*
- a. Begin planning for the potential future need to provide wastewater treatment facilities in areas of Bridport with higher density settlement.
  - b. Encourage the clustering of new development and the use of shared water and wastewater infrastructure.
  - c. Continue to seek state approval of alternative technologies and systems that will work for on-site treatment in typical Bridport soil conditions while being affordable for town residents.

**MAINTAINING RURAL CHARACTER**

As one of the most vital agricultural communities remaining in Vermont, Bridport has retained a significant amount of its rural character. That character was created and will continue only by maintaining the diverse economic, cultural and natural features that when combined together result in a community-wide sense of place and identity. The following elements are key components in creating the town’s rural character.

The primary feature responsible for Bridport’s rural character is its working landscape, which has been shaped and defined by more than two centuries of agricultural use. Despite increasing non-farm residential development, the town’s landscape and settlement patterns still largely reflect the pattern established by the first several generations of farmers.

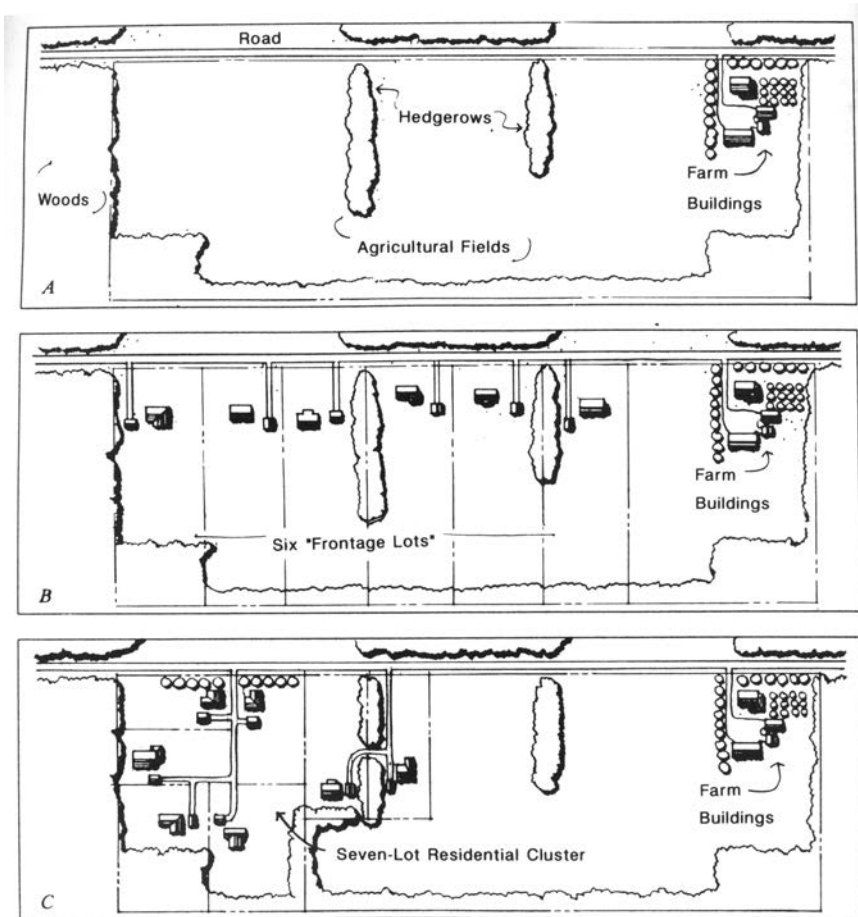
Bridport residents also enjoy a comparably healthy natural environment with clean air and water, expanses of open land, wildlife populations, and a common commitment to the conservation of those shared resources. Another defining feature of the town’s rural character is its residents’ lifestyle. Bridport offers residents a rural lifestyle marked by relative privacy, peace and solitude, access to the land and nature, a lack of formality, a somewhat slower pace, and a strong sense of independence and individualism. At the same time, the town also has a small-town atmosphere where residents meet and talk at the general store or post office, work together on community projects and have a shared sense of community pride and identity.

Bridport, like other rural communities, has been struggling through a transition period in recent years as the agricultural economy is changing and people have been moving into the community and building new homes in former farm fields. Although the percentage of town residents dependent upon the land for their livelihood has been declining over the past 30 years, Bridport’s economy is still based in agriculture.

Bridport’s land use regulations – in the form of the town’s zoning and subdivision regulations – provide structure within which this transition in land use is occurring. Conventional zoning determines the number of residential units allowed on a parcel largely by setting minimum lot sizes. Much of Bridport has been zoned for two acre lots along town roads with ten-acre zoning behind since the 1980s. However until they were recently amended, state septic regulations had promoted development on lots larger than ten acres. The results of these regulations can be seen in Bridport’s landscape, as a large-lot suburban pattern of development has begun to overspread the historic settlement pattern of small centers surrounded by agricultural land.

Bridport wants to remain an agricultural community, and it recognizes that it must retain most of its productive farmland in large, viable tracts to support that goal. As more residential development occurs around the town’s farms, the likelihood of conflict between farmers and their non-farming neighbors increases. The Town of Bridport will actively support the right of its farmers to farm following accepted agricultural practices. The issue the town must grapple

with is determining the most appropriate location for, intensity and character of residential development within the town's rural areas.



**Figure 8: A Comparison of Two Rural Development Options**

Illustration from *Managing Change: A Pilot Study in Rural Design and Planning* (Doble et al., 1992)

Many town residents feel the tension between a desire for low-density development and the wasteful practice of creating large residential lots. It is recognized that large lot zoning by itself can consume agricultural land and open space rapidly, and that the resulting pattern is more similar to the suburban character many residents moved to town to get away from than the rural character that brought them to a community like Bridport.

There are, however, techniques that can allow for development while maintaining the qualities and resources that make Bridport an attractive community. In recent years, these planning techniques have been lumped together under the term “smart growth.” Smart growth can be achieved by using innovative planning techniques for residential subdivisions such as “cluster development” and “conservation design.”

Cluster and conservation subdivisions separate density from lot size, permitting property owners to develop the allowable density on small lots in exchange for permanently protecting the remainder of the parcel as open space. Well-planned, high-density development with dedicated open space would fit better with Bridport's rural character than low-density, uniform sprawl development. A number of studies have shown that compact development with proximity to permanently protected open space also enhances property values because homeowners are willing to pay a premium for the assurance that adjacent open land will never be developed. Clustered subdivisions are also cost effective, are more likely to provide affordable lots and are less expensive to build than conventional developments.

Clustering refers to residential developments where more than half the buildable land area is designated as undivided, permanent open space. This is achieved by allowing a developer to cluster the allowable residential units on smaller lots in designated areas, leaving the remaining area of the parcel intact. With clustering, homes are built on two acre or smaller lots (with favorable soils or use of shared wastewater systems) and a conservation easement, which runs with the property in perpetuity, specifies the ownership and use of the remaining open space. The area could be used for agriculture, recreation or other conservation purposes and the residents of development usually have the benefit of the open land being available to them.

Conservation subdivisions are a more environmentally sensitive form of clustering. Conservation subdivision design protects resources the community has identified as important such as prime agricultural soils, surface waters, wetlands, steep slopes, wildlife habitat, scenic views or other sensitive resources. The first step in conservation subdivision design is to identify the resources that are to be preserved. Portions of the site that are not constrained by these features become the potential development areas. Calculations are then made to determine the number of dwellings the zoning allows on the parcel. This process reverses the sequence of steps normally used in designing a conventional subdivision. The result is development that fits into the landscape and preserves its rural setting.

Bridport's zoning regulations have allowed for clustering through use of the Planned Unit Development (PUD) provisions for a number of years.

Due largely to state wastewater regulations, these provisions were rarely used. Since the recent changes to state law, PUDs have become a more viable option. The town could also provide incentives for developers to use the PUD provisions in order to promote desired development patterns and types. Bridport's regulations do not currently allow this, but it is something that should be examined as the regulations are revised.

Communities can also plan and regulate in a manner that allows for revitalization and growth in existing village centers, creating the kind of dense, mixed-use neighborhoods that have not been built in this country since before World War II. This is another technique for preserving rural character by guiding growth into designated higher-density areas.

Bridport's current regulations would not allow new homes to be built following the historic patterns that led to the creation of the village center and other neighborhoods in town. The zoning regulations call for larger lots, greater setbacks and frontages than the typical village development pattern. The lack of water and wastewater infrastructure in Bridport's existing settlement areas, compounded by poor soils for wastewater treatment, continues to be a limiting factor for more dense development. While the infrastructure may not currently be in place to support it, the town could revise the regulations to support its desired future development pattern if infrastructure were to be built.

#### **VILLAGE REGION**

This nearly 500-acre area contains Bridport's traditional village center, the town's commercial hubs formed by the two intersections of Routes 22A and 125, and open farmland.

Bridport's village center was laid out in 1784 and developed slowly at the intersection of the stage road to Vergennes and one of three main routes to Lake Champlain. At the core of this land use region is Bridport's village center containing approximately 40 homes, many of which were built in the mid- to late-1800s. This traditional center is recognized on the Vermont State Register of Historic Places as the Bridport Village Historic District. The village center also contains a number of public buildings and former commercial structures.

Most of the residential lots in the village center are less than two acres in size and many are less than one acre. The core village area comprises less than 100 acres and its small lots are bounded on all sides by large farm parcels. While not all land within the core of the village center is currently developed, there is little room for additional development due to lot configuration and the amount of land in public ownership.

Currently, three sides of the village center are constrained by conserved land. Since several of the goals expressed in this plan call for this region to accommodate higher-density residential and commercial development, the town should carefully consider the impacts on the viability of this region before supporting any additional land conservation within this region.

There are currently a number of small businesses operating within or close to the village region, including Pratt's General Store, Champlain Valley Insurance Agency, Boise Citgo, Broughton's Farm Supply, Mikes Fuels and Eagle Eye Printing.

A wide range of land use activities appropriate in scale and character to a small town center should be allowed in Bridport's village region. Commercial activities should be of a type that would provide needed services to town residents and places where residents can interact with their neighbors. The village region should remain the main commercial area in town. Highway commercial uses should not flow out of the village region north or south on Route 22A and the town's zoning regulations should ensure that the village region does not become characterized by strip highway development at a scale inappropriate for a rural community such as Bridport. Community facilities, such as the school, town offices, post office, churches and fire department, should continue to be located in the village region to promote the viability of the town center.

New development should be encouraged to fit into the historic fabric of the village's existing homes and community buildings. Development should be allowed on small lots and provision of the infrastructure needed to facilitate higher density use should be encouraged. As the village is further developed, consideration should be given construction of sidewalks to promote pedestrian access to homes, businesses and community facilities. New streets to be built within the village should allow for interconnection and the future creation of a grid street pattern.

#### **THE UPLAND REGION**

The Upland Region lies to the east of East Street and extends out towards the Weybridge and Cornwall town lines. It also includes land to the east of Route 22A south of Bridport's village center. This area of



Bridport is distinguished by its rocky, hilly terrain and much of the town’s larger forest blocks.

The northeast corner of this region is characterized by the steepest terrain in town. An area known locally as Gale’s Ledge extends southeast from Snake Mountain along the town lines between Bridport and neighboring Weybridge and Cornwall. Gale’s Ledge is a unique resource within the Town of Bridport. It provides wildlife habitat and recreation opportunities for area residents.

The northeastern corner of this region is part of the larger Snake Mountain area, whose ridgelines form an essential component of the scenic character of this part of the Champlain Valley. In the early 1990s, there was a proposal for a large telecommunication tower on Snake Mountain in the Town of Addison, which was never constructed. The Town of Bridport supports keeping Snake Mountain and its associated ridgelines clear of towers and similar structures.

This area of town should continue to be a primarily agricultural and rural residential region. Commercial activities should be limited to home-based businesses, agriculturally-based businesses, or businesses carried on within former agricultural buildings. Any commercial activities occurring on properties accessed by town roads should be limited in the amount of additional traffic they are permitted to generate. Residential development should be allowed a low density with the use of the town’s PUD provisions encouraged.

While the Upland Region is generally a low-density area, there are several clusters of homes including those in the Mountain Road and Hemenway

Neighborhoods. Neighborhoods have been delineated in these two areas because residential development has already occurred there at a somewhat higher density and because these two areas generally have soils better suited to onsite septic systems than those that are found in most of the town. While this latter factor would make residential development more feasible in these neighborhoods, it must also be recognized that some of the land has other constraints including slope, rock and ledge, and forest cover that make development less desirable. Use of PUDs within these neighborhoods should be promoted so that residential development can occur in a manner that would take such site features into account. These two neighborhoods are more likely to be suitable for medium density residential development than other areas in the Upland Region.

#### **THE LAKESHORE REGION**

Bridport has around eight miles of shoreline on Lake Champlain and there are about 150 residences in the Lakeshore Region. This region represents less than five percent of the town’s land area, but it contains 25 percent of its homes. Some of the residences on the lake are seasonal, but over the past several decades a significant percentage of the lakeshore “camps” have been converted to year-round use. This region is being converted from agricultural and recreational use to residential use at a faster pace than any other area of town.

The Lakeshore Region is not uniformly developed and there are three neighborhoods characterized by a higher density of development within the region – Giard’s Bay Neighborhood, Torrey Island Neighborhood and the West Bridport Neighborhood.

The Giard's Bay Neighborhood is composed of approximately 80 small lots, most a half-acre or less in size. There are approximately 65 residences in this neighborhood about 60 percent of which are seasonal. Camps were first built here in the 1940s and when they were constructed most belonged to Bridport residents. Over the years, many of the camps have been sold outside their original families of ownership and some have been converted to year-round use.

Torrey Island, or Swamp Island as it is also known locally, is another small community of lakeshore homes and camps. The island is connected to the mainland across the town line in Shoreham by an access road that passes through the Torrey barnyard. Until improvements were made to the access road, the island was not accessible by vehicle when the lake was high. There are approximately 25 homes on the 25 acres of the island that are located in Bridport. There are two larger parcels on the island and most of the remaining land is divided into lots a half acre or less in size.

The final lakeshore neighborhood is the historic settlement of West Bridport. Located at the terminus of Crown Point Road, this area was an early center of commerce and shipping 200 years ago. A ferry operated from West Bridport across the lake to Crown Point, New York into the 1930s. West Bridport had its own store and post office into the early 1900s. Most of the buildings that characterized that early port have been destroyed or demolished over the years. Its heritage as a center can still be seen in the town's road system at the intersection of Lake Street, Crown Point Road and Liberty Lane. There are currently around 20 homes in this 210-acre neighborhood.

The remainder of the lakeshore region is characterized by agricultural use and more recently large-lot residential development. Promoted by the former 10-acre exemption in the state wastewater regulations, in recent years much of the new residential development along the lake has occurred in narrow long lots, often referred to as spaghetti lots, extending from Lake Street or Route 125 to the shoreline. These lots are generally 10 to 12 acres in size and range from 200 to 300 feet and width with depths of 1,200 to over 2,500 feet. The houses are built near shore, most with long individual driveways out to the road.

It is certain that there will continue to be a demand for residential development along Bridport's lakeshore. In order to protect this important resource and promote the highest quality development possible along the shoreline, the town should consider requiring the use of its PUD provisions in this region. There is still significant undeveloped shoreline frontage remaining along the lake and without modifications to the town's land use regulations it is likely that eventually the entire shoreline will be divided up into narrow residential lots. The town should further refine its vision and plan for the future of the lakeshore weighing the benefits and impacts of continued agricultural, additional residential or future water-oriented commercial activities that could be located on the shoreline.

Consideration should be given to rezoning the West Bridport neighborhood to allow for higher density development and the potential for recreating a village center on the lakeshore. Such a center should be primarily residential, although small-scale commercial

uses might be appropriate especially those related to water, recreation and tourism.

The maintenance of a mix of seasonal and year-round housing should be encouraged in both the Giard's Bay and Torrey Island Neighborhoods. Given the pre-existing small lots, care should be taken to ensure that development remains at an appropriate scale and intensity of use.

**AGRICULTURAL REGION**

The Agricultural Region is Bridport's largest planning region, comprising 57 percent of the town's land area. The vast majority of this land is in agricultural use and more than 2,500 acres of farmland in this region have been conserved. If agriculture is to remain economically viable in Bridport, the land base in this region must remain largely in production. The town should examine its zoning regulations to ensure that they support to the greatest extent possible continued agricultural use of this land, while accommodating a low level of residential development.

Currently, Bridport's zoning regulations use a technique referred to as "strip zoning," where subdivision of small lots is allowed along most roads and larger lot sizes are required for the land behind them. At one time, this zoning system was considered a good way to conserve agricultural land while allowing for residential development. Over the past 10 years, this system has been abandoned by many communities for regulations that promote cluster development or conservation design. A build-out analysis has been done for the Town of Bridport that models the maximum potential development allowable under existing zoning. Consideration should be given to whether the density level in the agricultural region

is set appropriately to promote agricultural rather than residential use.

**LEMON FAIR REGION**

The Lemon Fair Region is an approximately 3,200-acre area in the southeastern corner of Bridport. This area is characterized by the floodplain and associated wetlands around the Lemon Fair River. Around 1,300 acres in this region have been classified as wetlands in the National Wetland Inventory. Approximately 260 acres around the Lemon Fair is owned by the state. Around another 1,030 acres has been conserved through the sale of development rights.

Due to the combination of seasonally flooded land and wetlands, this region is virtually undeveloped. There are no homes built within this region. A small amount of acreage is in agricultural use, but most areas within this region cannot be cultivated or even hayed on wet years. Due to these constraints, development should continue to be kept out of this region. Allowable uses should include low-intensity agricultural and forestry uses, recreation, and open space.

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## compatibility

### **THE ADDISON REGION**

The Town of Bridport is located in the Addison Region. By state statute, town plans must be compatible with the Regional Plan. The Bridport Town Plan contains goals and objectives similar to the Addison County Regional Plan. The Regional Plan adopts the land use plans of its member municipalities as its own, so there can be no conflict between local and regional land use plans.

### **SURROUNDING TOWNS**

This section briefly examines the land use plans for towns surrounding Bridport. No conflict was found to exist between Bridport and its neighbors. Each of the towns is listed below with a summary of the land use along that town's boundaries.

#### ***Addison***

The Town of Addison borders Bridport to the north. The Addison Town Plan indicates that its shoreline area near the border with Bridport is suitable for higher-density residential, commercial and recreational uses. The Bridport plan also has a lakeshore region, although it envisions the area continuing in agricultural and residential use. Given that the waterfront area directly on the town line, Willow Point, is already developed with houses in both towns, it is unlikely that further development in Addison will occur within proximity to the Bridport border.

Along much of the remainder of the town line, both towns have classified land for agricultural and rural residential uses. Bridport has suggested that the area around East Street is suitable for higher density

development. Both towns recognize the area around Snake Mountains and its associated ridges as a unique resource with special concerns.

#### ***Weybridge***

The Town of Weybridge borders Bridport's northeastern corner. The Weybridge land use plan puts this area into the Lemon Fair Valley and Snake Mountain planning regions. The plan describes this area as being suitable for mainly conservation and agricultural uses. In Bridport, this plan classifies the area on the Weybridge border as part of its Upland Region.

#### ***Cornwall***

The Town of Cornwall forms much of the eastern boundary of Bridport. Much of the border between the towns is part of the Lemon Fair floodplain and wetland area. Both towns recognize this area as environmentally sensitive and ill-suited for development. Cornwall's land use plan classifies the area north of Route 125 as suited for rural agricultural and residential uses. In Bridport, the terrain becomes more steep and wooded. Bridport classifies this area as part of its Upland Region, suited for low-intensity residential use.

#### ***Shoreham***

The Town of Shoreham borders Bridport to the south. Both towns recognize the shoreline community on Torrey Island. The remainder of the land on the town line in Shoreham is part of the town's rural region. The Shoreham Plan calls for this region to remain largely agricultural and for new development to maintain traditional settlement patterns.

**TOWN OF BRIPORT SINGLE JURISDICTION ALL HAZARDS MITIGATION PLAN**

The All Hazard Mitigation Plan has been developed and will now be included as “Appendix A” in our Town Plan. This Single Jurisdiction All-Hazards Mitigation Plan includes a section of Flood Resiliency along with the Town of Bridports current flood mitigation effects referenced on page 46 in the Erosion Pollution and Flood Resiliency section.

**STANDARD FOR THE BRIDPORT TOWN PLAN REGARDING SOLAR PROJECTS**

The Town of Bridport supports responsibly sited and developed renewable energy projects within its boundaries. It recognizes that to maximize profits, developers desire projects to be located in close proximity to electric power lines capable of transmitting the load proposed to be generated and easy access from major transportation networks for construction. However, it desires to maintain the working landscape, adopted conservation and habitat protection measures and scenic rural views important to its tourism economy and rural cultural aesthetic. Not all commercial or community standards in order to be considered “orderly development” supported by this plan and in order to not unduly impact the aesthetics of the rural countryside this plan intends to protect:

**1. Community Standards**

- A. Siting. Where a project is placed on the landscape constitutes the most critical element in the aesthetic siting of a project. Poor siting cannot be adequately mitigated. Accordingly, all renewable energy projects must evaluate and address

the proposed site’s aesthetic impact on the surrounding landscape.

- a. Good sites have one or more of the following characteristics:
  - Roof-mounted systems;
  - Systems located in close proximity to existing larger scale, commercial, industrial or agricultural buildings;
  - Proximity to existing hedgerows or other topographical features that naturally screen the proposed array from view from at least two sides;
  - Reuse of former brownfields or otherwise impacted property.

**2. Average Person**

For the purpose of this plan, the municipal legislative body, the Select Board, shall be deemed to represent the voice of the “average person” with respect to the ‘Quechee Test’ when evaluating the aesthetics of a proposed solar array.

**3. Mitigation methods:**

In addition to properly siting a project, solar developers must take the following action to mitigate all project sites:

- a. Locate the structures on the site to keep them from being “skyline” above the horizon from public and private vantage points.
- b. Shorter panels may be more appropriate in certain spaces than taller panels to keep the project lower on the landscape.
- c. At a minimum, all solar arrays must observe the setback restrictions contained

in Act 56 governing solar installations. However, developers must meet the setbacks listed in the Municipal Zoning Regulations within the zoning District in which it lies.

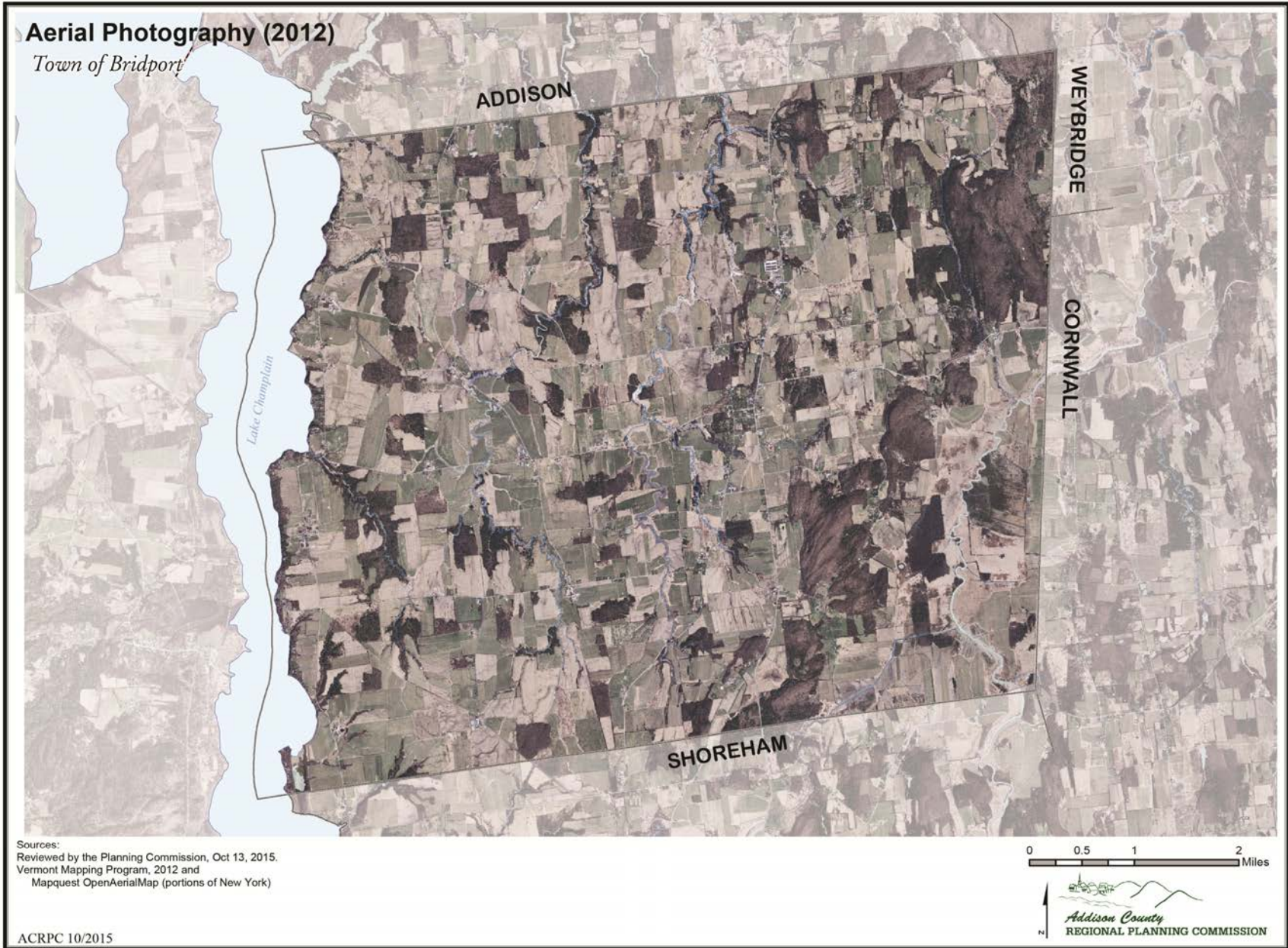
- d. Use the existing topography, development or vegetation on the site to screen and/or break the mass of the array.
- e. In the absence of existing natural vegetation, the commercial development must be screened by native plantings beneficial to wildlife and pollinators that will grow to a sufficient height and depth to provide effective screening within a period of 5 years. Partial screening will break the mass of the site and protect public and private views of the project.
- f. Practice a “good neighbor policy”. The siting of the array should be done in such a manner that the array creates no greater burden on neighboring property owners or public infrastructure than it does on the property on which it is sited. As an example, a landowner may not site an array on his or her property in a location calculated to diminish the visual neighbor’s or the public’s viewshed. Locating a solar array in a manner designed to reduce impacts on neighbors or public viewsheds constitutes reasonable mitigation.
- g. Use black or earthtone materials (panels, supports fences) that blend into the landscape instead of metallic or other brighter colors).

#### **4. Decommissioning and Restoration:**

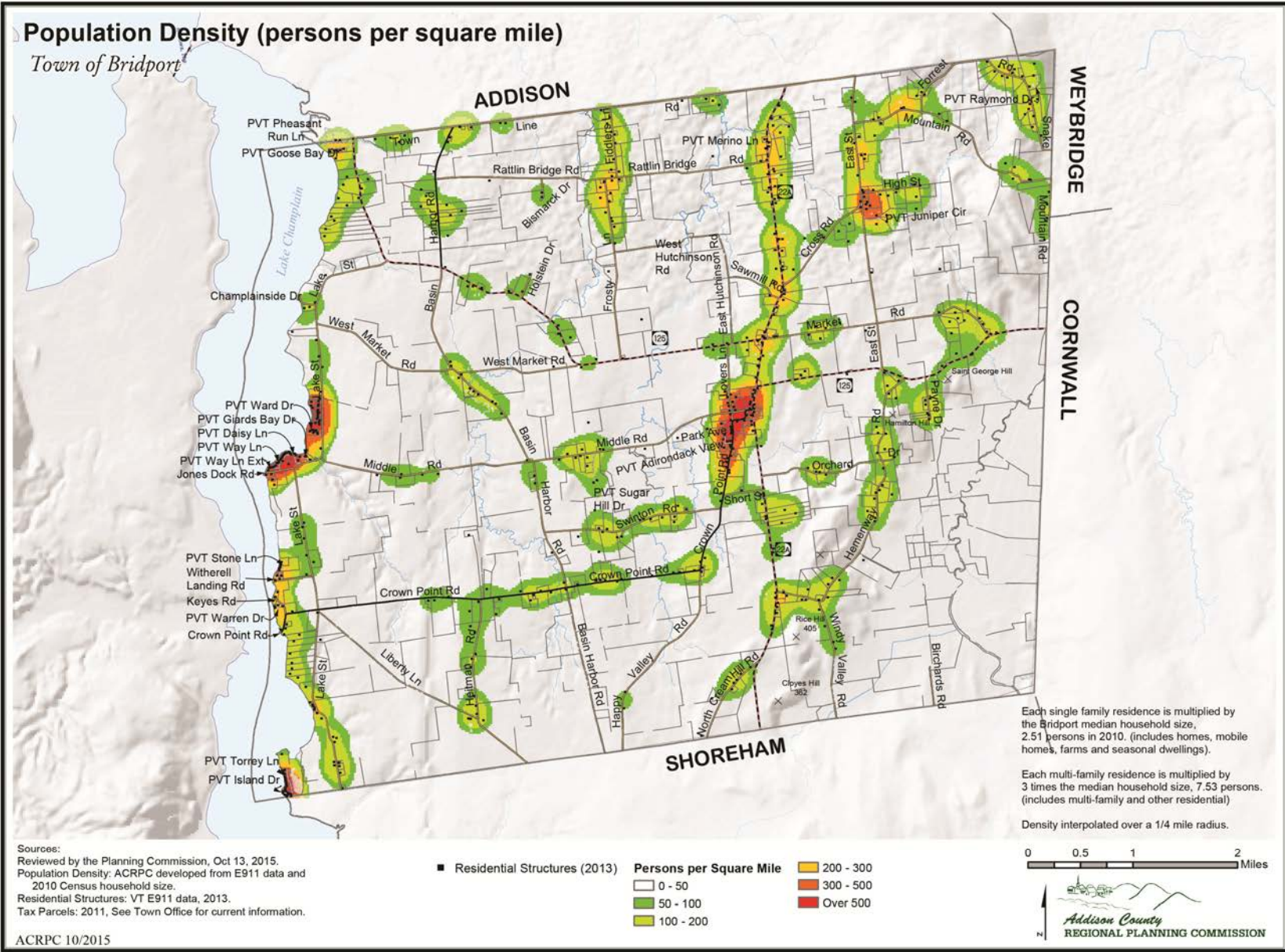
All projects shall be decommissioned at the end of their useful life and property shall be restored to its pre-project condition. Developers of all projects 100 kW and greater shall provide the municipality with appropriate assurances to guarantee funding exists to decommission the project, by posting a surety bond. In keeping the Town of Bridport’s desire to retain our agricultural land base, the end of the useful life of a solar array shall be deemed to be at the end of the initial contract for services with the power company.

A town plan is a worthless document if it merely sits on a shelf for eight years between required revisions and readoptions. This section of the Bridport Plan lists several specific actions that the town might take over the course of the next eight years implement the policies of this plan.

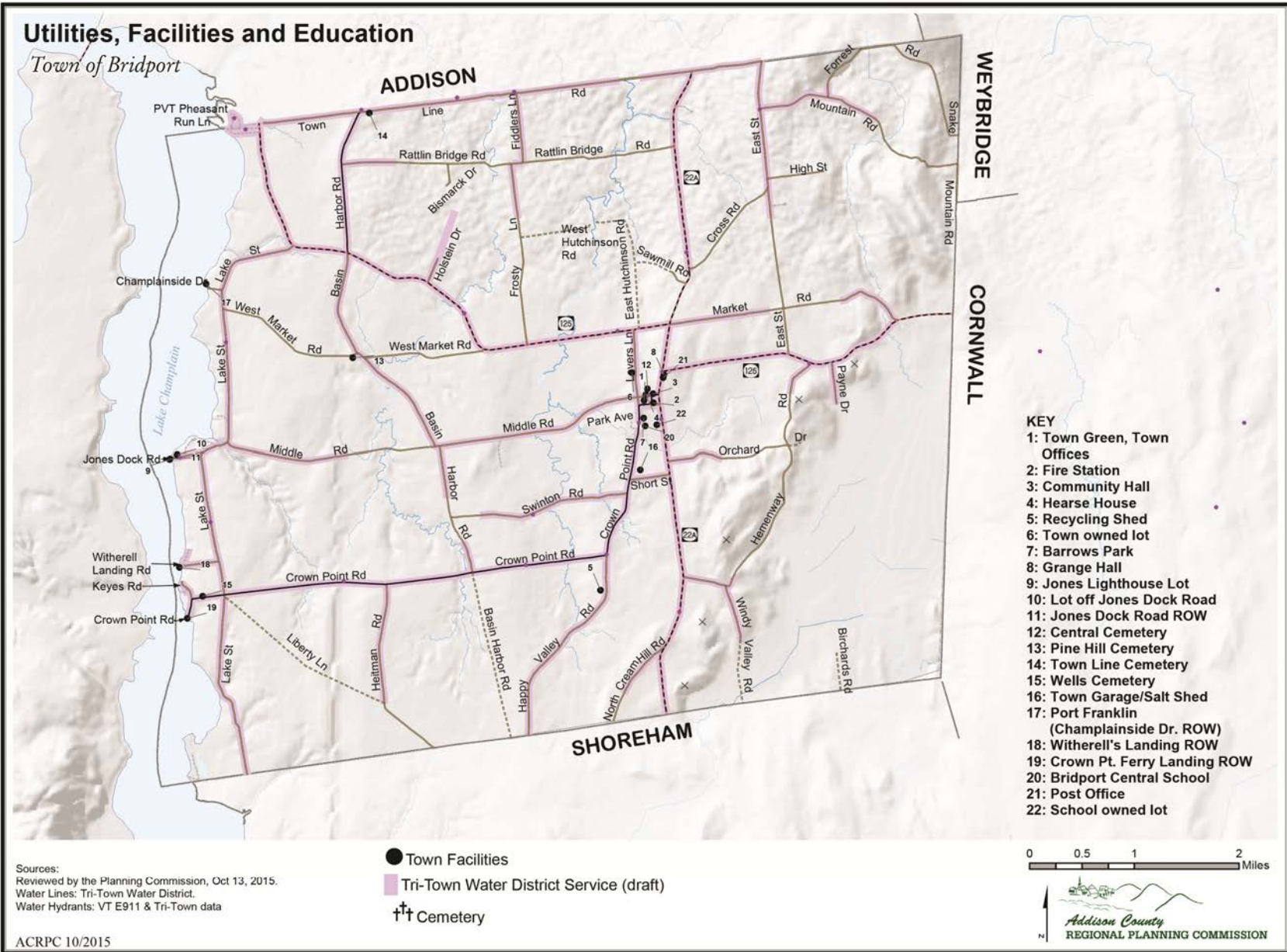
1. Review and revise Bridport’s zoning and subdivision regulations to ensure they meet the requirements of state law and implement the policies of this plan.
2. Seek Village Center designation for Bridport’s village center, which would increase the town’s competitiveness in seeking state grants funds and may provide benefits to owners of some historic buildings in the form of tax credits.
3. Develop educational materials for new residents to inform them about the town’s commitment to its agricultural way of life, accepted agricultural practices, and this plan.



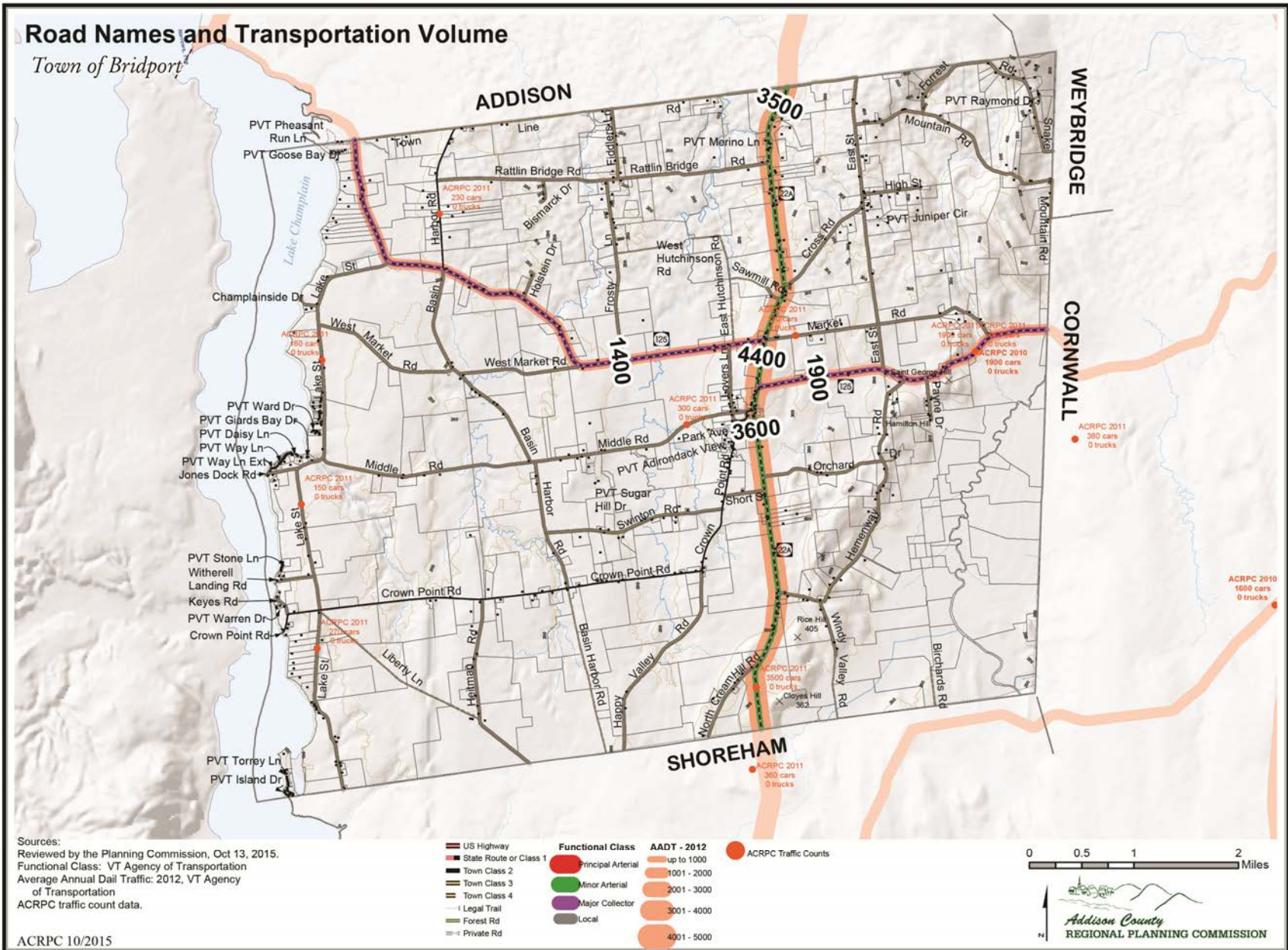




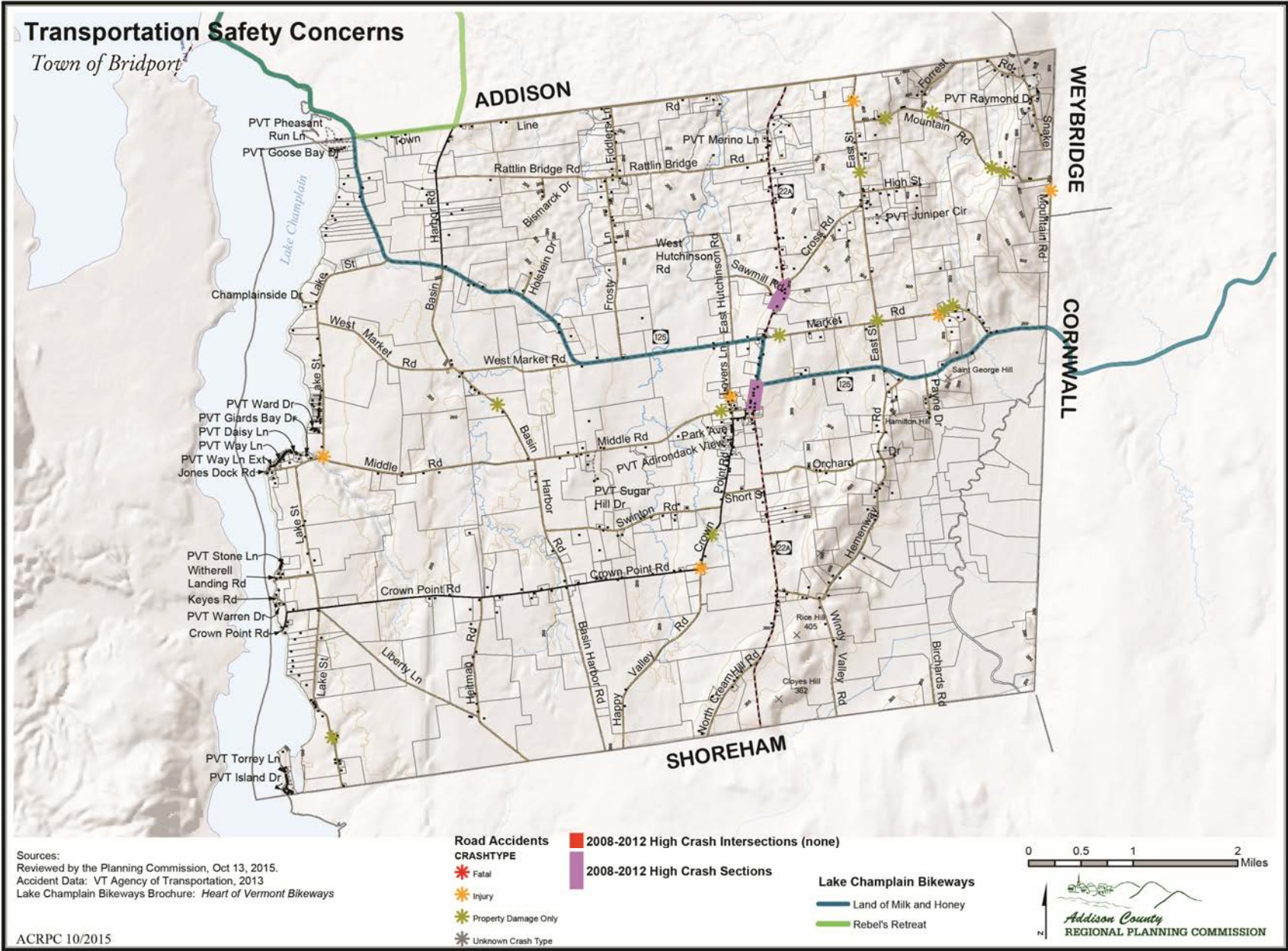
# Utilities, Facilities and Education



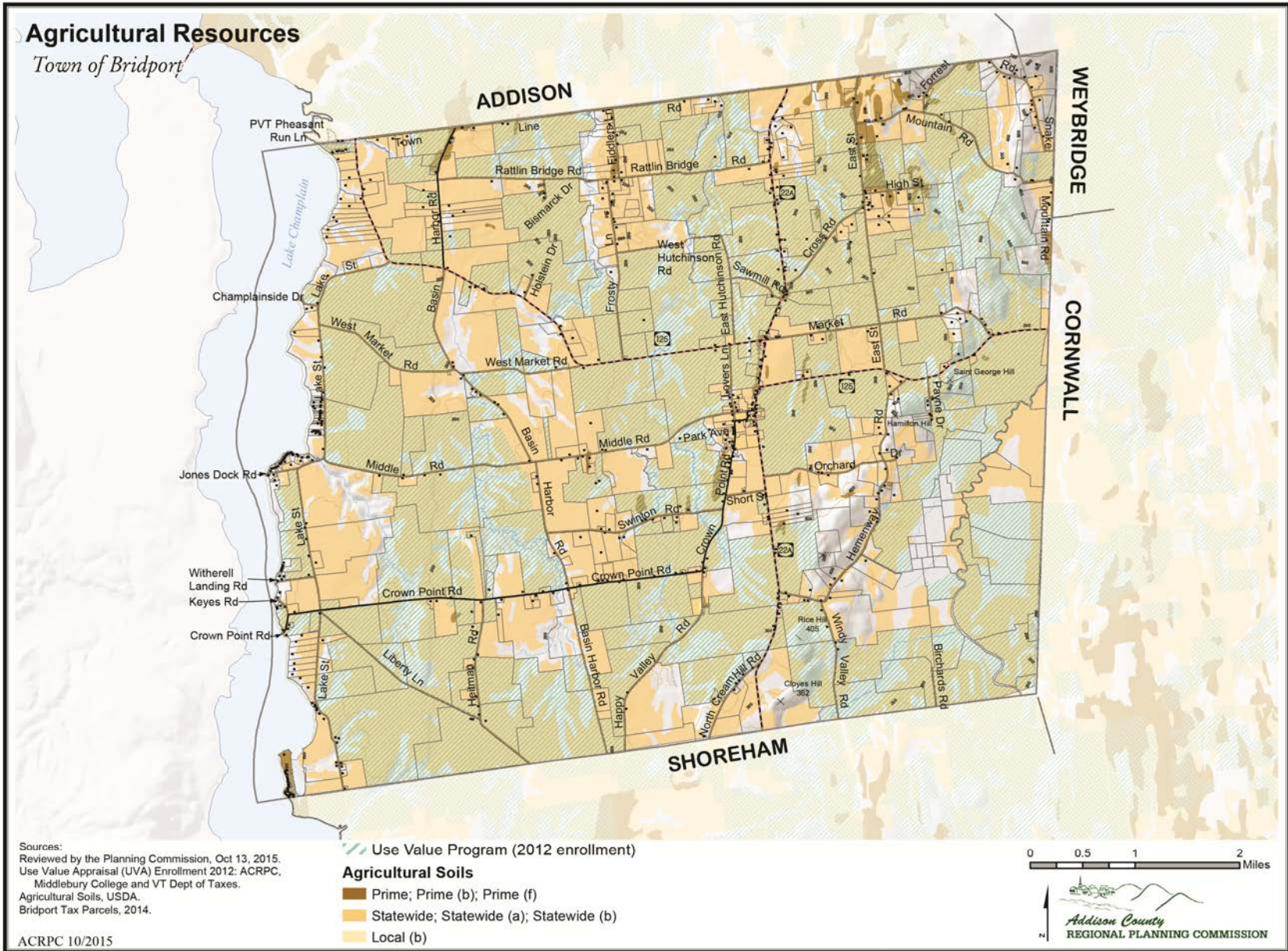




**BRIDPORT TOWN PLAN**  
 2017 TO 2024



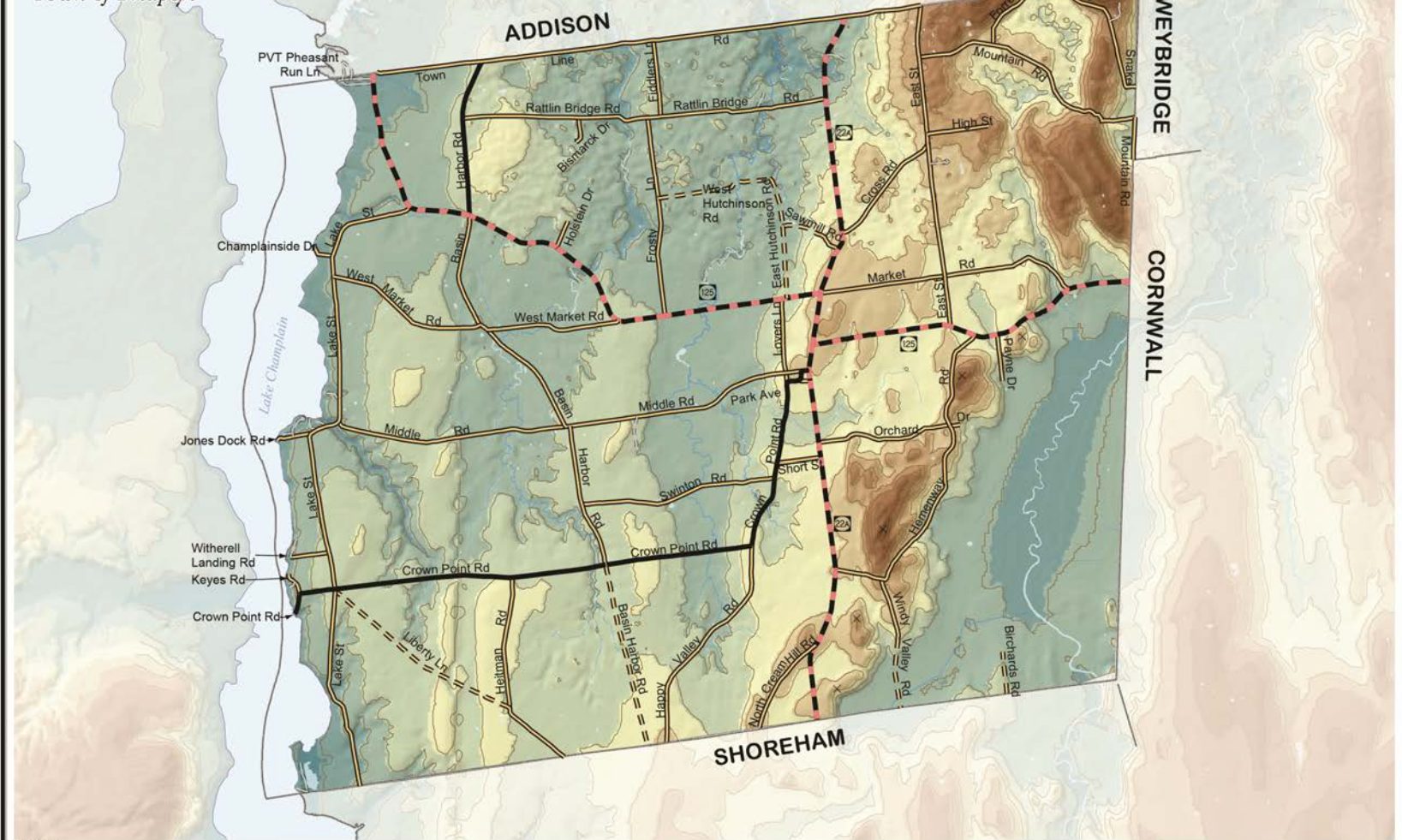






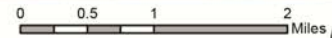
# Elevation and Landform

Town of Bridport



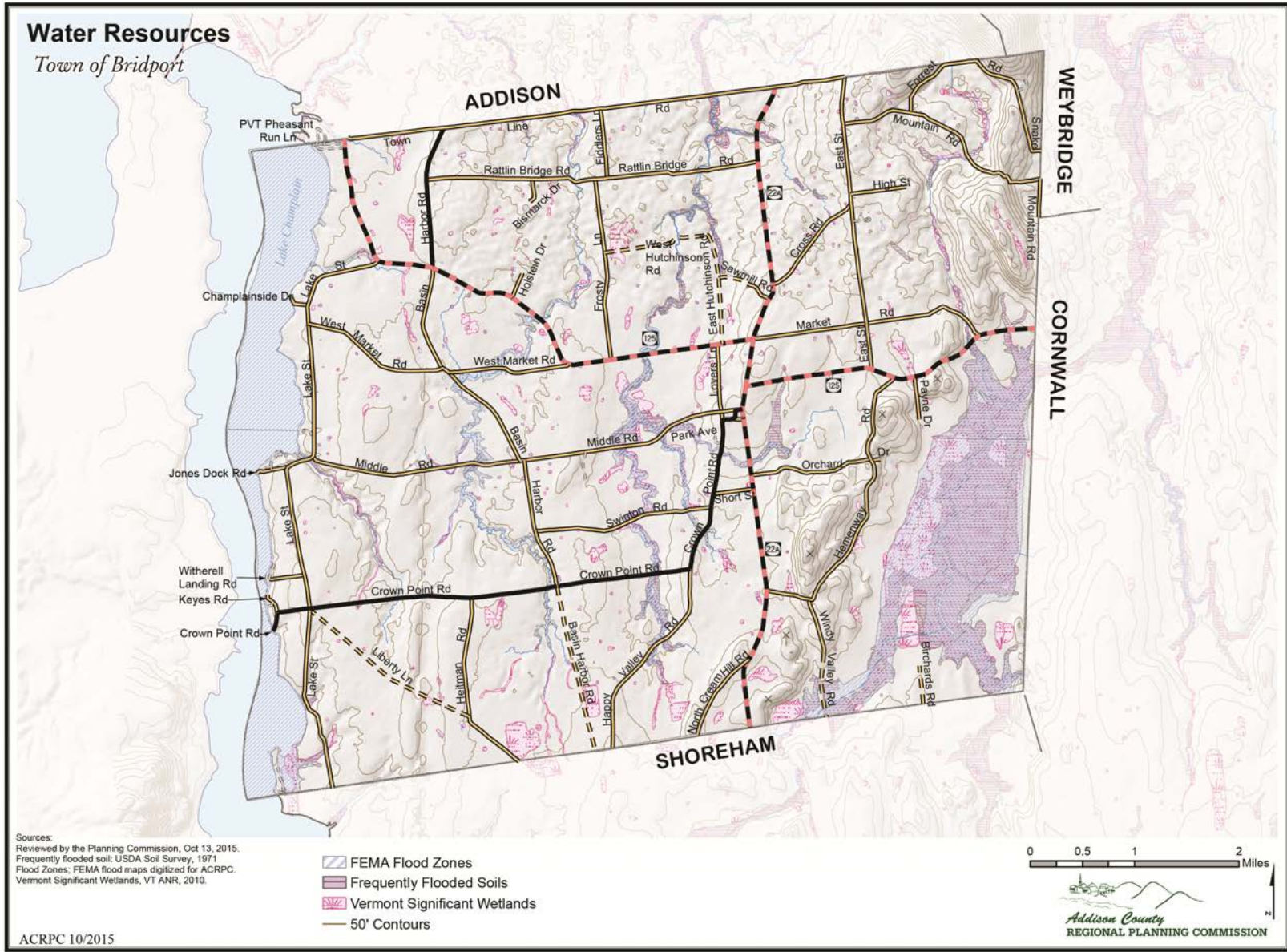
Sources:  
 Reviewed by the Planning Commission, Oct 13, 2015.  
 Elevation from USGS DEM (7.5 minute quads)

— 50' Contours	<b>Elevation in feet</b>	151 - 200	301 - 350
	less than - 100	201 - 250	351 - 400
	101 - 150	251 - 300	401 - 450
			451 - 500



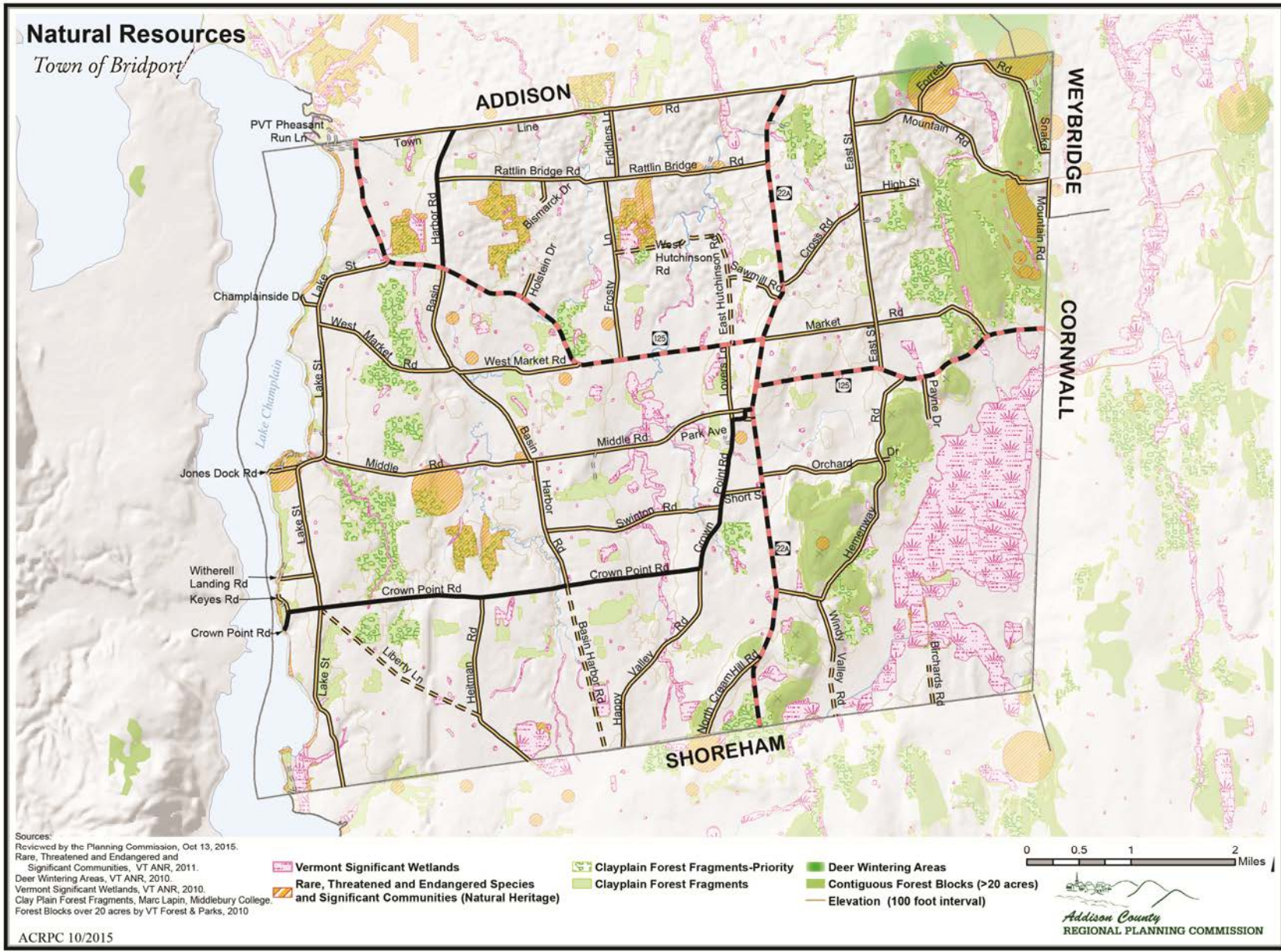
ACRPC 10/2015



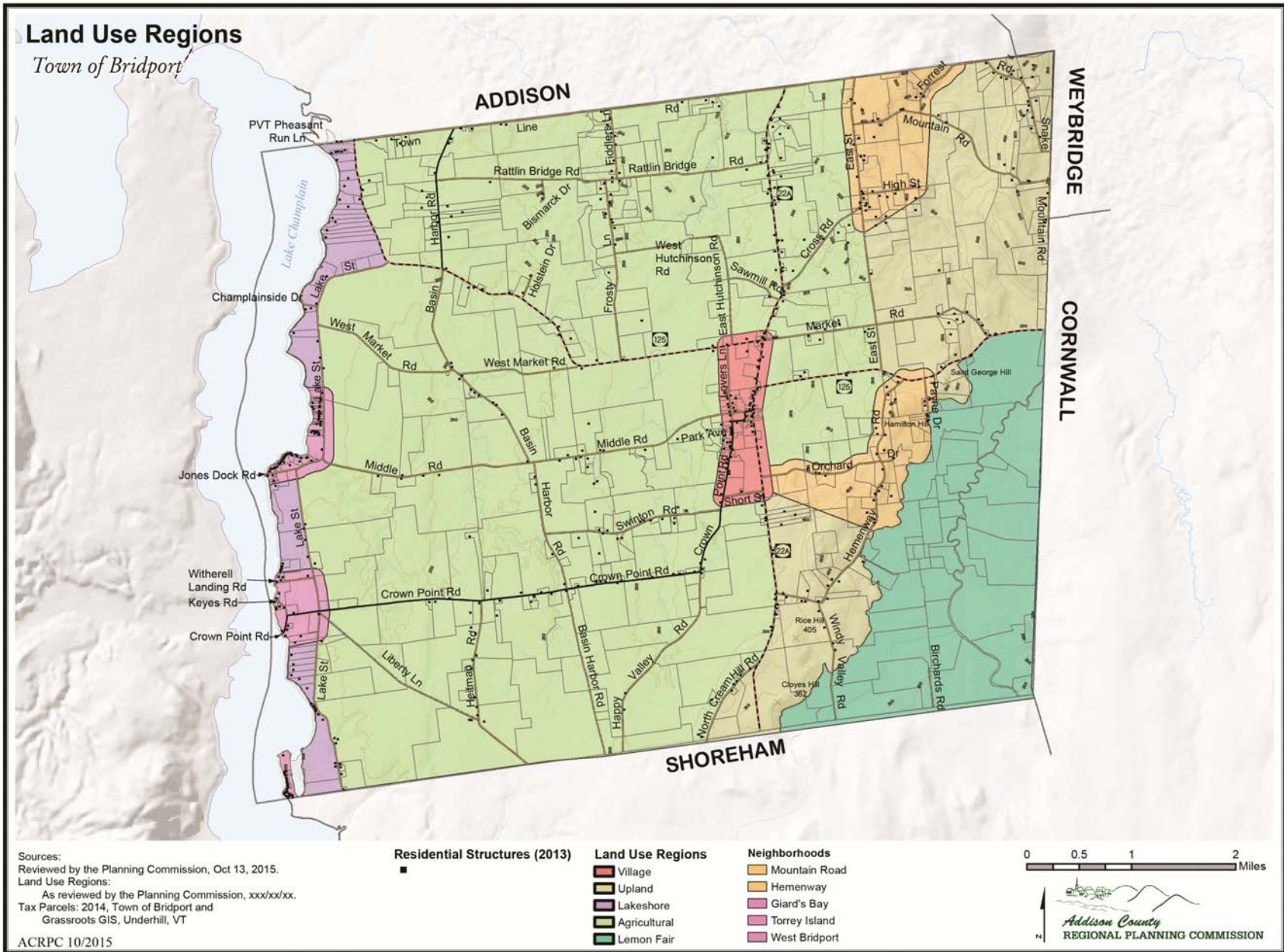


**BRIDPORT TOWN PLAN**  
*2017 TO 2024*





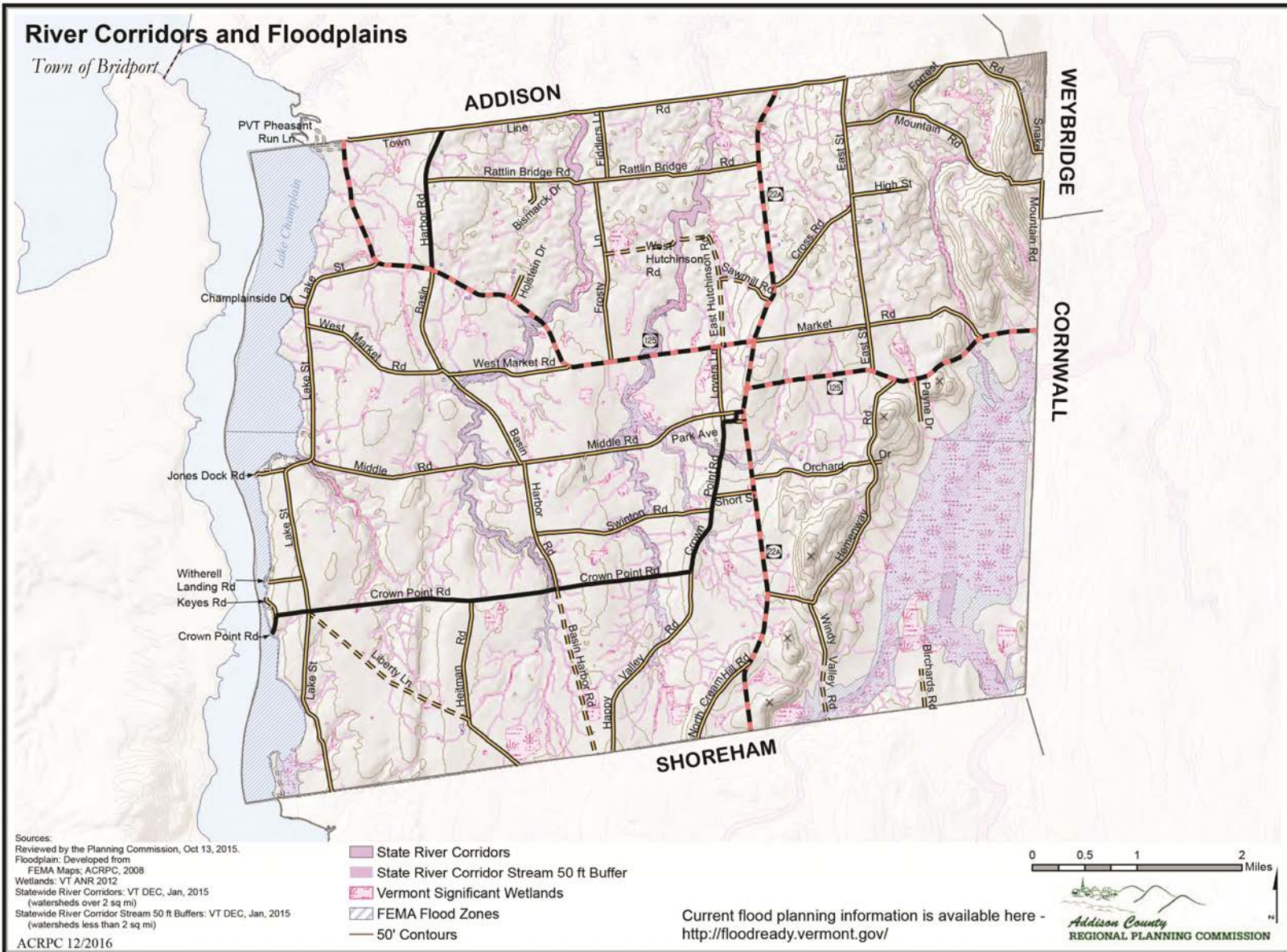




**BRIDPORT TOWN PLAN**  
 2017 TO 2024

# River Corridors and Floodplains

Town of Bridport



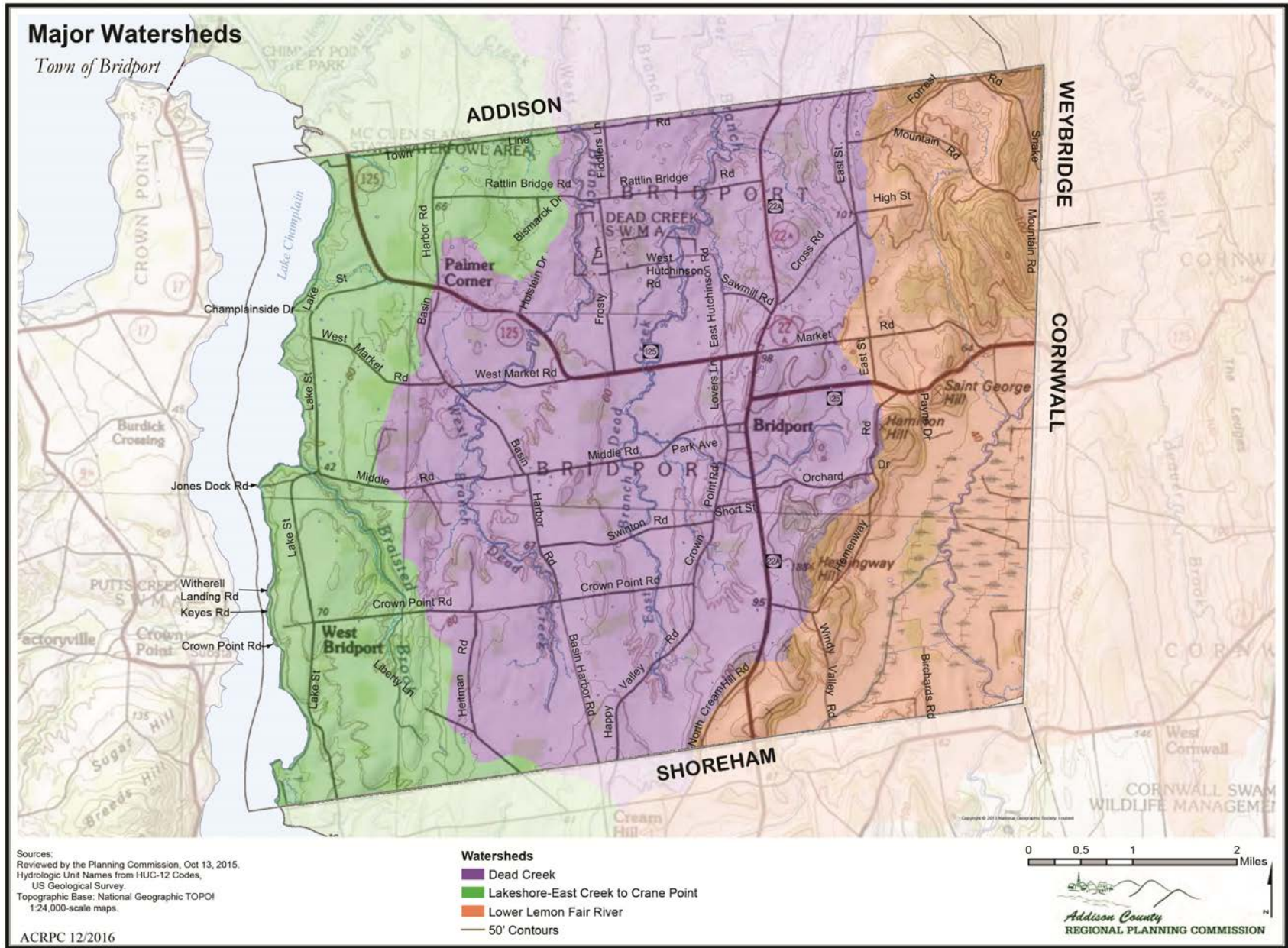
Sources:  
 Reviewed by the Planning Commission, Oct 13, 2015.  
 Floodplain: Developed from  
 FEMA Maps; ACRPC, 2008  
 Wetlands: VT ANR 2012  
 Statewide River Corridors: VT DEC, Jan, 2015  
 (watersheds over 2 sq mi)  
 Statewide River Corridor Stream 50 ft Buffers: VT DEC, Jan, 2015  
 (watersheds less than 2 sq mi)  
 ACRPC 12/2016

- State River Corridors
- State River Corridor Stream 50 ft Buffer
- Vermont Significant Wetlands
- FEMA Flood Zones
- 50' Contours

Current flood planning information is available here - <http://floodready.vermont.gov/>

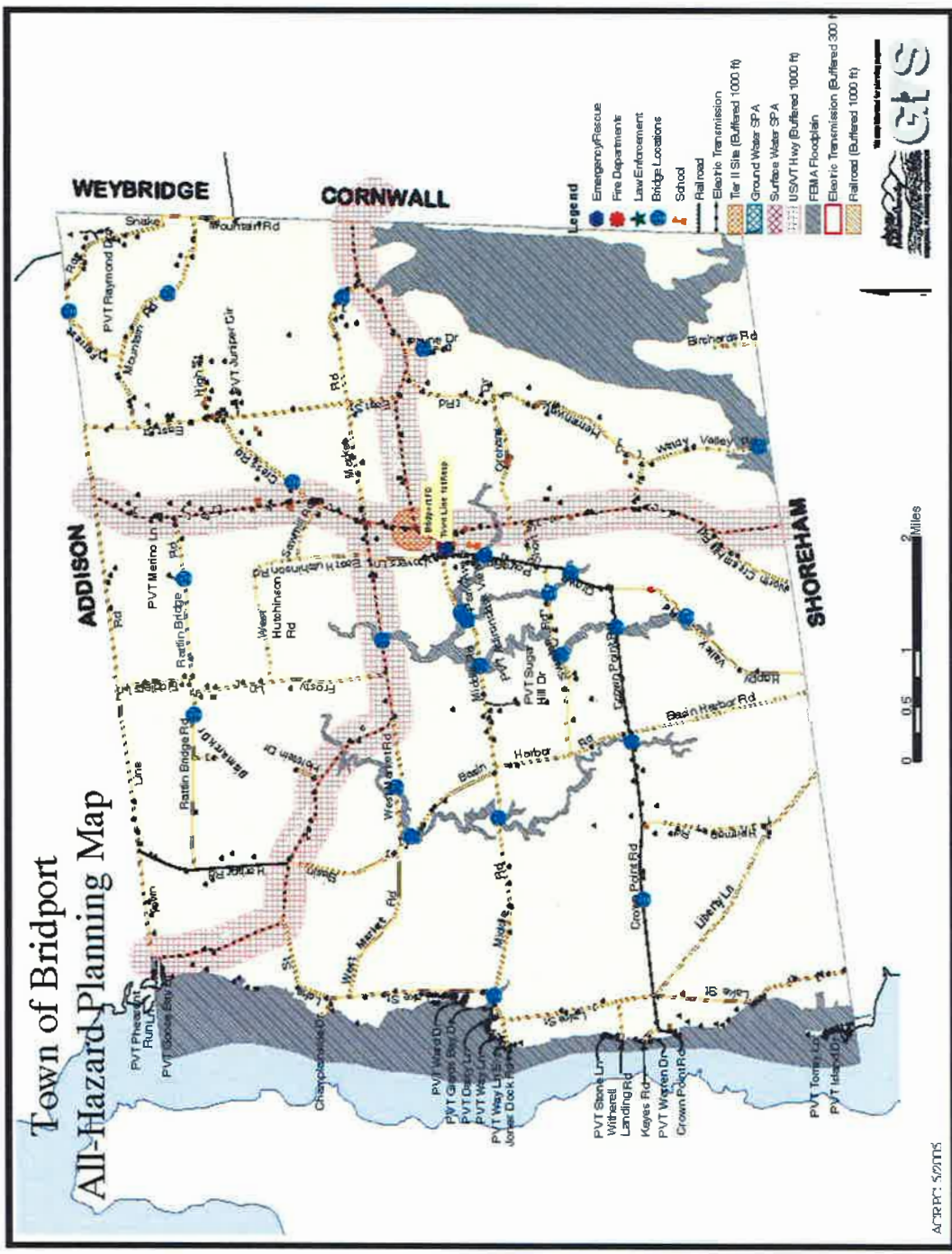






**BRIDPORT TOWN PLAN  
2017 TO 2024**

# Town of Bridport, Vermont



# Single Jurisdiction All-Hazards Mitigation Plan

Final Plan Adopted:  
1/12/2016

# **Bridport, Vermont Single Jurisdiction All-Hazards Mitigation Plan**

**Table of Contents:**

- 1. Planning Process.....Page 3**
  - 1.1 Current Plan Development Process.....Page 3**
  - 1.2 Opportunities for Public Comment**
  - 1.3 Opportunities for Additional Comment**
  - 1.4 Extent of Review**
- 2. Community Background.....Page 6**
  - 2.1 Local Maps**
    - Bridport Road Names**
    - Local Services, Facilities and Infrastructure**
    - Bridport Population Density**
- 3. Existing Adopted Plans Which Support Hazard Mitigation.....Page 9**
  - 3.1 Bridport LEOP**
  - 3.2 Bridport Town Plan Policy Statements**
  - 3.3 Addison County Regional Plan Goals**
  - 3.4 State of Vermont Hazard Mitigation Plan Goals**
- 4. Community Risk Assessment.....Page 11**
  - 4.1 Local Areas of Concern Map**
  - 4.2 Risk Prioritization Results**
  - 4.3 Hazard Type, Location, Extent and Vulnerability**
- 5. Community Mitigation Strategies.....Page 38**
  - 5.1 Hazard Mitigation Goals**
  - 5.2 Ongoing Mitigation Strategies by Hazard Type**
  - 5.3 Proposed Mitigation Actions and Projects by Hazard Type**
  - 5.4 Project Prioritization Process**
- 6. Plan Maintenance Procedures.....Page 49**
  - 6.1 Plan Review/Update Process**
  - 6.2 Programs, Initiatives and Projects Review**
  - 6.3 Post-Disaster Review Procedures**
- 7. Plan Adoption Resolution.....Page 52**
  - Annex A Regional Maps.....Page 53**
    - Addison Region Hazardous Materials Locations**
    - Addison Region Watersheds**
    - Addison Region Average Annual Daily Traffic**
    - Addison Region Dam Locations**
    - Addison Region Bridge Locations**
  - Annex B Local Documents.....Page 58**
    - Town Road and Bridge Standards Adoption Meeting Minutes**
    - Plan Comments**
  - Annex C Common Mitigation Measures by Hazard Type..... Page 64**
  - Annex D External Mitigation Project Funding Opportunities.....Page 73**



## 1. Planning Process

### 1.1 Current Plan Development Process

The Town of Bridport Selectboard Chair indicated an interest in working through the process of creating an All-Hazards Mitigation Plan in early 2012 following damaging flooding from Tropical Storm Irene. The Town's interest was used in developing a background narrative to support inclusion in a FEMA Pre-Disaster Mitigation request sponsored by the Northwest Regional Planning Commission (NWRPC). Following an extensive review and contracting process, ACRPC was authorized by NWRPC to begin the planning process in late 2013. The town Selectboard met on August 12, 2013 at its regular meeting and authorized its support for this planning process through a resolution of the board. In April of 2014 ACRPC was requested by the Northwest Regional Planning Commission, the grant administrator, to stop all work until contract wording could be clarified. As of May 2014, ACRPC was given the go ahead by NWRPC to continue the process of developing a plan.

An initial draft single jurisdiction plan was prepared by staff of the Addison County Regional Planning Commission (ACRPC) converting a previous draft annex of an earlier 2002 regional plan into a single jurisdiction plan.

The following residents were appointed by the Bridport Selectboard on 9/9/2013 to a mitigation planning committee:

Sue Walker -	Selectboard member
Mark Pumiglia -	Planning Commission
Dusty Huestis-	Bridport Road Foreman and Volunteer Fire Department
Ed Payne -	Bridport Zoning Administrator
Steve Huestis -	Selectboard member

The draft plan was submitted to the mitigation planning committee on 9/27/2013 for initial review and edits. The committee met 10/15/2013 to review the draft plan and complete a Hazard Inventory and Risk Assessment for the Town of Bridport. The committee met again on 11/5/2013 to identify possible mitigation projects and suggest additional edits to the draft plan. ACRPC Staff met with the Bridport Road Crew (Dusty Huestis, Dale Stone) on 2/7/2014 to identify highway-related issues and potential highway projects. The committee continued to suggest changes via e-mail to confirm suggested revisions and corrections to the initial draft plan.

Input on the draft plan was requested from town residents during open meetings of the town Planning Commission and the Town Selectboard where copies of the draft plan were available for review. An initial draft plan was submitted to staff at the Northwest Regional Planning Commission for review and suggestions on 6/30/2014.

Based on comments from this public process, the draft plan was further edited and the draft plan was submitted to the State of Vermont Hazard Mitigation Officer for state review on 7/10/2014. Due to extensive recommendations given for another plan in process, the draft plan was extensively reworked in January of 2015, submitted to DEMHS for further review and finally, submitted to the Federal Emergency Management Agency (FEMA) on 3/2/2015 for comments and preliminary approval. Comments were received back from FEMA reviewers on 6/8/2015

Changes were made to the draft plan based on FEMA recommendations and an updated draft was completed on 7/6/2015. Upon completion of this draft, the plan was further circulated to the Town Selectboard and hazard mitigation committee for their approval. Upon Selectboard approval, the final plan was submitted to FEMA Region I for their Approval Pending Adoption (APA) status, which was received on 12/8/2015.

The APA plan was adopted by the Bridport Selectboard on 1/12/2016. The final adopted plan was then forwarded to FEMA Region I for confirmation. Final FEMA approval was received on \_\_\_\_\_.

### 1.2 Opportunities for public comment/input

Multiple opportunities for public comment were made available during the planning process:

- A plan review/update committee was appointed on 9/9/2013 by the Town Selectboard.
- The plan was made available in the Town Offices for public comment while in draft form and input was requested (no comments).
- Meetings of both the Town Selectboard and the Town Planning Commission were open for public comment throughout the planning and draft phases of this plan (no comments received).

### 1.3 Opportunities for additional comments

Additional opportunities for regional and state-level comments in the draft stage were provided throughout the planning process.

- A copy of the draft plan was provided to the State Hazard Mitigation Officer Ray Doherty for comments which were received on 7/10/2014.
- A substantially completed draft was submitted to the State of Vermont Agency of Natural Resources staff for comment on 6/26/2014.
- A final draft of the plan was approved by the Bridport Selectboard in a publicly warned meeting on 2/24/2015 for submission to FEMA.
- An updated copy was sent to Ray Doherty for submission to FEMA on 2/26/2015.
- FEMA Region 1 staff received a draft for comment on 3/2/2015
- A copy of the draft plan was posted on the ACRPC website [www.acrpc.org](http://www.acrpc.org) for regional review and notice was given during monthly meetings of ACRPC as to its availability. No comments were received.
- The December 2014 ACRPC newsletter included an article announcing that the draft plan was available for public review and comments were requested. The draft was posted on 1/5/2015.
- A running draft was posted in the ACRPC office from October 2013 through June 2015 for public review and comments (no comments received)
- The bordering towns of Addison, Shoreham, Cornwall and Weybridge were informed of the availability of the plan on the ACRPC website on 2/6/2015 and input was requested. No comments.

### 1.4 Extent of review

Throughout the planning process all sections of an earlier regional plan were reviewed for accuracy. Recently completed studies and newly developed data were included in the document. Information from the following documents and sources were incorporated into this plan either as data or to inform the committee's prioritization process:

- 2014 Local Emergency Operations Plan (previously identified high hazard areas and vulnerable populations)
- January 2011 Town Plan (support for the committee's prioritization process and section 2 narrative.)

- 2011 Addison County Regional Plan (transportation section used to identify high accident locations)
- 2013 State of VT Hazard Mitigation Plan (provided a listing of statewide hazard concerns)
- Recently declared disasters
- 2012 Report of the State Fire Marshall (provided data to inform structure and wild fire risks)
- [www.fema.gov](http://www.fema.gov) (provided official data on declared disasters)
- [The Vermont Weather Book](#) by David Ludlum (provided historic accounts of disasters for Section 4.3)
- National Climatic Data Center website (provided information for Section 4.3)
- FEMA Snow Load Safety Guide (informed Section 4.3)
- FEMA FIRMS dated 8/15/1979 (incorporated into maps and section 4.3)
- FEMA Flood Insurance Study from February 1979 (Used to determine the FEMA flood elevations for Lake Champlain in Bridport, Section 4.3)
- VT Center for Geographic Information data layers (incorporated into map products)
- LEPC #8 Tier II reports (incorporated into Section 4.3)
- Bridport Annual Town Reports 1980-2013 (informed FEMA reimbursements in table #1)
- The Shoreline Stabilization Handbook for Lake Champlain and other Inland Lakes (informed erosion extent in Section 4.3)



## 2. Community Background

The Town of Bridport, Vermont was chartered in 1761 and its development in the early years focused on the use of Lake Champlain as a transportation venue. Subsequent development of rich farmland away from the lake led to the development of a more traditional village center around the current intersection of VT Rte 22A and Middle Road. Bridport village or “The Corners” is a civic and government center to the town and contains the Town Offices, Grange, Post Office, churches and a town green. Within this tight central core were also housed the school and town garage until more recent construction of a centralized school and new town garage complex to the south of the village center. In modern times, the significance of Lake Champlain as a recreation resource has resulted in a resurgence of residences along the shoreline.

VT Route 22A passes through Bridport’s village center from north to south and divides the town with 1/3 east of the highway and 1/3 west. VT State Rte 125 further divides the town north and south with 1/3 north of Rte 125 and 1/3 south of the highway.

Since recording a low of 653 residents in the 1960 census, Bridport’s population has nearly doubled to its 2010 census level of 1218 creating an average population density of 28 people per square mile. More densely populated areas in town include the village area and clusters of shoreline properties. Most recent trends indicate that the population seems to be leveling out with the majority of new residents due to a rise in births over deaths rather than any rapid in-migration.

According to the 2010 census, there are 612 housing units in Bridport, a number that has nearly tripled since the census began recording housing units in 1940. Of those units, 368 were owner-occupied, 117 were rented occupied and 127 were considered vacant. 89 of the units were seasonal use only and were considered as part of the vacant number. There has been a recent trend toward conversion of seasonal homes into year-round homes which is being monitored carefully by the town planning commission to ensure public safety in the form of clean waters and adequate services are maintained. In Bridport, most year-round homes are single-family wood structures (87.5%), a little more than 11% are mobile homes and less than 2% are multi-family homes.

Bridport has a workforce of just under 900 workers and 70% of them work outside of the town in nearby communities. The town is quite dependent upon the income generated from these workers and from the Agricultural economy as there are limited other economic opportunities within the town. Green Mountain Power is the sole provider of electrical power and landline telephone service is provided by Champlain Valley Telecom. Cellular reception is available in most areas of town but is very limited in some areas due to the limited number of towers. To date, cellular phone companies have focused on serving the Route 22A corridor. Residents of Bridport are served by the Tri-Town water district for their potable water needs and provide for their own sewage needs through individual on-site septic systems. Changes to the State of Vermont’s septic regulations have severely limited the ability to dispose of wastewater due to the native heavy clay soils and are impacting development opportunities in the town. Alternative wastewater systems are still on the horizon but have yet to be approved for use. In addition, lakeshore camps and residences have always struggled between the need to safely dispose of septic and potentially destabilizing the lakeshore.

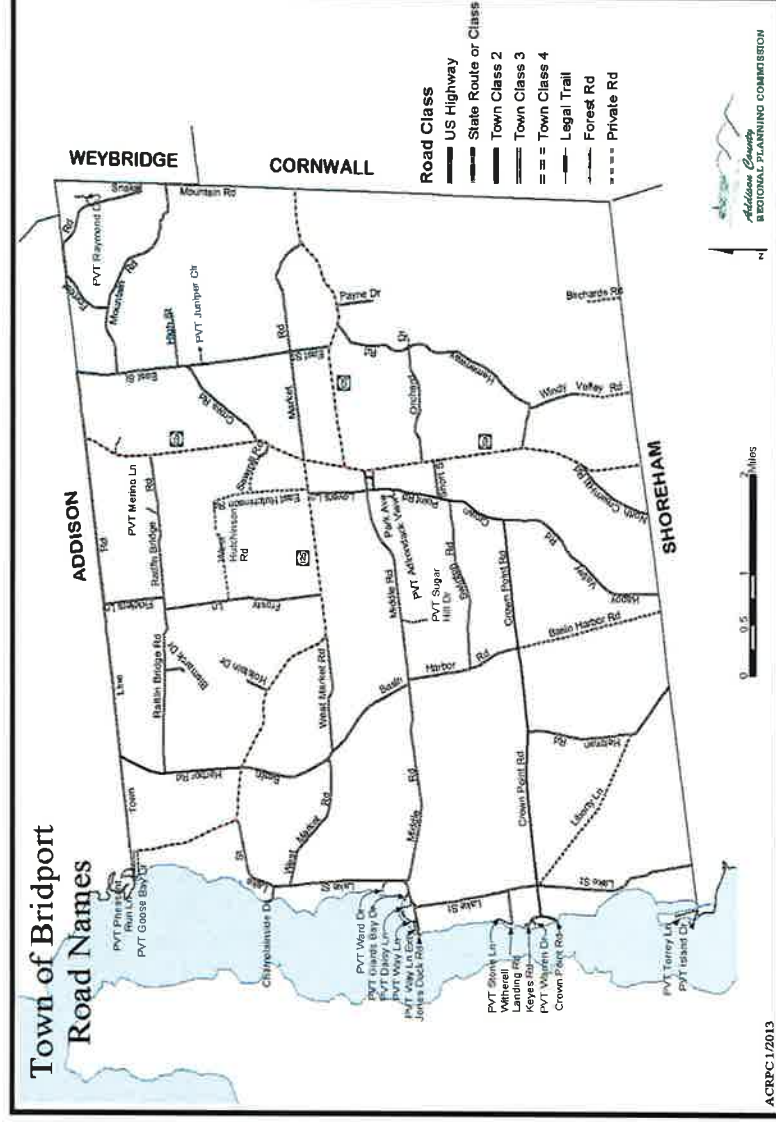
The Town of Bridport has emergency medical service (EMS) coverage through the volunteer Townline First Response Squad which partners with the Middlebury Regional EMS for transport services. Patients are generally transported to either Porter Medical Center (10 miles) or Fletcher-Allen Hospital (38 miles). The Bridport Volunteer Fire Department provides fire coverage throughout town with assistance through mutual aid from surrounding communities. In 2012, the fire department responded to 13 Fires and/or motor vehicle accidents. Poorly constructed driveways and private roads sometimes hinder response, particularly along the

lakeside camps. Law enforcement in the Town is provided by the Vermont State Police. Routine traffic enforcement is provided under contract to the town by the Addison County Sheriff. The towns two constables provide the only community based law enforcement.

The Town has an appointed Emergency Management Coordinator and uses a Local Emergency Operations Plan (LEOP) to coordinate response to larger incidents. The LEOP identifies the Town Office as its primary emergency operations center. It also identifies the Town Garage as a secondary EOC which, along with the Bridport Central School is one of the two town-owned buildings served with back up generators. Four potential emergency shelters are identified in the LEOP as the Bridport Central School, the Community Hall, St. Bernadett's Parish Hall and the Congregational Church Vestry. The LEOP also identifies its highest hazard areas as any east-west roads, all of which are prone to drifting snow in winter months.

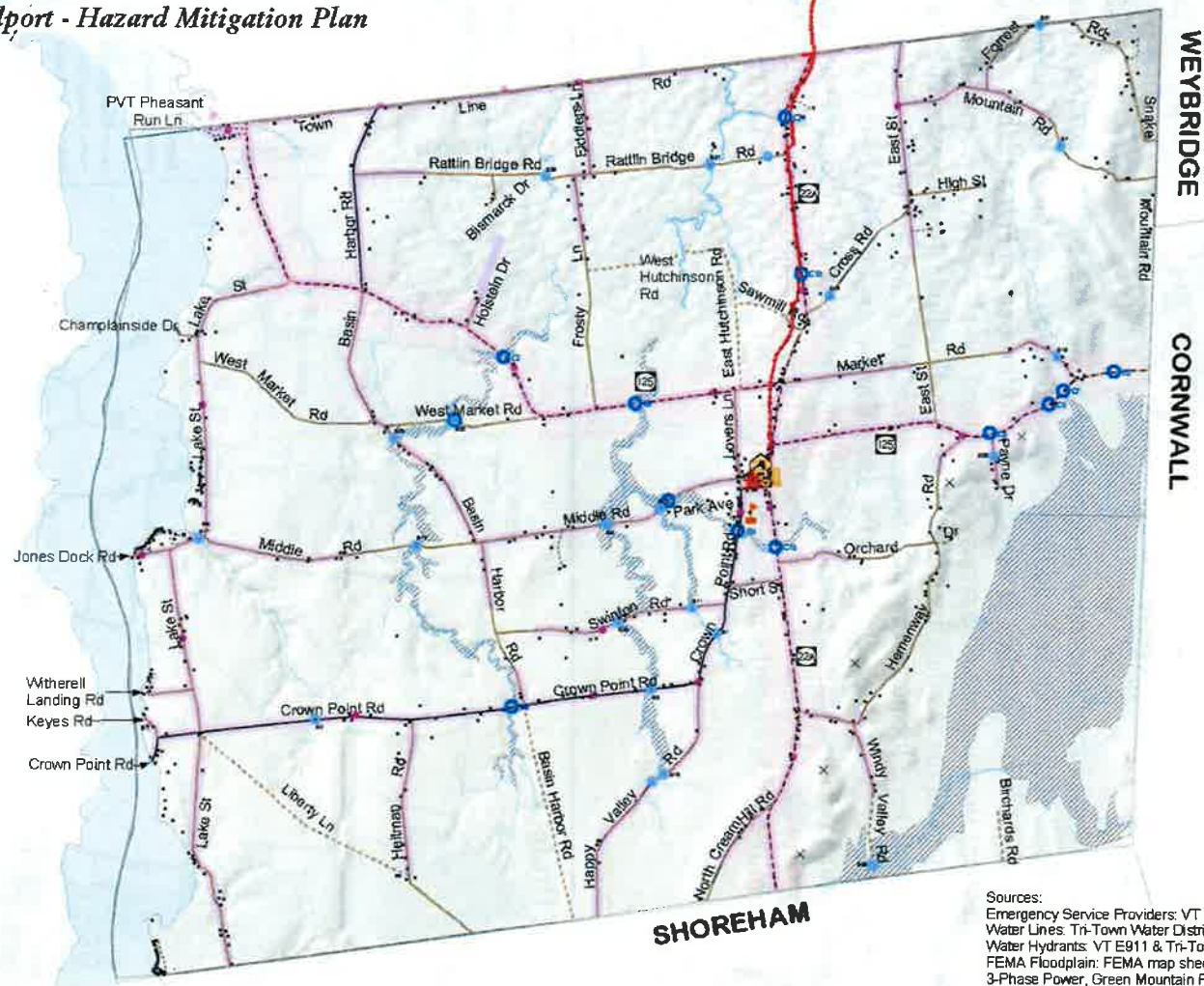
The Town is a member of the National Flood Insurance Program and as such has adopted zoning by-laws (last updated in 2002), designating Flood Hazard Areas including associated regulations for administering those areas. Fortunately, much of the identified floodplain is associated with the Lemon Fair which floods regularly once or twice a year. This frequent flooding has effectively discouraged development in recent times due to difficulties in disposing of septage and the availability of alternate non-flooding sites in town. The other identified floodplain is in the flood zone located along the shores of Lake Champlain. In 2011 a series of spring rains combined to create a record-breaking flood elevation for Lake Champlain of over 103ft. Fortunately, due to the steep shoreline grades, most seasonal camps were unaffected by the flooding. Unfortunately, as these seasonal residences are slowly converted to year-round homes, there is an increased load placed on Bridport's clay based shoreline. This shoreline tends toward slumping resulting in an increased risk to all structures located along the shore.

## 2.1 Local Maps



# Local Services, Facilities and Infrastructure

## Town of Bridport - Hazard Mitigation Plan



Sources:  
 Emergency Service Providers: VT E911, 2013  
 Water Lines: Tri-Town Water District  
 Water Hydrants: VT E911 & Tri-Town data  
 FEMA Floodplain: FEMA map sheets digitized under contract to ACRPC  
 3-Phase Power: Green Mountain Power, 2014.

- ★ State Police, Sheriff (not shown)
- 🚒 Bridport Fire Dept
- 🚑 Middlebury Area Vol Amb (not shown)
- 🏛️ Bridport Town Office
- 🎓 Bridport Central School
- 🏠 Bridport Town Hall
- 🚗 Bridport Town Garage
- 🔴 Overhead 3-Phase Power
- 💧 Hydrant
- 🚦 Tri-Town Water District Service
- 🛣️ US/VT Hwy (Buffered 1000 ft)
- 🌉 Local Bridges
- 🌉 State Bridges
- 🌊 FEMA Floodplain



ACRPC 11/2014

### **3. Existing Adopted Plans which support Hazard Mitigation**

The following plans pre-date this plan and are used to illustrate how the community, the Addison region and the State of Vermont have incorporated mitigation into standard planning mechanisms. As the Bridport Selectboard, Planning Commission and Emergency Manager continue to work on annual or 5 year updates of these plans, the Town of Bridport All Hazards Mitigation Plan will be able to provide needed information for those planning processes.

#### **3.1 Bridport Local Emergency Operations Plan (High Hazard and Vulnerable Sites)**

- *All east/west roads- Drifting Snow*

#### **3.2 Bridport Town Plan (2011) Policy statements which support Hazard Mitigation**

- *Continue to support high quality fire and rescue services in town and ensure that new development is constructed in a manner that will allow adequate access for emergency responders.*
- *Encourage projects, including improvements to the town's water system and installation of dry hydrants, which would increase the effectiveness of the fire department in its ability to extinguish fires.*
- *To provide and maintain a transportation system that is safe, efficient and affordable*
- *Continue to work with the State to slow traffic and increase safety through Bridport's village center.*
- *Review the town's current standards for private roads and codify them as necessary to ensure that emergency access is possible for all properties on these roads.*
- *To maintain and, where necessary, improve the quality of Bridport's ground and surface waters and wetlands.*

#### **3.3 Addison County Regional Planning Commission Regional Plan (2011) Goals that support Hazard Mitigation**

- *Work to restore and maintain stream equilibrium by developing and implementing river corridor plans.*
- *Reduce flooding and related damages through appropriate mitigation techniques.*
- *Encourage watershed based cooperation and educate towns and the general public about water quality and stream dynamics*
- *Provide communities the support they need to be proactive in reducing flood and erosion hazards by adopting appropriate zoning regulations to limit development in hazardous areas.*
- *Encourage proper maintenance and sizing of bridges, culverts and other structures to accommodate flow from storm events and to mitigate flood hazards.*
- *Reduce the loss of life and injury resulting from all hazards.*
- *Mitigate financial losses incurred by municipal, residential, industrial, agricultural and commercial establishments due to disasters.*
- *Reduce the damage to public infrastructure resulting from all hazards.*
- *Recognize the connections between land use, storm-water, road design/ maintenance and the effects from disasters.*
- *Ensure that mitigation measures are sympathetic to the natural features of the region's rivers, streams and other surface waters; historic resources; character of neighborhoods; and the capacity of the community to implement them.*
- *Encourage hazard mitigation planning as a part of the Municipal Planning Process.*

- *Encourage municipalities and landowners to consider VT Agency of Natural Resources riparian guidelines for habitat and flood protection.*

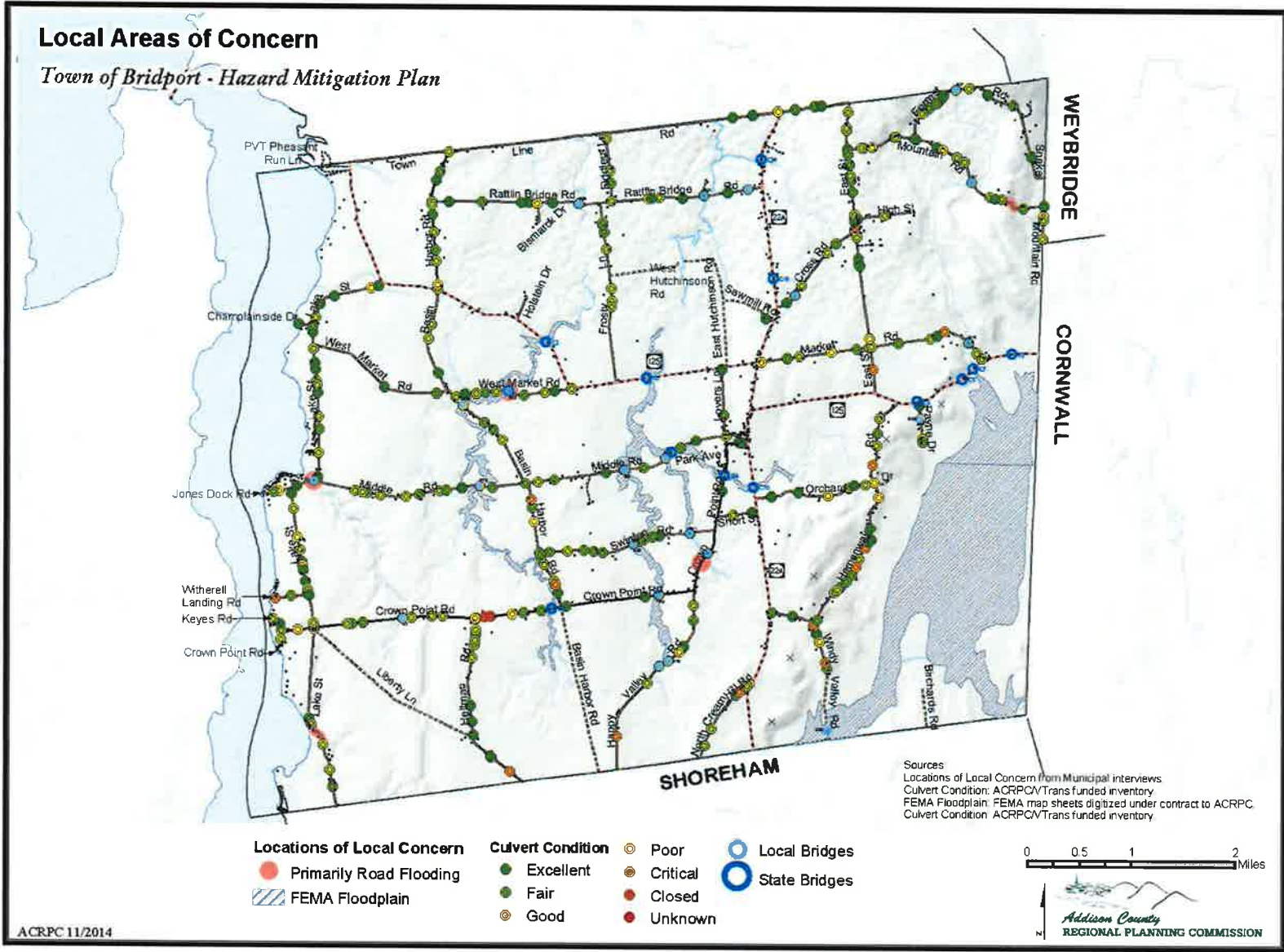
### ***3.4 State of Vermont Hazard Mitigation Plan (2013) Hazard Mitigation Goals***

- *Ensure that current and proposed legislation and regulatory policies require effective hazard mitigation practices throughout the State.*
- *Ensure that grant-related funding processes allow for expedient and effective mitigation actions to take place at the municipal and State level.*
- *Provide timely and accurate technical assistance that supports hazard mitigation activities to regional and local jurisdictions as well as private sector partners.*
- *Identify state-level risks and vulnerabilities and protect or harden state infrastructure against hazards.*
- *Conduct hazard assessments, mapping and data collection projects to increase knowledge about both the hazards facing Vermont and the most effective mitigation actions for minimizing public exposure to hazards.*



# 4. Community Risk Assessment

## 4.1 Local Areas of Concern Map



#### 4.2 Risk Prioritization Process

The Town of Bridport's Hazard Mitigation Planning Committee identified the following hazards in its hazard inventory– Drought, Power Failure, Flooding, Lightning, High Winds, Landslide, HazMat Spill, Structure Fire, Wildfire, and Winter Storm. Additional hazards listed on the State hazard inventory were dam failure, ice jams and extreme temperatures. These were not evaluated in the Bridport HIRA because there is no history of ice jam damage in town, no dams listed on the state dam inventory database, and extreme temperatures are a commonplace enough occurrence that the committee felt evaluation of them was unnecessary. The committee completed a Hazard Inventory and Risk Assessment (See Bridport, VT HI/RA) which resulted in the following hazards being identified as being High Priority– Winter Storm/Ice Storm, and Widespread Power Failure. The committee scored High Wind, Flood/Flash Flood, HazMat Spill/Transportation Accident, Landslide/Erosion of the lakeshore, and Structure Fire as its highest scoring hazards of medium priority, followed quickly by Lightning and Wildfire.

# Bridport, VT. Hazard Inventory/Risk Assessment

Hazard Type	Probability	Warning	Geographic Impacts	Property Damage	Vulnerability
Drought	2	1	1	1	5 – (1)
Widespread Power Failure	3	4	3	2	12 – (3)
Flooding/Flash Flood	3	3	2	2	10 – (2)
Lightning	4	3	1	1	9 – (2)
High Winds	3	3	2	2	10 – (2)
Landslide/Erosion	3	4	1	2	10 – (2)
HazMat/Transportation Accident	3	4	1	2	10 – (2)
Structure Fire	4	4	1	1	10 – (2)
Wildfire	3	4	1	1	9 – (2)
Winter Storm/Ice Storm	4	2	4	2	12 – (3)
Earthquake	2	4	1	1	8 – (1)

**Probability: Frequency of Occurrence**

- 1= Unlikely <1% in a given year
- 2= Occasionally 1%-10% probability in a given year
- 3= Likely >10% but <100% in any given year
- 4= Highly Likely 100% probability in a given year

**Warning: Time available to give notice to the majority of the population**

- 1= More than 12 hours
- 2= 6-12 Hours
- 3= 3-6 hours
- 4= <3 hours (minimal)

**Geographic Impacts: How much of the population is expected to be impacted**

- 1= Isolated Locations/neighborhood <20% of population impacted
- 2= Moderate impact >20% and <75% of population impacted
- 3= Community-wide >75% of population impacted within community
- 4= Region-wide Level 2 & 3 impacts in surrounding communities

**Property Damage: Severity of damages and disruption**

- 1= Negligible Isolated property damage, minimal disruption to infrastructure
- 2= Minor Isolated moderate to severe property damage, brief disruption to infrastructure
- 3= Moderate Severe damages at neighborhood level, temporary closure of infrastructure
- 4= Major Severe damages town-wide, temporary to long-term closure of infrastructure

**Vulnerability: Total score of Probability, Warning, Geographic Impact, and Property Damage**

- 1= Low Priority ≤8 total score, low cost –no cost mitigation projects only
- 2= Medium Priority >8 and ≤10 total score
- 3= High Priority >10 and ≤12 total score
- 4= Regional/State-wide Priority >12 total score



## Declared Disasters by County 2003-2013

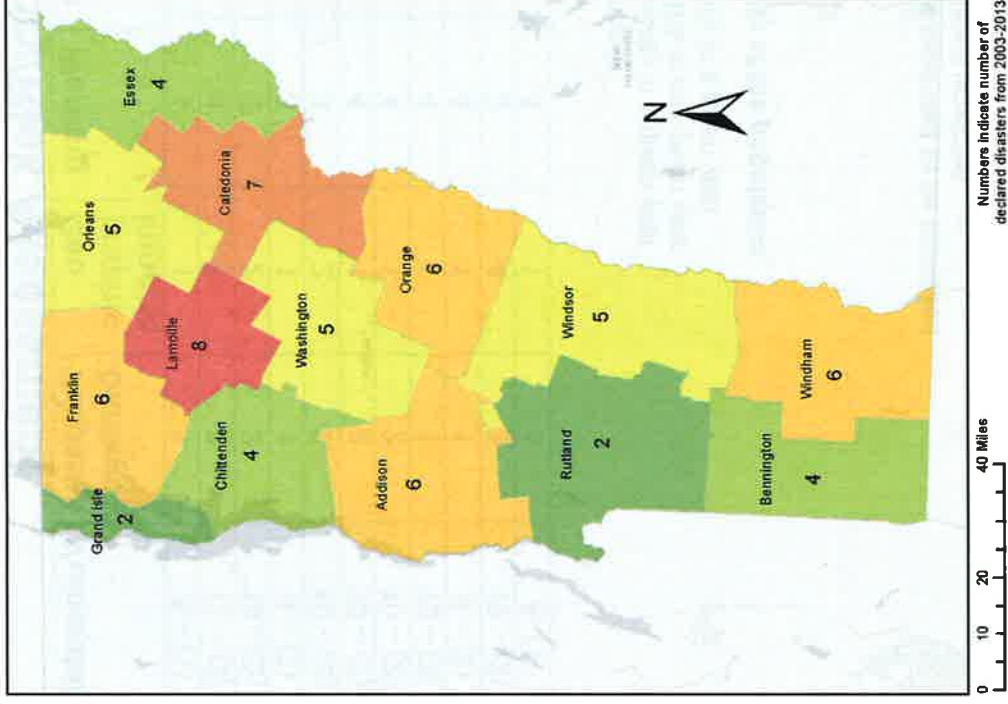
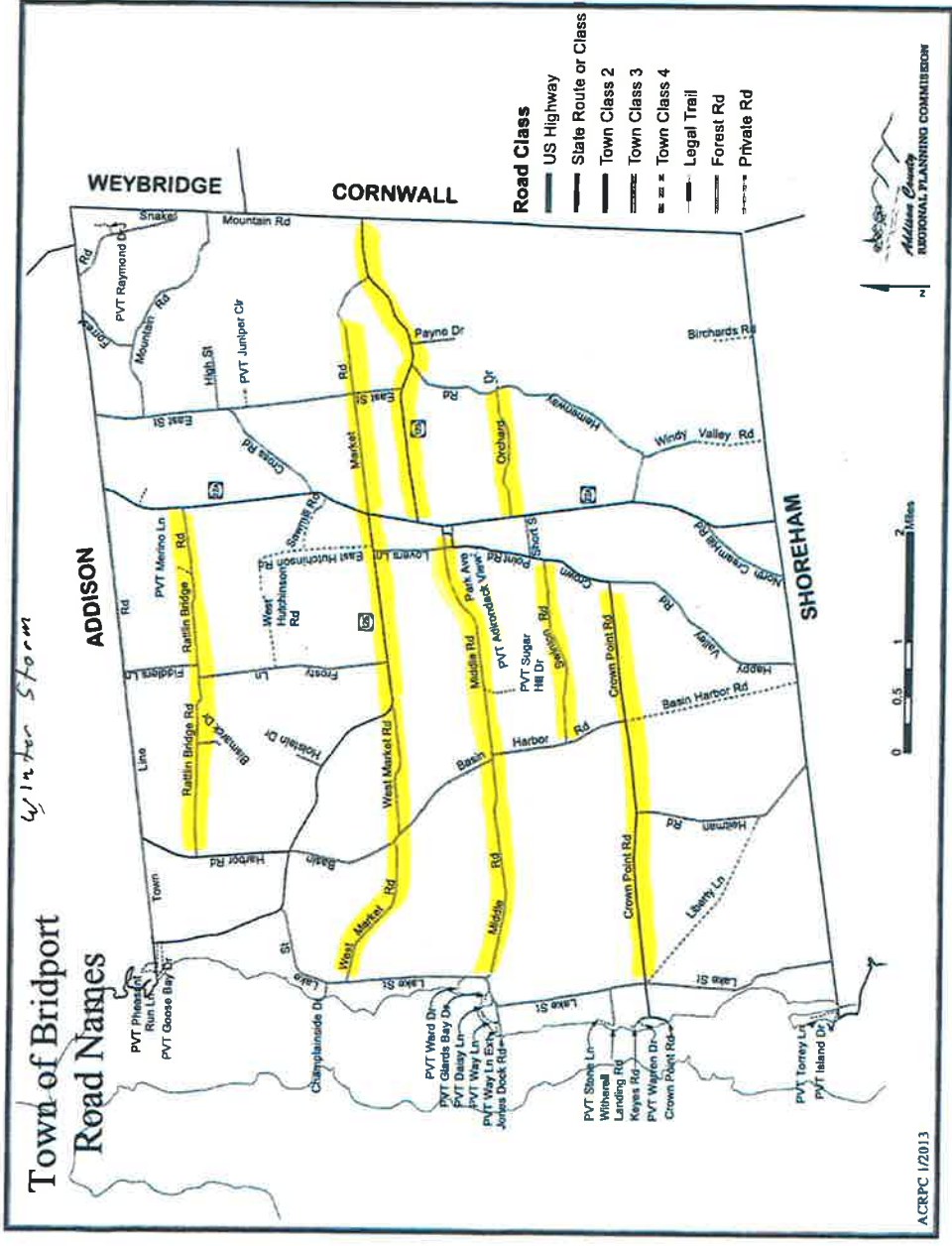


Table #1 Federally declared disasters affecting Addison County

Year	Date	Description	Dec. #	County Cost	Bridport
1973	7/6/1973	Severe Storms, Flooding, Landslides	DR397	\$ Unavailable	\$ Unavailable
1976	8/5/1976	Severe Storms, High Winds, Flooding	DR518	\$ Unavailable	\$ Unavailable
1977	9/6/1977	Drought	EM3053	\$ Unavailable	\$ Unavailable
1989	8/4-5/1989	Severe Storms, Flooding	DR840	\$ 31,033	\$ Unavailable
1993	4/24-5/26/1993	Flooding, Heavy Rain, Snowfall	DR990	\$ 17,639	\$ Unavailable
1996	1/19-2/2/1996	Storms, Flooding	DR1101	\$ 130,529	\$ Unavailable
1998	1/6-16/1998	Ice Storms	DR1201	\$ 662,388	\$ Unavailable
1998	7/17-8/17/1998	Severe Storms and Flooding	DR1228	\$2,146,484	\$ Unavailable
2000	7/14-18/2000	Severe Storms and Flooding	DR1336	\$ 744,075	\$ Unavailable
2001	3/5-7/2001	Snowstorm	EM3167	\$ Unavailable	\$ 8,187.00
2004	8/12-9/12/2004	Severe Storms and Flooding	DR1559	\$ 365,661	\$ 54,000.00
2008	6/14-17/2008	Severe Storms and Flooding	DR1778	\$ 486,850	\$ Unavailable
2008	7/21-8/12/2008	Severe Storms and Flooding	DR1790	\$ 438,900	\$ 179,100.00
2011	4/23-5/9/2011	Severe Storms and Flooding	DR1995	\$ Unavailable	\$ Unavailable
2011	8/26-9/2/2011	Hurricane Irene	EM3338	\$ Unavailable	\$ Unavailable
2011	8/27-9/2/2011	Tropical Storm Irene	DR4022	\$ Unavailable	\$ 539,534.00
2012	5/29/2012	Severe Storm, Tornado and Flooding	DR4066	\$ Unavailable	\$ Unavailable

4.3 Hazard Type, Location, Extent, Previous Occurrences, Future Probability and Vulnerability  
 The following hazard types have been identified, evaluated and prioritized in a risk assessment exercise conducted with the Bridport hazard mitigation committee. The matrix in 4.2 shows the results of that evaluation process for the Town of Bridport. The following hazard types are listed in their order of priority with highest vulnerability described first.

- Winter Storm/Ice Storm – (Vulnerability 12- High Priority) –



Results of Bridport Hazard Mitigation Committee exercise

**Location:** Severe winter storms are common throughout Vermont and can occur geographically in any part of Bridport. As in much of the Champlain Valley, the prevailing winds are either from the south or the north. Due to these winds, blowing and drifting snow impacts east/west roads the most.

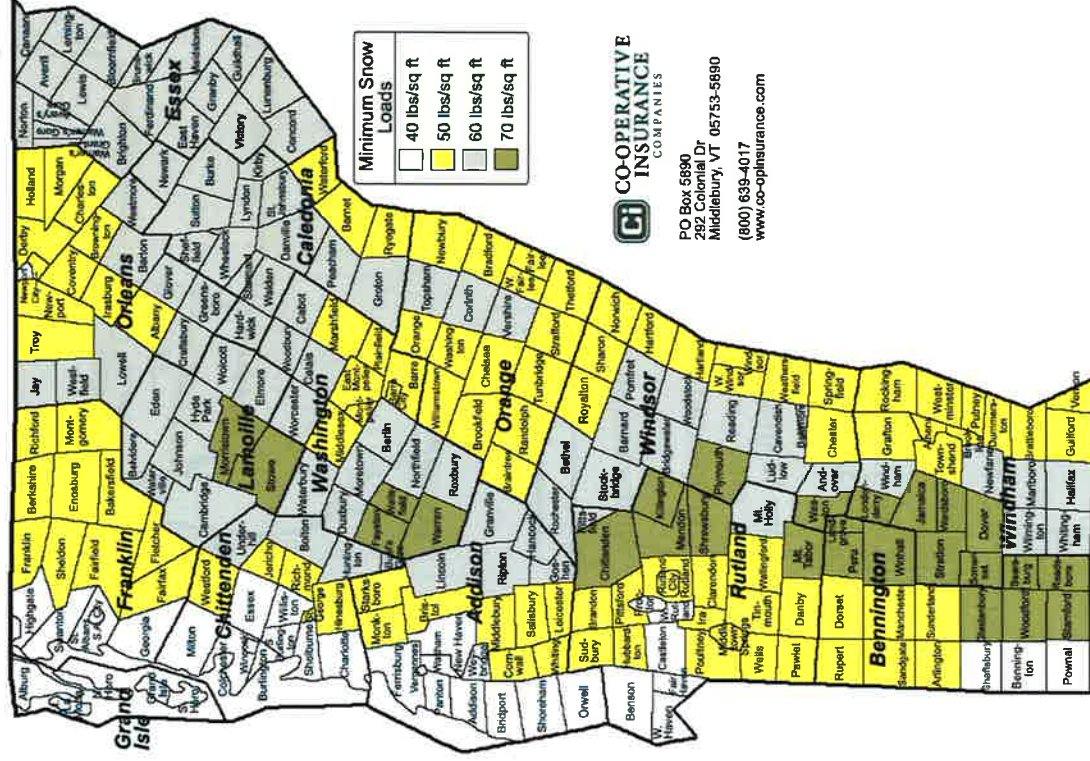
In the Town of Bridport, interviews with the road crew indicate that the most common issues associated with winter storms are the combination of heavy snowfall and high wind. These two circumstances combine to create widespread drifting along most east/west roads in town. Specifically mentioned were Crown Point Road, Middle Road, Swinton Road, eastern Market Street and Orchard Drive. Swinton Road in particular was identified due to recent rapid development along this relatively short road.

Another issue identified was the occurrence of freezing culverts following mid-winter warm spells. These lead to road washouts when water-filled ditches bypass frozen culverts. Many of the culverts susceptible to freezing are those that are found at the entrances to private driveways which were constructed with an eye to lowering costs for the homeowner rather than built with the town highway network in mind.

**Extant:** When conditions are predicted, the National Weather Service issues warnings ranging from a Winter Storm Warning (heavy snowstorm predicted within 24 hours) to Blizzard Warning (sustained wind and snow with gusts up to 35 mph for at least 3 hours) to Heavy Snow Warning (accumulations of over 6 inches in a 24 hour period).

Construction standards for snow load (see map) indicate that structures in the Town of Bridport should be built to withstand loads of 40 pounds per square foot. This would indicate an average depth of snow of 32 inches or 8 inches of ice on a square foot of roof surface. At that point, design standards would be exceeded and the structure runs the risk of collapse. Given this standard, a snowstorm which dumped 32 inches of snow or 8 inches of ice would likely result in a few collapsed roofs, especially on structures which are not built to these standards.

Minimum Snow Loads for Estimating Construction Design (Bridport=40lb/sq ft)





**Previous Occurrences:** The National Climatic Data Center reports that the Addison Region has experienced 2 major Ice Storm events over the past 25 years. The highest recorded damages were incurred during the 1998 Ice Storm (DR-1201) which impacted most of the northeastern US and resulted in \$750,000 in damages to Addison County properties. The Town of Bridport was not spared. Power outages continued for several days as remote power lines were accessed by off-road vehicles. P/A reimbursement for damages associated with this storm topped \$23,000.

NCDC records indicate that the Addison Region also experienced 123 winter storm events over the past 25 years. The worst storms resulted in \$100,000 in damages in both 2010 and 2005. During the period an estimated \$1,743,000 in cumulative property damages and \$10,000 in crop damages were incurred. The Town of Bridport recorded limited damages during most of these events though residents were impacted by loss of power and the occasional downed tree or branches in the road.

In March of 2001, the so-called “Town Meeting Day” snow event (Emergency Declaration #EM3167) caused reduced ability for residents to travel to the voting booth due to hazardous conditions. The Town was reimbursed \$8,187 to cover some of the costs of keeping roads open on Town Meeting Day and the meeting itself was rescheduled to a later date due to the inability of voters to attend.

As recently as February 2007, a significant snowstorm coupled with high wind nearly crippled much of Vermont including the Addison County region which suffered a reported \$237,000 in damages. This “Valentines’ Day Blizzard” stressed the resources of most local communities, including the Town of Bridport, to capacity but did not ultimately result in a federal declaration.

As recently as December of 2014, a storm dropping extremely heavy snow toppled trees which, in turn dropped power lines. In some areas of town residents were without power for several days. Preliminary damage estimates from the Town of Bridport indicate approximately \$10,000 in debris cleanup expenses were incurred by the Town.

**Future Probability:** The late 1960’s saw record breaking snowfalls in Vermont and locals remember being able to drive snow machines over the tops of wire fences. These record years were followed by the 1970’s and 80’s with below average snows. The number and severity of winter storms have been increasing since the late 1980’s establishing a cyclical pattern. If the current trend continues, it is likely there will be a continued increase in severe winter storms that will impact the Town of Bridport in the future.

**Vulnerability Summary:** With a regular occurrence of a significant snow or ice storm, the town feels the impact of a winter storm most on the transportation infrastructure of the community. The town is able to keep the roads open and treated for most storms and rarely has lost the ability to keep up with a winter storm due to the Town’s high preparedness level and ongoing mitigation actions. Fortunately, the regular occurrence of winter storms also causes most residents to maintain a high level of preparedness for winter storms.

As population growth and housing expands along remote road corridors such as Swinton Road, increasing dependency on local roads by the new homeowners requires changes in winter maintenance. New driveway culvert policies are limiting the installation of freeze-prone culverts and as old culverts fail, larger ones are being installed. The town has, thus far, been able to keep up with the increased demands on its services during winter, through additional hires and equipment purchases.

Without that preparedness level, the community vulnerability to Winter Storm/Ice Storm scores 12. A score of 12 would be considered HIGH based on a high probability with a high percentage of the population impacted.

- **Widespread Power Failure – (Vulnerability 12- High Priority)**

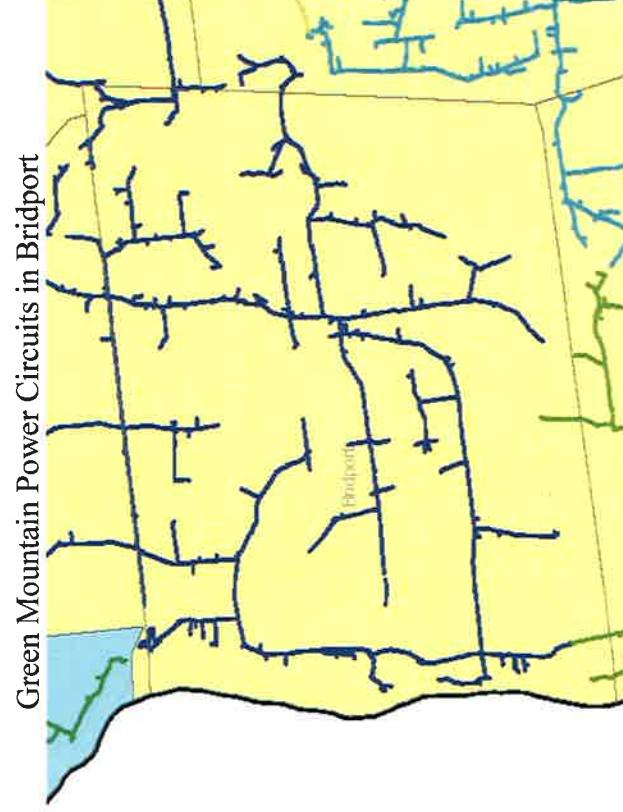
**Location:** Based on local knowledge, power outages are a common event throughout the Town of Bridport. There seems to be no particular pattern to where an outage may hit but outages often mimic the areas of high wind or where trees have not been adequately pruned or removed.

**Extent:** Depending on the cause of the failure, a widespread outage could last for days or even weeks. In the case of either a failing national grid or downed power lines throughout the northeast, outages could even be longer. When outages occur due to impacts from natural events, they tend to include either the entire town or large areas served by the same line.

**Previous occurrences:** In 1998 a severe ice storm hit northern Vermont and much of the Addison region. No community in the region was spared damage associated with downed power lines. Power outages continued for several days as remote power lines originally laid out by Rural Electrification in the 1930s and 1940s were accessed by off-road vehicles. In December 2014 a power outage of several days duration caused by heavy snow impacted much of Vermont including the Town of Bridport.

**Future probability:** Subsequent to the ice storm of 1998, power companies have re-routed many remote lines onto town highway rights of way and increased annual pruning efforts. Frequency of occurrence and length of outage duration have been reduced thereby also reducing the overall impact impacts to residents. If these and similar efforts continue, a reasonable person would predict fewer power outages of shorter duration. The effect of these improvements to infrastructure may be cancelled out by the general increase in the types of storms which lead to power outages.

**Vulnerability summary:** During summer months, localized power outages caused by severe summer storms mostly cause inconveniences to residents unless extended outages impact a family's frozen food supply or their ability to pump water from wells. Extended outages during winter months coupled with extreme cold have periodically resulted in more extensive damage associated with freezing pipes.

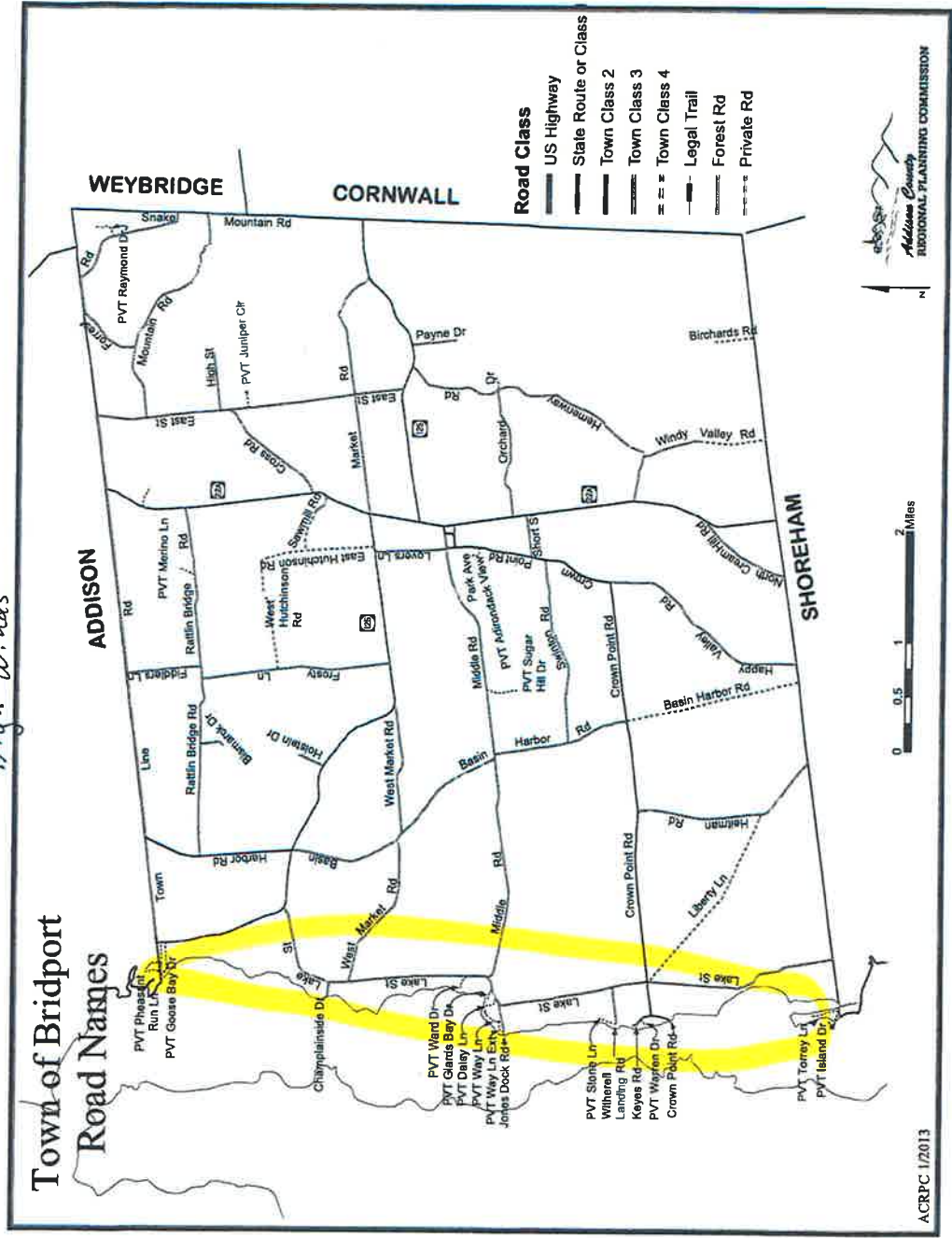


Mitigation activities by power companies have included re-routing many of the remote lines onto town highway rights of way and an increase in pruning effort. This has resulted in a less vulnerable power system but, given the results from the recent storm, there is still a long way to go.

The community vulnerability to Winter Storm/Ice Storm scores 12. A score of 12 would be considered HIGH based on a high probability with a high percentage of the population impacted. Widespread power outages have been extensively mitigated in the past few years effectively reducing the community's vulnerability. Actual vulnerability could be considered MODERATE based on impacts to infrastructure, health, and environment.

- **High Winds - (Vulnerability 10- Medium Priority)**

*High Winds*



**Results of Bridport Hazard Mitigation Committee exercise**

**Location:** Damages due to high winds are rare in Bridport and are dependent on the location of the wind gusts and/or cyclonic wind. While these weather events generally cannot be precisely located, the prevailing winds are generally from the north or south. The Lake Champlain shoreline is at a

slightly higher risk of damage due to high winds because of the long, unobstructed fetch which also produces wave action. The entire Town of Bridport is at risk of high wind damage depending on where the winds strike.

### Beaufort Wind Scale

MPH	Beaufort #	Description	Effects
0-1	0	Calm	Calm; Smoke rises straight up
1-3	1	Light Air	Wind motion causes smoke to drift slowly
4-7	2	Slight Breeze	Leaves rustle, wind is felt on exposed skin
8-12	3	Gentle Breeze	Leaves and small twigs in constant motion
13-18	4	Moderate Breeze	Small branches move; dust and loose paper raised
19-24	5	Fresh Breeze	Small trees sway;
25-31	6	Strong Breeze	Large branches sway; overhead wires “whistle”
32-38	7	Near Gale	Whole trees in motion; walking into wind takes effort
39-46	8	Gale	Twigs break off trees; cars veer on the road
47-54	9	Severe Gale	Branches break; Light structural damages
55-63	10	Whole Gale	Trees blown over; considerable structural damage
64-73	11	Storm	Widespread structural damages
74+	12	Hurricane	Considerable and widespread damage to structures

**Extent:** High winds come in many forms in Addison County and are included in damages associated with Hurricane, Tornado, Wind-shear and Hail Storms. The National Weather Service issues a wind advisory for sustained strong winds of 31 to 39 mph (Beaufort #7) or gusts of 46 to 57 mph. Winds of greater than 58 mph trigger a High Wind Warning.

Often, thunderstorms are accompanied by hail which generally results in minor property damages but can have a large effect on agricultural crops like apples and corn.

Remnants of hurricanes striking Vermont are uncommon and bring not only heavy rain but high winds as well. Similarly, tornadoes are known to occur and have been reported in the Addison Region. Tornadoes are less common than hail storms and high winds, but have occurred throughout Vermont.



The worst case high wind event could uproot trees, tear roofing from structures and collapse old or poorly constructed buildings. The loss of power and land line phone service is also possible during these events due to downed power lines caused by the falling trees.

**Past Occurrences:** NCDC records indicate The Addison Region has experienced 34 High Wind events and 35 Strong Wind events over the past 25 years resulting in \$1,451,000 in cumulative property damage and \$25,000 in crop damages. No information was found that would corroborate specific wind damage in the Town of Bridport.

In June of 2005 and in July of 2003, locally developing lines of thunderstorms resulted in a combined total of over \$150,000 in damages to communities in Addison County. Another high wind event occurred in 2007 to the south of Addison County which resulted in a so-called Nor-icane. This storm became a presidentially declared event (DR 1698) and resulted in over \$1,000,000 in reported damages. A total of 108 Thunderstorm wind events have been recorded in the Addison Region over the past 25 years with the highest recorded winds of 65knots in July of 2012. Within the 25 year record a total of \$1,433,000 in cumulative property damages due to high wind events were recorded.

The largest recorded hail size in the past 25 years was 2” in diameter in New Haven in December of 2012.

Since 1953 40 tornadoes have been recorded in the State ranging from F1 to F2 on the Fujita Scale. These storms killed 9 people and caused over \$8.4 million dollars in estimated property damage. Addison County experienced two of those storms. In June of 1965, a twister touched down resulting in \$37,000 in damage and one death. Another in 1983 struck the northern portion of the county and resulted in crop losses exceeding \$500,000. On May 27, 2014 a tornado was reported to have touched down in the Addison region. The storm was reported by observers in the towns of Bridport and Cornwall.



Storm Damage from 5/27/14 reported tornado in Bridport and Cornwall, Vermont



Hurricanes in 1938 and 1950 are still remembered by older residents when barns collapsed and animals needed to be rescued or put down due to injuries. More recently the remnants of Tropical Storm Irene in 2011, brought heavy rains and flooding to Vermont, fortunately without the typical high winds.

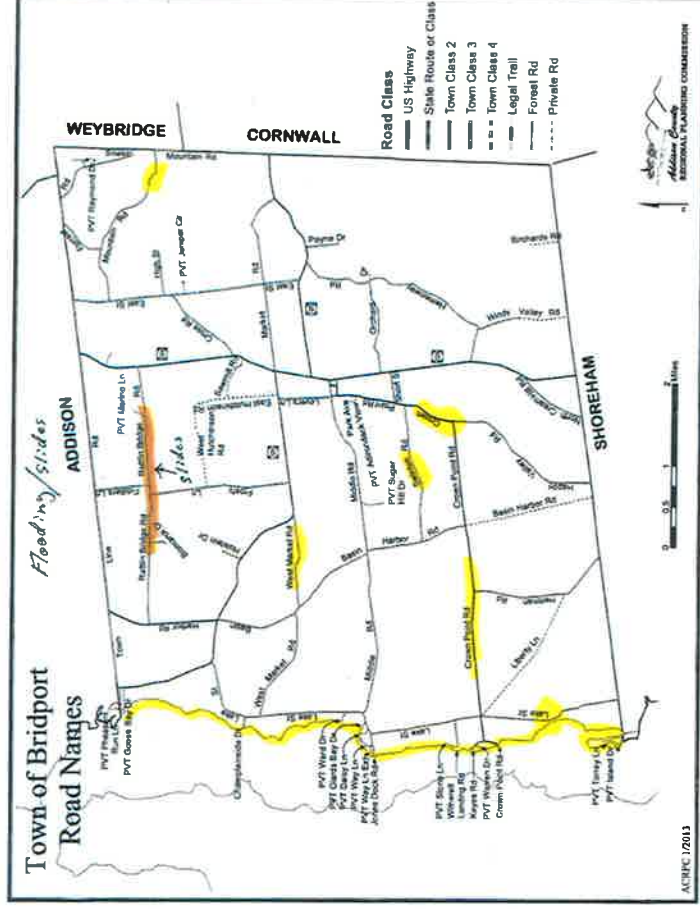
**Future Probability:** Over the past 15-20 years there has been an observable increase in the severity and frequency of storms in Bridport. Extremes in warming and cooling which we have seen in recent years lead to high winds as convective forces meet cooling forces. It is probable that in the future, we will not see a lessening in winds or wind producing storms. The current cycle would also predict an increase in both tropical storms and tornados.

**Vulnerability Summary:** Due to the generally flat topography of the Champlain Valley and proximity to the lake, the entire Town of Bridport is vulnerable to many types of storms which could produce high winds. High winds usually result in damage to trees, which in turn, lead to power outages. Localized strong winds have also resulted in occasional damage to roof panels and loss of shingles. Often, residents do not take into account wind impacts when new construction or major renovations are performed.

Beyond damage to private residences, impacts to power lines caused by falling and/or uprooted trees tend to be felt by all residents of Bridport. Recent extensive tree removal to protect power lines may possibly have increased wind speed as an unintended consequence though no specific observations were noted by committee members.

The community vulnerability to High Winds scored 10. A score of 10 would be considered a medium priority for the town based on a medium probability and warning with a relatively low overall impact.

- **Flood/Flash Flood – (Vulnerability 10- Medium Priority)**



**Location:** The Town of Bridport is most susceptible to flooding, along the shore of Lake Champlain where camps and private residences are clustered along the lake. The primary areas of concentration for these structures are at low elevations of Lake Street, Torrey Lane, and Crown Point Road. These structures were often built prior to current zoning regulations which would have mitigated some of the flooding risk if built today. Other areas of mapped inundation flooding, including a large area along the Lemon Fair have never been developed and are currently protected, in some measure, by the town's current floodplain regulations.

Flash flooding is possible anywhere in town and damages due to flash flooding are generally to the town's highway infrastructure. Past impacts have been seen on West Market Road, Swinton Road, Crown Point Road, Mountain Road, Middle Road and Lake Street in particular have been impacted by flash-type flooding in recent years.

**Extent:** FIRM flood maps, digitized in 2006 by ACRPC and E911 points as documented by the State E911 database were compared digitally and where the two sets of data intersect, there are 5 single-family residences, and 13 Camp/Bungalows in the town that are shown to be vulnerable to potential flooding. Three of these properties are currently insured through the NFIP down from a high of 5 in 2013 when total insured values were close to \$900,000.

Based on field observations by the Bridport Zoning Administrator, only 5 Camp/Bungalows would actually lie within the area of the mapped Base Flood Elevation. The discrepancy comes from error within the digitization process used when ACRPC originally scanned and converted paper maps to GIS format. The estimated value of these structures is \$368,100. This represents 0.3% of the grand list. In recent years, the town has been faced with the conversion of some of these camps to year-round residences. While not increasing the number of structures, these conversions do increase the potential losses were they to be flooded. While local flood regulations address substantial improvements, much of this work is done piecemeal and never triggers in-depth review.

**Past Occurrences:** The Addison Region has experienced 21 flooding events over the past 25 years with reportable damages. The Town of Bridport has been impacted by 4 of these presidentially declared disasters in the past 10 years (August/September 2004, July/August 2008, April/May 2011 and September 2011) as a result of flooding. A review of annual reports from the Town of Bridport show a total of almost \$800,000 in FEMA reimbursements from these events.

In August of 2008, strong storm cells hit Bridport and much of Addison County, resulting in a federal disaster declaration. In Bridport, Crown Point Road and Swinton Road experienced culvert washouts as well as washouts along Hemenway Road and Mountain Road. Almost \$180,000 was reimbursed by FEMA and the State of Vermont over a period of three years to cover expenses associated with this storm.

In the spring of 2011, a quick snow melt followed by weeks of spring rains resulted in a new record height for Lake Champlain at 103ft above sea level. This exceeded the elevation for a projected 500 year flood in Bridport. Throughout the lakeshore in Vermont and New York, camps were hit with the high flood waters.

In late summer of 2011, the Tropical Storm remnants of Hurricane Irene caused devastating flooding in much of Vermont. Damages associated with TS Irene in the Town of Bridport included closure of

Lake Street and Middle Road for extended periods of time until repairs could be made. In particular, a previously scheduled replacement of an undersized culvert on Lake Street was delayed and a design recommended by the State of VT was not implemented due to the unwillingness of FEMA to fund the mitigation with section 406 funds. Over \$490,000 in reimbursements were received for the Lake Street culvert alone. As of this writing, in 2014, final reimbursements have still not been received for all of Irene's damages.

**Future Probability:** Since the desirability of a "home on the water" is quite high, pressure to develop additional lands within floodplains is increasing. While current long-term residents of Bridport generally know better than to build on a floodplain that floods every few years, newcomers to town could view these locations as desirable. Given the poor quality of the FIRMs serving the Town of Bridport, it is not hard to imagine the incremental process of filling in the natural floodplain to elevate new homes. While these new homes would be considered safe from flooding, the impacts of lands both upstream and downstream would likely put additional infrastructure at risk.

Climate experts infer that residents of lakeshore properties should be prepared for more frequent and higher flood elevations in the future.

Within the Town of Bridport the lands surrounding the Lemon Fair and Dead Creek are textbook examples of natural floodplain which has been left relatively undeveloped. Due to the availability of other lands much more suitable to development in town, these floodplains will likely continue to function well into the future.

**Vulnerability Summary:** The Town of Bridport, in its historic development patterns, is relatively flood-safe. Only camps and residences along Lake Champlain are currently at risk for flooding. With property values high along the shores of Lake Champlain, new buyers can no longer afford to own a camp on the lake useable only during summer months. These owners often turn toward a complete rebuild or renovation performed over time to accommodate a year-round residence. Even though owners may not actually live in the former camp year-round, these improvements allow for a three season extension of the summer season and increase the value of these properties as well as any losses associated with flooding.

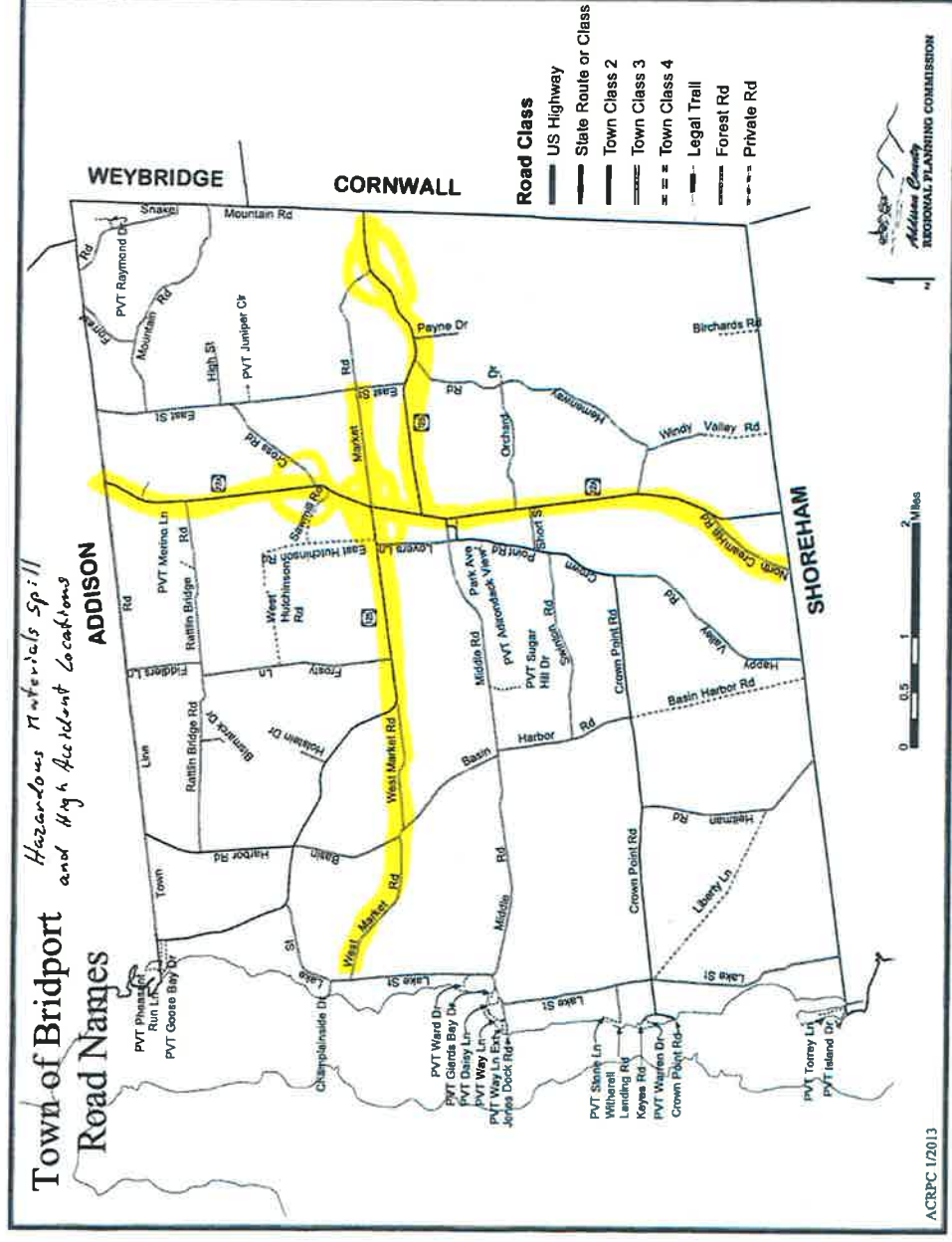
Limitations for development in floodplains provided by base NFIP standards tend to subsidize growth in a mapped floodplain and may not sufficiently address the hazards associated with proximity to the lake. Further limitations that address erosion hazards should be considered.

The community vulnerability to Flooding scored 10. A score of 10 would be considered a medium priority for the town based on a medium probability and warning with a relatively low overall impact.

- **Hazardous Materials & Highway/Transport Accidents – (Vulnerability 10- Medium Priority)**  
**Location:** There are two sites in town that have sufficient types and/or quantities of hazardous materials to require Tier II reporting.
  - Boise's Citgo 2953 Rte 22A
  - Mike's Fuels Rte 22A

The Town also recognizes certain locations along town and state highways are high accident locations(HAL) as identified through local knowledge, police reports and VTrans reports. These HALs occur in the Town of Bridport at three primary locations:

- The intersection of Rte #22A, Rte #125, and Market Road
  - The intersection of Rte #125 and Market Road
  - The intersection of Rte #22A and Rte 125 just north of the village center
- These locations are at higher risk for hazardous material spills due to their HAL status.



### Results of Bridport Hazard Mitigation Committee exercise

**Extent:** Based on a recommended public safety evacuation distance from the 2012 Emergency Response Guidebook, a 1000-foot circle has been drawn around the Tier II sites. Of the 734 buildings (E911 locations) in Bridport, there are 6 Single-Family residences, 1 multi-family residence, 3 commercial facilities, 1 lodging establishment, 1 Government building and the school or 1.7% of the structures in town that might be impacted based within the identified 1,000 foot hazard circles.

Essential facilities which could be impacted by a large hazardous material spill within the Town of Bridport are:

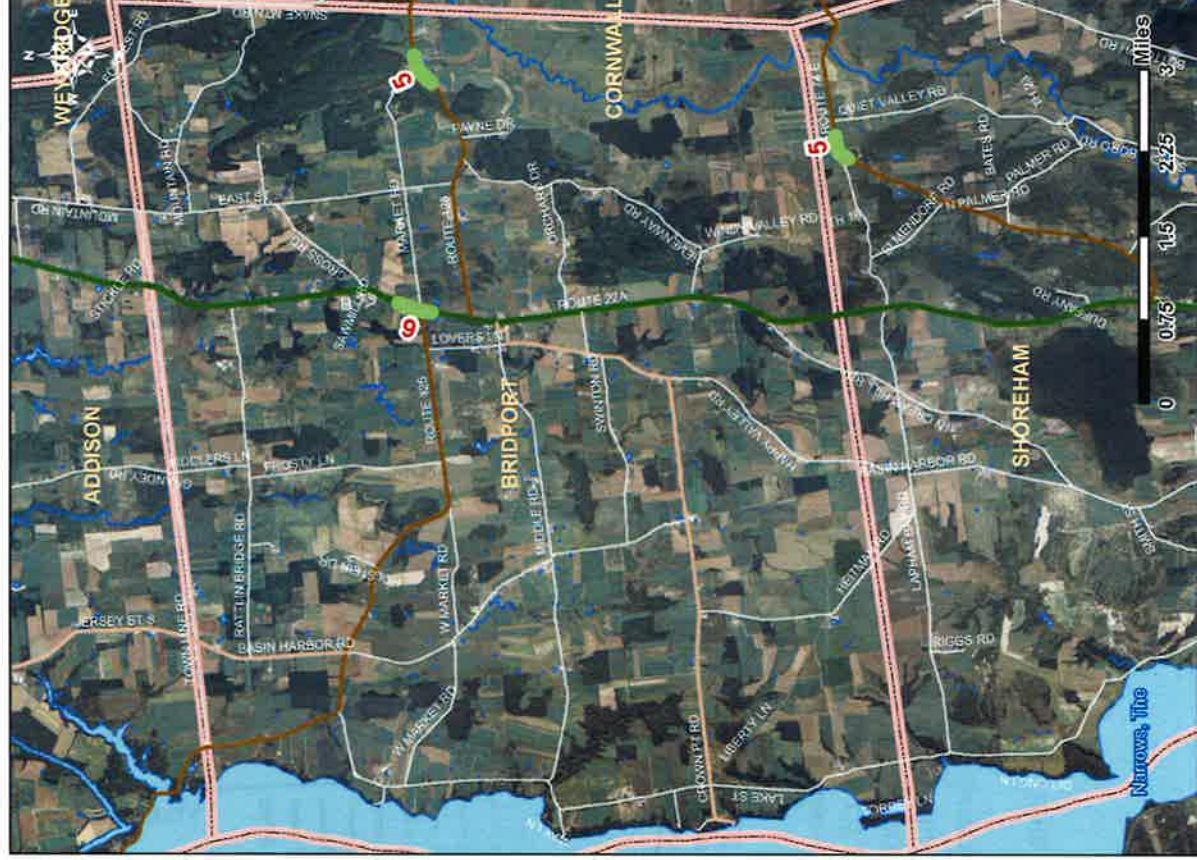
- Bridport Fire Station
- Bridport Town Office
- Bridport Central School
- Bridport Post Office
- Bridport Masonic Hall



**Previous Occurrences:** Minor non-reportable releases of propane have occurred, primarily during product transfer between storage tanks and delivery truck. In 2004, a tractor/trailer combination truck left Route #22A northbound and spilled a considerable quantity of fuel oil. Response required mobilization of the county hazmat team and resulted in loss of firefighting gear as well as environmental clean-up costs.

The HAL status of the intersections along Route 22A and Route #125 indicate multiple accidents at these locations. The intersection between Route 22A, Market Road and Route #125 saw 6 reported accidents in the period between 2006 and 2010.

### **Bridport ~ High Crash Locations : 2006-2010**



\* Labels ~ indicate "Total Number of Crashes" within the 5-year period





**Location:**

Landslide/erosion issues in the Town of Bridport are generally limited to erosive actions of high water on riverbanks in town, a currently stabilized slump on Rattlin Bridge Road and on the occasional slumping of the shoreline along Lake Champlain.

**Extent:**

The shoreline of Lake Champlain in the Town of Bridport is made up largely of unconsolidated clay-based material. Current weather trends include increased frequency and severity of rain. That, combined with the unintentional actions of camp owners along the shore, and the base of clay can result in relatively large-scale slumps. When these slumps occur in developed areas, entire camps can find themselves at the bottom of a bank closer to the water than was ever planned. If not destroyed by the slide, camps may have difficulty finding enough space left at the top of a bank to reset. With camp values over \$100,000, the loss of several due to landslide could result in over one million dollars in uninsured damages.

Town highways are at risk in some areas to landslide/slump actions as well. Recently, Rattlin Bridge Road was being slowly displaced laterally due to uncontrolled water seepage into the clay. Loss of even 100 yards of town highway due to slump would have a negative impact the towns road budget.

**Past Occurances:**

In the recent past, Rattlin Bridge Road was impacted by a slump which is believed to have been caused by the plugging of an old culvert and subsequent saturation of upslope soils. Camps along Giards Bay have also experienced settling of their foundations over time. While no major slumps were identified in interviews, the current shoreline along Lake Champlain is pockmarked with historic slumps. Elsewhere along the Lake Champlain shoreline, where soils are similar to those in Bridport, more recent examples include a 100ft slump which occurred in the Town of Colchester in the late 1960's. This slump ended up jutting out into Lake Champlain carrying a camp with it. The camp needed to be dragged up approximately 60 feet to get back to its original elevation.

**Future Probability:**

Due to the relatively flat terrain within the Town of Bridport, the catastrophic erosion and channel migration seen in mountain towns along river corridors is uncommon. Geomorphic assessment protocols used in the mountains are relatively ineffective at predicting future channel migration on the floor of the former Champlain Sea. Fortunately, areas surrounding Dead Creek, and the Lemon Fair still perform the wetland/floodplain functions as they have for thousands of years. The generally wet nature of the soils and their tendency to flood on an annual basis has kept most development at bay.

Poorly constructed driveways contribute to erosion hazards of their own when heavy rains wash gravel from uphill driveways into town ditches and onto town roads. As roadside ditches fill with gravel, they no longer retain their water carrying capacity and can result in road washouts during even relatively minor storms.

The increasing value placed on Lakeside property is starting to increase development pressure along the shoreline. Recent Vermont regulations were created to help reduce the impacts of this increased development. Some areas along Bridport's shore have already been developed in tight clusters of camps. When converted to year-round residences, water is added to the soils from leachfields. An increase in impervious surface is another byproduct of these conversions. These, together, increase the likelihood of future slumping.

### **Vulnerability Summary:**

Much of the most erosion susceptible property in the Town of Bridport lies along the shores of Lake Champlain where the ancient lake bed clay deposits meet the current lake shore. Camps and newly built year-round homes have been constructed along unstable bluffs overlooking Goose Bay, and Giard's Bay, in particular. The use of these residences can result in a slow saturation and resultant increase in slide risk of the native clay soils. In addition, the desire to see the lake view from structures located along lakeside bluffs tempts landowners to clear natural vegetation which has historically helped to stabilize those bluffs. Town road accesses to the lake have experienced deterioration from erosion in recent years at Witherell Landing, Champlainside, and the end of Crown Point Road.

Increased concern about potential landslide and observed toe-of-slope erosion often results in a landowner "protecting" their shoreline via expensive rip-rap treatments. Unfortunately, while these treatments tend to temporarily protect one property, they also divert the erosive forces of wave movements further along the shore to the neighboring properties who then, in turn, must find a way to protect their own lands. The resultant protection cycle of costs escalates far beyond what would have been lost had the shores been left to react naturally over the course of decades.

The community vulnerability to Landslide scored 10. A score of 10 would be considered a medium priority for the town based on a medium probability and warning with overall impacts limited to small areas.

- **Structure Fire – (Vulnerability 10- Medium Priority)**

### **Location:**

There are wood frame structures susceptible to structure fire scattered throughout the Town of Bridport with the highest concentration being camp groups along the shore of Giard's Bay. These camps are generally accessed by private drives and roads along Lake Street and Jones Dock Road. A secondary concentration is located on Torrey Island at the southeast corner of town. These are accessed by a private road which was built across a Torrey farm pasture. One last grouping is one located around the traditional village center (the "corners). Most of these were built before modern fire-resistant construction materials and methods were developed. Particularly along the lake, these summer residences, prior to current zoning, were built close together to take advantage of lakeshore access, thus making them more vulnerable to a wind-spread multiple structure fire.

### **Extent:**

The communities greatest risk for structure fire would be when a combination of circumstances were to happen at the same time. An example of these factors could be a structure fire in the Jones Dock Road area where traditional growth patterns of small seasonal camps have resulted in close-packed individual structures accessed via narrow and poorly constructed driveways. The combination of tightly packed structures and poor access for fire equipment is at its highest risk during winter months. The combination of snow, unplowed driveways, and reduced numbers of residents during the off season could lead to a fire getting out of control and spreading to nearby structures before the fire department could even get close enough to access the incident.

### **Past Occurrences:**

Responses by the Bridport Volunteer Fire Department for automobile accidents and structure fires over the past 10 years have remained relatively stable with an average of 17 per year. Closer inspection however, indicates a definite increase in responses between the first five years of the sample (avg. 14/year), and the last five years (avg. 25 /year).

Bridport Volunteer Fire Dept. Annual Fire and Motor Vehicle Responses

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Avg.
# of responses	11	13	17	11	16	37	16	15	13	21	17
# new residences	25	7	5	16	8	3	1	2	6	5	8

**Future Probability:**

The Town of Bridport has issued an average of 8 building permits per year over the past 10 years for either the construction of new residences or replacement of old residences. While this is not a huge increase, a surprising number fell into the category of replacement residence. These are probably either replaced camps or replaced mobile homes, both of which can add to the fire risk when located along the lakeshore.

**Vulnerability summary:**

Over the past 20 years, prices for these summer camps have skyrocketed mostly due to the value of the land they sit on. The increased purchase costs of these properties drives a slow conversion from seasonal to more expensive year-round residences because owners feel a need to get more use out of them. The pre-existing small lot size converted to year-round homes increases the per acre value and increases the potential losses from wind driven fire. This new development has not had a huge impact on fire risk, however, due to improved construction methods.

Unfortunately, risks to firefighters continue to escalate as newer construction materials often produce a dangerous combination of gasses when burned. Increased numbers of houses and poorly constructed driveways do impact the fire department’s ability to respond. Narrow and steep driveways not negotiable by fire equipment were identified particularly in the Forest Road area. While a landowner may have saved money in constructing these driveways, a much higher cost is associated with a structure fire at a location with limited access as well as an additional risk to volunteer firefighters who respond.

The community vulnerability to Structure Fire scored 10. A score of 10 would be considered a medium priority for the town based on a high probability with only a short warning but with a relatively low overall impact.

- **Lightning – (Vulnerability 9- Medium Priority)**

**Location:**

Severe storms which include lightning along with wind and rain events are a common occurrence in Bridport during summer months. While unpredictable, lightning tends to be drawn to high and pointed places. Town buildings are located at the height of land in Bridport village (Town Hall, Grange Building, Fire Station, etc.) and are therefore more highly susceptible to lightning strike than most residential structures.

**Extent:**

Lightning strikes in western Addison County, Vermont averaged between 4-6 strikes per square kilometer each year based on data collected by NASA satellites between 1995 and 2002. Within the Town of Bridport, these numbers would extrapolate into between 480 and 720 lightning strikes per year.

Lightning strikes routinely cause fires to trees along ridge tops in Vermont and less commonly start fires in structures. Fires associated with lightning strikes to inhabited buildings occur fewer than once every five years on average. More common is loss of power and damage to electronic equipment in homes where there has been a proximity strike. Anecdotally, there are multiple reports each year of electronic equipment unprotected by surge suppressors which are damaged by lightning strikes. Generally, these homeowners file insurance claims for damages and total annual damages in the entire community likely do not exceed \$10,000.

**Previous Occurrences:**

Relatively little information has been recorded of recent significant lightning strikes. However, a lightning strike killed Bridport resident Cyrus Stone, outside his house in 1910. Given the estimated numbers of lightning strikes in Bridport, it is certain that there have been strikes on homes and barns resulting in fires. Another common strike location is at a power line transformer.

**Future Probability:**

It is unlikely that lightning strikes will be reduced over the next few decades, however, if predicted increases in storm numbers and severity are true, increased numbers of lightning strikes would be expected. As newer buildings are built with fire resistant materials the likelihood of fire due to lightning is reduced.

**Vulnerability Summary:**

Bridport's susceptibility to lightning strike seems to be relatively stable. While historically, buildings may have been protected from lightning-caused fires by a lightning rod system, these seem to have fallen out of favor in recent years. During that same time period, an increase in fire protection capability has allowed the community to keep their perceived risk at a constant level.

The highest risk area for lightning strikes with the highest resultant damage to the public infrastructure continues to be where multiple public buildings are clustered on the height of land in the traditional village center. Loss, due to fire caused by lightning or electrical surge could be quite disruptive to the community if it were the town office, grange, or church.

The community vulnerability to Lightning scored 9. A score of 9 would be considered a medium priority for the town based on a high probability and limited warning but with a relatively low overall impact.

**Wildfire – (Vulnerability 9- Medium Priority)**

**Location:**

Wildfire can occur almost anywhere throughout the Town of Bridport. Generally, two different wildfire fuels can be found within the boundaries of the town. The forested areas of town, are characterized by fuels found in the duff layer (leaves, fallen branches, etc.). Non forested areas of Bridport have a fuel base of dried grasses and shrubs. Recent development in forested areas of town has resulted in homes nestled into woodlands creating an urban/wildfire interface risk. In open agricultural areas, the risk is from controlled burns in fields that can get out of control and result in a running fire through dry grasses.

**Extent:**

Springtime burning of open fields has been a longstanding historic practice thought to improve field fertility. Every few years, these get out of control due to either poor planning or unexpected winds. Generally, this type of wildfire is limited to a few acres and poses limited threats to structures lying close to the fuel source in the path of the fire. Fires in the forest tend to be smaller, usually limited to under an acre in size. These are generally mitigated by hardwood tree species and cover on the forest floor. Lakeside camps can sit among trees with a deep duff layer comprised primarily of leaves and/or needles. These camps also traditionally have open fires as part of the summer camping experience. The combination of these factors can lead to a higher fire risk in these areas.

A fast traveling wild-fire, whether through dry hayfields or through a dry bed of forest duff could easily lead to structure fires, especially in outbuildings. During an extremely dry spring, an out-of-control fire such as this could tax the local fire department and its mutual aid partners.

**Past Occurrences:**

In the century prior to 1920, wildfires enveloped large tracts of the New England forests in large part due to the logging activity and wood burning locomotives of the time. No current records of wildfire activity have been found for the Town of Bridport. However, the State Agency of Natural Resources keeps track of fires in the entire state. Most wildfires are never reported to State forestry officials and are therefore not shown in their annual reports. Based on the period between 2001 and 2010 the fires which were reported averaged just under 120 fires which burned a total of 215 acres.

**Vermont Wildfire Statistics**

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
# fires	189	100	101	86	221	118	81	115	95	88
# Acres	295	146	95	250	547	254	180	138	164	84
Ave. Size	1.56	1.46	.95	2.91	2.48	2.15	2.22	1.20	1.73	.95

**Addison County Wildfire Statistics**

Year	2006	2007	2008	2009	2010
# fires	2	4	6	10	1
# Acres	.5	9	10	4.5	1.2

Within the past 50 years, forests have been closed to recreation state-wide 3 times due to extreme fire conditions. While these incidents have not resulted in large-scale damage in the Town of Bridport, the conditions existed for widespread forest fires. In addition, an unusually dry spring will often result in a no-burn proclamation most recently seen in 2009.

**Future Probability:**

The combinations of factors which lead to widespread wildfires usually coincide with extended droughty conditions. Periodic droughts occur every 30-40 years in Vermont and based on observed patterns, would be next expected in the decade between 2020 and 2030. During this period additional risk for wildfire would exist and an increase in wildfires would also be expected.

**Vulnerability Summary:**

With an active agricultural base, much of the Town of Bridport is either open land or lands recently abandoned and growing up to shrubs. Consequently, many structures within this area border on areas with a high fuel load of grasses and shrubs.

Similarly, forested areas of town and along the lakeshore would fall within the traditional urban/wildfire interface. This increased risk for forest fire due to proximity is moderated by the so-called “Teflon Forest” conditions of the Northeastern US. While moisture levels generally tend to be higher than in the fire-plagued western forests, scattered periods of drought can increase fire danger levels to *Extreme* particularly during spring and fall seasons when dry leaves cover much of the forest floor.

Increased development within the urban/wildfire interface continues throughout the state and Bridport has not escaped that trend. It is becoming increasingly important that residences and essential facilities be constructed with an eye toward wildfire resistance by establishing no-burn zones around structures.

With a community vulnerability score of 9, wildfire is considered a MEDIUM PRIORITY based on a high likelihood of occurrence yet with a low overall impact to the community.

- **Earthquake – (Vulnerability 8- Low Priority) –**

**Location:**

As surprising as it is to some residents, all of Vermont, including the Town of Bridport, is classified as an area with “moderate” seismic activity. This can be compared to the west coast of the U.S., which is classified as “very high” and the north-central states classified as “very low.” Located in the Champlain Valley, Bridport is at moderately higher risk than some other areas of Vermont.

**Extent:**

Based on information provided by the Vermont Geological Survey, Department of Environmental Conservation, Agency of Natural Resources, HAZUS outputs for the region are summarized as follows:

The Middlebury Once-in-500 year earthquake (5.7 magnitude) could cause significant damage in Addison County. The Goodnow, NY Once-in-500 year earthquake (6.6 magnitude) could cause shaking just above the lower limit for building damage. The Montreal, Quebec (6.8 magnitude) and the Tamworth, NH (6.2 magnitude) Once-in-500 year earthquakes probably would not cause damage in Addison County. Only the loss data from the Middlebury and Goodnow events are shown below:

Middlebury Scenario:

- Building damage – HAZUS estimates that over 1600 buildings will receive at least moderate damage. This is a little more than 13% of the total number of buildings in the county. (13% of buildings in Bridport would be 95 buildings). HAZUS also estimates that all essential facilities (hospital, schools, police stations and fire stations will receive at least moderate damage. A total of .8% or 6 structures would be predicted to be substantially damaged. An estimated 4-5 families would be displaced from their homes and may need temporary shelter in Bridport.
- Transportation & utility systems – HAZUS estimates minimal disruption of the transportation and utility systems. However, over 9000 households in the region are expected to be without electrical power for up to three days.
- Casualties – Minimal casualties are also expected with less than twenty-five requiring medical attention and less than three needing hospitalization in the region.



- Economic loss – Direct building losses are estimated at > \$83 million and business interruption losses are expected to be as much as \$105 million. HAZUS estimates that although there was minimal damage to the transportation system the loss would still be close to \$15 million. Approximately \$4.4 million would be needed to repair damaged communications systems.

Goodnow Scenario:

- Building damage – HAZUS estimates that over 600 buildings will receive at least moderate damage. This is a little more than 5% of the total number of buildings in the county. (5% of buildings in Bridport would be 37) HAZUS also estimate that all essential facilities (hospital, schools, police stations and fire stations will receive at least moderate damage. 2-3 families are predicted to be displaced from their homes and will need temporary shelter.
- Transportation & utility systems – HAZUS estimates minimal disruption of the transportation and utility systems. However, over 4000 households are expected to be without electrical power for up to three days in the region.
- Casualties – Minimal casualties are also expected with less than six requiring medical attention and only one needing hospitalization.
- Economic loss – Direct building losses are estimated at > \$17 million and business interruption losses are expected to be as much as \$24 million. HAZUS estimates that although there was minimal damage to the transportation system the loss would still be close to \$3.6 million. Approximately \$0.9 million would be needed to repair damaged communications systems.

**Previous Occurrences:**

Sixty-three known or possible earthquakes have been centered in Vermont since 1843 (*Ebel, et al 1995*). The two strongest recorded quakes measured in Vermont were of a magnitude 4.1 on the Richter scale. One was centered in Swanton and occurred on July 6, 1943, and the second occurred in 1962 in nearby Middlebury. The Swanton quake caused little damage, but the Middlebury quake did result in broken windows, cracked plaster and falling objects (*VEM, 1995*).

Earthquakes centered outside the state have also occasionally been felt in Vermont. Twin quakes of 5.5 occurred in New Hampshire in 1940. In 1988, an earthquake with a magnitude 6.2 on the Richter scale took place in Saguena, Quebec and caused shaking in the northern two thirds of Vermont (*Ebel, et al 1995*).

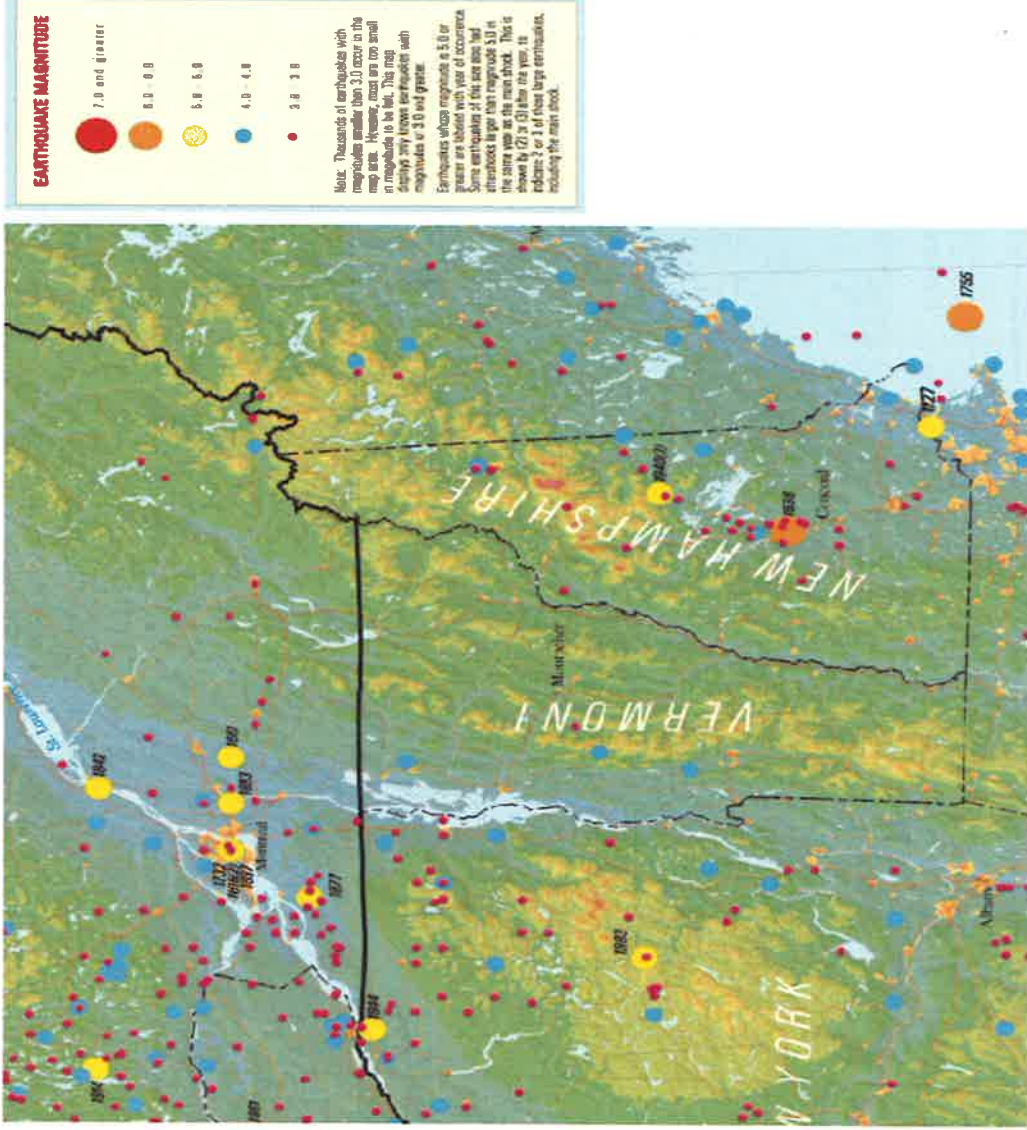
In May 2001 and again in the summer of 2010, earthquakes in the 5.0-5.5 range have been felt in Bridport with epicenters in New York and Quebec respectively.

**Future Probability:** The USGS database shows there is a 2.26% probability of an earthquake measuring 5.0 or above within 31 miles of the Town of Bridport in the next 50 years.

**Vulnerability Summary:** The Bridport Hazard Mitigation Committee scored Earthquake hazard a risk score of 14 resulting in a vulnerability score of 3. Residents of the community do not generally consider earthquake to be a high enough risk to require preparing for one. This results in little or no preparedness should an earthquake occur.

The community vulnerability to Earthquake scored 8. A score of 8 would be considered a low priority for the town based on a low probability with no advance warning but with a relatively low overall impact.

### Regional Historical Earthquake Records



- **Drought – (Vulnerability 5 - Low Priority)**

#### **Location:**

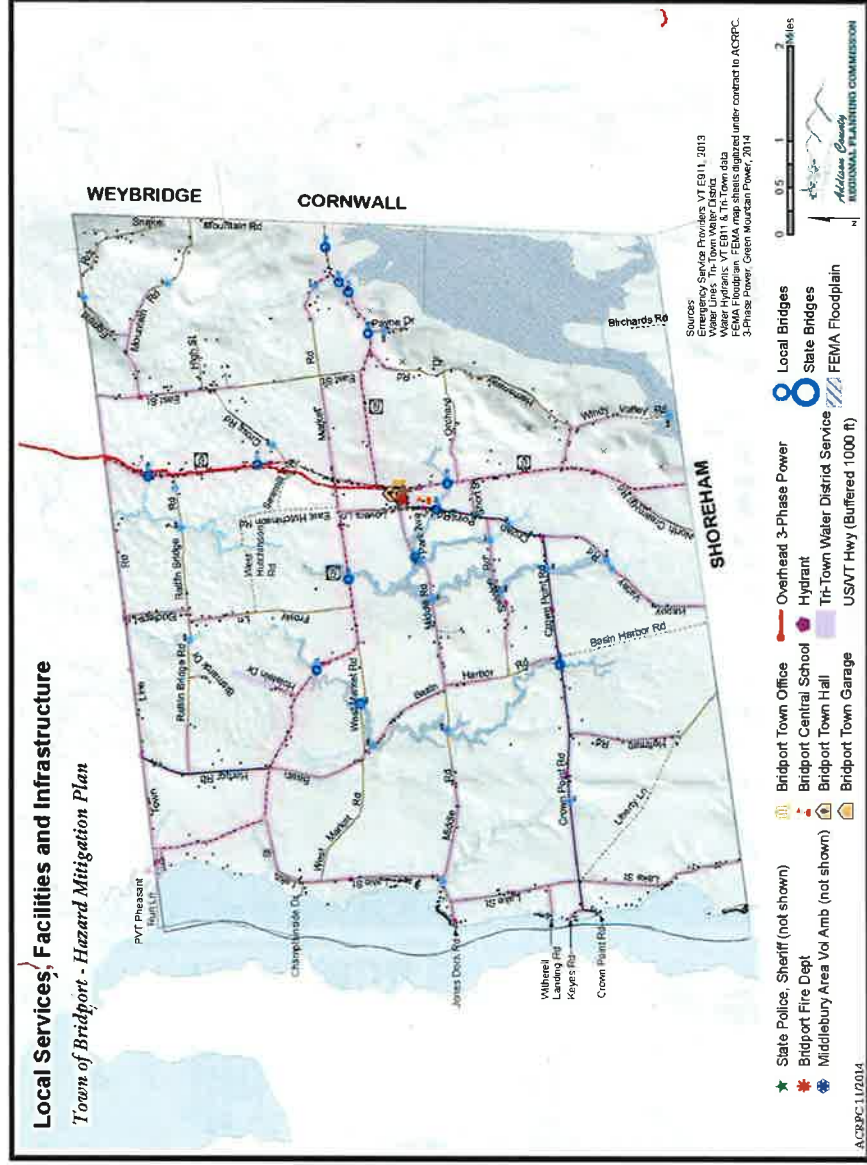
Drought, due to lack of rain resulting in a receding water table is generally a regional issue due to its widespread nature. Most of the Town of Bridport receives its water supply from Lake Champlain via the Tri-Town Water District and residents are, therefore less susceptible to drought conditions.

**Palmer Drought Index Table**

≥ 4 Extremely Wet	3 - 3.99 Very Wet	2 - 2.99 Moderately Wet	1 - 1.99 Slightly Wet	.5 - .99 Incipient Wet Spell	.49 - .49 Near Normal	-.5 - -.99 Incipient Dry Spell	-1 - -1.99 Mild Drought	-2 - -2.99 Moderate Drought	-3 - -3.99 Severe Drought	≤ -4 Extreme Drought
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**Extent:**

Four types of drought are identified in the State of Vermont's Hazard Mitigation Plan: meteorological, agricultural, hydrological and socioeconomic. Local knowledge indicates dry spells are periodic in nature and would be considered severe about every 10 years on the average. The residents served by Tri Town Water would probably not be impacted during a droughty period but farm crops throughout Bridport could be.



**Local infrastructure map identifying the extent of the Tri-Town Water service area**

**Previous Occurrences:**

An extended drought period in the region during the 1960s saw the development of several community-owned water systems in communities along Lake Champlain. The Town of Bridport at that time entered into a multi-town water district along with the Towns of Addison and Shoreham. The Tri-Town Water District was formed which resulted in a water access and treatment plant located on the shore of Lake Champlain in the Town of Addison and an extensive system of water lines which serve along public roads in each of these towns. No direct costs to the town due to drought have been recorded in the period since the creation of the Tri-Town Water District.

**Future Probability:**

Historical records show periods of moderate to severe drought impact Vermont every 30 -40 years with the last occurring during the 1990s. Were this pattern to continue, a moderate to severe drought would be expected sometime in the decade between 2020 and 2030.

**Vulnerability Summary:**

With a high likelihood that the region will experience a moderate to severe drought in the next decade, a now ageing infrastructure, and increased demands due to future residential growth, could require widespread upgrades to the existing infrastructure. These costs would need to be borne by the residents of the water district. The needs of local dairy farms for milk and crop production could also severely impact the efficacy of the existing system were a major drought to occur.

Since agriculture is the largest economic engine in Bridport, an extended drought which caused reduced crop production could have widespread impacts.

The community vulnerability to Drought scored 5. A score of 5 would be considered a low priority for the town based on the existence of a robust water system with redundant equipment.



## 5. Community Mitigation Strategies

### 5.1 Hazard Mitigation Goals by Hazard Type

Each hazard type identified in Section 4 “Community Risk Assessment” can be mitigated dependent on the willingness to do so at the local, state or federal level. For example, the mitigation of flood damage is basically a simple fix- don’t allow anything in the floodplain that can’t afford to be lost and when it is lost, don’t replace it. This would include all forms of infrastructure whether it be homes, highways, dams or croplands. Unfortunately, political will can rarely stand up to the simplicity of mitigation.

The Town of Bridport has identified that its goals for hazard mitigation are to reduce and/or avoid all long and short term vulnerabilities to the hazards identified in section 4.3. In doing so, it also recognizes that political will and lack of funding stand in the way of many mitigation projects. The town particularly supports local residents’ efforts to mitigate their personal risks. The Town also supports projects that lead to a positive benefit vs. cost evaluation and which the voters find affordable.

<b>Identified Hazard</b>	<b>Primary Mitigation Goal</b>
Winter Storm/Ice Storm	Ensure that essential services can function during disaster
Widespread Power Failure	Ensure that essential services can function during disaster
High Winds	Ensure that essential services can function during disaster
Flood/Flash Flood	Reduce loss of infrastructure due to flash flooding and Protect existing floodplain from development
Haz Mat and Transportation Accidents	Ensure that highway improvements result in safer conditions
Landslide/Erosion	Reduce loss of infrastructure due to erosion
Structure Fire	Protect the health and safety of the public
Lightning	Protect the health and safety of the public
Wildfire	Protect the health and safety of the public
Earthquake	Protect existing and new properties and structures
Drought	Protect existing and new properties and structures

### 5.2 Authorities, Policies, Programs, Resources (and the ability to expand upon these)

#### **Authorities of Town Officials:**

Selectboard: The Selectboard is responsible for the basic administration of the town. They take care of roads, make appointments to other boards and commissions, and authorize expenditures of voted budgets. The selectboard may enact ordinances and rules in many areas including traffic regulation, regulating nuisances, managing solid waste, dogs and recreation, and establishing bike paths.

Planning Commission: The Planning Commission is responsible for long range planning in a town particularly as it relates to future land uses. They prepare a municipal plan and zoning bylaws which are adopted by the Selectboard. Planning Commission members are appointed by the Selectboard.

Zoning Administrator: The Zoning Administrator (ZA) is appointed by the town’s Selectboard with consideration given to the recommendation of the planning commission. Their responsibilities include administration and enforcement of a town’s zoning bylaws, The ZA and usually also serve as the administrator of town floodplain regulations.

Tree Warden: The Town Tree Warden is responsible for the shade and ornamental trees within the town rights-of-way. They oversee tree health and removal when necessary. The tree warden is appointed by the Selectboard.

Fire Warden: The Town Forest Fire Warden has the responsibility for suppression of wildland fires, regulating open burning in the town by issuing burn permits, and wildfire education/prevention. The Town Fire Warden is appointed by the state Commissioner of Forests, Parks and Recreation with approval by the town's Selectboard.

Health Officer: The Town Health Officer is the executive officer of the local Board of Health. A local board of health may make and enforce rules and regulations...relating to the prevention, removal, or destruction of public health hazards and the mitigation of public health risks. The Town Health Officer is appointed by the Commissioner of Health with approval by the local Selectboard. They take direction from the state Department of Health in investigation and enforcement of public health issues.

Emergency Manager or Coordinator: By default, a towns Selectboard chair is the town's emergency management director (EMD) unless one is appointed. Many communities retain the authorities of an EMD within the Selectboard and appoint an emergency coordinator instead. The emergency manager is responsible for the organization, administration and operation of the local emergency management organization. Emergency managers prepare local emergency operations plans, coordinate a local emergency management group and perform emergency management functions at the local level.

**Current policies, programs, resources and the ability to expand on these for identified hazards:**

#### Winter Storm/Ice Storm

Mitigation activities by power companies have re-routed many of the remote lines along town highways since a 1998 ice storm and an increased pruning effort has reduced the impact of a similar event would it happen today. Where affordable, the burying of power lines is encouraged throughout town to help mitigate the most common effect of winter storms in Bridport

The Town of Bridport generally mitigates its winter storm risk through preparedness activities in the form of appropriately sized equipment and training. In the event of an extended power outage during extremely cold weather, the Town has identified the Bridport Central School as a designated warming shelter equipped with a back-up power source. The periodic cutting of brush along town highways also mitigates the effects of large winter storm events by reducing their ability to act as snow fence dropping windblown snow into the town highway system. In past years, the annual installation of snow fence helped mitigate the drifting found along the town's east/west roads. This practice, however, fell out of favor as labor became more expensive and storage in the summer of wooden slat snow fencing became an issue.

During interviews, the town highway crew expressed an interest in revisiting the installation of snow fence. Recent fencing design can now allow a single man to install in one day what formerly took two men several days and storage of the new and lighter fencing could now occur easily in second floor storage areas. In particular, the road crew noted snow drifting as an issue on Rattlin Bridge Road, Crown Point Road and Middle Road.



### **Widespread Power Failure**

Many private residences have back-up power sources and essential Town facilities like the Bridport Central School and Town Garage have been retrofitted in recent years.

As population growth and housing expands along remote road corridors, increasing reliance on dependable power by the new homeowners requires changes in line maintenance. Green Mountain Power (GMP), the utility servicing the Town of Bridport has ongoing programs of line clearing and relocation to ensure outages are kept to a minimum. In addition, recent improvements to the transmission system in northwest Vermont have provided redundant transmission systems to bring electric power to the region.

The Town of Bridport supports development of a robust and redundant local electric generation and transmission system for its residents and recommends the burying of power lines. This support is limited to that which can prove that the benefit to local residents outweighs the financial costs and the societal costs associated with industrial generation and visual degradation of the local landscape by aboveground transmission lines.

### **High Winds**

Residents of the Town generally do not recognize high wind as a hazard which can be mitigated with the exception of the effects previously discussed under widespread power failure.

Newly constructed buildings may have tie downs between roof and side walls but no building codes exist within the community that require construction to any particular standard.

Where high wind hazards have been recognized, it is usually a function of damage that might be caused if a tree were to be blown over and its effect on a residents' home. For this reason, some trees are removed from the landscape to reduce their vulnerability to high wind events. Within the village area, the town's Tree Warden supervises maintenance and removal activities of trees on town property. The Town of Bridport supports removal of dead and hazardous trees in the state right-of-way to mitigate the hazards associated with their falling either on town highways or on power lines. Along town rights of way, however, hazard tree removal is performed by the town road crew without the involvement of the town Tree Warden. The Town is considering whether a more active tree warden or the appointment of a member of the road crew as a deputy tree warden would result in a safer roadside. Specific locations where trees are a hazard were identified by the road crew as along Hemmenway and Forest Roads.

### **Flood/Flash Flood**

The Town has been a member in good standing of the NFIP for over 30 years. There are no identified "Repetitive Loss" properties located in Bridport. Five flood insurance policies are in effect for residences in the town which are insured for just under \$900,000. The anticipated changes to flood insurance brought on by the Biggert-Waters Act will eventually cause premiums on structures within the floodplain to skyrocket. These increased insurance costs may encourage buyouts and elevation projects that have previously been considered too expensive by homeowners historically benefitted by subsidized flood insurance.

Bridport's zoning regulations prohibit all new construction and substantial improvements to existing residences within the mapped floodplain with the exception of certain open space uses which do not impact the flood carrying capacity of the floodplain. Utilizing an early template which exempts "camps" from review is recognized as a gap in current zoning regulations. It is believed that the local

term “camp” referring to a seasonal home was not the original intent of the template which probably referred to something more akin to a tenting site for camping. It is unknown whether the cost of elevating a structure will trigger the substantial improvement clause of the current regulations.

The Town of Bridport adopted the 2013 edition of road and bridge standards as recommended by VT AOT on 2/11/2013. This document addresses road and bridge construction standards designed to mitigate local infrastructure issues and are particularly designed to mitigate potential damages due to flooding and flash flooding. The standards address culvert sizing, ditch treatments and driveway access to reduce flood-caused erosion. The road and bridge standards template is attached as Annex F of this mitigation plan.

The Town supports continued compliance with the NFIP and would support Community Rating System (CRS) improvements if the benefits to the town’s residents would outweigh the costs of additional administration and compliance.

#### **Hazardous Materials and Highway Transport Accidents**

Representatives from the Town of Bridport are active members of the Local Emergency Planning Committee in planning for hazardous materials incidents. The Town mitigates risk to local responders by reporting its Tier II facilities as required at both the state and local levels.

The Bridport Volunteer Fire Department generally has its members trained to respond at the operations level to hazardous materials spills within their response territory. In light of the recent installation of propane tanks in proximity to the village, some fire department members feel an increased involvement in zoning decisions is warranted.

The Town zoning bylaws sections 521 and 522 specifically limit storage of flammable liquids above ground and within specified distances of schools, hospitals, libraries, and religious institutions. In addition, Town zoning bylaws limit storage of hazardous materials in the mapped floodplain.

The Town of Bridport was one of the study subjects for “Traffic Calming and Non-Vehicular Routes for five Addison County Towns” produced in 1997. Since the completion of this study, Bridport has installed additional lighting at the entrance to the school. Unfortunately, since the main route for hazardous materials in town is a State highway, many other recommendations are not within the Town’s power to implement. The study, in 1997, recommended a roundabout at the intersection of Rtes 125 and 22A which is one of the three high accident locations in town. While not supported by either VTrans or many of the citizens of Bridport, the Selectboard is considering revisiting the issue and looking at the recommendations with a new understanding of the situation.

A representative from the town sits on the local Transportation Advisory Committee, a regional group whose purpose is to prioritize potential transportation related projects within the region. This group rates High Accident Locations (HAL) highly in prioritizing projects to mitigate the risks associated with these locations by changing alignments, added signage and reduced speeds.

#### **Landslide/Erosion Hazard**

Unfortunately, the relatively short lives (compared to geologic time) of property owners lead many toward the belief that riverbanks and shorelines have always been stable and that channel migration and shoreline erosion can be prevented by human actions rather than understanding how human actions can, instead, increase the speed of the forces of nature. Action by the State legislature in 2014 resulted in adoption of the Shoreline Protection Act. This act should serve to reduce landslide risk

along the shores of Lake Champlain by limiting removal of natural vegetation and extending the lands governed by state permits.

The Town planning commission, in its 2011 rewrite of the Bridport Town Plan identified erosion of the Lake Champlain shoreline as a hazard which is specifically being increased due to riprap treatments along the toe of the slope and wholesale removal of woody plants and trees. “The best long-term solution to slow the rate of shoreline erosion is retaining and planting woody shoreline vegetation.”

The Town of Bridport supports mitigation of shoreland landslides through natural slope stabilization and is active in its educational support of this concept. Copies of “The Shoreline Stabilization Handbook” first created through a Project Impact funded grant are made available to shoreline landowners who are thinking about treatments to their lands. In addition, Town Zoning Bylaws limit clear cutting of trees within 100 feet of the shoreline except for a single 12 foot view corridor unless prior approval has been sought from the Zoning Board of Adjustment.

Erosion hazards along Streams and Creeks in town are limited due to the slow winding nature of these waterways in Bridport. The State Agency of Natural Resources recently released a “river corridor” layer for mapping which shows the amount of space along rivers and streams required to accommodate stream movement over time. The Town supports evaluating whether adoption of an overlay district similar to that which regulates floodplains would be effective in reducing this hazard in the community.

### **Structure Fire**

The Town of Bridport’s subdivision regulations help to mitigate the effects of structure fire by requiring adequate water storage facilities within new subdivisions. The Town Plan also speaks to the need for improved and well maintained emergency access to residences.

The Town supports the Bridport Volunteer Fire Department with a grant equal to over half of the annual budget for the department. This all-volunteer organization makes up the remainder of its operating budget through generous support from townspeople in the form of donations and support at fundraising events.

The Town also supports revisiting its current driveway standards as a way of mitigating both the access problems associated with structure fires and those associated with erosion’s impact on the town infrastructure.

Actions identified under the Drought hazard would also mitigate structure fire and wildfire risk in future developments.

### **Lightning**

The town has mitigated potential damage to Town-owned structures due to lightning strike by installing lightning rods to channel the electrical energy directly to ground rather than through a structure’s electrical system.

Most of the larger, privately owned farm structures in vulnerable locations have similarly installed lightning rod systems to protect them from lightning strike with the encouragement from insurance companies and extension agents.

The Town has no adopted building standards which would require this action and feels the risk to private residences should be borne by each resident on their own.

### **Wildfire**

The Bridport annual Town Report includes a report from the Town Fire Wardens which includes an educational message which encourages getting a permit for outdoor burning and warns that fines will be levied if burn permit has not been requested prior to the fire. Two active fire wardens add to the mitigation value of this message.

The town has no guidelines in place for home construction that would limit the risk to wildfire in Bridport. Actions taken as described above should limit the setting of uncontrolled outdoor fires and should result in an overall limited risk. In addition, adequate water storage facilities required as an impact assessment should mitigate future fire risk in future developments.

### **Earthquake**

Despite the probability of an earthquake within the next 50 years, most town residents do not even attempt to mitigate its hazard.

As in most communities in Vermont, no building codes exist in the town which would serve to mitigate the impacts of an earthquake. The Town of Bridport has not identified earthquake as a hazard it feels is imminent enough to justify much in the way of mitigation actions.

Making educational materials on earthquake hazards available would allow reasonable decisions to be made during new construction.

### **Drought**

Agricultural activities highly dependent on water such as fruit and vegetable crops can be severely impacted by lack of rain. In the Town of Bridport, the Tri-Town Water District provides potable water to all residents and farms. Most of these businesses have mitigated the effects of periodic droughts in the past by providing irrigation systems fed by farm ponds and depend on the public water supply to fill in when needed. However, whether enough capacity exists to supply irrigation needs during a severe drought, is unknown. An alternative for farms, dependent on crops and highly impacted by low water supplies may be to become dependent on a USDA disaster declaration to find relief.

Reduced water supplies also impact the community's fire fighting capabilities. The public water supply is available but its use for firefighting purposes does impact all users to some extent. Thus, in some areas, the fire department is dependent on surface water supplies for much of its fire fighting water supply. The department is installing dry hydrants in deep water ponds and streams to make access easier as housing continues to expand into areas not served by Tri-Town.

As a mitigation measure shared with structure fire and wildfire, larger subdivisions may need to be required to provide fire ponds as part of an impact assessment.

The town supports drought mitigation in its support of the Tri-Town Water District including the recent creation of an emergency tie in to the neighboring Vergennes/Panton Water District. This inter-water district connection allows either district to be temporarily fed from the other in case of a system failure.

### 5.3 Project Prioritization process

Projects and actions included in Section 5.2 are conducted by the Town of Bridport or regional and State agencies where noted. The Town encourages its residents to adopt mitigation actions which could protect their personal property by making educational materials available to residents. Many of these potential actions are contained in Annex C as mitigation measures for individuals. Mitigation actions identified in Section 5.4, however, are considered the jurisdiction's priority mitigation actions. The town has the following priorities for choosing mitigation projects: Life safety and the safety of its residents, keeping local roads and bridges open to ensure access for emergency vehicles, and protecting critical infrastructure facilities in the town. The 5.4 actions/projects are constantly evaluated for benefit to the community, estimated project costs and political will to implement and will be implemented as those factors indicate. The actions identified in Section 5.4 under each hazard have passed a preliminary evaluation utilizing those general concepts by the hazard mitigation committee, and are listed in their order of priority. Before undertaking these projects, they will additionally be prioritized based on their feasibility and a benefit vs. cost review. A minimum C/B result of 1.0 will be required prior to any request for federal mitigation funds. Annex D identifies only some of the available programs which can help to fund some of these actions/projects. All projects in section 5.4 will be reviewed for progress following any local disaster declaration and will be considered annually as part of overall town budgeting.

### 5.4 Proposed Mitigation Actions and Projects by Hazard Type

In developing the following list of proposed mitigation actions and projects, care was taken to include only those projects which could be considered reasonable and feasible based primarily on cost and political willingness. The town will maximize 406 mitigation opportunities whenever possible when making repairs to P/A eligible damages during a declared disaster.

Each project in this action plan includes an estimated cost, possible funding sources, the lead person or agency responsible for completion of the project, societal benefits of the action and an estimated timeframe for project completion. Timeframes are estimates of start and finish of projects and of start only where the action is a policy change.

#### **Winter Storm/Ice Storm**

The Town has historically mitigated the effects of winter storms/ice storms through annual funding of the highway crew and its equipment. In funding this, an eye is always kept open for new approaches and equipment options.

The Town will support efforts by Green Mountain Power to mitigate power outages due to ice storms via pruning and tree removal activities. The Town's support will be in the form of granting permissions to the power company for work in the town right-of-way when requested unless such access will adversely impact scenic corridors and residents desires to keep the beauty of tree-lined streets and roads.

***Estimated cost: \$0***

***Potential Benefits: Reduced numbers and duration of power outages***

***Source of Funds: None needed***

***Responsibility: Selectboard***

***Timeframe: Q3, 2015-Q2, 2020***

The Town intends to begin testing the value of snow fencing along east/west roads to mitigate the effects of drifting snow in these areas.

*Purchase and installation of snow fence at test locations-cost \$1,000 or less*

*Source of funds: Annual town highway budget*

*Potential Benefits: Reduced snow drifting to gain better access to residents during severe storms*

*Responsibility: Selectboard, Road Commissioner, Highway Foreman*

*Timeframe: Q4, 2016 – Q2, 2020*

#### **Widespread Power Failure**

The town has identified granting of right-of-way access to Green Mountain Power to allow tree pruning and other line maintenance in its review of Winter Storm/Ice Storm. These actions will also serve to mitigate some of the impacts of summer storms.

The Town will investigate the costs and possible funding sources to allow installation of a back-up generator for the Town Office.

*Estimated cost: \$7,500*

*Source of funds: Town general fund or grant sources*

*Potential benefits: Preservation of town documents, availability for use as a warning shelter*

*Responsibility: Town Selectboard*

*Timeframe: Q4, 2015-Q4, 2016*

#### **High Winds**

The Town will limit damages due to high winds by removing dead and dying trees within the town right-of-way that could fall during a high wind event.

*Estimated cost: \$5,000 annual cost*

*Source of funds: Town highway budget.*

*Potential benefits: Eliminating risk of falling dead trees due to high wind*

*Responsibility: Joint Town Highway Dept, Tree Warden and Selectboard*

*Timeframe: Q1, 2016 – Q4, 2020*

#### **Flood/Flash Flood**

The Town will fund attendance by the Zoning Administrator at NFIP trainings when offered locally.

*Estimated cost: \$200-\$300*

*Source of Funds: Town General Fund Planning and Zoning budget*

*Potential benefits: Reduced likelihood of floodplain development*

*Responsibility: Town Zoning Administrator/ACRPC*

*Timeframe: Q1, 2016 – Q4, 2020*

The Town will evaluate the benefit vs. cost for entry into the Community Rating System of the NFIP

*Estimated cost: Negligible*

*Source of funds: Town general fund.*

*Potential Benefits: reduced flood insurance cost to residents*

*Responsibility: Joint, planning commission, Zoning Administrator and Selectboard*

*Timeframe: Q3, 2016 – Q1, 2017*

The Town will include additional flood resiliency language in the next rewrite of the Town Plan.

*Estimated cost: \$2,000 as part of an overall rewrite*

*Source of funds: Municipal planning grants.*

*Potential benefits: Effective language in Town Plan will allow for effective floodplain regs*



***Responsibility: Joint Selectboard and Planning Commission  
Timeframe: At next Plan rewrite 2016***

The Town will evaluate the adoption of more stringent floodplain/river corridor regulations by the Town Planning Commission in its next zoning update.

***Estimated cost: \$200-\$300***

***Source of Funds: Town General Fund Planning and Zoning budget***

***Potential Benefits: reduced flood risks***

***Responsibility: Town Planning Commission***

***Timeframe: Following Town Plan Update – Q2 2017-Q4, 2020***

The following specific road projects have been identified which will serve to mitigate the effects of flooding and/or flash flooding in the road network system to be implemented as funding allows. All identified culvert and bridge replacements are subject to the State of Vermont's stream alteration permit and the codes and standards adopted by the Town of Bridport.

- Stone Line ditches according to the town's road plan when work is being completed on any road.

***Estimated cost: Varies dependent on project***

***Source of funds: Town highway budget.***

***Potential benefits: Reduced ditch erosion along roads***

***Responsibility: Joint Town Highway Dept and Selectboard***

***Timeframe: Q2, 2016 - Q3, 2020***

- Replace culverts on Crown Point Road, Middle Road and Rattlin Bridge Road per Road and Bridge Standards with larger sizes if called for following hydraulic review.

***Estimated cost: Varies dependent on project***

***Source of funds: Town highway budget.***

***Potential benefits: Reduce susceptibility to wash-outs***

***Responsibility: Joint Town Highway Dept and Selectboard***

***Timeframe: As culverts fail and/or need replacement.***

**Hazardous Materials and Highway Transport Accidents**

The Town Planning Commission will review current zoning standards for storage of hazardous materials as part of next zoning regulation review/update.

***Estimated cost: Negligible, as part of zoning rewrites***

***Source of funds: Town General Fund***

***Potential Benefits: Reduced conflicts between residential uses and HazMat storage***

***Responsibility: Planning Commission, Fire Department, Selectboard***

***Timeframe: Following Town Plan Update – Q2 2017-Q4, 2020***

The Town Planning Commission will request increased input/review from the fire department on applications.

***Estimated cost: Negligible, Time only***

***Source of funds: Town General Fund***

***Potential Benefits: Increased knowledge base for reviews***

***Responsibility: Planning Commission, Fire Department, Selectboard***

***Timeframe: Q1, 2016 – Q4, 2020***

The Town will create and adopt driveway and curb cut standards that ensure safe access on and off the town highway system, safe access for emergency vehicles and to mitigate impacts of poor driveway design on town infrastructure.

***Estimated cost: Negligible***

***Source of funds: Town General Fund***

***Potential Benefits: Improved access to all residences, reduced damages to town roads.  
Responsibility: Joint Selectboard, Highway Dept, Fire Dept. and Planning Commission  
Timeframe: Q3, 2016 – Q2, 2017***

The Town has identified the following high risk locations on its highway system. The Town Selectboard will request improvements which support mitigation of the hazards in any future construction/reconstruction activities by VTTrans.

- The intersection of Rte 22A, Rte 125 and Market Road  
***Estimated cost: None to Town  
Source of funds: State/Federal highway funds.  
Potential Benefits: Reduced risk of accident at the intersection  
Responsibility: Joint Selectboard and State AOT  
Timeframe: Q1, 2016***
- The intersection of Rte 125 and Market Road.  
***Estimated cost: None to town  
Source of funds: State highway budget.  
Potential Benefits: Reduced risk of accident at the intersection  
Responsibility: Joint Selectboard and State AOT  
Timeframe: Q1, 2016***
- The intersection of Rte 125 and Rte 22A north of the village.  
***Estimated cost: None to town  
Source of funds: State highway budget.  
Potential Benefits: Reduced risk of accident at the intersection  
Responsibility: Joint Selectboard and State AOT  
Timeframe: Q1, 2016***

The Town will request additional evaluation of Route 22A for safety improvements between Short Street and Route 125 East.

***Estimated cost: None to town***

***Source of funds: State highway budget.***

***Potential Benefits: Reduced risk of accident at the intersection  
Responsibility: Joint Selectboard and State AOT  
Timeframe: Q1, 2016***

The Town will identify and eliminate “Y” intersections within the town highway system wherever practical in favor of “T” intersections.

***Estimated cost: Negligible, if done as part of road rebuilding projects***

***Source of funds: Town General Fund***

***Potential benefits: reduced risk of accident at these intersections  
Responsibility: Joint Selectboard, Highway Dept  
Timeframe: As highway renovations occur***

### **Landslide/Erosion Hazard**

The Town planning commission will evaluate the regulation of development including setbacks and tree clearing in its Shoreland Planned Residential District at its next zoning regulation rewrite with an eye toward erosion and landslide mitigation.

*Estimated cost: Negligible as part of a regular rewrite*

*Source of funds: Town general fund.*

*Potential Benefits: Reduced erosion and landslide risk*

*Responsibility: Joint, planning commission, Zoning Administrator and Selectboard*

*Timeframe: Following Town Plan Update – Q2 2017-Q4, 2020*

The Town planning commission will evaluate ANR River Corridor maps and explore the need for adoption of a River Corridor overlay district in its zoning regulations.

*Estimated cost: Negligible as part of a regular rewrite*

*Source of funds: Town general fund.*

*Potential Benefits: Access additional State funds for disasters, reduce risks of fluvial erosion*

*Responsibility: Joint, planning commission, Zoning Administrator and Selectboard*

*Timeframe: Following Town Plan Update – Q2 2017-Q4, 2020*

### **Structure Fire**

The Town planning commission will improve current driveway standards in its next zoning bylaw rewrite to support basic accessibility for emergency vehicles to all structures in town.

*Estimated cost: \$2,000 as part of an overall rewrite*

*Source of funds: Municipal planning grants.*

*Potential Benefits: Improved vehicular access, reduce conflict with town highways*

*Responsibility: Joint Selectboard and Planning Commission*

*Timeframe: Following Town Plan Update – Q2 2017-Q4, 2020*

### **Lightning**

The Town feels the risk to private residences of lightning strike should be borne by each resident on their own. The Town will make lightning mitigation information available to homeowners at the Town Office.

*Estimated cost: None to town*

*Source of funds: Government Printing Office*

*Potential Benefits: Increased awareness by residents*

*Responsibility: Town Clerk/ACRPC*

*Timeframe: Q4, 2015*

### **Wildfire**

The Town Fire Warden will require outdoor burn permits prior to any outdoor burning.

*Estimated cost: None*

*Source of funds: Town General Fund*

*Potential Benefits: Reduced occurrence of wildfire*

*Responsibility: Joint Selectboard and Fire warden*

*Timeframe: Q2, 2016*

The Town believes it is the homeowner's responsibility to mitigate their susceptibility to wildfire through "firewise" practices. The town will support education in this area by providing educational materials in the town office.

*Estimated cost: None to town*

*Source of funds: Government printing office*

*Potential Benefits: Increased awareness by residents*

*Responsibility: Town Clerk/ACRPC*

*Timeframe: Q4, 2015*

### **Earthquake**

The Town believes it is the responsibility of private homeowners to be ready for earthquakes. The town generally believes that building construction standards are the responsibility of each private homeowner. The Town also does not believe the risks associated with earthquake are large enough to require any town building retrofits at this time.

The Town feels education is the key to preparing private homes for an earthquake and will make earthquake education materials available at the town office when available.

*Estimated cost: None to town*

*Source of funds: Government Printing Office*

*Potential Benefits: Increased awareness by residents*

*Responsibility: Town Clerk/ACRPC*

*Timeframe: Q4, 2015*

### **Drought**

The town believes the State of Vermont's new water/wastewater rules will likely help mitigate the impacts of future droughts. No new action is needed at this time.

## **6. Plan Maintenance Procedures**

Any Hazard Mitigation Plan is dynamic and should not be fixed. To ensure that the plan remains current and relevant, it is important that it be updated periodically. The plan will be updated at a minimum every five years in accordance with the following procedure:

### **6.1 Plan Review and Update Process (5 year cycle)**

1. The Bridport Selectboard assembles a Review/Update Committee to include government officials and interested public.
2. The Committee will discuss the process to determine if any modifications or additions are needed due to changing conditions since the last update occurred. Data needs will be reviewed, data sources identified and responsibility for collecting/updating information will be assigned to members.
3. Other Town plans (Emergency Operations Plan, Town Plan, Road Plan, etc) will be reviewed to ensure a common mitigation thread still exists throughout.
4. A draft update will be prepared based on these evaluation criteria:
  - Changes in community and government processes, which are hazard-related and have occurred since the last review.

- Progress in implementation of plan initiatives and projects.
  - Effectiveness of previously implemented initiatives and projects.
  - Evaluation of unanticipated challenges or opportunities that may have occurred between the date of adoption and the date of the report.
  - Evaluation of hazard-related public policies, initiatives and projects.
  - Review and discussion of the effectiveness of public and private sector coordination and cooperation.
5. The public will be invited to review and give input on drafts as they are produced.
  6. Selectboard members will have an opportunity to review the draft update. Consensus will be reached on any changes to the draft.
  7. The Selectboard will notify and schedule a public meeting to ensure adequate public input.
  8. The Selectboard will recommend incorporation of community comments into the draft update.

#### 6.2 Programs, Initiatives and Projects Review

Although the plan should be reviewed in its entirety every five years as described above, the Town will monitor and evaluate its programs, initiatives and projects annually as the town budget is created. This will ensure that progress will be reviewed and projects either added or removed from the towns work plan based on changing local needs and priorities. In creation of the municipal plan by the planning commission, concepts, goals and strategies from this plan will be used to inform the development of that plan and will be incorporated into that plan when appropriate.

#### 6.3 Post-Disaster Review Procedures

Should a declared disaster occur, a special evaluation process will occur in accordance with the following procedures:

1. Within six (6) months of a declared emergency event, the Town will initiate a post disaster review and assessment of actions.
2. This post disaster review and assessment will document the facts of the event and assess whether existing Hazard Mitigation Plans effectively addressed the hazard.
3. A report of the review and assessment will be created by a Review/Update Committee.
4. The committee will make a determination whether the plan needs to be amended. If the committee determines that NO modification of the plan is needed, then the report is distributed.
5. If the committee determines that modification of the plan IS needed, then the committee drafts an amended plan based on its recommendations and forwards to the Selectboard for public input.

6. Following completion of a public input process, further amendments may be made and a final plan delivered to the Selectboard for adoption.
7. The Selectboard adopts the amended plan.



**7. Plan Adoption Resolution**

**RESOLUTION**

Selectperson SUE WALKER, offers the following resolution and moves its adoption. Seconded by Selectperson SUE STOCKER.

RESOLVE: That in order to provide for sustained actions to reduce or eliminate long-term risk to people and property from hazards and their effects in the Town of Bridport, VT, the Town Selectboard deems it advisable and in the best interests of the community to adopt the attached Town of Bridport, Vermont Single Jurisdiction All-Hazards Mitigation Plan. In adopting this plan, the Selectboard instructs all community departments to follow the recommendations contained in this plan.

PASSED AND ADOPTED THIS 12 DAY OF January, 2016

Norman A. Barrett, Chairperson

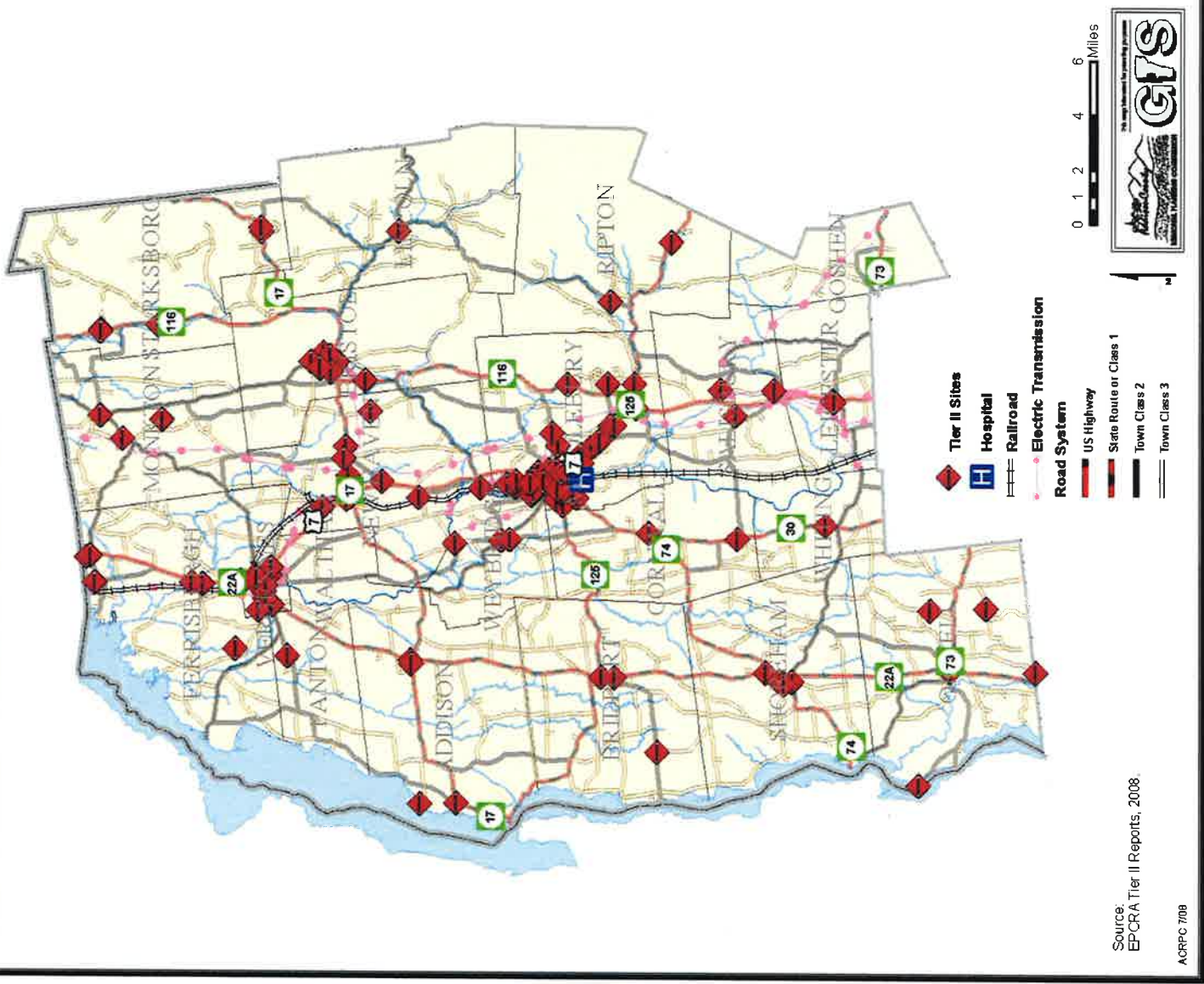
Town of Bridport, VT

ATTEST:

Valerie Bougeois  
Town/City/Village Clerk

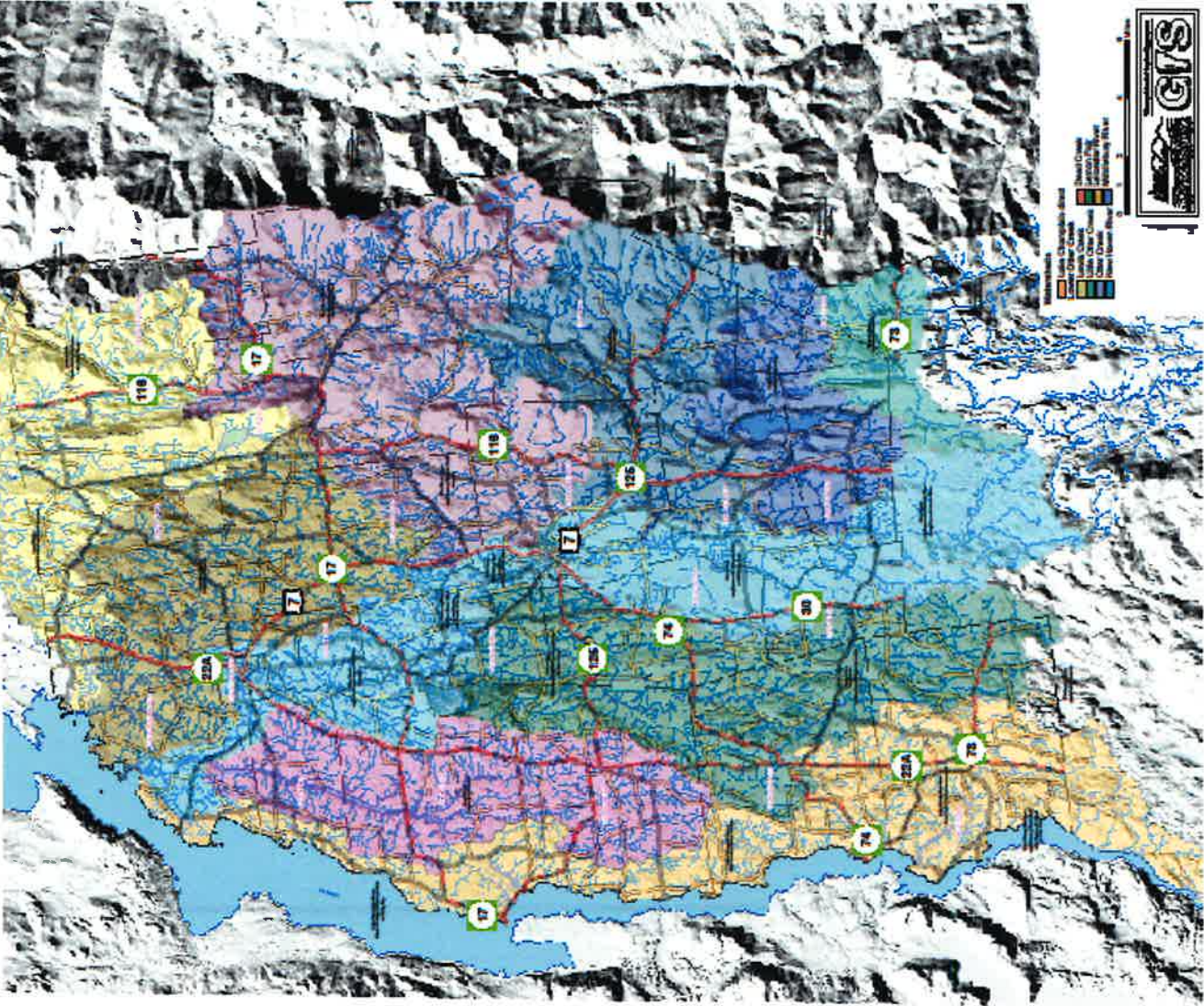
Annex A  
Regional Maps

# Addison Region Hazardous Material Locations





**Addison Region Watersheds**  
**Lower Otter Creek Basin Sub-Watersheds**  
with  
**Lower Lake Champlain Direct Drainage**





# Addison Region Average Annual Daily Traffic 2002

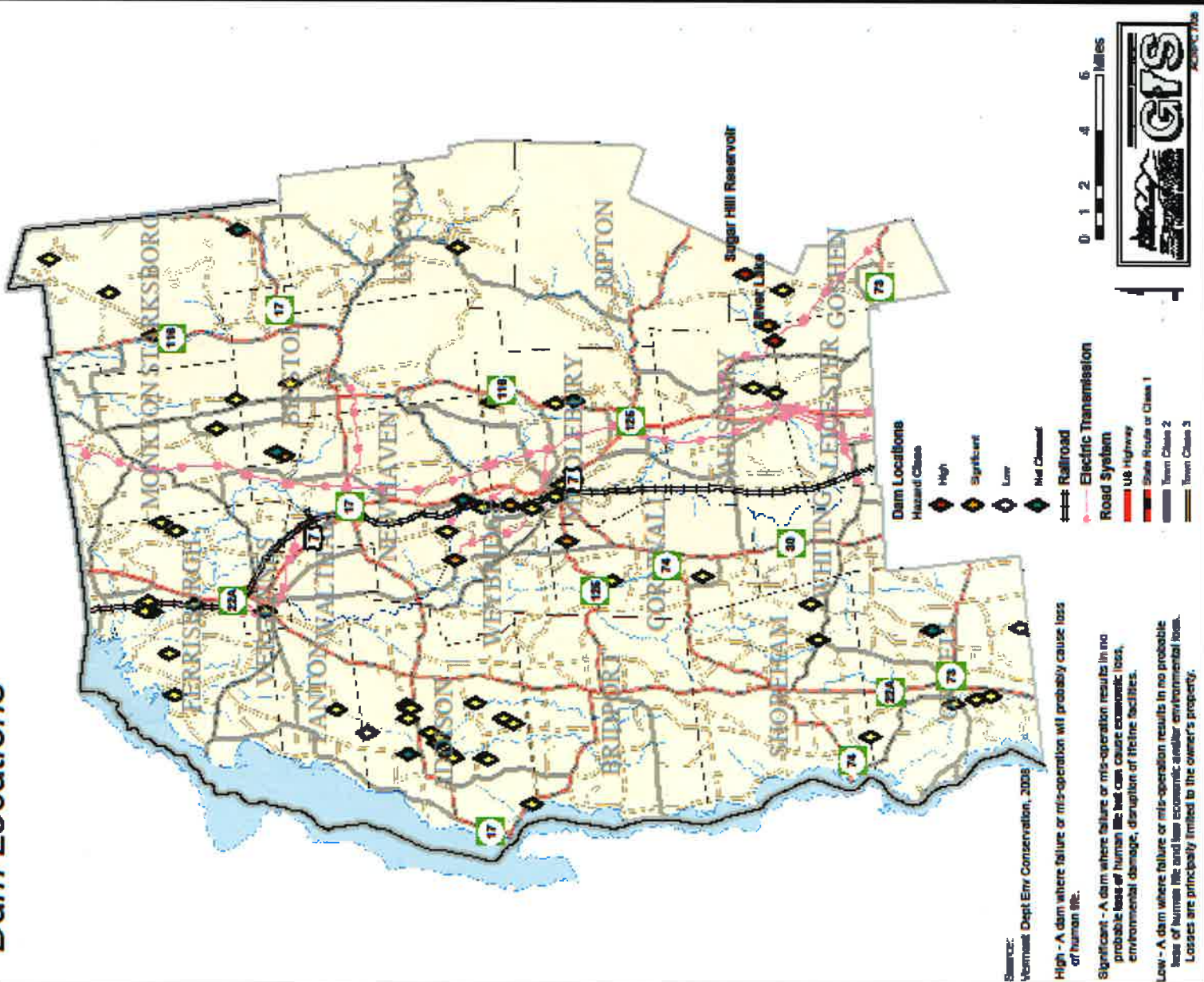


Source: Vermont Agency of Transportation, 2007.

Acadmic 2008



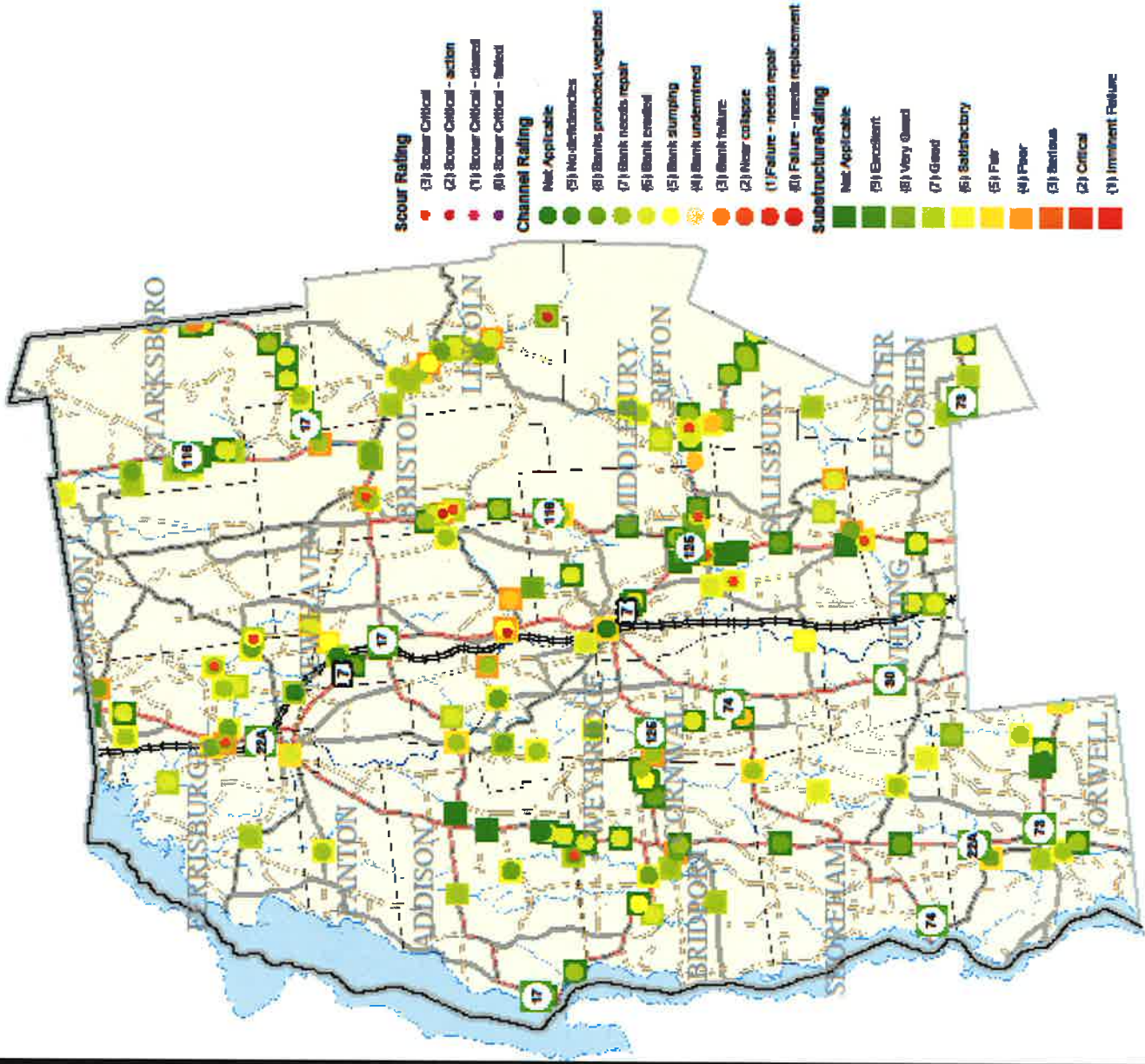
# Addison Region Dam Locations





# Addison Region

## Bridge Locations with fluvial associated ratings



Source:  
Vermont Agency of Transportation, 2008  
(State Long, State Short and Town Long bridges  
shown)

ADDI02C 2/08





**Annex B**  
**Local Documents:**  
**Local Road and Bridge Standards**

January 23, 2013

**TOWN ROAD AND BRIDGE STANDARDS**  
**TOWN OF Bridport, VERMONT**

The Town of Bridport hereby adopts the following Town Road and Bridge Standards which shall apply to the construction, repair, and maintenance of all town roads and bridges.

The standards listed here are considered minimum and apply to construction projects and repair and maintenance activities. The standards include management practices and are designed to: ensure the safety of the traveling public, minimize damage to road infrastructure during flood events, and enhance water quality protections by minimizing sediment delivery to surface waters and/or wetlands.

The select board reserves the right to modify the standards for a particular project or repair or maintenance activities where, because of unique physical circumstances or conditions, there is no possibility that the project or activities can be completed in strict conformance with these provisions. Any modifications to the standards must be done in a manner that serves the underlying intent of the management practice, be it public safety, flood hazard avoidance, or water quality protection. Fiscal reasons are not a basis for modification of the standards. Questions about modifications to the standards should be directed to the VT Trans District Office.

Municipalities must comply with all applicable state and federal approvals, permits and duly adopted standards when undertaking road and bridge activities and projects.

Any new road regulated by and/or to be conveyed to the municipality shall be constructed according to the minimums of these standards. If any federal and/or state funding is involved in a project, the VT Trans district office must be notified prior to any field changes taking place that would alter the original scope of work.

**Roadways**

- All new or substantially reconstructed gravel roads shall have at least a 12-inches thick processed gravel sub-base, with an additional 3 inches (minimum) top course of crushed gravel.
- All new or substantially reconstructed paved roads shall have at least a 5 inches thick processed gravel sub-base.
- All roadways shall be graded so water does not remain on the road surface. For roadways that are not super-elevated, this generally means a 2-4% ( $1/4"$  -  $1/2"$  per ft) crown for gravel roads and a 1-2% ( $1/8"$  -  $1/4"$  per ft) crown for paved roads to promote sheeting of water.
- Proper grading techniques for gravel roadways must be used to avoid creating a ridge or berm between the crown and the ditch.
- Any berm along the roadway shoulder that prevents the proper sheeting of water must be removed.

**Ditches and Slopes**

Soil exposed during ditch and slope construction, repair or maintenance must be treated immediately following the operation and temporary erosion prevention and sediment control practices must be installed and maintained during construction activities and until the ditch or slope is permanently stabilized.

The following are minimum erosion control measures. Careful attention must be given to areas vulnerable to erosion and immediately adjacent or discharging to surface waters and/or roadway drainage facilities:

- Seed and mulch all ditches with grades less than 5% when undertaking projects or repairs or maintenance activities that result in exposed soil. Vegetation must be established and monitored. If vegetation is not established within 10 days of placement, install biodegradable non-welded matting with seed.
- Stone line all new or reconstructed ditches or whenever soils are disturbed by maintenance activities with grades equal to and greater than 5%; alternatively, install stone check dams. The check dams must meet criteria outlined in the "*Standards and Specifications for Check Dams*," from the *Vermont Standards and Specifications for Erosion Prevention and Sediment Control*. Specifically, dams must be placed so that the crest of the downstream check dam is at the same elevation as the base of the upstream dam.
- Create parabolic (wide "U" shaped) ditches when constructing new or substantially reconstructing ditches, rather than narrow "V" shaped ditches wherever lateral space allows. Ditches with gradual side slopes (maximum of 1:2, vertical to horizontal ratio) and a wide bottom (at least 2 feet) are preferred. Use biodegradable, non-welded matting to stabilize side-slopes where slopes are greater than 1:2 and less than 1:1 ½; apply seed and mulch to any raw or exposed side-slope if slopes are less than 1:2.
- All ditches must be turned out to avoid direct outlet into surface waters. There must be adequate outlet protection at the end of the turnout, either a structural (rock) or vegetative filtering area. If in the best professional engineering judgment of the VTTrans Operations Division, there is a cost effective ditch treatment that will meet the intent of the management practices described above, but represents a departure from these standards, the municipality may implement the more cost effective ditch treatment alternative with the professional recommendation submitted in written form by VTTrans prior to the municipality executing the work.
- When constructing new or substantially reconstructing side slopes, use appropriately sized stone armament on slopes that are 1:1½ or greater. If perennial streams are affected by the toe of slope the project must conform to the statewide Stream Alteration standards.

#### **Culverts and Bridges**

- Replacement of existing culverts and any new culvert must have a minimum culvert diameter of 18 inches.
- Replacement of existing bridges and culverts and any new bridges and culverts must be designed in accordance with the VTTrans Hydraulics Manual, and, in the case of perennial streams, conform to the statewide Stream Alteration standards.
- All new driveway culverts must have a minimum diameter of 15 inches.
- When installing or replacing culverts, use appropriate techniques such as headwalls and wingwalls, where there is erosion or undermining or where it is expected to occur.
- Install a splash pad or plunge pool at the outlet of new or repaired drainage culverts where there is erosion or where erosion may occur. Splash pads and plunge pools are not appropriate for use in streams supporting aquatic life.

#### **Guardrails**

When roadway, culvert, bridge, or retaining wall construction or reconstruction projects result in hazards such as forestopes, drop offs, or fixed obstacles within the designated clear-zone, a roadside barrier such as guardrail must be installed. The most current version of the AASHTO Roadside Design Guide will govern the analysis of the hazard and the subsequent treatment of that hazard.



**Access Management**

The town must have a process in place, formal or informal, to review all new drive accesses and development roads where they intersect Town roads, as authorized under 19 V.S.A. Section 1111. Towns may reference VTrans A-76 Standards for Town & Development Roads and B-71 Standards for Residential and Commercial Drives; and the VTrans Access Management Program Guidelines for other design standards and specifications.

**Training**

Town highway maintenance crews must collectively attend a minimum total of 6 hours of training per year on best road management practices. The town must keep documentation of their attendance for a period of three years.

Passed and adopted by the Selectboard of the Town of Bradport, State of Vermont on 2-11, 2013

Select Board:

General Board  
Carl Chubb  
Stephen H. White

## Hazard Committee Meeting Minutes

### Town of Bridport

#### Hazard Mitigation Planning Committee Meeting

10/15/13

Members Present: Steve Huestis, Sue Warner, Ed Payne, Mark Pumiglia

1. Meeting started at 10:00 am at the Bridport Town Office with a brief description of hazard mitigation and what the process is of creating a hazard mitigation plan. Tim explained the process of bringing together a committee of interested townspeople and officials and having the identify their risks to hazards and what they can do to help mitigate those hazards.
2. The committee was each handed out a hazard inventory and risk assessment worksheet and Tim led them through the process of identifying hazards that the town faces and what the impacts of those hazards might be within the town both to people and to property. Committee identified Drought, Power failure, Flooding, High Winds, Landslide, Lightning, HazMat Spill, Structure Fire, Wildfire, Winter Storm and Earthquake as hazards that might impact the town in one way or another. After final scoring, five hazards were identified as those which would most impact the community based on the worksheet criteria. In order of concern from highest to lowest these five hazards ranked: Winter Storm (1), High Winds (2), Power Failure (2), Flooding (3) and HazMat Spill (3). The worksheet is attached.
3. The committee was next given a series of town maps labeled with the different types of hazards and members were asked to identify the areas of town most susceptible to that hazard. Members identified the lakeshore as being particularly susceptible to high winds and flooding. East-West roads were identified as being most at risk in flooding and winter storm events. Power failures were so widespread and common that no areas of town seemed more at risk than others and finally a significant hazmat spill would likely occur on State highways 22A and 125.
4. Other comments by the committee included that drought was, at one point a hazard until the mid 1960's when the Tri-Town Waterworks was built. Members remembered national guard water buffalos being set up at intersections in town during the worst of the droughts of the 1960's.
5. Green Mountain Power has utilized Vaillancourt to trim tree branches and take down trees which could fall on their power lines during a high wind or snow event. That action seems to have limited the overall impacts due to lessening the occurrences of power loss in the past few years.
6. The town has both an active Tree Warden and Fire Warden in the community which helps lessen the risks of wildfire and identifies dead trees for removal by the town road crew.
7. Meeting adjourned 11:30

Town of Bridport  
Hazard Mitigation Planning Committee Meeting  
11/5/13

Members Present: Ed Payne- Zoning Administrator, Mark Pumiglia- Planning Commission

1. Meeting was called to order at 10:00 am at the Bridport Town Office.

2. The committee members were given the task of identifying possible mitigation actions for each of the hazards identified in the last planning meeting. Tim started off the discussion by identifying several road policies that could be strengthened and/or updated by the Selectboard and planning commission. These included:

- Having a curb cut policy that would ensure that driveway access was only allowable following review to ensure the location was safe. This would include evaluating pre-existing cuts that had initially been created as part of farm access to fields. Many of these might be reasonable as long as the road is being accessed by a tractor but might be very hazardous when entering via automobile.
- Generally addressing driveway standards so that emergency responders are not put at risk responding to a call by a poorly constructed driveway or private road.
- Eliminating “Y” intersections and converting them to “T”s”. This encourages a full stop at the intersection rather than a roll through. Many of these were created long before the advent of the automobile.

Committee members identified the following projects that would help mitigate future risks:

- The practice of clearing trees from power lines by Green Mountain Power
- Identifying and removing hazardous trees by the town tree warden including support to the tree warden from the Selectboard
- Recommending that all new structures including farm buildings be built to withstand projected snow loads.
- Provide a back-up power source to the town offices so that they may continue to function during power outages.
- Increase the required setbacks from the lakeshore for all new construction to lessen the risks of flooding and land subsidence.
- Limit the number or percentage of trees which may be cut along the lakeshore to ensure the stability of the banks.

Other mitigation projects were deferred to the road commissioner who will be meeting with Tim in the future.

3. Meeting adjourned at 11:00

Tim continued to work with Ed to identify structure which had been identified as being within the FEMA floodplain based in the digital rendition of the maps and what their assessed values were.

Address	Total Assessed Value	Improvements Value
4948 Lake Street	\$147,300	\$35,300
4894 Lake Street	\$166,200	\$69,700
4896 Lake Street	(structure has been removed)	\$148,400
4868 Lake Street	\$253,600	\$62,400
737 Torrey Lane	\$103,000	\$52,300
5894-5897 Crown Point Rd.	\$102,300	
Town of Bridport total acreage		26,993.74 Acres
Town Grand List	\$1,315,150.50	in 651 parcels

Town of Bridport  
Hazard Mitigation Planning Committee Meeting  
12/10/13

Members Present: Mark Pumiglia, Sue Warner, Steve Huestis

1. Meeting was called to order at 10:00 am at the Bridport Town Office.
2. In an informal discussion, committee members assisted Tim in the identification of past disaster expenditures that had been reimbursed by FEMA and/or the state as follows:

2001 Town Meeting Day Blizzard.....	\$8,187.00
2005 Summer Storm.....	\$54,900.00
2007 Valentines Day Blizzard.....	None reimbursed
2008 Flood Damage.....	\$179,100.00 reimbursed over 3 years
2011 Blizzard.....	None reimbursed
2011 Slide on Rattlin Bridge Road.....	None reimbursed
2011 Tropical Storm Irene.....	\$535,000.00 over 3 years (town had to borrow \$300,000)
Total since 2001.....	<u>\$781,921.00</u>

3. Committee members brainstormed possible funding sources for road improvements: High Risk Rural Roads Program, Better back Roads Program

Town of Bridport  
Hazard Mitigation Planning Committee Meeting  
2/7/14

Interview with Dusty Huestis and Dale Stone at the Town garage to identify hazards and where culverts will need to be replaced in the next few years that are probably currently undersized.

- 1@ East End of Rattlin Bridge Road
- 2 on Crown Point Road above Middle Road replace 18” with 24”
- Snow drifting at Crown Point Road/Middle Road, Swinton Road, Orchard Road. All could be candidates for snow fencing.
- Dead and dying trees along Hemmenway Road and Forrest Road
- Lake flooding in areas all along Lake Street
- Land subsidence along lakeshore at east end of Crown Point Road, along Goose Bay, Where Giards Bay meets Lake Street and at the end of Witherell Landing Road.

It is town policy that landowners install culverts for their own curb cuts to specs identified in the highway codes and standards. When time comes for replacement the landowner pays for the culvert which is installed by the town.

Other common issues throughout the road system:

- Undersized driveway culverts overtopping and taking out the town road.
- Poorly constructed driveways that intersect with the town highway system from a higher elevation causing gravel to be washed into the town road.

As a firefighter in the local department, Dusty was particularly concerned that the town allowed installation of a 30,000gal propane tank adjacent to the town center and another is going to be proposed for the same location. He feels zoning should be looked at to make sure that does not happen again in the future.



## Annex C Common Mitigation Measures by Hazard Type

Mitigation measures for “all-hazards” have been adapted from a flood mitigation approach developed by French Wetmore, of Wetmore and Associates in Park Forest, Illinois, into six categories:

- Prevention – measures intended to keep a hazard risk problem from becoming worse. They ensure that future development does not increase hazard losses. Examples would include: Planning and Zoning, Open space preservation, Land Development regulations, Storm water management.
- Property Protection – measures used to modify buildings, or their surroundings, subject to hazard risk rather than prevent the hazard from occurring. Examples are: Acquisition of vulnerable properties, Relocation from hazard prone areas, Rebuild or modify structures to reduce damage by future hazard events, Flood-proofing of flood-prone buildings.
- Natural Resource Protection – measures intended to reduce the intensity of hazard effects as well as improve the quality of the environment and wildlife habitats. Erosion and sediment control and Wetlands protection are examples.
- Emergency Services – measures that protect people before and after a hazard event. That would include: Warning, Response, Critical facilities protection, Health and safety maintenance.
- Structural Projects – measures that involve construction of man-made structures to control hazards. Some examples would include: dams, reservoirs, debris basins, channel modifications, storm sewers, elevated roadways.
- Public Information – activities intended to inform and remind people about hazardous areas and the measures to avoid potential damage and injury. Examples are: Outreach projects, Real estate disclosure, Technical assistance, Community education programs.

The following suggested Mitigation Measures were taken from the website of the Northeast States Emergency Consortium (NSEC).

### ALL HAZARDS

- Map vulnerable areas and distribute information about the hazard mitigation strategy and projects.
- Provide information to contractors and homeowners on the risks of building in hazard-prone areas.
- Develop a list of techniques for homeowner self-inspection and implementation of mitigation activities.
- Organize and conduct professional training opportunities regarding natural hazards and hazard mitigation.
- Distribute NOAA weather radios.
- Develop sound land use planning based on known hazards.
- Enforce effective building codes and local ordinances.
- Increase public awareness of community hazards.
- Provide sites that are as free as possible from risk to natural hazards for commercial and industrial activities.
- Consider conservation of open space by acquisition of repetitive loss structures.
- Consider conservation of open space by acquisition of areas identified as “vulnerable or at risk”
- Ensure a balance between residential growth, conservation of environmental resources through a detailed analysis of the risks and vulnerability to natural hazards.
- Conduct joint planning and sharing of resources across regions, communities, and states.
- Establish a hazard mitigation council.

- For future proposed development design guidelines, incorporate hazard mitigation provisions, including improved maps.
- Consider adding a "safe room" requirement for all new buildings.
- Establish incentives to encourage business owners and homeowners to retrofit buildings with hazard - resistant features.
- Teach disaster and hazard awareness in schools.

## **FLOOD**

### **Flood Hazard Mitigation Measures for Communities:**

- Developing and enforcing all-hazards building codes,
- Adopting incentives to encourage mitigation
- Developing administrative structures to support the implementation of mitigation programs
- Mitigation should be incorporated into future land use plans through riparian corridor protection, limiting flood hazard area development, and other measures.
- Developing and conducting public information campaigns on hazard mitigation should be a priority.
- Participate in the National Flood Insurance Program (NFIP).
- Conduct watershed geomorphic assessments.
- Encourage riparian corridor protection.

### **Flood Hazard Mitigation Measures for Individuals:**

#### *How to Protect Your Property:*

- Keep insurance policies, documents, and other valuables in a safe-deposit box. You may need quick, easy access to these documents. Keep them in a safe place less likely to be damaged during a flood.
- Avoid building in a floodplain. Some communities do not permit building in known floodplains. If there are no restrictions, and you are building in a floodplain, take precautions, making it less likely your home will be damaged during a flood.
- Raise your furnace, water heater, and electric panel to higher floors or the attic if they are in areas of your home that may be flooded. Raising this equipment will prevent damage. An undamaged water heater may be your best source of fresh water after a flood.
- Install check valves in building sewer traps to prevent flood water from backing up into the drains of your home. As a last resort, when floods threaten, use large corks or stoppers to plug showers, tubs, or basins.
- Seal walls in basements with waterproofing compounds to avoid seepage through cracks.
- Consult with a construction professional for further information if these and other damage reduction measures can be taken. Check local building codes and ordinances for safety requirements.
- Contact your local emergency management office for more information on mitigation options to further reduce potential flood damage. Your local emergency management office may be able to provide additional resources and information on ways to reduce potential damage.

## **HAZARDOUS MATERIALS**

## **Hazardous Material Hazard Mitigation Measures for Communities:**

FEMA's National Mitigation Action Plan suggests that state and local mitigation plans include the following:

- Developing and enforcing all-hazards building codes,
- Adopting incentives to encourage mitigation
- Developing administrative structures to support the implementation of mitigation programs
- Mitigation should be incorporated into land use management plans.
- Developing and conducting public information campaigns on hazard mitigation should be a priority.

Natural hazard events have often triggered technological hazards such as ruptured pipelines and building fires, clearly linking the natural and technological risks. Accordingly, the National Mitigation Strategy, as an all-hazards strategy, will build upon existing programs that mitigate technological hazards, and focus on the critical importance of coordination among efforts to mitigate hazards, regardless of the source of the risk.

- Recognize the dangers posed by hazardous materials.
- Identify places where hazardous materials are likely to be encountered.
- Understand when a hazard may exist.
- Contact the appropriate persons or agencies to give or receive specific hazardous materials information.
- Identify procedures to minimize personal and community exposure to hazardous materials.

Hazardous materials events can and do occur as independent events. Natural hazard events, however, have often triggered technological hazards such as ruptured pipelines and building fires, clearly linking the natural and technological risks. Accordingly, the National Mitigation Strategy, as an all-hazards strategy, will build upon existing programs that mitigate technological hazards, and focus on the critical importance of coordination among efforts to mitigate hazards, regardless of the source of the risk.

Communities can and should:

- Recognize and identify the dangers posed by hazardous materials in the community.
- Identify industries and other locations places where hazardous materials are stored and used.
- Develop a community hazardous materials emergency plan.
- Develop an early warning and notification system.
- Work with local businesses and industry to Identify procedures to minimize personal and community exposure to hazardous materials.

Hazardous Materials Hazard Mitigation Measures for Individuals: Individual and families should develop a personal plan of what to do in case of a hazardous materials accident.

*How to Plan for a Hazardous Materials Incident:*

- Learn to detect the presence of a hazardous material.
- Many hazardous materials do not have a taste or an odor. Some materials can be detected because they cause physical reactions such as watering eyes or nausea. Some hazardous materials exist beneath the surface of the ground and can be recognized by an oil or foam-like appearance.
- Contact your Local Emergency Planning Committee (LEPC) or local emergency management office for information about hazardous materials and community response plans.
- Find out evacuation plans for your workplace and your children's schools.

- Be ready to evacuate. Plan several evacuation routes out of the area.
- Ask about industry and community warning systems.
- Have disaster supplies on hand.
- Flashlight and extra batteries
- Portable, battery-operated radio and extra batteries
- First aid kit and manual
- Emergency food and water
- Non-electric can opener
- Essential medicines
- Cash and credit cards
- Sturdy shoes
- Develop an emergency communication plan. In case family members are separated from one another during a hazardous materials accident (this is a real possibility during the day when adults are at work and children are at school), develop a plan for reuniting after the disaster. Ask an out-of-state relative or friend to serve as the "family contact." After a disaster, it's often easier to call long distance. Make sure everyone knows the name, address and phone number of the contact person.

## STRUCTURE FIRE

### Fire Hazard Mitigation Measures for Communities:

FEMA's National Mitigation Action Plan suggests that state and local mitigation plans include the following:

- Developing and enforcing all-hazards building codes,
- Adopting driveway and water supply standards for new development.
- Adopting incentives to encourage mitigation
- Developing administrative structures to support the implementation of mitigation programs
- Mitigation should be incorporated into land use management plans.
- Developing and conducting public information campaigns on hazard mitigation should be a priority.

The United States Fire Administration (USFA) serves as the national focus on reducing fire deaths, injuries, and property losses. In 1974, Congress passed the Federal Fire Prevention and Control Act which established the USFA and the fire research program at the National Institute of Standards and Technology (NIST). The USFA works to involve the public and private sector to reduce losses through public education, arson detection and control, technology and research, fire data collection and analysis and fire service training and education. NIST performs and supports research on all aspects of fire with the aim of providing scientific and technical knowledge applicable to the prevention and control of fires.

### Fire Hazard Mitigation Measures for Individuals:

#### *How to Protect Your Property:*

- Keep lawns trimmed, leaves raked, and the roof and rain-gutters free from debris such as dead limbs and leaves.
- Stack firewood at least 30 feet away from your home.
- Store flammable materials, liquids and solvents in metal containers outside the home at least 30 feet away from structures and wooden fences.
- Create defensible space by thinning trees and brush within 30 feet around your home.

- Landscape your property with fire resistant plants and vegetation to prevent fire from spreading quickly.
- Post home address signs that are clearly visible from the road.
- Provide emergency vehicle access with properly constructed driveways and roadways, at least 12 feet wide with adequate turnaround space.
- Make sure water sources, such as hydrants and ponds, are accessible to the fire department.
- Burning yard waste is a fire hazard. Check with your local fire agency on a non-emergency number for fire permit requirements and restricted burning times.
- Use fire resistant, protective roofing and materials like stone, brick and metal to protect your home.
- Avoid using wood materials that offer the least fire protection.
- Cover all exterior vents, attics and eaves with metal mesh screens no larger than 6 millimeters.
- Install multipane windows, tempered safety glass or fireproof shutters to protect large windows from radiant heat.
- Use fire-resistant draperies for added window protection.
- Have chimneys, wood stoves and all home heating systems inspected and cleaned annually by a certified specialist.
- Fire Alarm Safety requires checking on or installing fire alarms in your home.
- Residential sprinklers have become more cost effective for homes. Currently, they protect few homes.

*How to Prepare for a Fire Emergency:*

- Know how to contact fire emergency services in your area.
- Plan ahead. Make sure you and your family are prepared for a fire emergency.
- Develop and practice escape and evacuation plans with your family.
- Install smoke alarms on every level of your home. Test them monthly and change the batteries at least once a year. Consider installing the new long-life smoke alarms.

**WINTER STORM**

**Winter Storm Hazard Mitigation Measures for Communities:**

FEMA's National Mitigation Action Plan suggests that state and local mitigation plans include the following:

- Developing and enforcing all-hazards building codes,
- Adopting incentives to encourage mitigation
- Developing administrative structures to support the implementation of mitigation programs
- Mitigation should be incorporated into land use management plans.
- Developing and conducting public information campaigns on hazard mitigation should be a priority.

In addition, FEMA recommends the following actions to further protect communities from the effects of Winter Storms:

- Building code development and enforcement of snow loads
- Develop a storm water management plan for snowmelt
- Assuring adequate supplies of sand and salt
- Maintaining snow removal equipment so that it is ready to be deployed
- Retrofitting public buildings to withstand snowloads and prevent roof collapse
- Clearing roofs of excessive snow accumulations

- Develop a winter storm plan or annex to the local emergency management plan
- Develop a capability to monitor weather forecasts, conditions and warnings issued by the National Weather Service
- Identify appropriate shelters for people who may need to evacuate due to loss of electricity, heat or coastal flooding due to storm surge
- Assure that critical facilities such as police and fire stations and schools are accessible and equipped
- Clearing streets and roads of snow to assure the passage of public safety vehicles and general traffic.

### **Winter Storm Hazard Mitigation Measures For Individuals:**

#### *How to Protect Your Property:*

- Make sure your home is properly insulated. If necessary, insulate walls and attic. This will help you to conserve electricity and reduce your home's power demands for heat. Caulk and weather-strip doors and windowsills to keep cold air out, allowing the inside temperature to stay warmer longer.
- Install storm windows or cover windows with plastic from the inside. This will provide an extra layer of insulation, keeping more cold air out.
- To keep pipes from freezing:
- Wrap pipes in insulation or layers of old newspapers.
- Cover the newspapers with plastic to keep out moisture.
- Let faucets drip a little to avoid freezing.
- Know how to shut off water valves.
- If the pipes freeze, remove any insulation or layers of newspapers and wrap pipes in rags. Completely open all faucets and pour hot water over the pipes, starting where they were most exposed to the cold (or where the cold was most likely to penetrate). A hand-held hair dryer, used with caution to prevent overheating, also works well.
- Consider storing sufficient heating fuel. Regular fuel sources may be cut off. Be cautious of fire hazards when storing any type of fuel.
- Before winter, be sure you install and check smoke alarms.
- Consider keeping safe emergency heating equipment:
- Fireplace with ample supply of wood.
- Small, well-vented wood, coal, or camp stove with fuel.
- Portable space heater or kerosene heater. Check with your local fire department on the legality of using kerosene heaters in your community. Use only the correct fuel for your unit and follow the manufacturer's instructions. Refuel outdoors only, and only when cool. Keep your kerosene heater at least three feet away from furniture and other flammable objects.
- When using alternative heat from a fireplace, wood stove, space heater, etc., use fire safeguards and ventilate properly. Fire hazard is greatly increased in the winter because alternate heating sources are used without following proper safety precautions.
- Install snow fences in rural areas to reduce drifting in roads and paths, which could block access to homes, barns, and animals' feed and water.
- If you live in a flood-prone area, consider purchasing flood insurance to cover possible flood damage that may occur during the spring thaw. Homeowners' policies do not cover damage from floods. Ask your insurance agent about the National Flood Insurance Program if you are at risk.

#### *How to Plan for a Winter Storm:*

- Understand the hazards of wind chill, which combines the cooling effect of wind and cold temperatures on exposed skin. As the wind increases, heat is carried away from a person's body at an accelerated



rate, driving down the body temperature. "Wind chill" is a calculation of how cold it feels when the effects of wind speed and temperature are combined. A strong wind combined with a temperature of just below freezing can have the same effect as a still air temperature about 35 degrees colder.

- Service snow removal equipment before winter storm season. Equipment should be available for use if needed. Maintain it in good working order.
- Keep your car's gas tank full for emergency use and to keep the fuel line from freezing.
- Get training. Take an American Red Cross first aid course to learn how to treat exposure to the cold, frostbite, and hypothermia.
- Discuss with your family what to do if a winter storm WATCH or WARNING is issued. Designate one household member as the winter storm preparedness leader. Have him or her discuss what to do if a winter storm watch or warning is issued. Have another household member state what he or she would do if caught outside or in a vehicle during a winter storm. Everyone should know what to do in case all family members are not together. Discussing winter storms ahead of time helps reduce fear and lets everyone know how to respond during a winter storm.

## **HIGH WINDS**

### **High Wind Hazard Mitigation Measures for Communities:**

FEMA's National Mitigation Action Plan suggests that state and local mitigation plans include the following:

- Developing and enforcing all-hazards building codes,
- Adopting incentives to encourage mitigation
- Developing administrative structures to support the implementation of mitigation programs
- Mitigation should be incorporated into land use management plans.
- Developing and conducting public information campaigns on hazard mitigation should be a priority.

FEMA also suggests that communities further reduce their vulnerability to hurricanes through the adoption and enforcement of wind- and flood-resistant building codes. Sound land-use planning can also ensure that structures are not built in the highest hazard areas.

### **High Wind Hazard Mitigation Measures for Individuals:**

- Make a list of items to bring inside in the event of a storm. A list will help you remember anything that can be broken or picked up by strong winds. High winds, often in excess of 40 miles per hour, can turn unanchored items into missiles, causing damage or injury when they hit.
- Keep trees and shrubbery trimmed. Make trees more wind resistant by removing diseased or damaged limbs, then strategically remove branches so that wind can blow through. High winds frequently break weak limbs and hurl them at great speed, causing damage when they hit property. Debris collection services may not be operating just before a storm, so it is best to do this well in advance of approaching storms.
- Remove any debris or loose items in your yard. High winds can pick up anything unsecured, creating damage to property when the debris hits.
- Install protection to the outside areas of sliding glass doors. Glass doors are as vulnerable as windows to breakage by wind-driven objects.
- If you live in a flood plain or are prone to flooding, also follow flood preparedness precautions. Nor'easters and severe thunderstorms can bring great amounts of rain and frequently cause floods.

## **EARTHQUAKE**

### **Earthquake Hazard Mitigation Measures for Communities:**

FEMA's National Mitigation Action Plan suggests that state and local mitigation plans include the following:

- Developing and enforcing all-hazards building codes,
- Adopting incentives to encourage mitigation
- Developing administrative structures to support the implementation of mitigation programs
- Mitigation should be incorporated into land use management plans.
- Developing and conducting public information campaigns on hazard mitigation should be a priority.

FEMA's Earthquake Program has four basic goals directly related to the mitigation of hazards caused by earthquakes. They are to:

- Promote Understanding of Earthquakes and Their Effects.
- Work to Better Identify Earthquake Risk.
- Improve Earthquake-Resistant Design and Construction Techniques.
- Encourage the use of Earthquake-Safe Policies and Planning Practices.

### **Earthquake Hazard Mitigation Measures for Individuals**

#### *How to Protect Your Property:*

- Bolt bookcases, china cabinets, and other tall furniture to wall studs. Brace or anchor high or top-heavy objects. During an earthquake, these items can fall over, causing damage or injury.
- Secure items that might fall (televisions, books, computers, etc.). Falling items can cause damage or injury.
- Install strong latches or bolts on cabinets. The contents of cabinets can shift during the shaking of an earthquake. Latches will prevent cabinets from flying open and contents from falling out.
- Move large or heavy objects and fragile items (glass or china) to lower shelves. There will be less damage and less chance of injury if these items are on lower shelves.
- Store breakable items such as bottled foods, glass, and china in low, closed cabinets with latches. Latches will help keep contents of cabinets inside.
- Store weed killers, pesticides, and flammable products securely in closed cabinets with latches, on bottom shelves. Chemical products will be less likely to create hazardous situations from lower, confined locations.
- Hang heavy items, such as pictures and mirrors, away from beds, couches, and anywhere people sit. Earthquakes can knock things off walls, causing damage or injury.
- Brace overhead light fixtures. During earthquakes, overhead light fixtures are the most common items to fall, causing damage or injury.
- Strap the water heater to wall studs. The water heater may be your best source of drinkable water following an earthquake. Protect it from damage and leaks.
- Bolt down any gas appliances. After an earthquake, broken gas lines frequently create fire hazards.
- Install flexible pipe fittings to avoid gas or water leaks. Flexible fittings will be less likely to break.
- Repair any deep cracks in ceilings or foundations. Get expert advice if there are signs of structural defects. Earthquakes can turn cracks into ruptures and make smaller problems bigger.

- Check to see if your house is bolted to its foundation. Homes bolted to their foundations are less likely to be severely damaged during earthquakes. Homes that are not bolted have been known to slide off their foundations, and many have been destroyed because they are uninhabitable.
- Consider having your building evaluated by a professional structural design engineer. Ask about home repair and strengthening tips for exterior features, such as porches, front and back decks, sliding glass doors, canopies, carports, and garage doors. Learn about additional ways you can protect your home. A professional can give you advice on how to reduce potential damage.
- Follow local seismic building standards and safe land use codes that regulate land use along fault lines. Some municipalities, counties, and states have enacted codes and standards to protect property and occupants. Learn about your area's codes before construction.

*How to Plan for an Earthquake:*

- Pick "safe places" in each room of your home. A safe place could be under a sturdy table or desk or against an interior wall away from windows, bookcases, or tall furniture that could fall on you. The shorter the distance to move to safety, the less likely you will be injured. Injury statistics show that persons moving more than 10 feet during an earthquake's shaking are most likely to experience injury.
- Practice drop, cover, and hold-on in each safe place. Drop under a sturdy desk or table, hold on, and protect your eyes by pressing your face against your arm. Practicing will make these actions an automatic response. When an earthquake or other disaster occurs, many people hesitate, trying to remember what they are supposed to do. Responding quickly and automatically may help protect you from injury.
- Practice drop, cover, and hold-on at least twice a year. Frequent practice will help reinforce safe behavior.
- Talk with your insurance agent. Different areas have different requirements for earthquake protection. Study locations of active faults, and if you are at risk, consider purchasing earthquake insurance.
- Inform guests, babysitters, and caregivers of your plan. Everyone in your home should know what to do if an earthquake occurs. Assure yourself that others will respond properly even if you are not at home during the earthquake.
- Get training. Take a first aid class from your local Red Cross chapter. Get training on how to use a fire extinguisher from your local fire department. Keep your training current. Training will help you to keep calm and know what to do when an earthquake occurs.
- Discuss earthquakes with your family. Everyone should know what to do in case all family members are not together. Discussing earthquakes ahead of time helps reduce fear and anxiety and lets everyone know how to respond.

**Annex D**  
**External Mitigation Project Funding Sources**

**Federal**

**FEMA**

- **Pre-Disaster Mitigation Program.** FEMA’s Pre-Disaster Mitigation Competitive (PDM-C) Grant Program provides funds to states, territories, and federally recognized tribes for pre-disaster mitigation activities. The grant program is administered by FEMA for pre-disaster mitigation planning and projects primarily addressing natural hazards. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations.
- **Hazard Mitigation Grant Program.** The Hazard Mitigation Grant Program (Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act) is activated during Presidential Disaster Declarations to assist in identifying mitigation projects, and funding these projects on a 75% Federal/25% non-Federal cost share basis. Mitigation program funding is based on 15% of the federal funds expended for the Infrastructure and Individual Assistance Programs. The HMGP supports other program activities, i.e. participation the NFIP and a current Hazard Mitigation Plan are required for recipients of HMGP funds.
- **Section 406 Hazard Mitigation.** Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act provides funding to mitigate certain projects as they are being repaired as part of overall disaster assistance to a community. Under Section 406, if it can be shown to be cost effective to mitigate a Public Assistance eligible project as part of the repair, FEMA may fund the mitigation as part of the overall project cost.
- **National Flood Insurance Program (NFIP).** The National Flood Insurance Program (NFIP) makes federally subsidized flood insurance available to property owners in locations agreeing to participate in the NFIP. If communities enter the NFIP, they are required to adopt floodplain ordinances meeting criteria established by FEMA. These criteria include: requiring permits for development within designated floodplains; review development plans and subdivision proposals to determine whether proposed sites will be reasonably safe from flooding; require protection of water supply and sewage systems to minimize infiltration of floodwater; obtain, review, and utilize all base flood elevation data; and assure the maintenance of flood carrying capacities within all watercourses.
- **The Community Rating System.** An element of the NFIP, is designed to promote the availability of flood insurance, reduce future flood damages, and ensure the accurate rating of flood insurance policies. Participating communities may receive credit for proven mitigation measures, thus reducing the cost of flood insurance within their jurisdictions.
- **The Infrastructure Program (Section 406 of the Stafford Act).** Authorizes funding for the repair, restoration, or replacement of damaged facilities belonging to public and private non-profit entities, and for other associated expenses, including emergency protective measures and debris removal. The Infrastructure Program also authorizes funding for appropriate cost-effective hazard mitigation related to damaged public facilities.

- **The National Inventory of Dams (US Army Corps of Engineers project).** Identifies high-hazard dams and encourages the development of warning systems and emergency plans for many of these facilities.
- **Hazardous Materials Program.** FEMA's mission under this program is to provide technical and financial assistance to States and local jurisdictions and to coordinate with public and private sector entities to develop, implement, and evaluate HAZMAT emergency preparedness programs. FEMA supports State and local agencies in the design, implementation, and evaluation of HAZMAT-related training and planning exercises, and cooperates with the U.S. Department of Transportation in the maintenance of electronic bulletin boards to provide the latest information on HAZMAT planning, training, exercises, and conferences.
- **US Fire Administration (USFA).** Through the USFA, FEMA administers a nationwide program to enhance fire prevention and control activities and to reduce significantly the loss of life and property caused by fires. Programs are carried out by: National Fire Academy; Office of Fire Prevention and Arson Control; Office of Firefighter Health and Safety; Office of Fire Data and Analysis; Office of Federal Fire Policy and Coordination; Office of National Emergency Training Center Operations and Support, and Office of Educational Technology.
- **Flood Mitigation Assistance (FMA).** The Flood Mitigation Assistance (FMA) program provides funds for projects to reduce or eliminate risk of flood damage to buildings that are insured under the (NFIP) on an annual basis.

There are three types of FMA grants available to Applicants:

- Planning Grants - *to prepare flood mitigation plans*
- Project Grants - *to implement measures to reduce flood losses, such as elevation, acquisition or relocation of NFIP-insured structures*
- Management Cost Grants - *for the grantee to help administer the FMA program and activities*

**The Emergency Planning and Community Right-to-Know Act of 1986** imposed upon state and local governments planning and preparedness requirements for emergencies involving the release of hazardous materials. The role of the federal government in response to an emergency involving the release of hazardous materials is to support local and state emergency operations. Activation of the federal Regional Response Team (RRT) provides access to federal resources not available at the state and local levels. An on scene coordinator is designated to manage federal resources and support. The national warning and communications center for emergencies involving the release of hazardous materials is manned 24 hours a day, and is located at the U.S. Coast Guard headquarters in Washington, D.C.

**The National Weather Service** provides meteorological and hydrologic services that include weather and hydrologic warnings, forecasts, and related information. The primary mission of the NWS is to save lives and reduce property damage through timely issuances of tornado and flood warnings and river stage forecasts. To cope with dangerous weather, the NWS interacts with emergency services personnel throughout the state by: issuance of tornado and flash flood watches or warnings for those areas in which a threat is posed; issuance of flood watches and warnings for major streams and rivers within the state. Addison County is within the coverage area of the NWS office in Burlington but also may receive information from the Albany, NY office.

**The U.S. Army Corps of Engineers** undertake a broad range of civil works projects to develop, manage, and conserve the nation's water resources. No work may be undertaken without authorization and funding from Congress, either from specific legislation or continuing authorities. Projects are planned to serve as many purposes as are feasible and to protect or improve the environment as much as possible. The Corps is involved in developing and implementing plans for flood control, navigation, hydropower, recreation, and water supply. The Corps has authority for emergency operations, bank protection, permit administration, and technical assistance. Corps of Engineers assistance includes:

- Studies and Projects
- Discretionary Authority to implement certain types of water resources projects without specific Congressional approval. These projects are typically limited in cost and duration, and include:
  - Section 14 - Emergency Stream bank Protection of Public Facilities, limitation of \$500,000 per project.
  - Section 107 - Small Navigation Projects, usually for port facilities and navigation channels. Work on channels usually improves stream flow and aids flood control efforts.
  - Section 205 - Small Flood Control Projects, not to exceed \$5 million. Funds may be used for projects such as upgrading flood protection structures and channelization of streams.
  - Floodplain Technical Assistance, to include:
    - Conducting floodplain mapping surveys to provide either first-time mapping of an area or to correct older floodplain maps;
    - Conducting flood studies in cooperation with FEMA to determine actual flood levels for settlement of flood insurance claims;
    - Providing technical advice regarding proposed floodplain ordinances and building codes.
  - Emergency operations to respond to flood emergencies, to include flood fighting, constructing advance temporary measures in anticipation of imminent flood, and the repair of damaged flood control works after the flood event.
  - Permit authority, the Corps has the authority to issue Permits to cover construction excavation and other related work in or over navigable waterways; and Permits covering the discharge of fill material in all waters of the United States and adjacent wetlands.

#### **Department of Housing and Urban Development**

- Community Development Block Grant Program. Funds are provided as grants to units of local government. Local governments can use the funds to: construct flood and drainage facilities; finance rehabilitation projects that include flood proofing, elevation, purchase of flood insurance, etc.; finance acquisition and relocation of homes to remove them from the floodplains.
- Rental Rehabilitation Program. Funds to rehabilitate rental properties can be used for flood proofing and repair to flood damage.
- Section 312 Loan Program. Provides funds to rehabilitate both residential and non-residential properties, including flood repair and flood proofing.



**Department of Agriculture Natural Resource Conservation Service (NRCS)** can provide technical assistance in the conservation, development, and productive use of water resources. In addition, the NRCS monitors use of prime farmland.

- **Watershed Protection and Flood Prevention.** Technical and financial assistance to local entities to plan and install works of improvement for watershed protection, flood prevention, agricultural water management, and other approved purposes.
- **Resource Conservation and Development.** Technical and financial assistance to local entities to plan and install works of improvement for watershed protection, flood prevention, agricultural water management, and other approved purposes.
- **Emergency Watershed Protection.** Provides assistance to reduce hazards to life and property in watersheds damaged by severe natural events. NRCS can provide 100% of the cost of exigency situations, and 80% of the cost for non-exigency situations, if funds are available.
- **Conservation Technical Assistance.** Provided to land users to control erosion, sediment, and to reduce upstream flooding.
- **River Basin Surveys and Investigations.** Includes Conservation River Basin Studies to assist in solving existing problems or meeting existing or projected needs, and Floodplain Management Studies to provide information and assistance for reducing future flood damages. Financial assistance is provided by sponsors.

**U.S. Geological Survey (USGS)** provides certain hazard studies and recommendations. A portion of the mission of the USGS is to collect and analyze data on the quantity of surface water through a network of gauging stations. The data is used in preparing flood frequency reports to evaluate the severity of floods. This data is useful in flood hazard mitigation studies, establishing flood prone areas, and potential flood heights near hydraulic structures.

**Economic Development Administration** was established to generate new jobs, to help protect existing jobs, and to stimulate commercial and industrial growth in economically distressed areas of the United States.

**Small Business Administration (SBA) Disaster Assistance Programs** provide loans to businesses and individuals affected by presidential and SBA disaster declarations. The program provides direct loans to businesses to repair or replace uninsured disaster damage to property owned by the business, including real estate, machinery, and equipment, inventory and supplies. Businesses of any size are eligible. Non-profit organizations are also eligible. Assistance to individuals comes in the form of low-interest loans for repair or replacing damaged real and personal property. The SBA administers the Disaster Assistance Programs.

## State

### **Agency of Administration**

- **Emergency Relief and Assistance Fund (ERAF)** The ERAF was created following disastrous flooding in 1998 and was created so that the State of Vermont would have funding to assist municipalities in covering the 25% local share following a federally declared disaster. Communities who are active in mitigation efforts (including current hazard mitigation plans, adopted codes and standards, membership in the NFIP and others) are rewarded with a higher level of state funded reimbursement.

## VTrans

- **Town Highway Grants Program.** State aid grants for highways are made annually to the governing body based on the number of Class 1, 2 or 3 miles in the Municipality. The General Assembly appropriates a lump sum annually for this purpose (19 V.S.A. Section 306(a)). Distribution is made quarterly, with no application required. There is no requirement that State funds be matched with local funds, other than a requirement that municipalities expend no less than \$300 per mile of local tax revenues of their highways (19 V.S.A. Section 307).
- **Town Highway Bridge Program.** State assistance for major rehabilitation or reconstruction of bridges with a span of six feet or more on class 1, 2 or 3 town highways is made available by the Secretary of Transportation from annual appropriations for that purpose (19 V.S.A. Section 306(b)). State assistance amounts are not limited for any one project. The State assistance requires 10 percent participation or match of total project cost with town funds for replacement projects and 5% for rehabilitation projects. The local match is capped at the amount raised by a municipal tax rate of \$0.50 on the Grand List (19 V.S.A. Section 309(a)).
- **Town Highway Structures Program.** State grants for bridges, culverts and retaining walls that are part of the municipalities highway (Class 1, 2 or 3) infrastructure are made by the Secretary of Transportation from annual appropriations for the purpose. State grant amounts are limited to \$150,000 for any one project. State funds are required to be matched, as follows:
  - By at least 20% of the total project cost, or
  - By at least 10% of the total project cost providing that town has adopted Town Highway codes and standards and the town has conducted a highway infrastructure study (not less than three years old), which identifies all town culverts, bridges and identified road problems.
- **Town Highway Class 2 Roadway Program.** State grants to provide for the preservation of any Class 2 highways by providing grants for resurfacing or reconstruction are made by the Secretary of Transportation or his/her designee from annual appropriations for that purpose. State grants are limited to \$150,000 for any one project and there are match requirements for the town similar to the Town Highway Structures Program.
- **Town Road & Bridge Standards.** As a result of legislative action relating to the Town Aid programs an incentive program was created providing additional funding to towns meeting two requirements:
  - Adopted codes and standards.
  - Conducted a network infrastructure study.

## Agency of Natural Resources

- **Ecosystem Restoration Grant Program.** As part of a governor's initiative to improve water quality in Lake Champlain, Funds have been allocated to assist in clean-up. Funds from this source have paid for a large portion of recent geomorphic studies in the Addison region as well as supporting the development of Fluvial Erosion Hazard Zones. Additionally, funds have been allocated to purchase development rights in hazardous locations.

## **Department of Public Safety, Division of Emergency Management**

- Local Emergency Management Director Program. A continuing program of training for local emergency management directors to provide a consistent base of knowledge to understand their roles and responsibilities in Emergency Management.
- Generator Grant Program. VEM allocates funds from FEMA EMPG to allow towns to purchase back-up power sources for emergency shelters for continued use in the event of a power failure.

### **Regional**

The Addison County Regional Planning Commission (ACRPC) provides assistance to local governments concerning planning for future land use, business, transportation, emergency management and population.

In addition to the specific programs mentioned below, ACRPC has identified Municipal Development Plans and Capital Improvement Plans as appropriate local planning mechanisms suitable for incorporating many of the provisions of this plan. These plans, by statute, need to be updated on a 5 year rotation. In Addison County, each municipality adopts these new or updated plans according to their own timetable and therefore, each is at a different place in the planning and adoption process. At the time of each rewrite, ACRPC generally assists local planning commissioners and will encourage inclusion of appropriate provisions of this plan into any new document.

ACRPC annually sets aside funds from its transportation planning activities to be administered by the Transportation Advisory Committee (TAC). Proposals are entertained each year to fund planning projects for transportation projects. One effective ongoing program is a local culvert survey and upgrade program, which funds updates of culvert surveys for 2-3 towns annually. TAC grants have funded several mitigation studies in the past including:

- Route 125 relocation study
- Bakers Bridge mitigation study

ACRPC assists community mitigation projects and planning through utilization of:

- FEMA PDM-C planning grants
- FEMA HMGP planning grants
- FEMA HMGP project grants
- Federal Emergency Planning Grants

### Acknowledgements:

The creation of this plan is the result of many, many efforts to create hazard mitigation plans for communities in the State of Vermont. We have borrowed liberally from other adopted plans from throughout the state sometimes basic concepts and design, and at other times duplication of wording and illustrations.

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