

Ch 5: EMERGENCY MANAGEMENT, FLOOD RESILIENCY, AND THE COVID-19 PANDEMIC

Emergency Management Goals

To build disaster-resistant communities in the Region through sound emergency and land use planning by:

1. Developing community resilience and resistance by connecting municipalities with a variety of resources, tools, and Information to respond to various disasters and emergency situations.
2. Assisting in the preparation, development, and implementation of local emergency operations plans, local hazard mitigation plans, mapping of vulnerable areas, etc.
3. Minimizing the loss of life, physical and emotional injury, financial loss, property damage
4. Organizing and encouraging emergency training for local emergency personnel and elected municipal officials.
5. Participating in and supporting the Regional Emergency Management Committee to facilitate cooperation and coordination among fire and rescue services, law enforcement, and other emergency management service providers.
6. Identifying and securing funding to reduce emergency planning and management costs within the Region.
7. Facilitating key stakeholder engagement and planning, to include training, recruitment, and retention for emergency management volunteers.

1. EMERGENCY MANAGEMENT

1A. Emergency Planning

Building disaster-resistant communities through sound land use planning is a primary goal of emergency planning. When considering future land use in town plans and zoning regulations, towns should weigh the predictable consequences of development given disaster risks such as flood hazard areas, steep slopes, and inadequate roads. If done effectively, emergency planning can save lives, reduce incidences of injury, protect public and private property, and preserve the cultural, historical, scenic, and natural resource assets of the Region. Within our Region, there are issues of adequate emergency management service coverage, lack of volunteers, and the cost of emergency management equipment. Emergency responders face challenges such as volunteer recruitment, retention, and aging volunteers, which can result in longer wait times for residents. More recently, with the onset of the COVID-19 pandemic, other emergency management issues have arisen.



There are four phases in Emergency Management:

- Mitigation
- Preparedness
- Response
- Recovery

Being prepared for when an emergency or natural disaster occurs is a priority for all towns in the Region. Towns can take steps to combat the four main objectives of emergency management.

Each town in the Region currently has adopted or is in the process of adopting a Local Hazard Mitigation Plan, to help prevent and mitigate the damages caused by these events. With the plan and membership in the [National Flood Insurance Program \(NFIP\)](#), all towns within the MARC Region may apply for Pre-Disaster Mitigation, Hazard Mitigation, Building Resilient Infrastructure and Communities, and Flood Mitigation grants all administered through the Federal Emergency Management Agency (FEMA). In addition to the Local Hazard Mitigation plans, towns must adopt a Local Emergency Management Plan (LEMP) that outlines the specific procedures and locations for Emergency Operations Centers, shelters, and other emergency services ([20 V.S.A. § 6](#)). If a town does not adopt or keep current mitigation, preparedness, response, and recovery measures, eligibility for the emergency relief assistance funds (ERAF) drops significantly. As of 2022, 80% of eligible communities have adopted all four hazard mitigation measures.

TABLE 5.1 LOCAL HAZARD MITIGATION PLAN SCHEDULE BY TOWN			
Town	Date Adopted	Duration	Expiration
Andover	8/27/18	2018-2023	2023
Baltimore	9/5/18	2018-2023	2023
Cavendish	4/10/21	2016-2021	2021
Chester	10/6/22	2021-2026	2026
Ludlow	12/3/18	2018-2023	2023
Reading	4/10/17	2017-2020	2022
Springfield	12/10/18	2018-2023	2023
Weathersfield	10/15/18	2018-2023	2023
West Windsor	5/15/18	2018-2022	2022
Windsor	11/13/21	2021-2026	2026

The [Emergency Relief and Assistance Fund \(ERAF\)](#) assists communities by providing funding after federally-declared disasters. Eligible public costs are reimbursed by federal taxpayers at 75%. For disasters after 2014, the State of Vermont will contribute an additional 7.5% toward the costs. For communities that take specific steps to reduce flood damage the State will contribute 12.5% or 17.5% of the total cost. This means that a well-prepared town will receive 92.5% total reimbursement through Federal and State share (see Table 5.2). According to [Flood Ready Vermont](#), a town can maximize their Emergency Relief and Assistance Funding (ERAF) and enhance their preparedness through participating in the following five measures:

12.5% - eligible communities have adopted four mitigation measures:

1. [National Flood Insurance Program](#) (participate or have applied);
2. Town Road and Bridge Standards (adopt standards that meet or exceed the 2013 template in the current: [VTrans Orange Book: Handbook for Local Officials](#));
3. Local Emergency Management Plan (adopt annually after town meeting and before May 1)
4. Local Hazard Mitigation Plan - Adopt a FEMA- approved local plan (valid for five years). Or, a draft plan has been submitted to FEMA Region 1 for review.

17.5% - eligible communities also:

5. Protect River Corridors from new encroachment; or, protect their flood hazard areas from new encroachments and participate in the FEMA Community Rating System.

After a declared disaster the damage, to public infrastructure including roads and culverts may approach a million dollars. Here is how the cost of damage will be carried by federal, state, and municipal taxpayers:

TABLE 5.2 EMERGENCY RELIEF AND ASSISTANCE FUND COST-SHARING			
	7.5% ERAF Rate	12.5% ERAF Rate	17.5% ERAF Rate
Federal Share	\$750,000	\$750,000	\$750,000
State Share	\$75,000	\$125,000	\$175,000
Municipal (Town Taxpayer) Share	\$175,000	\$125,000	\$75,000
Total Cost	\$1,000,000	\$1,000,000	\$1,000,000

A town can check their ERAF standing through the [State of Vermont's Community Reports](#). As of 2022, the towns in our Region are eligible for the following ERAF rates:

TABLE 5.3 ERAF RATES IN THE REGION						
X= IN COMPLIANCE		12.5% Eligibility				17.5% Eligibility
Town	ERAF Rate	1. National Flood Insurance Program	2. Town Road and Bridge Standards	3. Local Emergency Management Plan	4. Local Hazard Mitigation Plan	5. Protect River Corridors
Andover	12.5%	X	X	X	X	
Baltimore	17.5%	X	X	X	X	X
Cavendish	7.5%	X	X			X
Chester	12.5%	X	X	X	X	
Ludlow	12.5%	X	X	X	X	
Reading	17.5%	X	X	X	In Process	X
Springfield	7.5%	X	X		X	
Weathersfield	12.5%	X	X	X	X	
West Windsor	12.5%	X	X	X	X	
Windsor	12.5%	X	X	X	X	

(Source: State of Vermont's Community Reports)

1B. Mitigation



Mitigation is actions taken to reduce the loss of life (human, pets, or livestock) or damage to property by lessening the impact of future disasters. In the event of a foreseeable natural or human-caused disaster, these actions seek to reduce exposure to, probability of, and potential loss from hazardous and disastrous events. Mitigation includes compliance with the National Flood Insurance Program (NFIP) flood hazard regulations. Towns must be in compliance with this program to enable property owners to obtain flood insurance to blunt the effects of catastrophic loss. All towns in the Region are currently members of the NFIP program.

FEMA, through Vermont Emergency Management (VEM), has a hazard mitigation program to assist towns in permanent mitigation projects. Through risk analysis, towns can identify areas of concern and assign a priority ranking to mitigation projects. FEMA offers additional resources for making communities disaster-resistant. The Vermont Local Roads Program assists towns in setting the proper standards for roads, culverts, bridges, and access to local roads.

The [FEMA Hazard Mitigation Assistance \(HMA\)](#) includes funding the following programs:

1. [Hazard Mitigation Grant Program](#) - Assists in implementing mitigation measures after a federally-declared disaster, but not tied to the disaster area. The program can also fund the cost of preparing a Local Hazard Mitigation Plan.
2. [Building Resilient Infrastructure and Communities \(BRIC\)](#) - Nationally competitive funding with changing priorities, funded annually by Congress.
3. [Flood Mitigation Assistance \(FMA\)](#) – Provides funding to reduce the threat or eliminate the risk of flood damage to buildings insured under the National Flood Insurance Program.

The full list of high priority mitigation projects in the Region are listed in the Appendix. Common High Priority Mitigation projects for MARC towns include:

- Culvert work: Inventory, Assessment, Upgrade, Replacement
- Annually update Local Emergency Management Plan
- Review and implement other recommended activities in the “Firewise” program
- Flood resiliency projects
- Annually review mitigation plan and projects
- Seek appropriate funding for eligible mitigation projects

1C. Preparedness



Preparedness is taking stock of the persons and assets available for response to an emergency resulting from damage caused by a natural or human-caused hazard. The first step in preparedness is the town’s Local Emergency Management Plan, which is a guide for use in the early stages of disaster response. A current local emergency management plan is required for municipalities to receive increased state reimbursement through the Emergency Relief and Assistance Fund (ERAF). It identifies key emergency personnel, an Emergency Operations Center, contact information, sheltering locations, tasks, and an

evacuation plan.

The full list of high priority preparedness projects in the Region are listed in the Appendix. Preparedness projects for MARC towns include:

- Update and maintain Local Emergency Management Plan
- Conduct annual maintenance program on culverts
- Actively seek funding for emergency management projects
- Review and implement other recommended activities in the “Firewise” program
- Engage in public outreach and education

1D. Response

Emergency response is a time-sensitive reaction to an incident designed to save lives, stabilize an emergency, and protect property and the environment. Emergency response may include warning, evacuation, rescue, shelter, keeping the residents up to date on relevant information, and providing medical care to the public. A town’s response is often dependent on mutual aid, an agreement among neighboring towns to assist or standby with equipment and personnel during an emergency. Though few formal agreements have been made, many ad hoc mutual aid agreements exist throughout the Region. The need may arise for additional assistance when an emergency is greater than what can be reasonably handled by the responding department. The situation may be, for example, a large natural disaster, such as the significant damage caused by intense floodwaters. In 2011, floodwaters from Tropical Storm Irene required a widespread regional emergency response, including the assistance of many towns within the region as well as State aid and the National Guard.



1E. Recovery



Recovery is the effort to restore the infrastructure and the social and economic life of communities after a disaster. It incorporates mitigation and preparedness strategies to lessen and avoid damage from the next event. FEMA provides recovery assistance to communities following federally designated disasters.

To aid in Recovery, the following funding programs are available to towns:

1. The [Emergency Aid and Assistance Fund \(ERAF\)](#)- uses state funding to match federal public assistance after a federally declared disaster. "Eligible public costs are reimbursed by federal taxpayers at 75%. For disasters after October 23, 2014, the State of Vermont will contribute an additional 7.5% toward the costs. For communities that take specific steps to reduce flood damage the State will contribute 12.5% or 17.5% of the total cost."
2. [Post Disaster Funds](#)- Funds to aid in recovery after a disaster. Funds may be available to support a wide array of recovery efforts including but not limited to: individual and household assistance, highway disasters, and public assistance.

1F. Emergency Services

1. AMBULANCE

An ambulance is a medically equipped vehicle, usually accompanied by a paramedic or emergency medical service (EMS) personnel to provide urgent health care for sick or injured patients and to transport them to the hospital in an emergency. Ambulance and emergency rescue services are provided through volunteer services in Chester, Cavendish, Reading, and Ludlow. Several towns, including Andover, Baltimore, Weathersfield, and West Windsor contract with other municipalities, as well as private firms from within and outside of the Region for ambulance service. Several factors including the Region's aging population, challenging work hours, and stringent training requirements have made it difficult for volunteer services to attract and retain staff. Springfield and Windsor provide full-time ambulance services.

2. FIRE

All the Region's towns currently utilize municipal or independent fire departments. Andover contracts with the Town of Chester, and Baltimore contracts with Springfield for fire services. Capabilities of existing fire service facilities are generally considered adequate by the towns to address current and projected needs, although as with ambulance services volunteer fire services

also face recruitment and staffing challenges. Weathersfield is expanding its fire protection infrastructure through the creation and installation of fire ponds and dry hydrants.

The two common types of fires that occur in the Region are structural and wildland fires. Structural fires involve residential, commercial, or industrial buildings. Structural fires can be caused by cooking, heating, electrical or lighting equipment, intentional fire setting and smoking materials. Wildland fires are any fire that are not considered structural. A large percentage of wildland fires are human-caused that result from un-attended campfires, burning debris, negligent discard of smoking material, and arson. Most fires in Windsor County are structural fires by a ratio of two structural fires for every wildland fire.

3. POLICE

Law enforcement in the Region is provided by local, county, state, and federal police offices. The towns of Springfield, Ludlow, and Windsor offer full-time 24-hour police service while Chester and Weathersfield have a full-time local police department supplemented by the Vermont State Police during off hours. All towns have, as required by state statute, a town constable. The Windsor County Sheriff's Office provides contractual patrol service to the towns of Andover, Cavendish, and Reading. In addition, the County Sheriff's Office serves as backup support for local and State Police when requested. In addition, the State Police are mandated by Vermont law to provide service for any town that does not employ a full-time police department. State Police service for the Region is provided through the Rockingham and Royalton barracks. The duties of the various and related law enforcement organizations may either overlap or fall short of providing adequate coverage throughout the Region. An assessment of the service areas and coordination of the duties performed by each level of law enforcement would assist towns in planning for more efficient service. Such an analysis would also provide help for eliminating potential gaps in current and future services.

Recruiting new police officers and state troopers is difficult presently. The severe shortage of staffing is forcing many towns to reduce full-time police coverage and has limited the ability of State Police to provide coverage to those towns.

Since 1998, Enhanced 911 (E911) service has been available for all Vermont towns choosing to participate in the system. Every town in the Region is participating in the E911 system. E911 relies on locatable physical addresses linked to telephone numbers, a system that provides the name of the telephone subscriber, the location from which the call originated, and the names of all emergency service providers for the location for every E911 call. The call can then be forwarded to the proper dispatch center(s) to dispatch emergency service providers to the scene, even if the caller is unable to describe his or her location or the nature of the emergency. It is extremely important for towns to make the E911 Board immediately aware of any road changes to keep the master lists accurate and up to date.

FirstNet Authority

[FirstNet](#), also known as the First Responder Network Authority, is an independent agency within the U.S. Department of Commerce's National Telecommunications and Information Administration (NTIA). The network is dedicated to emergency responders and public safety through the buildout, deployment, and operation of a public safety broadband network.

[In 2017, Vermont "opted-in" to the FirstNet Network](#). This decision enabled FirstNet and AT&T to create a system of modernized devices, apps, and tools for first responders. The network's goal is to provide police, EMS, fire, and other public safety personnel updated communication through:

- Connecting first responder subscribers to the information when handling day-to-day operations, responding to emergencies, and supporting large events.
- Creating an efficient communications experience for public safety personnel during natural disasters and severe weather events or search-and-rescue missions.
- Enhancing network coverage across Vermont's rural landscape
- Creating a set of tools for public safety, including public safety apps and specialized devices

1G. Hazard Assessment

Local Hazard Mitigation Plans are used to identify policies and actions that can be implemented over the long term to reduce risk and future losses. Mitigation Plans form the foundation for a community's long-term strategy to reduce disaster losses and break the cycle of disaster damage, reconstruction, and repeated damage.

In addition to the local hazard mitigation plans, to best gauge the Region's susceptibility to various disasters, a Regional Hazard Analysis was conducted in the process of creating the Local Emergency Planning Committee (LEPC) #3 All-Hazards Resource Guide. This analysis began with an inventory of possible hazards, along with assigning a probability and vulnerability score to each hazard. A probability score of 0-4 was given to each potential hazard with 0 being unlikely and 4 being an annual event. Next, a vulnerability score of 1-4 was assigned, with 1 representing a moderate event impacting between 30-300 people, and 4 indicating a disaster impacting over 9,000 people. **Table 5.4** below shows the results of this hazard analysis, indicating the Region is most vulnerable to power outages, severe winter weather, & hazardous materials release, with several other hazards following close behind.

TABLE 5.4 STATE HAZARD ASSESSMENT (2018)			
Hazard Impacts	Probability	Potential Impact Average	Score*
Fluvial Erosion	4	3.75	15
Inundation Flooding	4	3.25	13
Ice	3	2	8.25
Snow	4	1.75	7
Wind	4	1.5	6
Heat	3	2	6
Cold	3	2	6
Drought	3	2	6
Landslides	3	2	6
Wildfire	2	2.75	5.5
Earthquake	2	2.75	5.5
Invasive Species	2	1.75	3.5
Infectious Disease Outbreak	2	1.75	3.5
Hail	3	1	3

*Score = Probability x Average Potential Impact

[Source: 2018 Vermont State Hazard Mitigation Plan](#)

According to the National Climatic Data Center, 206 storm events occurred in Windsor County between January 1, 2010 and January 1, 2021, resulting in two deaths, zero injuries, and \$129.654 million in property damage due to:

- **FLOODS** – 23 events with \$125.925 million in property damage;
- **WINTER STORMS** - 46 events with \$2.13 million in property damage;
- **EXTREME COLD** – 1 event with \$0 in property damage;
- **THUNDERSTORMS, PRECIPITATION, AND/OR HIGH WINDS** - 83 events with \$1.3 million in property damage;
- **HAIL** – 24 events with \$15,000 in property damage.

In addition to the weather-related emergency events listed above, there are also various human-caused emergency events impacting our Region, including vehicular crashes. According to the Vermont Agency of Transportation data on federal aid system roads in the Region, from 2010 to 2021, there were 2,000 vehicle crashes resulting in 1,041 injuries and 29 deaths.

1H. Local Emergency Planning Committee (LEPC) and Regional Emergency Management Committees (REMC)

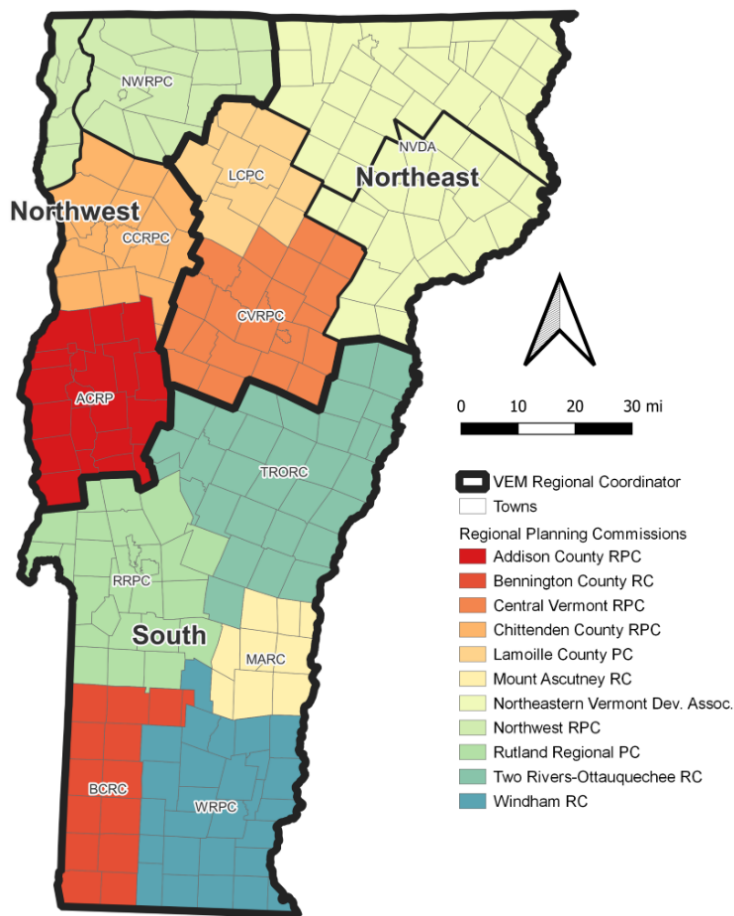
Local Emergency Planning Committee (LEPC)

In large part, Emergency Management in Vermont has been primarily a town responsibility, led by local emergency managers, or persons in the community who are involved in emergency preparedness, and was handled differently from town-to-town. The former LEPC #3 covered all ten towns in the Region with a focus on Hazardous Material incident preparation. This former LEPC has since been replaced with a Regional Emergency Management Committee (REMC), which is focused on all-hazards.

Under 20 V.S.A. §32, Local Emergency Planning Committees (LEPC) were appointed under the State Emergency Response Commission. The LEPCs included membership from fire departments, local emergency medical services, law enforcement, regional planning commissions, hospitals, Vermont Department of Health, Vermont Emergency Management, American Red Cross, and other interested public and private individuals.

The LEPC performed a number of duties including: activities pursuant to the Emergency Planning and Community Right-to-Know Act (EPCRA), 42 U.S.C. §11001 et seq. (1986), collection and administration of data related to the legal right to know what chemicals are used, stored, transported through or made in the region, coordinating with local emergency officials in the development of both local and regional emergency management plans, and pursuing additional funding opportunities. In addition, the LEPC was responsible for developing a regional disaster response plan, which includes training and testing exercises. ***Regional LEPCs have now been replaced by a single statewide LEPC transitioned from regional LEPCs to a single statewide LEPC.***

Regional Emergency Planning Committee (REMC)



REMC stands for [Regional Emergency Management Committee](#), which are regionally organized and controlled committees that participate in all-hazards planning, in addition to the statewide Local Emergency Planning Committee (LEPC).

In July 2021, the Local Emergency Planning Committees (LEPC) were replaced with a single statewide Local Emergency Planning Committee. The state Emergency Management Division established Regional Emergency Management Committees (REMC) which “shall coordinate emergency planning and preparedness activities to improve their regions’ ability to prepare for, respond to, and recover from all disasters.”

Mount Ascutney Regional Emergency Management Committee (REMC) is made up of Local Emergency

Management Directors and Emergency Services Representatives from each municipality in the region. Representatives from fire departments, emergency medical services, law enforcement, media, transportation, hospitals, the department of health district office, organizations serving vulnerable populations, amongst other emergency management stakeholders can participate.

The REMC conducts All-Hazards preparedness planning and coordinates with Vermont Emergency Management (VEM), the State Emergency Response Commission (SERC), and the new Statewide Local Emergency Planning Committee (LEPC).

The REMC prepares an annually updated plan that includes:

- Regional contact information
- Regional resources
- Regional mutual aid agreements
- Regional Emergency Services

Important Emergency Management Information for Towns

Key Steps for your Community:

- Ensure that Selectboards are aware of and have adopted these required plans.
- Appoint an Emergency Management Director, Emergency Management Coordinator or both.
- Make sure the Local Emergency Management Plan (LEMP) is updated annually.
- Create a Local Hazard Mitigation Plan (LHMP) every five years. Review the implementation table once a year.
- Incorporate river corridor protection measures into land use bylaws and town plans.
- Identify a local shelter within your community, have written agreements in place, and keep supplies stocked. Check in with agreements and supplies annually.
- Include an Emergency Preparedness line item in the town budget to pay for various emergency-related expenses
- Have Mutual Aid Memorandum of Understanding (MOU's) in place and review them annually.
- Use Front Porch Forum or town newsletters to engage with and inform residents about emergency preparedness measures.

In the Event of a Disaster

1. Share Information for Local Situation Reports

MARC serves as the reporting voice for our region's towns. Whether your town sustains damage or not, please report to MARC about the status of your town's damage in the event of a disaster as soon as possible. We will send your information to the state's Watch Officer so that resources and funding can be allocated to help respond to the damage and assist with emergency response in your town. . Or, if we are notified of a situation that could be impacting our region, we will reach out to each town to collect local situation reports. Learn more about damage reimbursements at [Vermont Flood Ready website](#).

2. Document, Document, Document

During an emergency event, document as many details as possible through written documentation, photos, videos, etc. Record work done by paid staff and volunteers during response and recovery, including what was done, the date, who was doing the work, the duration of the work, and the materials and equipment used.

Emergency Planning and Management Policies for Towns

1. Towns are encouraged to undertake and periodically review an all-hazards risk assessment in their community to identify potential hazards and the life and property at risk, including cultural, historical, and natural resource assets.
2. Towns are encouraged to develop and implement regulations to make communities more disaster-resistant.
3. Towns are required to review, update, and adopt Local Emergency Management Plans yearly before May 1st.
4. Towns are encouraged to adopt minimum standards for public roads, bridges, and culverts, using the Vermont Agencies of Transportation and Natural Resources, and FEMA standards.
5. Towns are encouraged, in the adoption of minimum road standards, to include the requirement that all private roads and driveways be properly constructed to prevent damage from storm water runoff.
6. Towns are encouraged to participate in the Vermont Enhanced 911 program.
7. Towns are encouraged to appoint representatives for the Regional Emergency Management Committee, to coordinate emergency preparedness and response with other municipalities and regional stakeholders.

Emergency Planning and Management Recommendations for RPC

1. Work with towns to undertake and periodically review their local hazard mitigation plan implementation tables and plans to identify potential hazards and the life and property at risk, including cultural, historical, and natural resource assets.
2. Work with towns to plan and adopt regulations that promote mitigation, preparedness, response, and recovery in the event of a disaster.
3. Work with towns to appoint representatives to the REMC and actively engage in meetings.
4. Explore efforts to develop a regional emergency response plan that includes surrounding areas in Vermont and New Hampshire.

2. FLOOD RESILIENCE

Flood Resiliency Goals

1. Assist towns in the Region with identifying and recognizing flood hazard areas to develop an understanding of flood risk and to make informed decisions about risk planning and management.
2. Support the goals and policies outlined in the Natural Resources Chapter around flood resilience.

The purpose of this section is to further the State Planning Goal of encouraging flood resilient communities and to address the requirements of 24 V.S.A. §4348a(a)(11). Flood and fluvial erosion hazard areas, as described in this section, are shown on Map 1. Water Resources.

Flooding is the most significant, common, and costly natural hazard which threatens the Region, and may include inundation flooding, flash flooding, ice jams, seasonal flooding, and dam inundation. Several significant recent flooding events have raised the awareness of flooding throughout the Region, such as Tropical Storm Irene in 2011 and unnamed events in July 2013 and July 2014. Table 5.5 shows flood events which have been defined as a presidentially declared disaster under the Stafford Act.

TABLE 5.5 FEDERAL DISASTER DECLARATIONS: WINDSOR COUNTY 1990 - 2021		
FEMA Disaster Number	Date of Declaration	Description
4532	April 8, 2020	COVID-19 Pandemic
4445	June 14, 2019	Severe Storms, Flooding
4330	August 16, 2017	Severe Storms, Flooding
4207	February 3, 2015	Severe Winter Storm
4140	August 2, 2013	Severe Storms and Flooding
4120	June 13, 2013	Severe Storms and Flooding
4066	June 22, 2012	Severe Storm, Tornado, and Flooding
4043	November 8, 2011	Severe Storms and Flooding
4022	September 1, 2011	Tropical Storm Irene
4001	July 8, 2011	Severe Storms and Flooding
1995	June 15, 2011	Severe Storms and Flooding
1951	December 22, 2010	Severe Storm
1790	September 12, 2008	Severe Storms and Flooding
1784	August 15, 2008	Severe Storms, Tornado, and Flooding

1778	July 15, 2008	Severe Storms and Flooding
1715	August 3, 2007	Severe Storms and Flooding
1698	May 4, 2007	Severe Storms and Flooding
1559	September 23, 2004	Severe Storms and Flooding
1488	September 12, 2003	Severe Storms and Flooding
1428	July 12, 2002	Severe Storms and Flooding
1358	January 18, 2001	Severe Winter Storm
1336	July 27, 2000	Severe Storms and Flooding
1307	November 10, 1999	Tropical Storm Floyd
1228	June 30, 1998	Severe Storms and Flooding
1184	July 25, 1997	Excessive Rainfall, High Winds, Flooding
1124	June 27, 1996	Flooding
1101	February 13, 1996	Storms and Flooding
1063	August 16, 1995	Heavy Rain, Flooding
990	May 12, 1993	Flooding, Heavy Rain, Snowmelt
938	March 18, 1992	Flooding, Heavy Rain, Ice Jams
875	July 25, 1990	Flooding, Severe Storm

(Source: [FEMA Declared Disasters](#))

Damage from inundation flooding can vary greatly depending on the amount of precipitation, snow cover, spring melt, soil saturation levels, and topography. The FEMA has designated Special Flood Hazard Areas throughout the Region, most recently updating the maps in 2007. The Special Flood Hazard Area, or floodplain, is the area determined by FEMA to have a 1% chance of annual flooding. (See Table 5.6 for definitions of common flood hazard terminology.) Particularly at risk during these flood events are village areas and related public infrastructure located within known flood hazard areas; this includes the Village of Chester, Windsor downtown, Village of Ludlow, Brownsville, and Proctorsville. While these areas are especially prone to flooding, all areas may experience inundation flooding.

TABLE 5.6 FLOOD ZONE DEFINITIONS	
<i>Floodway</i>	The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height; also known as the regulatory floodway. As designated and determined by FEMA.
<i>Floodway Fringe (i.e. Floodplain)</i>	The remaining portion of special flood hazard areas after exclusion of the floodway; also known as floodplain.
<i>Fluvial Erosion</i>	The erosion or scouring of riverbeds and banks during high flow conditions of a river. Fluvial erosion can be catastrophic when a flood event causes a rapid adjustment of the stream channel size and/or location.
<i>Fluvial Erosion Hazard Zone</i>	Includes the stream and adjacent lands necessary to accommodate the slope and plan form requirements of a geomorphically stable channel and is subject to fluvial erosion as defined by the Vermont Agency of Natural Resources and delineated on the current Fluvial Erosion Hazard Zone Map. Currently, only the Black River has a map showing fluvial erosion hazard zones.
<i>Special Flood Hazard Area</i>	The land in the flood plain within a community subject to a 1 percent or greater chance of flooding in any given year; also known as floodplain. As designated and determined by FEMA.
<i>River Corridor</i>	The land area adjacent to a river that is required to accommodate the dimensions, slope, planform, and buffer of the naturally stable channel and that is necessary for the natural maintenance or natural restoration of a dynamic equilibrium condition and for minimization of fluvial erosion hazards, as delineated by the Agency of Natural Resources in accordance with river corridor protection procedures. As of September 2014, no river corridor maps are available for this Region.

Special Flood Hazard Areas are low lying areas adjacent to rivers or streams and can be identified as high-risk areas for flooding. Early towns were built along river areas with easy access to waterpower and transportation resulting in many towns and villages within the Region having significant populations within the identified flood hazard area. River flooding may be widespread, affecting many towns, public utilities, and transportation infrastructure.

The following buildings and infrastructure are at risk from inundation flooding due to their location within special flood hazard areas:

- Number of residential structures within the Special Flood Hazard Area = 289
- Number of residential structures within the Floodway = 75
- Number of commercial enterprises within the Special Flood Hazard Area = 38
- Number of commercial enterprises within the Floodway = 12

- Number of bridges and culverts within the Special Flood Hazard Area = 277
- Number of bridges and culverts within the Floodway = 67

TABLE 5.7 PERCENTAGE OF COMMUNITY STRUCTURES WITHIN SPECIAL FLOOD HAZARD AREAS IN THE REGION	
Town	Percentage of Community Structures
Andover	1%
Baltimore	0%
Cavendish	7%
Chester	4%
Ludlow Town	5%
Ludlow Village	13%
Reading	2%
Springfield	2%
Weathersfield	2%
West Windsor	1%
Windsor	17%

Source: Vermont Flood Ready

In recent years, the Region has faced several severe flooding events, contributing to thousands of dollars of detrimental property damage, highlighting the dangers of continued flooding and erosion hazards, as well as the need for mitigation projects to lessen each flood’s impact. All the towns in the Region work with MARC to identify projects and strategies for maintaining flood resiliency and all have an adopted Local Hazard Mitigation Plan. Historic and existing land use patterns throughout the Region have resulted in encroachments to the flood and fluvial erosion hazard areas, berms, and the loss of woody vegetation from stream banks. These practices have resulted in the increased loss of a river's floodplain access and increased chance of erosion and river avulsion.

For more information on Flood Resilience, please see the Natural Resources Chapter.

3. REGIONAL IMPACT OF COVID-19

On March 13th, 2020, a State of Emergency was declared in response to the COVID-19 pandemic. In response to the health emergency, the State of Vermont, along with the rest of the country mandated protective measures including social distancing, capacity limits, and mask wearing. As of 2022, although the full effects have not been felt, the pandemic has had a serious impact on the Region’s businesses, food security, substance use disorder and overdoses, food and housing security, and more.

In response, federal, state, and local emergency action was enacted to expand emergency and urgent care facilities, food and housing resources, accommodations for testing and vaccination centers and more.

Windsor County: COVID-19 Cases Per Day (March 2020- April 2022)

Source: [USA Facts](#)

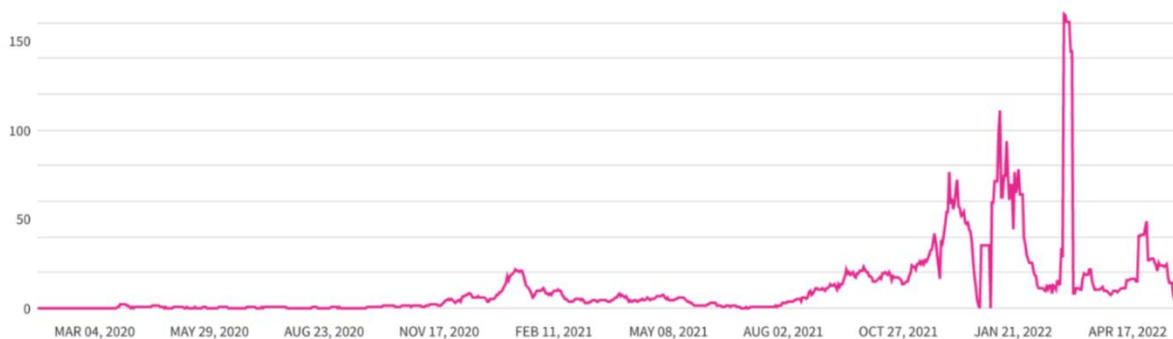


TABLE 5.8 COVID-19 CUMULATIVE CASES AND DEATHS (MARCH 2020- APRIL 2022)			
	Cases	Deaths	Rate of Death
Windsor County	9,850	54	0.55%
Vermont	131,460	661	0.50%

Source: [USA Facts](#)

Vaccination

Getting vaccinated and vaccine boosters are the best way to protect not only yourself but others against serious illness and death. Any person is eligible to get a booster at least 5 months after their second dose of the Pfizer or Moderna vaccine, including persons under the age of 5. There are additional booster shots available. As of 2022, the [CDC](#) recommends everyone stay up-to-date with vaccinations, including primary series doses and boosters for their age group, to protect themselves against the COVID-19 virus.

The COVID-19 vaccine became available in January 2021 prioritizing high risk individuals and became available for all people later in that year. In May 2022, the Center for Disease Control (CDC) approved vaccination and booster shots for children between the age of 5-11. And since then, vaccines have been approved for those under the age of 5.

For current information on the COVID-19 vaccine [click here](#).

Prevention

Due to the evolving and easy transmission of the COVID-19 virus, as well as a high hospitalization and death rate, the prevention of the spread of the virus is important. Before the availability of vaccines, the state and local municipalities required masks and social distancing measures to prevent the spread of the virus. As of 2022, the mask mandates and social distancing requirements are lifted but the risk has not completely dissipated, especially for high-risk individuals.

Prevention of the spread of COVID-19 can be managed through:

1. Staying up to date on vaccinations
2. Getting tested
 - a. After exposure
 - b. If you exhibit symptoms
3. Staying home if you feel sick
4. Masking and social distancing
5. Knowing if you are at high risk for COVID-19

For more information on ways to prevent the spread of COVID-19, [click here](#).

Testing

Testing is one of the tools the people and visitors to the Region can use to help quash the spread of COVID-19. There are several testing methods available to the public, including free at-home tests provided by the U.S. federal government. Testing sites are free, and most testing sites do not

require people to exhibit symptoms to get tested. Vermont Health Department testing locations closed June 2022.

For current information on COVID-19 testing, [click here](#).

Luckily, despite these infection rates, there are also high rates of COVID-19 vaccination in the Region's towns, with most towns presenting rates over 70%, with 4 of those towns having rates above 90%, as of December 16th, 2021.

TABLE 5.9 COVID-19 VACCINATION RATES IN THE REGION	
Town	COVID-19 Vaccination Rate
Andover	51-60%
Baltimore	41-50%
Cavendish	71-80%
Chester	>90%
Ludlow	>90%
Reading	>90%
Springfield	71-80%
Weathersfield	41-50%
West Windsor	81-90%
Windsor	>90%

Updated December 16th, 2021

Appendix:

I. Important Emergency Contacts

Contact	Phone Number
State Watch Officer	1-800-347-0488
VT ANR (Emergency Protective Measures for Instream Work)	(802) 490-6195
VTrans District 2 (Andover, Chester, Springfield, Cavendish, Baltimore, Weathersfield)	(802) 254-5011
VTrans District 3 (Ludlow)	(802) 786-5826
VTrans District 4 (Reading, West Windsor, Windsor)	(802) 295-8888
Mount Ascutney Regional Commission (MARC)	(802) 674-9201
American Red Cross	(855) 891-7325
HazMat Hotline	1-800-641-5005

II. High Priority Mitigation Projects in the Region

Town	Type of Action
Andover	Consider VTculverts.org data, VT Road & Bridge Standards, Geomorphic Assessments, and Resident Input to Prioritize Culvert Replacement
Andover	Replace and Upgrade Known Undersized Culverts based on above
Andover	Keep culvert/bridge inventory updated
Andover	Attend training on floodplain management and flood regulation administration
Andover	Update LEMP
Baltimore	Complete annual culvert upgrade based on inventory
Baltimore	Develop an action plan for removing high risk trees from along power lines
Baltimore	Conduct annual maintenance program on ditches
Baltimore	Maintain a LEMP
Cavendish 2018-2021 plan	Consider VTculverts.org data, VT Road & Bridge Standards, Geomorphic Assessments, and Residents Input to Prioritize Culvert Replacement
Cavendish 2018-2021 plan	Replace and Upgrade Known Undersized Culverts based on above
Cavendish 2018-2021 plan	Enhance outreach on safe winter home heating to homeowners, in addition to school program
Cavendish 2018-2021 plan	Review and implement other recommended activities in the "Firewise" Program
Cavendish 2018-2021 plan	Work with State to Mediate High Hazard Stone Culvert (ID-Singleton's)
Cavendish 2018-2021 plan	Implement Erosion Hazard Prevention Measures to protect Identified Critical Town Infrastructure – Sewer Lift
Cavendish 2018-2021 plan	Improve Flood Resiliency in Davis Road Bridge Replacement Project (in-progress, see below)
Cavendish 2018-2021 plan	Complete Black River Streambank Restoration Project (in-progress, see below)

Cavendish 2018-2021 plan	Determine and Formalize Process for Implementing Mitigation Actions
Chester 2021-2026 plan	Complete erosion and flood mitigation efforts on vulnerable stretch of Rt.35 along the South Branch that is susceptible to further deteriorate due to streambank erosion and stormwater during heavy rain and high flows Phase I: Complete repairs of highly eroded section Phase II: Complete engineering study/design for flood and erosion resiliency on remainder of road Phase III: Implement recommended upgrades to remainder of road
Chester 2021-2026 plan	Address flood risk to Mountain/Flamstead and Marshall Rd areas as recommended in the Road Erosion Inventory Report: Phase I: Conduct an engineering study for a stormwater system to control stormwater runoff and help stabilize the river bank. This project is consistent with Town Plan policy to strengthen stormwater infiltration practices for new development to improve flood resiliency. Phase II: Implement engineering design
Chester 2021-2026 plan	Address flood risk associated with three bridges over the Williams River used for access to private properties along Rt.103 (Thompson, Jewett, and Palmer). Failure of these bridges may isolate residents and cause debris jams and flooding downstream. Phase I: Conduct study to determine best options Phase II: Conduct Engineering Design in Progress Phase III: Implement Project
Chester 2021-2026 plan	Allocate enough funding each budget cycle to acquire and maintain an adequate salt/sand inventory beginning early in the fall season in anticipation of ice events over the season
Chester 2021-2026 plan	Make continued progress on Municipal Roads General Permit (MRGP) standards for implementing best management practices on hydrologically-connected road segments
Chester 2021-2026 plan	Update bridge and culvert inventories and maintain a priority list for upgrades and repairs to reduce risk of damage and infrastructure failure from flooding and erosion
Chester 2021-2026 plan	Conduct annual review of Hazard Mitigation Plan progress as noted in Section 6.3 prior to capital budgeting process and recommend incorporating projects selected from this plan, if feasible and funding is available
Chester 2021-2026 plan	Work with MARC to encourage hazard mitigation awareness and incorporate mitigation/preparedness actions into other town planning efforts providing specific examples and language to be discussed and considered
Chester 2021-2026 plan	Complete construction and opening of New Emergency Services Facility and use the opportunity for public outreach
Chester 2021-2026 plan	Work with MARC to provide a concise and comprehensive list of available funding sources to include a description/examples of eligible project types and application schedules to better coordinate efforts in implementing mitigation projects.
Ludlow	Seek funding for development of emergency plans and flood hazard mitigation for the Wastewater Treatment Facility and Fire Station
Ludlow	Improve efforts to incorporate hazard mitigation into other town planning, discussions, and activities
Ludlow	Continue progress on current East Hill FEMA Buyout project and seek other potential FEMA buyout opportunities
Ludlow	Continue efforts to move forward on retrofitting existing drainage system at Commonwealth intersection

Ludlow	Prioritize hydrologically connected road segments and prepare a 5-year plan for upgrade to incorporate new Municipal Roads General Permit standards to reduce road erosion and runoff
Ludlow	Actively seek funding to install recommended best management practices on local roads to meet new Municipal Roads General Permit state road standards based on identified priorities above
Ludlow	Work with MARC to seek grant opportunities more proactively for bridge and culvert upgrades to supplement town maintenance programs
Ludlow	Review recommended activities from the “Firewise” Program to enhance annual outreach for fire safety to all residents
Reading 2016-2021 goals	Incorporate River Corridor Plan recommendations into prioritization of capital spending on maintenance and upgrade of roads, bridges, culverts and ditches
Reading 2016-2021 goals	Identify vulnerable roadways and improve drainage through additional ditching and culverts with a focus on major evacuation routes
Reading 2016-2021 goals	Provide informational materials and buyout options to at-risk residential and commercial structure owners within River Corridor
Reading 2016-2021 goals	Implement annual awareness program for residents in early fall on the hazards of home heating and chimney fires
Reading 2016-2021 goals	Work with MARC to actively seek funding opportunities for HM recommendations in River Corridor Plans including conservation easements, bank restoration, debris and berm removal
Reading 2016-2021 goals	Review identified site specific mitigation measures recommended in River Corridor Plans and develop a plan to address those that are doable based on funding and available personnel
Reading 2016-2021 goals	Work with MARC to incorporate hazard mitigation plan into long-term planning process and Town Plans
Reading 2016-2021 goals	Work with MARC to Update Flood Hazard Regulations to include river corridor overlay and discourage development in FEH areas
Reading 2016-2021 goals	Create redundant power supply for critical facilities – Town & School
Reading 2016-2021 goals	Assess the vulnerability of critical town infrastructure facilities in River Corridor and determine specific mitigation options
Reading 2016-2021 goals	Review “Firewise” program, determine effectiveness, and incorporate new programs
Springfield	Work with MARC to incorporate these new Hazard Mitigation Plan Strategies into Other town planning efforts
Springfield	Mitigate Lincoln Street slope failure
Springfield	Mitigate North Main Street slope failure
Springfield	Determine stabilization options for the slope failure off of Seavers Brook Rd. (2016 REIR, ID#126)
Springfield	Evaluate stabilization options for severe bank erosion threatening utilities along Middle Rd. (2016 REIR, ID#67)
Springfield	Evaluate and prioritize remaining projects in 2016 Road Erosion Inventory Report not listed here
Springfield	Implement MRGP Plan to meet standards; prioritize road segments as funding becomes available

Springfield	Develop a Stormwater Master Plan
Springfield	Develop design plans to mitigate stormwater flow from Grove Street to reduce flood risk to Whitcomb Building residents and implement
Springfield	Develop design plans for the breach or removal of the Weathersfield Reservoir Dam
Springfield	Implement Vermont Alert System for the Town to include Training, Data Collection and Program Planning
Springfield	Establish Standard procedures for VT Alert to Inform Residents of Heating Fire Hazards during Extended Extreme Cold events, Brush Fire Hazard during Extended Dry Periods, Evacuation Routes and Emergency Shelters
Springfield	Conduct formal annual monitoring of this HMP and informing the public on progress made
Springfield	Conduct an educational outreach for Seavers Brook community on flood risk and resiliency
Springfield	Proactively manage culvert upgrade program by seeking new funding opportunities for Municipal Roads General Permit Standards compliance (MRGP)
Springfield	Identify and educate property owners located within Special Flood Hazard Areas or River Corridor on flood and erosion risks, mitigation, FHA By-Laws, and NFIP
Weathersfield 2018-2022 plan	Culvert upgrade to ____ (identify culvert 1 remaining)
Weathersfield 2018-2022 plan	Continued specialized hazardous materials training and exercises
Weathersfield 2018-2022 plan	Stone line ditch – Amsden Hollow Road
Weathersfield 2018-2022 plan	Incorporate new MRGP Standards in identifying and prioritizing vulnerable hydrologically-connected roadways and implement required practices to meet standards <i>as funding becomes available</i>
West Windsor 2018-2022 plan	Assess options to establish a second access to Ascutney Mountain Resort and Yale Heights and Happy Canyon housing developments during hazard events
West Windsor 2018-2022 plan	Enhance annual culvert upgrade program using Road Erosion Inventories and new funding opportunities for municipal roads
West Windsor 2018-2022 plan	Obtain funding to replace large culvert on Bible Hill Rd.
West Windsor 2018-2022 plan	Establish alternative route to siltation ponds in Talc Mine area and remove the Pellet Plant Bridge
West Windsor 2018-2022 plan	Formally adopt policies that address storage of unsecured objects in floodplain or river corridor
West Windsor 2018-2022 plan	Work with MARC to incorporate these new Hazard Mitigation Plan Strategies into Other community planning efforts
West Windsor 2018-2022 plan	Work with MARC on a Grant Opportunity to Modify River Corridor Map
West Windsor 2018-2022 plan	Identify and educate property owners located within Special Hazard Flood Areas or River Corridor on flood and erosion risks, mitigation, FHA By-Laws, and the current NFIP
West Windsor 2018-2022 plan	Conduct an All-Hazards Vulnerability Assessment for the Town’s water system
West Windsor 2018-2022 plan	Continue progress on incorporating recommendations in Flood Resilience Addendum to Town Plan in FHA By-Laws revisions
West Windsor 2018-2022 plan	Modify regulations and recommendations in Land Use Planning to accommodate highwater flows
West Windsor 2018-2022 plan	Conduct formal annual monitoring of this LHMP and informing the public on progress made

III. High Priority Preparedness Projects in the Region

Town	Type of Action
Andover	Map ponds as emergency water source
Andover	Update EOP
Baltimore	Develop procedures and planning for pre-winter activities
Baltimore	Conduct annual maintenance program on ditches
Baltimore	Maintain a LEOP
Cavendish 2018-2021 plan	Actively seek funding to provide back-up power supply for town EOC/Shelter
Cavendish 2018-2021 plan	Review and implement other recommended activities in the 'Firewise' Program
Chester 2021-2026 plan	Continue progress to upgrade all technical level emergency responders to EMT or higher level to provide more capacity for emergency response
Chester 2021-2026 plan	Complete construction and opening of New Emergency Services Facility and use the opportunity for public outreach
Chester 2021-2026 plan	Work with MARC to provide a concise and comprehensive list of available funding sources to include a description/examples of eligible project types and application schedules to better coordinate efforts in implementing mitigation projects
Reading 2016-2021 goals	Create redundant power supply for critical facilities – Town & School
Reading 2016-2021 goals	Assess the vulnerability of critical town infrastructure facilities in River Corridor and determine specific mitigation options
Reading 2016-2021 goals	Review "Firewise" program, determine effectiveness, and incorporate new programs
Springfield	Implement Vermont Alert System for the Town to include Training, Data Collection and Program Planning
Springfield	Establish Standard procedures for VT Alert to Inform Residents of Heating Fire Hazards during Extended Extreme Cold events, Brush Fire Hazard during Extended Dry Periods, Evacuation Routes and Emergency Shelters
Springfield	Conduct formal annual monitoring of this HMP and informing the public on progress made
Springfield	Conduct an educational outreach for Seavers Brook community on flood risk and resiliency
Springfield	Proactively manage culvert upgrade program by seeking new funding opportunities for Municipal Roads General Permit Standards compliance (MRGP)
Springfield	Identify and educate property owners located within Special Flood Hazard Areas or River Corridor on flood and erosion risks, mitigation, FHA By-Laws, and NFIP
Weathersfield 2018-2022 plan	Annual culvert inspection program
Weathersfield 2018-2022 plan	Dry hydrant mapping and needs assessment
Weathersfield 2018-2022 plan	Continued specialized hazardous materials training and exercises
Weathersfield 2018-2022 plan	Research funding opportunities WWVFD station repairs

West Windsor 2018-2022 plan	Assess options to establish a second access to Ascutney Mountain Resort and Yale Heights and Happy Canyon housing developments during hazard events
West Windsor 2018-2022 plan	Enhance annual culvert upgrade program using Road Erosion Inventories and new funding opportunities for municipal roads
West Windsor 2018-2022 plan	Identify and educate property owners located within Special Flood Hazard Areas or River Corridor on flood and erosion risks, mitigation, FHA By-Laws, and the current NFIP
West Windsor 2018-2022 plan	Prepare an Emergency Response Plan for the Town's water system