Western Connecticut Council of Governments
Multi-Jurisdiction Hazard Mitigation Plan Update
2026-2031

Municipal Annex
for
Town of Bridgewater

44 Main Street South
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Draft: October 2026

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Land & Water

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1.0 INTRODUCTION

1.1 Purpose of Annex

The purpose of this Hazard Mitigation Plan (HMP) annex is to provide a community-specific hazard risk assessment, capability analysis, and evaluation and prioritization of hazard mitigation measures and projects. Background information and the regional effects of pertinent natural hazards are discussed in the main body of the Western Connecticut Council of Governments (WestCOG) Multi-Jurisdictional Hazard Mitigation Plan. This annex is designed to supplement the information presented in the Multi-Jurisdictional HMP with more specific detail for the Town of Bridgewater and is not to be considered a standalone document.

The primary goal of this HMP, including this Municipal Annex, is to identify natural hazard risks and mitigation opportunities in order to reduce the loss of or damage to life, property, infrastructure, and natural, cultural, and economic resources. This includes the reduction of public and private damage costs. Limiting losses of life and damage to property will also reduce the social, emotional, and economic disruption associated with a natural disaster.

2.0 COMMUNITY PROFILE

2.1 Geography

2.1.1 Physical Setting

Incorporated in 1856, the Town of Bridgewater is located in southern Litchfield County and is home to a population of 1,727 (2010 U.S. Census). Bridgewater is bordered by the municipalities of New Milford to the north, Roxbury and Southbury to the east, Newtown to the south, and Brookfield to the south-southwest. Refer to Figure 2-1 for a map showing the location of Bridgewater.

The topography of the town is characterized by a generally rolling terrain with high plateaus, steep slopes, and river and stream valleys. The Housatonic River, Shepaug River, Clapboard Oak Brook, Wewaka Brook, Hop Brook, and numerous other small rivers and streams course through the town. The varying terrain of Bridgewater makes the town vulnerable to an array of natural hazards.

The Center for Land Use Education and Research (CLEAR) has developed a statewide land cover dataset derived from the 2023 Annual National Land Cover Dataset (NLCD). Areas identified as developed open space are maintained grasses such as residential and commercial lawns or golf courses. The land cover, expressed as a percentage of total land, is shown in Table 2-1.

Table 2-1: Land Cover by Area

Land Cover Class	Percent of Total Land
Developed	1%
Developed Open Space	9%
Forest	70%
Agriculture	14%

Source: University of Connecticut Center for Land Use Education and Research (CLEAR)

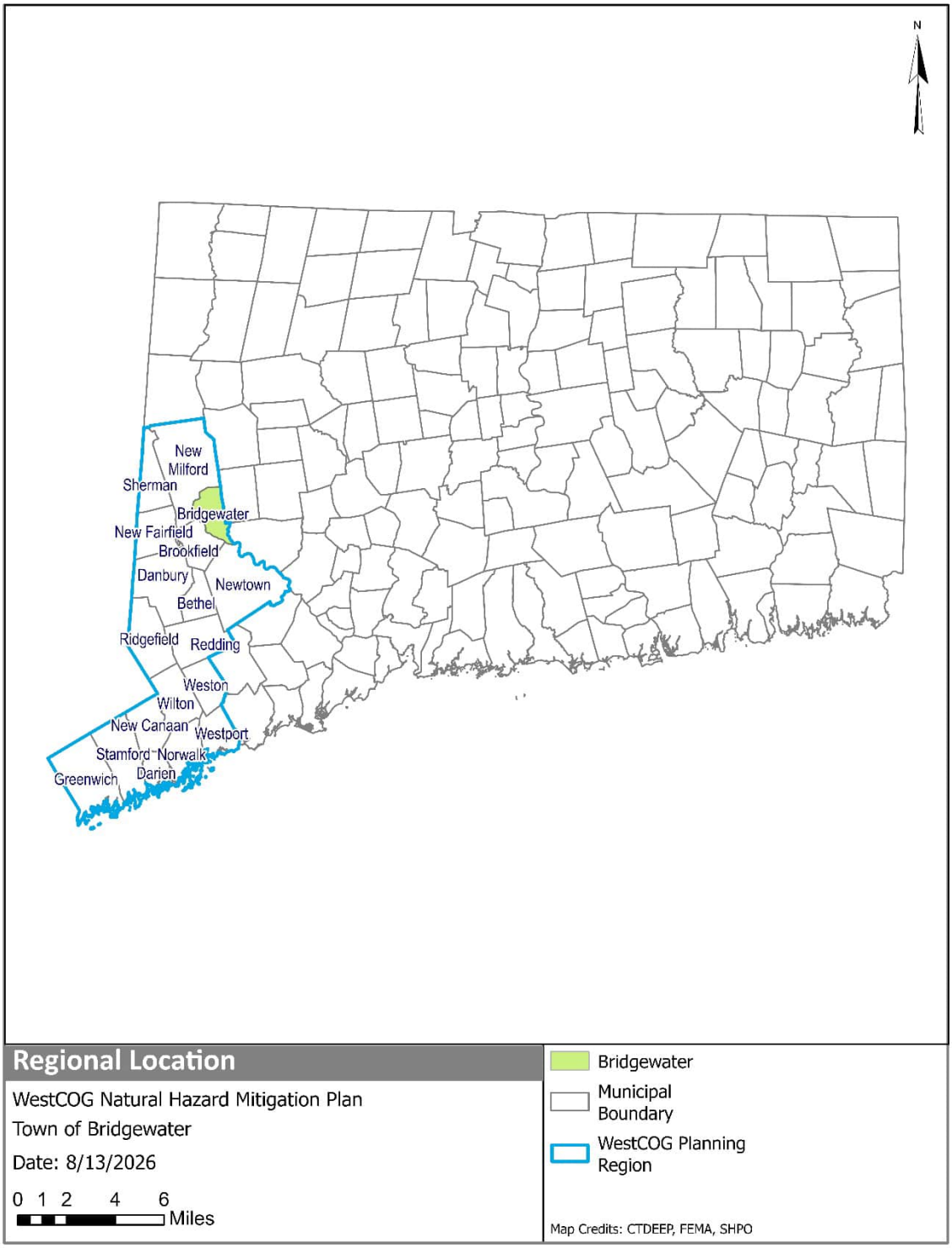

Figure 2-1: Location Map

2.1.2 Land Use

Bridgewater is a rural municipality characterized by low density population and limited rural commercial uses. In general, land use in Bridgewater consists predominantly of residential and open space areas. Commercial uses are limited and are concentrated in the center of the Town. Much of Bridgewater consists of steep slopes, rock outcroppings, and wetlands, which severely impact development potential.

According to the 2022 Plan of Conservation and Development (POCD), the Town of Bridgewater consists of approximately 10,136 acres, most of which is dedicated to residential use. An estimate of permitted land uses is shown in Table 2-2.

Table 2-2: Permitted Land Use

Permitted Land Use	Acres
Commercial/Industrial Zone	65.64
Town Green Zone	294.77
RR2 (2-acre zone)	772.40
RR3 (3-acre zone)	5,978.99
RR4 (4-acre zone)	3,024.34
Total Residential Zones	*9,775.73*

Source: 2022 Bridgewater Plan of Conservation and Development

According to the POCD, "from the total residentially zoned lands, an estimated 448 acres are unprotected, and 4,592 PA490 properties are temporarily protected, for a total of 5,040 acres that are potentially available for development. This land area constitutes approximately one-half of the Town and must be the focus of all future development considerations and preservation efforts."

The POCD also notes that open spaces, which cover over 2,200 acres, are managed by four conservancies: the Bridgewater Land Trust, The Nature Conservancy Sunny Valley Preserve, Northwest Connecticut Land Conservancy (formerly Weantinoge), and the Audubon Society. According to the town land records, approximately 2,246 acres of open space are owned by exempt organizations, as shown in Table 2-3.

Table 2-3: Total Land Owned by Exempt Organizations

Organizations	Number of Acres
Audubon Society	84
Bridgewater Land Trust	197
Eversource (CL&P)	265
First Light Hydro Generation	71
Nature Conservancy	1,442
NCLC	258
BVFD	28
Town of Bridgewater	99
Town of New Milford	114
Promisek Inc.	232
Total	**2,790**

Source: 2022 Bridgewater Plan of Conservation and Development

2.1.3 Climate and Climate Change

Over the course of the year, the temperature in Bridgewater typically varies from 19°F to 82°F and is rarely below 3°F or above 89°F. The warm season lasts from May 31 to September 15, with an average daily high temperature above 72°F. The hottest month of the year is July, with an average high of 81°F and a low of 63°F. The cold season lasts from December 3 to March 12, with an average daily high temperature below 44°F. The coldest month of the year is January, with an average low of 20°F and high of 35°F.

Precipitation falls throughout the year in Bridgewater. The wetter season lasts from April 2 to August 2, with a greater than 29% chance of a given day being a wet day. The chance of a wet day peaks at 36% on August 3. The smallest chance of a wet day is 22% on January 29. The most rain falls in October, with an average total accumulation of 3.7 inches. The least rain falls in January, with an average total accumulation of 1.8 inches.

The snowy period of the year lasts from November 3 to April 13, with a sliding 31-day liquid-equivalent snowfall of at least 1.0 inches. The most snow falls during January, with an average snowfall of 10.3 inches.

Climate data was sourced from Weather Spark based on analysis of the years 1980 to 2016.

Climate Change

Climate change projections for Connecticut were sourced from the 2019 Connecticut Physical Climate Science Assessment Report, developed by the University of Connecticut (UConn) Atmospheric Sciences Group and commissioned by the Connecticut Institute for Resilience and Climate Adaptation (CIRCA) with funding from the Department of Energy and Environmental Protection (DEEP). All projections are based on the IPCC high CO_2 emission scenario (RCP8.5).

Temperature

Annual temperatures have been increasing throughout Connecticut and are projected to continue to do so in the future. By mid-century, the average annual temperature is projected to increase by 5°F. Seasonal average temperatures are also expected to rise, with the greatest increase (6°F) experienced in summer (June to August). The number of nights over which the temperature remains above 68°F will quadruple from 10 days per year to more than 40 days, and the number of extremely hot days will increase from above 4 per year to 48 per year.

Precipitation

Rainfall data in "Technical Paper No. 40" by the U.S. Weather Bureau (now the National Weather Service) (Hershfield, 1961) dates from the years 1938 through 1958. According to these data, the 24-hour rainfall amount for a 50% annual-chance storm in Litchfield County is 3.2 inches.

The continued increase in precipitation only heightens the need for hazard mitigation planning as the occurrence of floods may change in accordance with the greater precipitation.

The Northeast Regional Climate Center (NRCC) has partnered with the Natural Resources Conservation Service (NRCS) to provide a consistent, current regional analysis of rainfall

extremes (http://precip.eas.cornell.edu/). In 2020, this dataset listed the 24-hour rainfall amount for a 50% annual-chance storm in Bridgewater as 3.34 inches.

The NOAA Atlas 14, released on September 30, 2015, puts the 24-hour rainfall amount for a 50% annual-chance annual storm in Bridgewater at 3.46 inches.

These precipitation amounts and more details are summarized in Table 2-4, below.

Table 2-4: 24-Hour Rainfall Amounts by Annual-Chance Occurrence

Source	24-Hour Rainfall Amount (inches) by Annual-Chance Occurrence		
	50%	4%	1%
Technical Paper No. 40	3.2	5.5	7.0
NRCC	3.34	6.21	8.76
NOAA Atlas 14	3.46	6.74	8.68

Annual precipitation has been increasing statewide and is projected to continue to increase. By mid-century, annual precipitation is projected to increase by 8.5%, with the greatest increase (13.4%) occurring in the winter months. Extreme precipitation events are projected to increase in both frequency and magnitude. Based on this increase and the precipitation figures above, by 2050, Bridgewater can expect the 24-hour rainfall amount for a 50% annual-chance storm to be around 3.5 to 3.7 inches or greater.

Despite overall increases in precipitation, drought risk is projected to rise, especially during summer, due to shifting precipitation patterns and rising potential evapotranspiration (plants taking up more water in hotter temperatures and longer growing seasons).

2.1.4 Drainage Basins and Hydrology

Bridgewater is divided into two sub-regional drainage basins: the Housatonic River and the Shepaug River.

Housatonic River

The Housatonic River drains an area of 1,948 square miles from Pittsfield, Massachusetts, to Milford, Connecticut, where it empties into Long Island Sound. The river flows a total of 134 miles from its upper reach to the sound. Once in the lower Housatonic Valley region, the river bends southeast, flowing through New Milford and cutting between Bridgewater, Southbury, and Newtown. The main channel of the Housatonic is lined with 1% annual chance storm floodplains that extend on either side of the river, with areas that further extend making up the 0.2% annual chance floodplains. The entirety of the section of the Housatonic River that borders Bridgewater is impounded by the Shepaug Dam to form the western branch of Lake Lillinonah. Significant tributaries to the Housatonic in Bridgewater include Clapboard Oak Brook and Wewaka Brook.

Shepaug River

Originating at the Shepaug Reservoir, the Shepaug River flows directly south, creating the lower eastern border of Bridgewater. The Shepaug Reservoir is held back by the Shepaug River Dam, which is classified as a high hazard dam, such that the entirety of the section of the Shepaug

River that borders Bridgewater is impounded. The Shepaug River continues to meander south through Washington and Roxbury with input from many streams and rivers, including the Bantam River, Bee Brook, Mallory Brook, and other tributaries. Significant tributaries to the Shepaug in Bridgewater include Hop Brook and Second Hill Brook. The River flows through the eastern portion of Bridgewater before entering the Housatonic River. The entire river from start to finish is bordered by 100-year floodplains, generally widening as the channel gets closer to the mouth.

2.2 Society, Culture, and Government

2.2.1 Population and Demographic Setting

According to the 2020 U.S. Census, Bridgewater had a population of 1,662 with 101 persons per square mile. The Connecticut State Department of Public Health estimates Bridgewater's 2026 population at 1,658. The American Community Survey (ACS) projects a population decline, with estimates putting the population at only 16,376 in 2030.

According to the 2022 Plan of Conservation and Development, the population in Bridgewater had declined by 3.9% from the 2010 to 2020 census, 2022 estimates note an increase in population between 2020 and 2020; this is attributed to post-COVID in-migration and "an unprecedented rise in local property values."

One important aspect of natural hazard mitigation planning is to identify a community's demographic trends in relation to natural hazards. The FEMA National Risk Index (NRI) (Version 1.20) explores and illustrates the relationship between social vulnerability, community resilience, expected annual losses attributed to natural hazards, and risk to those hazards. The NRI has four ratings built into the dataset:

1. Risk Index (A composite of the following three variables)
2. Expected Annual Loss
3. Social Vulnerability
4. Community Resilience

The social vulnerability incorporated into the NRI uses data from the United States Census Bureau's Community Resilience Estimate (CRE) dataset. This ten variable dataset represents the socioeconomic factors that are expected to contribute most to a community's ability to prepare for, withstand, and recover from a natural hazard event (Figure 2-2). The data used in the CRE were from the 1-year American Community Survey and Population Estimates Program.

The Town of Bridgewater is considered to have relatively low social vulnerability Figure 2-3.

Figure 2-2 Community Resilience Estimates Vulnerability Components (Source: US Census Bureau)

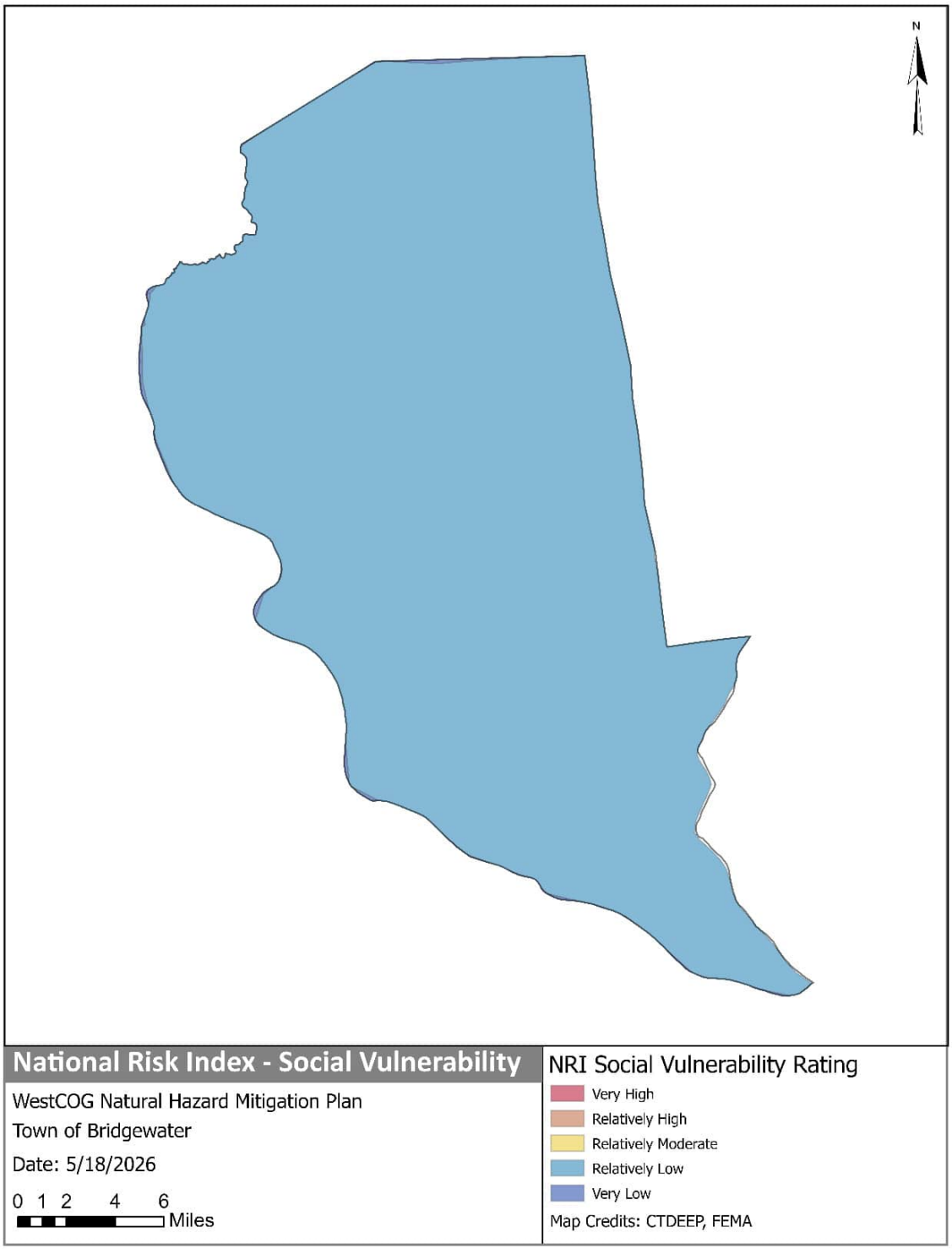

Figure 2-3 FEMA National Risk Index Social Vulnerability Index

2.2.2 Development Trends

In the 1980s, Bridgewater saw a rise in the number of single-family homes constructed. However, around 2007-2008, new construction mostly came to a standstill. Town personnel indicate that development is limited primarily to small-scale single-family home construction and property redevelopment. There are currently no large development proposals pending.

The town encourages the development of homes outside the floodplain, although recreational areas on lots may be within the floodplain. Therefore, development tends to be outside of flood zones and other areas of natural hazard risk, and community vulnerabilities have not been increasing.

Development in Bridgewater has been minimal over the last five years. The only new developments were single-family homes, and these were not located in floodplains. The major change is that the school age population is increasing, which is placing a strain on some Town services, but this is a challenge the Town looks forward to meeting.

2.2.3 Governmental Structure

The Town of Bridgewater is governed by a Selectman-Town Meeting form of government in which legislative responsibilities are shared by the Board of Selectmen and the Town Meeting. The First Selectman serves as the chief executive.

In addition to the Board of Selectmen and the Town Meeting, there are boards, commissions, and committees providing input and direction to Town administrators. Also, Town departments provide municipal services and day-to-day administration. Many of these commissions and departments play a role in hazard mitigation, including the Planning and Zoning Commission, Conservation & Inland Wetland Commission, the Building Official, the Land Use Office, the Fire Department, Emergency Management, and the Public Works Department.

2.2.4 Historic and Cultural Resources

Historic and cultural resources include sites, structures, and objects that are significant in history, architecture, archaeology, engineering, and culture. Protection of these resources grows economies and enhances community character, and following a natural disaster, they can help to reinforce neighborhood connections and reestablish a sense of community and normalcy. Consideration of these resources in this HMP is critical.

Historic preservation planning helps protect historic properties and cultural resources from demolition or alteration. **Hazard mitigation planning** helps protect life and property from damage caused by natural and manmade hazards. **Integrating** these two planning processes helps create safe and sustainable historic communities.
- Paraphrased from FEMA Report 386-6

Historic resources in Bridgewater are concentrated within the Bridgewater Center Historic District. There are more than 60 historic buildings in the district, including the 1807 Congregation Church, St. Mark's Episcopal Church, the present and former town halls, a distinctive Queen Anne commercial block on the west side of South Main Street, and the 1929 Burnham School.
Bridgewater's historic resources also include the Peck House and the childhood home of William Burnham. See Figure 2-4 for a map of historic resources in Bridgewater.

Analysis of the State Historic Preservation Office (SHPO) database of historic resources shows that some of these resources are exposed to natural hazards, as shown in Table 2-5.

Table 2-5: Number of Historic Assets (by parcel) Exposed to Different Hazards in Bridgewater

Hazard	Count	Value
Dam Failure	0	-
Earthquake	51	$27,261,050
Flooding	-	
1% Annual	0	
0.2% Annual	17	
Hurricane/Tropical Storm	51	$27,261,050
Thunderstorm	51	$27,261,050
Tornado	51	$27,261,050
Winter Storm	51	$27,261,050
Wildfire	8	
Interface	5	$2,751,000
Intermix	40	$21,027,940

Historic buildings and structures may be particularly susceptible to natural hazards because they were built prior to the establishment of more recent construction standards. Additionally, some of the structural integrity of these resources may have been degraded over the decades or centuries since their original construction. Structural retrofits and hazard mitigation methods may be challenging or restricted in cases where alteration of a resource will also diminish its cultural or historical aesthetic and value. Finally, miscommunications or a lack of knowledge may lead to damage to historic resources during the disaster recovery process.

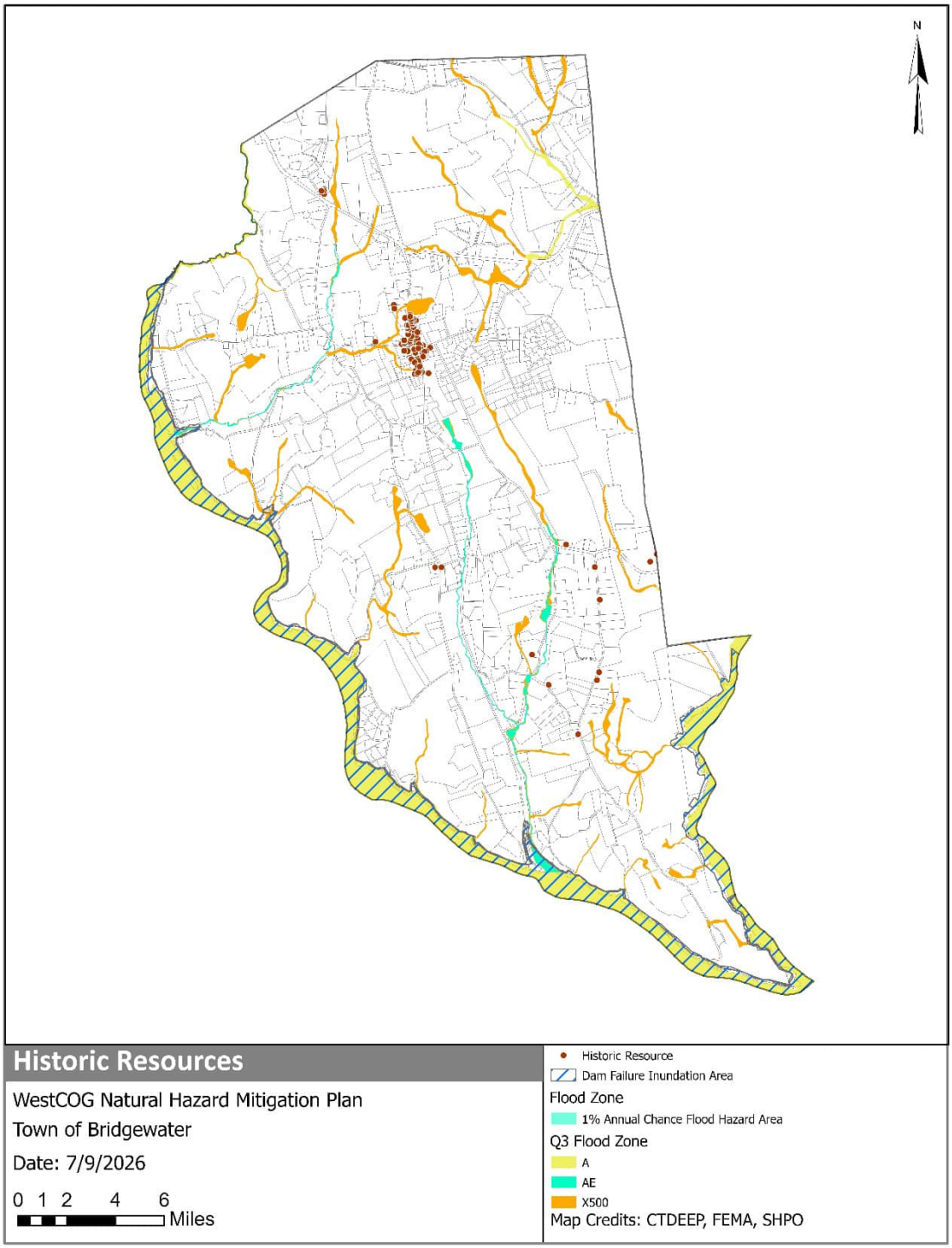

Figure 2-4: Historic Resources

Steps to incorporate historical and cultural preservation into hazard mitigation planning include:

- Inventory and survey historic and cultural resources
- Implement appropriate mitigation measures for those resources
- Take steps to move portable resources, such as artwork or documents, to safe locations prior to the occurrence of a hazard, if possible
- Consider these resources in emergency operations plans to prevent accidental damages during recovery efforts

Specific actions to mitigate natural hazard risks to historic resources were identified in the 2021 plan and are no longer current actions for the 2026-2031 update.

2.3 Infrastructure

2.3.1 Transportation

The Town of Bridgewater has two state routes running through the community. Route 133 runs north to south, almost bisecting the town entirely, and Route 67 runs east to west in the northern area of town. There are several smaller routes that are also used as main throughways.

The nearest highway to Bridgewater is Interstate 84, which is south of the town running through New Town, and Route 202, which runs north to south to the west of Bridgewater through New Milford.

2.3.2 Utilities

Bridgewater residents rely primarily on private wells for water supply, except for one small condominium complex in the northern area of town. There are presently no major public water suppliers with distribution lines in town

Eversource Energy is the primary electrical utility in town, and there are no natural gas providers in the town. Residents in Bridgewater rely on electricity, propane, or wood for fuel.

2.4 Planning and Regulatory Capabilities

2.4.1 Review of Existing Local Plans

Bridgewater has a number of plans that are relevant to hazard mitigation. These are noted here:

- **Plan of Conservation and Development (POCD):** Bridgewater's most recent POCD was adopted in 2022. It does not explicitly address natural hazard concerns within the community or include strategies that will mitigate risks from those hazards as the community continues to develop, but it does identify the important role certain natural resources play in hazard and flood mitigation.
- **Capital Improvement Plan (CIP):** Bridgewater maintains a CIP that is updated annually and lays out capital investments for a five-year period. The CIP often includes road, drainage, and other infrastructure improvement projects relevant to hazard mitigation.
- **Economic Development Plan:** Bridgewater is included within the Western Connecticut Comprehensive Economic Development Strategy (CEDS) of 2023, developed by WestCOG. The plan aligns with the COG's other efforts to promote climate sustainability and resiliency in the region.

- **Emergency Operations Plan (EOP):** Bridgewater's EOP is reviewed annually and updated as needed. Dam failure Emergency Action Plans (EAPs) for dams with failure inundation zones that may impact Bridgewater, and for which EAPs are available, are on file locally.
- **Open Space:** Bridgewater does not maintain a stand-alone Open Space Plan; instead, open space planning is incorporated into the community's POCD.

2.4.2 Review of Regulatory Structures

Bridgewater regulates development through a number of regulations, codes, and ordinances. These are summarized below. More detailed information about how these regulations relate to specific natural hazards is described in Section 3.

- **Building Code:** Bridgewater enforces the Connecticut State Building Code locally.
- **Zoning Regulations:** Most recently updated in September 2021.
- **Inland Wetlands and Watercourses Regulations:** Most recently updated in February r 2021.
- **Subdivision Regulations:** Most recently updated in July of 1998. Include provisions promoting control of stormwater runoff, installation of firefighting water sources, construction of adequate emergency access and egress, and burial of utilities.

2.5 Emergency Services, Critical Facilities, Sheltering, and Evacuation

Bridgewater has identified several critical facilities throughout the town. Table 2-6 and Figure 2-5 identify those critical facilities in Bridgewater. The Town considers its police, fire, governmental, and major transportation arteries to be its most important critical facilities since these are needed to ensure that emergencies are addressed while day-to-day management of Bridgewater continues. The Senior Center and Fire Station are both designated shelters in Town and also serve as heating and cooling centers. The Elementary School does not currently have a generator. While it would likely not serve as a shelter due to the lack of a kitchen, the Town would like to install one, as it could provide some degree of emergency support in the wake of a large event.

Table 2-6: Critical Facilities

Facility	Address or Location	Comment	Emergency Power	Shelter	In 1% Chance Floodplain
Senior Center	132 Hut Hill Road	Emergency Operations Center (EOC) and the Primary Shelter	✔	✔	No
Bridgewater Volunteer Fire Department	100 Main Street South	Emergency Response	✔	✔	No
Bridgewater Public Works Highway Garage	324 Hut Hill Road	Emergency Assistance	✔		No
The Village Store	27 Main Street South	Emergency Supplies and back-up shelter	✔		No

Facility	Address or Location	Comment	Emergency Power	Shelter	In 1% Chance Floodplain
Bridgewater Police Department	152 Hut Hill Road	Emergency Response			No
Bridgewater Town Hall	44 Main Street South	Secondary Shelter and Back-up EOC	✔		No
Burnham Elementary School	80 Main Street South	School			No
Mobil Gas Station	11 New Milford Road	Provides fuel for Emergency Response			No

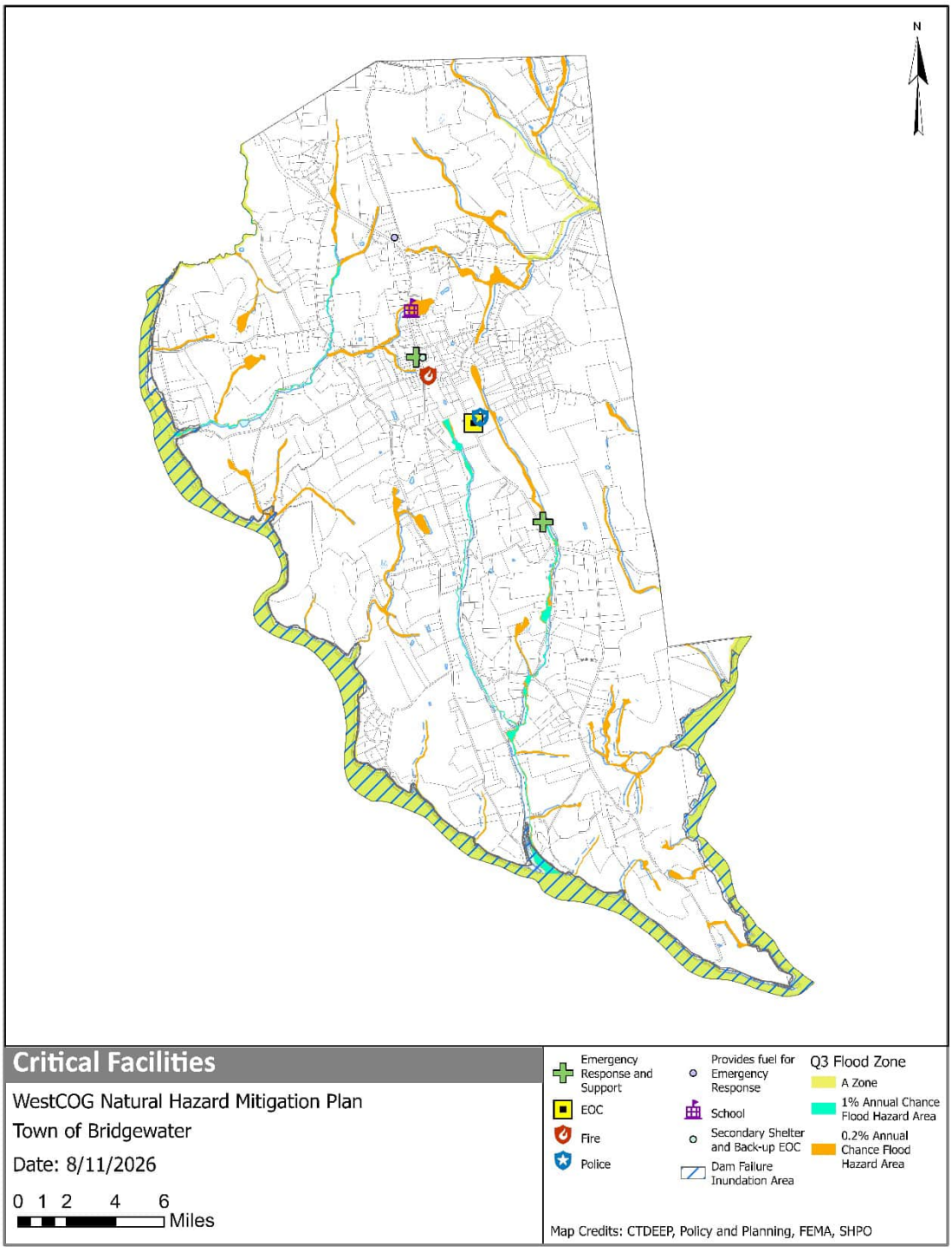

Figure 2-5: Critical Facilities & Flood Zones

2.5.1 Sheltering Capabilities

Emergency shelters are an important subset of critical facilities as they are needed in many emergency situations. There are three identified shelters in the town that are also considered critical facilities. The Senior Center on Hut Hill Road is the primary shelter for the town. The Fire Department on Main Street is considered the backup shelter. The Village Store on Main Street is considered a temporary warming shelter that provides wireless internet, phone service, and food. The Senior Center and Fire Station have both been identified as cooling and warming centers. All three facilities have backup generators.

In the event of a sustained power outage, it is anticipated that 10 to 20% of the population would relocate, although not all would necessarily use the shelter facilities.

Bridgewater is part of the Region Twelve School District. Burnham Elementary School on Main Street is considered a critical facility. The elementary school needs a generator, and once acquired, it may serve as a shelter.

Emergency Response Facilities

The Emergency Management Director coordinates emergency preparedness in the Town of Bridgewater. The Town's Emergency Operations Center (EOC) is located in the Bridgewater Senior Center. The EOC's goal is to provide citizens with the highest level of emergency preparedness before, during, and after disasters or emergencies. The backup EOC is the Town Hall. The Town coordinates with all internal departments to develop plans, protocols, and procedures that ensure the safety of Bridgewater's citizens. It also provides technical assistance to state and local emergency response agencies and public officials. The Town's EOP guides its response to emergencies arising from both natural and anthropogenic hazards.

Although the town has an EOC and backup EOC, the town administration is interested in the construction of a new Police Station that would house a technologically-updated EOC. This is considered to be a long-range goal and is not included as an action in this plan.

The Town is interested in obtaining grants to acquire generators capable of providing power to the local Mobil gas station and other important or critical facilities. Although the town recognizes that the gas station is privately owned, it is vital to residents in need of gas during severe storm events. For emergency personnel, the Public Works Highway Garage has 500 gallons of reserve gas stored at its location in times of emergencies. The acquisition of portable generators would greatly assist the town in providing emergency power when needed.

The town is also interested in pursuing funding through the Assistance to Firefighters grant program to purchase new equipment that will enhance emergency response capabilities.

The Town's Public Works Department performs tree and shrub removal and trimming on Town-owned lands and rights-of-way. During emergencies and following storms, the Public Works Department responds to calls related to downed trees.

Road closures are a major concern to town officials. Main Street (Route 133) has occasionally been closed due to snow, ice, or fallen trees. In the past, municipal staff have reported that CT

DOT and the electric utility have not addressed this area expeditiously, and road closures can delay emergency personnel response times. Bridgewater staff notifies CT DOT when accumulation is building, and local Public Works staff will clear Route 133 during emergencies when absolutely necessary. CT DOT has performed maintenance and safety improvements on Route 133 in recent years, which are expected to reduce road closures caused by drainage and debris issues.

Emergency Communication Capabilities

In Connecticut, the Department of Emergency Services and Public Protection (DESPP) has a regional focus. DESPP has divided Connecticut into five emergency planning regions, and as part of this new view, the DEMHS subsection of DESPP has been partnering with HVCEO and other regional planning organizations to strengthen emergency response. Bridgewater is located in Region 5, consisting of 43 towns in western Connecticut.

The Town utilizes a program known as “CT Alert" to direct geographically specific emergency notification telephone calls into affected areas. The local radio station, WLAD, is also utilized for notification purposes. The town can send emergency notifications via email, and the school system maintains a separate email notification system that can also be used. However, as of 2026, the town is looking to increase emergency communication capability and would like to implement an updated text-based notification system.

3.0 HAZARD ASSESSMENT

3.1 FLOODING (COASTAL, INLAND, AND ICE JAMS)

3.1.1 Setting

The potential for flooding is widespread in Bridgewater, with the majority of major flood risk along established SFHAs. The areas impacted by river overflow are generally limited to river corridors and floodplains. Indirect flooding that occurs outside floodplains and localized nuisance flooding along tributaries are also potential problems in the town. This type of flooding occurs particularly along roadways as a result of inadequate drainage and other factors. The frequency of flooding in Bridgewater is considered likely for any given year.

Bridgewater has experienced various degrees of flooding throughout its history. Melting snow combined with early spring rains has caused spring flooding. Flood events have also occurred in late summer to early autumn, resulting from storms of tropical origin moving northeast along the Atlantic coast. Winter floods result from the occasional thaw, particularly during years of heavy snow or periods of rainfall on frozen ground. Other flood events have been caused by excessive rainfall upon saturated soils, yielding greater than normal runoff.

A regulatory floodplain with AE designation has been mapped along the Housatonic River, Shepaug River, Wewaka Brook, Clapboard Brook, and Hop Brook. Areas identified as providing flood storage are identified with A Zone designations, meaning they are regulated as floodplain, but flood elevations have not been established. Refer to Figure 2-5 for the areas of Bridgewater susceptible to flooding based on FEMA flood zones.

3.1.2 Capabilities

Floodplain Management, NFIP, and CRS

The Town has consistently participated in the NFIP since November 1, 1979, and intends to continue participation in the NFIP. SFHAs in Bridgewater are delineated on a Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS). The FIRM delineates areas within Bridgewater that are vulnerable to flooding. The original FIS and FIRMs for flooding sources in the town were published on November 1, 1979; FEMA has not updated the local FIS or FIRM since that date. However, FEMA is currently in the process of updating FIRMs for the Housatonic River Watershed, which will include Bridgewater.

The Town First Selectman is currently the NFIP administrator for the Town and oversees the enforcement of NFIP regulations. CT DEEP's model regulations were used to update flood damage prevention regulations as necessary. The degree of flood protection established by the variety of regulations in the Town exceeds the minimum reasonable for regulatory purposes under the NFIP because the town requires freeboard of one foot. The Town discourages new construction and substantial reconstruction within the 1% annual chance floodplain by raising concerns during the floodplain permit process. New development is strictly managed through the Town's land use process. The Town is not enrolled in the Community Rating System (CRS) program, as CRS is not considered to be a cost-effective program due to the small number of flood insurance policies in the town.

Ordinances, Regulations, and Plans

Regulations, codes, and ordinances that apply to flood hazard mitigation in conjunction with and in addition to NFIP regulations include:

- ***Zoning Regulations*:** The Town of Bridgewater Zoning Regulations were most recently revised on September 16, 2021. The regulations have been enacted to "protect and promote the public health, safety, welfare, convenience, and property values; to lessen congestion in the streets; to secure safety from fire, panic, flood, environmental damage, and other dangers; to provide adequate light, air, and water, to prevent overcrowding of land; to avoid undue concentration of population; to facilitate adequate provisions for transportation, water, sewerage, schools, parks, and other public requirements; to preserve and protect the unique character of the Town of Bridgewater; to protect site and features of historic and archaeological significance; to conserve and protect existing and potential surface-water and groundwater drinking supplies, inland wetlands and watercourses, and other valuable natural resources; to prevent unnecessary soil erosion and sedimentation; and to provide adequate housing opportunities' for all citizens of Bridgewater consistent with soil types, terrain, infrastructure capacity, and the rural character of the Town." Section 5.09 states that all uses in floodprone areas shall conform to the terms of the Bridgewater Flood damage Prevention Ordinance, as amended.

- ***Chapter 155 Flood Damage Prevention Ordinance:*** The 1993 Ordinance is essentially the local version of the NFIP regulations and was enacted "to promote the public health, safety and general welfare and to minimize public and private losses due to flood conditions in specific areas by provisions designed to (1) restrict or prohibit uses which are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities (2) require that uses vulnerable to floods, including facilities which serve those uses, be protected against flood damage at the time of initial construction (3) Control the alteration of natural floodplains, stream channels and natural protective barriers which are involved in the accommodation of flood waters (4) Control filling, grading, dredging and other development which may increase erosion or flood damage; and (5) Prevent or regulate the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards to other lands.

    - Section 155.02 defines substantial improvement as "any combination of repairs, reconstruction, alteration, or improvements to a structure, taking place over a one-year period, in which the cumulative cost equals or exceeds 50% of the market value of the structure.

    - Section 155.05(1) states that residential, non-residential, and substantial improvements located in Zones A1-30, AE, and AH shall have the lowest floor, including basement, elevated at least to one foot above the base flood elevation.

    - Section 155.05(7)(a) prohibits encroachments within floodways unless certification by a registered professional engineer is provided demonstrating that

encroachments shall not result in any (0.00) increase in flood levels during occurrence of the base flood discharge.

- Section 155.06 outlines the standards for subdivision proposals. Specifically, the following requirements shall apply in all special flood hazard areas (a) all subdivision proposals shall be consistent with the need to minimize flood damage; (b) all subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage; (c) all subdivision proposals shall have adequate drainage provided to reduce exposure to flood hazards and (d) in Zone A base flood elevation data shall be provided for subdivision proposals and other proposed developments (including manufactured home parks and subdivisions) which are five acres or 50 lots, whichever occurs first.

- ***Wetlands and Watercourse Regulations***. The Bridgewater Inland Wetland and Watercourse Regulations were adopted in July 1998 and were most recently updated in February 2021. The purpose of the Regulations is to protect the quality of the inland wetlands and watercourses within the Town of Bridgewater by making provisions for the protection, preservation, maintenance, and use of inland wetlands and watercourses, including deterring and inhibiting the danger of flood and pollution.

  - Section 2.1defines "Regulated Activity" as (a) any operation within or use of a wetland or watercourse involving removal or deposition of material, or any obstruction, construction, alteration or pollution, of such wetlands or watercourses; (b) any activity in a wetland, watercourse or buffer that involves excavating, mining, grading, filling, placing or removing earth materials (including pond spoils); constructing, installing or repairing buildings, septic systems or other man-made structures; clear cutting or grubbing land; storing petroleum based product in a storage container that is affixed to the ground or placed below the surface of the ground; disposing, treating, storing or managing hazardous wastes; Any activity located outside of a wetland, watercourse, or buffer area if the Commission determines that such activity is causing or is likely to cause the obstruction, alteration or pollution of a wetland or watercourse, provided that the Commission may make such determination only after providing an opportunity for a hearing, as well as at least ten days prior written notice of the hearing, to the owner of the land on which the activity is being conducted or is proposed to be conducted.

  - Section 6 states that no person may conduct or maintain a regulated activity without obtaining a permit. Section 7 outlines the permit application requirements.

- ***Subdivision Regulations.*** The Town's Subdivision Regulations, effective July 1998, establish minimum acceptable standards of street construction, regulate the layout and development of lots and streets, and outline measures to prevent degradation of

potable water sources, control erosion and siltation, preserve adequate and convenient open spaces, and retain the natural features of the land.

- Section 5.1 states that subdivisions shall be designed in a manner that avoids development within SFHAs, inland wetlands and watercourses, streambelt land areas, and public water supply watershed associated with the Shepaug River.

- Section 5.6 requires applicants to demonstrate compliance with the Town Flood Damage Prevention Ordinance.

- Section 5.7 requires up to 15% on land within a proposed subdivision to be preserved for open space, park, or playground use.

- Section 7.1 outlines design standards and states that drainage systems shall provide for the prevention of flooding and soil erosion and protection of wetlands and watercourses.

- ***Plan of Conservation and Development.*** This 2022 document is the Town's vision statement for future development. It is updated every 10 years. The plan "strongly affirms the goals of preserving the rural character of the Town, protecting its natural resources, preserving farm and open land, and promoting community facilities and services." Some recommendations regarding conservation and natural resources include:

  - Monitor erosion and runoffs and institute remedial action and testing where needed
  - Prioritize open space needs on arterial and main roads and for scenic areas and vistas

Overall, the intent of these plans and regulations is to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas of the Town of Bridgewater by the establishment of standards designed to:

- Protect human life and public health
- Minimize expenditure of money for costly flood control projects
- Minimize the need for rescue and relief efforts associated with flooding
- Minimize prolonged business interruptions
- Minimize damage to public facilities and utilities such as water and gas mains; electric, telephone, and sewer lines; and streets and bridges located in floodplains
- Maintain a stable tax base by providing for the sound use and development of floodprone areas in such a manner as to minimize flood blight areas
- Ensure that purchasers of property are notified of special flood hazards
- Ensure the continued eligibility of owners of property in Bridgewater for participation in the NFIP

<u>Drainage and Street Flooding</u>

Drainage and flooding complaints are typically routed to the Fire Department; however, the number of complaints received is reportedly minimal. The Town Department of Public Works

(DPW) is in charge of the maintenance of the town's drainage systems and performs clearing of bridges and culverts, and other maintenance as needed. The Town uses these reports to identify potential problems and plan for maintenance and upgrades.

Culverts with known drainage issues are addressed on a case-by-case basis through system maintenance and/or upgrades as necessary. Minor repairs and replacements with larger pipe diameters have been completed; however, many culverts fall under the jurisdiction of CT DOT.

Communications

The National Weather Service issues a flood watch or a flash flood watch for an area when conditions in or near the area are favorable for a flood or flash flood, respectively. A flash flood watch or flood watch does not necessarily mean that flooding will occur. The National Weather Service issues a flood warning or a flash flood warning for an area when parts of the area are either currently flooding, highly likely to flood, or when flooding is imminent.

> The Departments of Fire and Emergency Services are responsible for monitoring local flood warnings. The Town can access the National Weather Service website at http://www.weather.gov/ to obtain the latest flood watches and warnings before and during precipitation events.

The Town also receives regular weather updates through the Division of Emergency Management and Homeland Security (DEMHS) Region 5 email alerts, as well as watches and warnings through the National Weather Service.

Bridgewater subscribes to the State's CT Alert emergency notification system. A link to sign up for emergency notifications through the CT Alert system is posted on the Town website.

Actions Completed and New Capabilities

Bridgewater continues to maintain and improve its flood mitigation capabilities. CT DOT has performed maintenance and safety improvements to Route 133 in recent years, which continue to reduce road closures due to drainage issues.

3.1.3 Vulnerabilities and Risk Assessment

Flooding can impact a variety of river corridors and cause severe damages in the Town of Bridgewater, but most often occurs in the Housatonic River watershed. Flooding due to poor drainage and streambank erosion are other hazards in the town and can cause minor infrastructure damage and create nuisance flooding of yards and basements.

Vulnerability Analysis of Repetitive Loss Properties

Based on correspondence with the State of Connecticut NFIP Coordinator at the Connecticut DEEP, no repetitive loss properties (RLPs) are located in Bridgewater.

Vulnerability Analysis of Critical Facilities

The list of critical facilities provided by the Town was used with the parcel data to accurately locate each critical facility throughout the town. None of the critical facilities were found to lie within the 1% annual chance floodplain.

Vulnerability Analysis of Areas Along Watercourses

According to town officials, significant damaging floods in Bridgewater are not common. The main sources of flood risk are Clapboard Oak Brook, Wewaka Brook, Hop Brook, Housatonic River, and Shepaug River. Periodic flooding does occur along Clapboard Oak Brook, Wewaka Brook and Hop Brook. Known problem areas include:

- **Wewaka Brook**
  - Portions of roadways are at risk of flooding during extreme events.
  - A single-family home and mill adjacent to Route 133 have occasional flooding
  - Flooding problems have occurred at its confluence with the Housatonic River.
  - Flooding problems have occurred downstream of its confluence with Wewaka Brook Tributary and the Wewaka Road crossing.

- **Clapboard Oak Brook** – This brook has suffered severe erosion and scouring along its bank. DOT has reportedly contributed to heavy runoff with more impervious area and improvements being installed along Route 133 that did not take stormwater detention into account. The areas west of Route 133 are prone to landslides due to steep terrain and runoff-induced erosion. The Brook has also experienced previous flooding problems at its confluence with the Housatonic River.

- Scouring and washouts around undersized culverts have occasionally occurred. For example, Town staff have noted that the Hemlock Road culverts may be undersized.

Vulnerability of Other Areas

There are other areas around the town that suffer from street flooding due to undersized culverts. Scouring and washouts around undersized culverts have occasionally occurred.

3.2 DAM FAILURE

3.2.1 Setting

Dam failures can be triggered suddenly, with little or no warning, and often from other natural disasters such as floods and earthquakes. Dam failures often occur during flooding when the dam breaks under the additional force of floodwaters. In addition, a dam failure can cause a chain reaction where the sudden release of floodwaters causes the next dam downstream to fail. While flooding from a dam failure generally has a moderate geographic extent, the effects are potentially catastrophic. Fortunately, a major dam failure is considered only a possible hazard event in any given year.

The Connecticut DEEP administers the statewide Dam Safety Program and designates a classification to each state-inventoried dam based on its potential hazard.

- *Class AA*: negligible hazard potential
- Class A: low hazard potential
- Class BB: moderate hazard potential
- Class B: significant hazard potential
- Class C: high potential hazard

As of March 2026, DEEP inventory documents 18 dams within Town limits. Additionally, high hazard dams located in surrounding municipalities have the potential to affect the Town of Bridgewater in a failure event.

3.2.2 Capabilities

The Dam Safety Section of the Connecticut DEEP Inland Water Resources Division is charged with the responsibility for administration and enforcement of Connecticut's dam safety laws. The existing statutes require that permits be obtained to construct, repair, or alter dams, and that existing dams be inventoried and periodically inspected to ensure that their continued operation does not pose a hazard to life, health, or property.

Dams regulated by the Connecticut DEEP must be designed to pass the 1% annual chance rainfall event with one foot of freeboard, a factor of safety against overtopping.

Significant and high hazard dams are required to meet a design standard greater than the 1% annual chance rainfall event.

The dam safety requirements are codified in Sections 22a-401 through 22a-411, inclusive of the Connecticut General Statutes. Sections 22a-409-1 and 22a-409-2 of the Regulations of Connecticut State Agencies have been enacted and set requirements for the registration, classification, and inspection of dams. Dams must be inventoried by the owner with the Connecticut DEEP according to Connecticut Public Act 83-38.

Effective October 1, 2013, the owner of any high or significant hazard dam (Class B and C) must develop and implement an EAP after the Commissioner of DEEP adopts regulations. The EAP shall be updated every two years, and copies shall be filed with DEEP and the chief executive officer of any municipality that would potentially be affected in the event of an emergency. New regulations shall establish the requirements for such EAPs, including but not limited to (1)

criteria and standards for inundation studies and inundation zone mapping; (2) procedures for monitoring the dam or structure during periods of heavy rainfall and runoff, including personnel assignments and features of the dam to be inspected at given intervals during such periods; and (3) a formal notification system to alert appropriate local officials who are responsible for the warning and evacuation of residents in the inundation zone in the event of an emergency.

The CT DEEP also administers the Flood and Erosion Control Board program, which can provide non-competitive state funding for the repair of municipality-owned dams. Funding is limited by the State Bond Commission. State statute Section 25-84 allows municipalities to form Flood and Erosion Control Boards, but municipalities must take action to create the board within the context of the local government, such as by revising the municipal charter. The Town's Planning and Zoning Commission is responsible for reviewing all development activities that occur within flood hazard or flood-prone areas.

The Town uses the CT Alert system for emergency notification. The dam failure inundation mapping discussed in the next section can help streamline geographic contact areas if a major dam failure is imminent.

Actions Completed and New Capabilities

Bridgewater's dam failure mitigation capabilities continue to be sufficient for the community.

3.2.3 Vulnerabilities and Risk Assessment

As of 2013, there were 18 DEEP-inventoried dams within the Town of Bridgewater. These dams are summarized in Table 3-1. Dams and dam failure areas, where available, are shown in Figure 2-5.

Table 3-1: Dams Registered with the DEEP in the Town of Bridgewater

Number	Name	Class
1601	SKYLINE RIDGE ROAD POND DAM	BB
1602	WEWAKA BROOK DAM	A
1603	ORE POND DAM	Unclassified
1604	SARA POND DAM	A
1605	SHURICK DAM	A
1606	ISABELL DAM	A
1607	NUTMEG FARM DAM	A
1608	MARSH POND DAM	A
1609	YOUNG POND DAM	A
1610	SECOND HILL DAM	A
1611	KINSTLER POND DAM	A
1612	JOHNSONS POND DAM	BB
1613	PAPARAZZO DAM	A
1614	KIVIAT POND DAM	A
1615	ADESMAN POND DAM	AA
1616	SEGA POND DAM	Unclassified
1617	SHOOK POND DAM	AA
1618	WEATHERLEY BROOK POND DAM	AA

The primary dam failure concern relates to high hazard (Class B and C) dams located in adjacent municipalities upstream of Bridgewater. Failure of these structures would have an impact on Bridgewater. This section primarily discusses the possible effects of the failure of such dams. Failure of a Class C dam has a high potential for loss of life and extensive property and infrastructure damage.

Class B and C Dams

The western and southwest borders of Bridgewater are formed by watercourses. The Housatonic River forms the boundary between New Milford and Brookfield, and the Shepaug River forms the border with Southbury. Both of these watercourses have been modified by the construction of high hazard dams, and as such, failure of upstream structures has the potential to affect portions of Bridgewater.

The Rocky River Development consists of a series of dams used to impound water for hydroelectric power generation. It is a seasonal pumped storage facility located along the Housatonic River in New Milford. The powerhouse is located seven miles downstream of the Bulls Bridge Dam in New Milford. The structures are owned by First Light Power.

The main dam (Candlewood Lake Dam #9602) crosses the Rocky River approximately one mile upstream of its confluence with the Housatonic River and impounds Candlewood Lake. This is the upper reservoir of the development, with a surface area of 5,610 acres at normal maximum water levels and a contributing watershed of 40.4 square miles. Candlewood Lake has a maximum storage volume of 577,000 acre-feet. It is an earth-filled structure with a 952-foot-long core wall and a maximum height of 107 feet. The Canal Dike is an earthen embankment about 2500 feet in length and 72 feet in height, forming the north bank of the power canal to the intake structure. Three Lanesville Dikes were constructed at low points along the middle of the eastern shoreline of Candlewood Lake:

An EAP for the Candlewood Lake Dam was prepared in 2004 by Northeast Utilities Service Company for First Light Power. The plan addresses the requirements of FERC Project No. 2576 and includes Candlewood Lake Dam, Lake Candlewood Dike #2, North Lanesville Dike, and Middle Lanesville Dike on Candlewood Lake. The EAP contains a Dam Breach Analysis for the main dam and dikes, and Inundation Maps for a "sunny day" failure and failure under 100-year flood conditions.

The EAP describes the thorough maintenance and monitoring schedule for all structures. This includes continuous staffing at the Rocky River Station; weekly inspections of the dikes; monthly weir and piezometer readings; and annual inspections by FERC representatives. Water levels in Candlewood Lake are continuously monitored via a signal transmitted through an underground cable. Tailrace levels in the Housatonic River are also monitored continuously via a mounted staff gage. Monitors have also been installed at weirs downstream of the Danbury Dike, Middle Lanesville Dike, the Main Dam, and the Canal Dike.

Inundation mapping developed in conjunction with the dam breach analysis indicates the limits of dam failure impacts extending downstream through Bridgewater along its entire western

boundary. The flooding impacts also extend upstream along the Shepaug River on the town's southeast border with Southbury. Inundation areas include the length of Lake Lillinonah (Housatonic River), Lillinonah Lake Road North, the western end of Tappen Road, the State Route 133 crossing of the Housatonic River, and approximately 1,800 feet of Main Street north of the Housatonic River. The EAP specifies that representatives of the Rocky River Project are responsible for notifying Bridgewater government officials in the event of an emergency.

Other Dams

- The Johnsons Pond Dam, located on a northern branch of the Clapboard Oak Brook, is one of only two dams considered to have a moderate hazard.
- The Paparazzo dam, a low hazard dam located on Clapboard Oak Brook, had repairs reportedly accomplished around 2014, and is inspected by the State's Dam Safety Division. It is no longer considered a significant risk to downstream areas.

Beaver Dams

Finally, the Town of Bridgewater has expressed concern about the potential failure of beaver dams. Specifically, the 300-acre Three Rivers Farm (where the Housatonic, Shepaug, and Pook rivers converge), called Promisek, at the southern tip of Bridgewater, has a few beaver dams that could cause minor problems should a dam breach.

3.3 HURRICANES AND TROPICAL STORMS

3.3.1 Setting

Several types of hazards may be associated with tropical storms and hurricanes including heavy or tornado winds, heavy rains, and flooding. While only some of the areas of Bridgewater are susceptible to flooding damage caused by hurricanes, wind damage can occur anywhere in the town. Hurricanes, therefore, have the potential to affect any area within the Town of Bridgewater. A hurricane striking Bridgewater is considered a possible event each year and could cause critical damage to the town and its infrastructure.

Connecticut is located in FEMA Zone II regarding maximum expected wind speed. The maximum expected wind speed for a three-second gust is 160 mph. This wind speed could occur as a result of either a hurricane or a tornado in western Connecticut and southeastern New York.

Parts of tall and older trees may fall during heavy wind events, potentially damaging structures, utility lines, and vehicles.

3.3.2 Capabilities

The Paparazzo dam, a low hazard dam located on Clapboard Oak Brook, had repairs reportedly accomplished about eight years ago, and is inspected by the State's Dam Safety Division. It is no longer considered a significant risk to downstream areas. The code was then updated and amended in 2022, with the current code having been updated and effective as of October 1, 2022. The code specifies the design wind speed for construction in all Connecticut municipalities. Effective October 1, 2022, the ultimate design wind speed for the Town of Bridgewater is 110 mph for a Category 1 event, 120 mph for a Category 2, 125 mph for a Category 3, and 130 mph for a Category 4 or 5 hurricane event.

Tree cutting in town is managed through Public Works. The foreman is constantly identifying trees to be trimmed either by Eversource or vendors. Disposal of tree debris is not a concern in town. Bridgewater maintains an aggressive tree and tree limb trimming program. The town's Tree Warden is Bud Wright, and the tree trimming budget is $30,000 a year to subcontract trimming. The Tree Warden is aware of approximately ten to twelve dead trees in Bridgewater that must be addressed.

Eversource, the local electric utility, provides tree maintenance near its power lines. The utility has reportedly done an adequate job trimming trees.

During emergencies, the Town currently has three designated emergency shelters available for residents, as discussed previously. During Tropical Storm Irene, the Town used the CT Alert system to notify all residents in the SFHA that they may evacuate and use one of the shelters. The Board of Education used its notification system to notify people on its list of emergency procedures. Prior to severe storm events, the Town ensures that warning/notification systems and communication equipment are working properly and prepares for the possible evacuation of impacted areas.

Actions Completed and New Capabilities

Bridgewater continues to maintain and improve its capabilities for severe wind mitigation. Local implementation of the State Building Code is one of its primary tools in this effort.

3.3.3 Vulnerabilities and Risk Assessment

The Town of Bridgewater is vulnerable to hurricane damage from wind, flooding, and any tornadoes accompanying the storm. In fact, most of the damage to the town from historical tropical cyclones has been due to the effects of flooding. Bridgewater town officials report that the large southerly and westerly exposures in the town create significant wind vulnerabilities.

Some critical facilities are more susceptible than others to flooding damage associated with hurricane rainfall. Such facilities susceptible to flooding were discussed in Section 3.5. Bridgewater's housing stock consists of historic buildings more than 50 years old, and sometimes 100 years old; relatively younger buildings built before 1990, when the building code changed to address wind damage; and relatively recent buildings that utilize the new code changes. Since most of the existing housing stock in the town predates the recent code changes, many structures are highly susceptible to roof and window damage from high winds.

As the Town of Bridgewater is not affected by storm surge, the U.S. Army Corps of Engineers has not calculated hurricane sheltering needs for the town. The Town determines sheltering needs based upon areas damaged or needing to be evacuated within the town. During extended power outages, it is believed that only 10% to 20% of the affected population of the town will relocate, while most will stay in their homes until power is restored. In the case of a major (Category Three or above) hurricane, the Town will likely depend on state and federal aid to shelter displaced populations until normalcy is restored.

3.4 SUMMER STORMS AND TORNADOES

3.4.1 Setting

Heavy winds (including tornadoes and downbursts), lightning, heavy rain, hail, and flash floods are the primary hazards associated with summer storms. Like hurricanes and winter storms, summer storms and tornadoes have the potential to affect any area within the Town of Bridgewater. Because these types of storms and the hazards that result (flash flooding, wind, hail, and lightning) might have limited geographic extent, it is possible for a summer storm to harm one area within the town without harming another. The entire Town of Bridgewater is therefore susceptible to summer storms (including heavy rain, flash flooding, wind, hail, and lightning) and tornadoes.

Based on the historic record, it is considered highly likely that a summer storm that includes lightning will impact the Town of Bridgewater each year, although lightning strikes have a limited effect. Strong winds and hail are considered likely to occur during such storms, but also generally have limited effects. A tornado is considered a possible event in Litchfield County each year, capable of causing significant damage to a small area.

3.4.2 Capabilities

Warning is the primary mitigation method for tornadoes and thunderstorm-related hazards. The NOAA National Weather Service (NWS) issues watches and warnings when severe weather is likely to develop or has developed, respectively. Emergency management personnel take specific actions under different NWS watches and warnings to prepare for summer storms and tornado impacts.

Aside from warnings, several other methods of mitigation for wind damage are employed in Bridgewater, as explained in Section 0. In addition, the Connecticut State Building Code includes guidelines for the proper grounding of buildings and electrical boxes.

Eversource trims trees along power lines. The town tree warden can remove dead and diseased trees in rights-of-way or Town land, working through the Public Works Department. Town-owned equipment is used except for complex situations, which would call for the use of a contractor.

Municipal responsibilities relative to summer storm and tornado mitigation and preparedness include:

- Developing and disseminating emergency public information and instructions concerning tornadoes, thunderstorm wind, lightning, and hail safety, especially guidance regarding in-home protection and evacuation procedures and locations of public shelters;
- Designating appropriate shelter space in the community that could potentially withstand lightning and tornado impact;
- Periodically testing and exercising tornado response plans; and
- Putting emergency personnel on standby at the tornado "watch" stage.

For municipal property, the Town budget is generally adequate to handle summer storm damage.

Actions Completed and New Capabilities

Bridgewater continues to maintain and improve its capabilities for summer storm and tornado mitigation. Public alerts, tree trimming, and coordination with Eversource are its primary mitigation strategies.

3.4.3 Vulnerabilities and Risk Assessment

The entire Town of Bridgewater is at relatively equal risk for experiencing damage from summer storms and tornadoes.

By virtue of its location in Litchfield County, the Town of Bridgewater has moderate to high potential to experience tornado damage. In general, thunderstorms and hailstorms in Connecticut are more frequent in the western and northern parts of the state and less frequent in the southern and eastern parts. Thunderstorms are expected to impact Bridgewater 20 to 30 days each year. The majority of these events do not cause any measurable damage. Although lightning is usually associated with thunderstorms, it can occur on almost any day. The likelihood of lightning strikes in the Bridgewater area is very high during any given thunderstorm, although no one area of the town is at higher risk of lightning strikes. The risk of at least one hailstorm occurring in Bridgewater is considered moderate in any given year.

Most thunderstorm damage is caused by straight-line winds exceeding 100 mph. Straight-line winds occur as the first gust of a thunderstorm or from a downburst from a thunderstorm and have no associated rotation. The risk of downbursts occurring during such storms and damaging the Town of Bridgewater is believed to be low for any given year. All areas of the town are susceptible to damage from high winds, although more building damage is expected in the town center, while more tree damage is expected in the less densely populated areas.

Secondary damage from falling branches and trees is more common than direct wind damage to structures. Heavy winds can take down trees near power lines, leading to the start and spread of fires.

Brookfield has experienced damage from severe summer storms in the past. On June 9, 2012, intense winds accompanied by thunderstorms battered the town, causing power outages throughout the town and many downed trees. On May 27, 2014, a severe thunderstorm with winds up to 100 mph caused downed trees and flooded roads across Bridgewater and surrounding towns; approximately 98% of CL&P customers in Bridgewater were without power. On May 16, 2018, a microburst hit the southern area of Bridgewater, causing serious damage to properties, taking out power, and blocking roads with tree debris.

NOAA states that climate change could increase the frequency and intensity of tornadoes, so the pattern of occurrence in Connecticut may change in the future.

3.5 WINTER STORMS AND NOR'EASTERS

3.5.1 Setting

Winter events and the hazards that result (wind, snow, and ice) have widespread geographic extents and have the potential to affect any area of the Town of Bridgewater. Due to its variable elevation, the Town can have higher amounts of snow on the outskirts of the town than in the town center. In general, winter storms are considered highly likely to occur each year (although major storms are less frequent), and the hazards that result (nor'easter winds, snow, and blizzard conditions) can potentially have a significant effect over a large area of the town.

Most winter weather events occur between December and March. Winter weather may include snow, sleet, freezing rain, and cold temperatures. Most deaths from winter storms are indirectly related to the storm, such as from traffic accidents on icy roads and hypothermia from prolonged exposure to cold. Damage to trees and tree limbs, and the resultant downing of utility cables, are common effects of these types of events. Secondary effects include loss of power and heat, and flooding as a result of snowmelt.

3.5.2 Capabilities

Programs specific to winter storms generally include preparing plows and sand-and-salt trucks, tree trimming to protect power lines, and other associated snow removal and response preparations. The Town budget is generally adequate to handle winter storm damage, although the plowing budget is often depleted. The heavy snowfalls associated with the winter of 2010-2011 drained the Town's plowing budget and raised a high level of awareness of the danger that heavy snow poses to roofs.

The 2022 Connecticut Building Code specifies that a pressure of 35 pounds per square foot (psf) be used in Bridgewater as the base "ground snow load" when computing snow loads for different roof types.

The town owns five plowing trucks and is responsible for 36 miles of town roads. The standard salt mixture is used for deicing. Priority is given to plowing egresses to critical facilities. Homeowners, private associations, and businesses are responsible for plowing their own driveways and roads.

Prior to a winter weather event, the Town ensures that all warning/notification and communications systems are ready and ensures that appropriate equipment and supplies, especially snow removal equipment, are in place and in good working order. In some known problem areas, pre-storm treatment is applied to roadways to reduce the accumulation of snow. The Town also prepares for the possible evacuation and sheltering of populations that could be affected by the upcoming storm (especially the elderly and persons with special needs).

Actions Completed and New Capabilities

Bridgewater continues to maintain and improve its capabilities for winter storm mitigation. Public alerts, tree trimming, and road plowing are its primary mitigation strategies.

3.5.3 Vulnerabilities and Risk Assessment

The entire Town of Bridgewater is at relatively equal risk for experiencing damage from winter storms, although some areas (such as icing trouble spots and neighborhoods with a high concentration of flat roofs) are more susceptible. Many damages are relatively site-specific and occur to private property, while repairs for power outages are often widespread.

Based on the historic record, Connecticut experiences at least one major nor'easter every four years, along with a variety of minor and moderate snow and ice storms that occur nearly every winter. Connecticut residents can expect at least two or more severe winter weather events per season, including heavy snowstorms, potential blizzards, nor'easters, and potential ice storms.

After a storm, snow piled along the sides of roadways can reduce sightlines and reflect blinding amounts of sunlight. When coupled with slippery road conditions, poor sightlines, and heavy glare, these conditions create dangerous driving conditions. Stranded motorists, especially senior and/or handicapped citizens, are at particularly high risk of injury or death from exposure during a blizzard. The elderly population in Bridgewater, in particular, is susceptible to the impacts created by winter storms due to resource needs (heat, electricity loss, safe access to food, etc.).

The structures and utilities in the Town of Bridgewater are vulnerable to a variety of winter storm damage. Two barns collapsed in Bridgewater in January and February 2014. Tree limbs and some building structures may not be suited to withstand high wind and snow loads. Ice can damage or collapse power lines, render steep gradients impassable for motorists, undermine foundations, and cause "flood" damage from freezing water pipes in basements.

Town officials have indicated that the most vulnerable areas to snow drift are located along Town Line Road, Keeler Road, Curtis Road, Second Hill Road, Northrup Street, Rocky Hill Road, and Hut Hill Road. In other areas, the effects are generally mitigated through municipal plowing efforts. Drifting snow is often a problem after a lot is cleared for a new home or new landscaping.

Icing causes difficult driving conditions on Route 133 since there is not a lot of sun exposure. The Town's standard of presalting has been helpful in controlling ice in these problem areas. During the public meeting for this plan development, it was noted that icing is also a concern on Second Hill Road as water seeps from the road bank and freezes as it crosses the road. This could potentially be addressed by installing new drainage along 200 feet of the roadway.

Recent climate change studies predict a shorter winter season in Connecticut (by as much as two weeks), fewer snow-covered days, and a decreased overall snowpack. These models also predict that fewer, more intense precipitation events will occur with more precipitation falling as rain rather than snow. This trend suggests that future snowfall will consist of heavier (denser) snow, and the potential for ice storms will increase. Such changes will have a significant impact on how the state and its communities manage future winter storms and on how those storms affect residents, roads, and utilities across the state.

3.6 WILDFIRES AND DROUGHT

3.6.1 Setting

The ensuing discussion about wildfires is generally focused on the undeveloped wooded and shrubby areas of Bridgewater, along with low-density suburban type development found at the margins of these areas known as the wildland interface.

The Town of Bridgewater is generally considered a moderate risk area for small wildfires but a low risk area for large wildfires. Wildfires are of particular concern in outlying areas with poor access for firefighting equipment. Hazards associated with wildfires include property damage and loss of habitat. Wildfires of any type are considered a likely event each year, but when one occurs, it is generally contained to a small range with limited damage to non-forested areas.

In addition, Bridgewater and Litchfield County overall have experienced drought challenges over recent years.

The 2023 Connecticut Natural Hazard Mitigation Plan assumes that the State of Connecticut is likely to experience a drought every two to three years. This assumption is based on climate change projections that anticipate hotter, wetter conditions in the near future. Climate forecasts often suggest that while precipitation may increase, the overall pattern will generally be higher intensity storms, with longer than average dry periods between events. The State Plan also identifies that Litchfield County accounts for roughly 20.19% of the state's total number of farms, with a market value of over $46 million in product sold from these farms.

3.6.2 Capabilities

According to town officials, there are a few dry hydrants and a few ponds in town that are utilized for fire suppression. The Town has one all-terrain brush truck for fighting off-road fires and utilizes mutual aid agreements with all of its neighbors. Unlike on the West Coast of the United States, where fires are allowed to burn toward development and then stopped, the Bridgewater Fire Department responds to fires whenever possible. This proactive approach is believed to be effective for controlling wildfires. Finally, the DEEP Forestry Division uses rainfall data from a variety of sources to compile forest fire probability forecasts. This allows the DEEP and the Town to monitor drier areas of the state and prepare for forest fire conditions.

Fire protection regulations are outlined in the Subdivision Regulations. Specifically, Section 5.5 of the Subdivision Regulations states that "the Commission may, in its sole discretion, require, for fire protection, the construction of ponds, including dry hydrants, in any subdivision." However, local regulations do not require fire protection in buildings. This is a concern if an affordable housing proposal is again presented to the town's land use commissions. The town is interested in adding fire protection requirements to the Zoning Regulations.

Actions Completed and New Capabilities

Bridgewater's wildfire and drought mitigation capabilities continue to be sufficient. In addition, the fire department has increased the level of communication and alerts regarding wildfire danger. Mitigation consists primarily of drought and wildfire condition monitoring, development of mutual aid agreements, and installation and maintenance of wildfire-fighting resources.

3.6.3 Vulnerabilities and Risk Assessment

According to the Connecticut DEEP, the actual forest fire risk in Connecticut is low due to several factors. First, the overall incidence of forest fires is very low. According to the 2023 State Hazard Mitigation Plan, an average of 243 fires per year occurred from 2013 to 2022; an increase from the average 109 fires per year reported in the 2019 State HMP. In 2020 alone, there were a reported 603 wildland fire events. Secondly, as the wildfire/forest fire prone areas become fragmented due to development, the local fire departments have increased access to those neighborhoods for firefighting equipment. Third, the problematic interface areas, such as driveways too narrow to permit emergency vehicles, are site specific. Finally, trained firefighters at the local and state levels are readily available to fight fires in the state, and inter-municipal cooperation on such instances is common.

Minor brush fires have occurred in Bridgewater over the years. In March 2017, fire departments from Bridgewater, Brookfield, New Milford, and Roxbury responded to a brush fire near Main Street South that burned around 20 acres. There were some brush fires during the 2024 drought, but nothing of concern and minimal impact. The frequency and extent were no greater than in a normal year. This was credited to the Fire Department's strong public outreach program.

The most common causes of wildfires are arson, lightning strikes, and fires started from downed trees hitting electrical lines. Thus, wildfires can occur anywhere, at any time, in both undeveloped and lightly developed areas. The extensive forests and fields covering the state

are prime locations for a wildfire. In many areas, structures and subdivisions are built abutting forest borders, creating areas of particular vulnerability.

Wildfires are more common in rural areas than in developed areas, as most fires in populated areas are quickly noticed and contained. The likelihood of a severe wildfire developing is reduced by the state's extensive network of water features, which create natural breaks that can stop the spread of a fire. During prolonged droughts, these natural features may dry up, increasing the state's vulnerability to wildfires.

While the overall statewide fire risk is low, local risk is not necessarily the same as the statewide risk. Bridgewater town officials believe that the fuels are present in the forested parts of the town, and thus believe that the risk is present.

Most wildfires in Connecticut are relatively small. In the drought year of 1999, the average wildfire burned 5 acres, compared with the two most extreme wildfires recorded since 1986, which burned 300 acres each. Given the availability of firefighting water in the town, including the use of nearby water bodies, it is believed that this average value for a drought year and the extreme value are applicable to the town as well.

Town officials have noted that the Zoning Regulations do not include fire protection elements or any specifications requiring underground tanks or on-site water storage standards. The town has also indicated that there are a number of “dry fuel” areas throughout town that are considered vulnerable to wildfires.

The Wildland-Urban Interface (WUI) index is used to identify areas that may be at greater risk of wildfires based on the density of development in comparison to the amount of wildfire prone vegetation. Wildfire Risk Areas in Bridgewater are mapped in Figure 3-1.

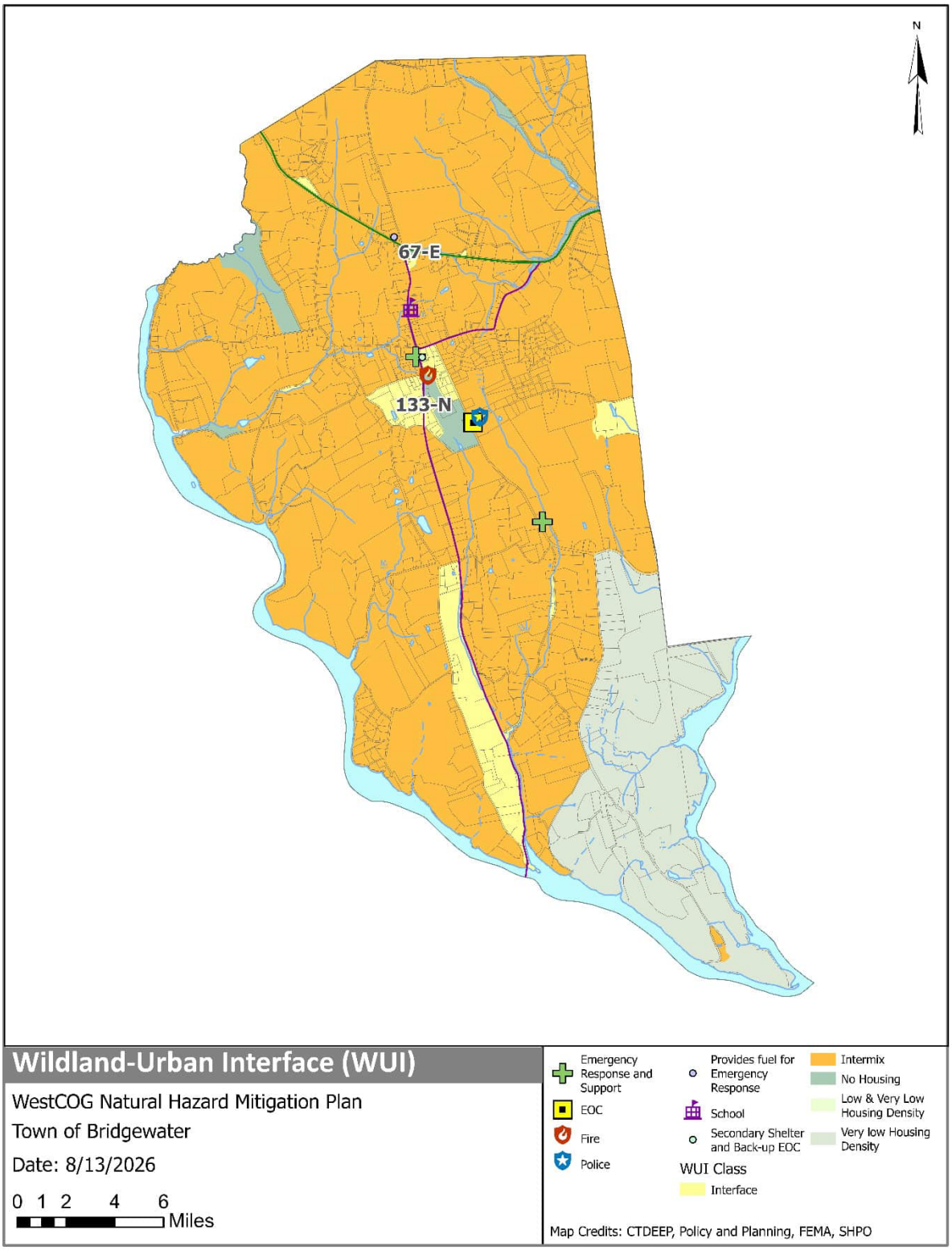

Figure 3-1 Wildfire Risk Areas

3.7 EARTHQUAKES AND LANDSLIDES

3.7.1 Setting

The entire Town of Bridgewater is susceptible to earthquake damage. However, even though earthquake damage has the potential to occur anywhere, both in the town and in the northeastern United States, the effects may be felt differently in some areas based on the type of geology. In general, earthquakes are considered a hazard that may possibly occur, but that may cause significant effects to a large area of the town.

3.7.2 Capabilities

The Connecticut Building Codes include design criteria for buildings specific to each municipality as adopted by the Building Officials and Code Administrators (BOCA). These include the seismic coefficients for building design in the Town of Bridgewater. The Town has adopted these codes for new construction, and they are enforced by the Building Official. Due to the infrequent nature of damaging earthquakes, land use policies in the Town do not directly address earthquake hazards. However, various documents do indirectly discuss areas susceptible to earthquake damage and regulations that help to minimize potential earthquake damage.

- ***Zoning Regulations***: Section 5.06 outlines soil erosion and sediment control regulations. Section 7.02.03 outlines application requirements and states that applicants shall provide the location of natural features, including but not limited to rock outcroppings, slopes in excess of 15%, soil types, and forested areas on the lot.
- ***Subdivision Regulations***. Section 2.2.9 requires that soil erosion and sediment control plans be developed for proposed projects.
- ***Plan of Conservation and Development.*** The 2012 plan recommends reviewing the definition of steep slopes and limiting residential development on steep slopes.

Actions Completed and New Capabilities

Earthquake mitigation capabilities in Bridgewater have not significantly changed in recent years and are deemed sufficient given the low risk of a hazardous event.

3.7.3 Vulnerabilities and Risk Assessment

Some areas in Bridgewater are underlain by sand and gravel. Structures in these areas are at increased risk from earthquakes due to amplification of seismic energy and/or collapse. The best mitigation for future development in areas of sandy material may be the application of the most stringent building codes or possibly the prohibition of new construction. However, many of these areas are located in floodplains associated with the streams and rivers in Bridgewater, so they are already regulated. The areas that are not at increased risk during an earthquake due to unstable soils are those underlain by glacial till, which includes most of the town.

Areas of steep slopes can collapse during an earthquake, creating landslides. Seismic activity can also break utility lines such as water mains, electric and telephone lines, and stormwater management systems. Damage to utility lines can lead to fires, especially in electric and gas mains. Dam failure can also pose a significant threat to developed areas during an earthquake. For this Plan, dam failure has been addressed separately.

3.8 EXTREME HEAT

3.8.1 Setting

Extreme heat can occur at any time during the warmer months and can be defined as temperatures that hover 10 degrees or more above the average high temperature for the region. The NWS defines extreme heat as a period of abnormally hot weather generally lasting more than two days. A *heat wave* typically lasts three or more days with temperatures over 90 degrees for those days. These events typically last for a prolonged period of time, can vary in extent and intensity, and are often accompanied by high humidity.

An extreme heat event or heat wave can occur anywhere throughout Connecticut and any of the WestCOG communities. According to the 2023 Connecticut State Natural Hazard Mitigation Plan, Fairfield and Litchfield counties experienced, between 2012 and 2021, the greatest and least average annual number of days with temperatures greater than 90 degrees, respectively. Fairfield County experienced five days on average, while Litchfield County experienced zero days on average.

Extreme heat events are expected to increase. The WestCOG Regional Climate Assessment (2026) notes that "by 2050, in a high CO_2-emissions scenario (RCP 8.5), average temperatures are expected to rise by approximately 5°F and continue to increase thereafter." The region is also likely to see an increase in heat wave days, summer days (where daily maximum temperatures are above 77 degrees), and tropical nights (where the daily minimum is below 68 degrees).

3.8.2 Capabilities

The Town of Bridgewater has identified cooling centers in town which can provide respite to members of the community during an extreme heat event or heat wave. The Town also monitors the National Weather Service and local forecasts for heat warnings and advisories, in addition to guidance set forth by the State.

Actions Completed and New Capabilities

The town has identified two cooling centers in Bridgewater.

3.8.3 Vulnerabilities and Risk Assessment

While the entire town is at risk of an extreme heat event, vulnerability can vary widely throughout the community as it does across Connecticut. To better characterize vulnerability to extreme heat, UConn CIRCA has developed a tool to aid in understanding extreme heat vulnerability for communities across the state. This tool, known as the Climate Change Vulnerability Index (CCVI), is comprised of dozens of factors that contribute to a community's heat sensitivity, exposure, adaptive capacity, and ultimately, the overall heat vulnerability. The CCVI can be used as a tool to characterize heat vulnerability for Bridgewater.

In general, the most vulnerable populations in Bridgewater would include the young and the elderly, and those populations living in the more densely developed areas in town, which may have reduced tree coverage and a greater density of impervious surface. According to the CCVI, more heat vulnerable areas in Town are concentrated along the Route 133 corridor and the along the eastern Bridgewater and Roxbury line.

Changes and Improvements

The town, like all WestCOG communities, is now including extreme heat in its HMP and beginning to plan more intently to address extreme heat impacts.

4.0 MITIGATION STRATEGIES AND ACTIONS

4.1 Goals and Objectives

Municipal goals and objectives have been made consistent regionally and are presented in the Multi-Jurisdictional Plan document.

4.2 Status of Mitigation Strategies and Actions from Previous HMP

The table below lists the mitigation actions developed in the previous HMP and their status. Actions to be carried forward are noted as such. Actions that have been institutionalized as capabilities are not carried forward.

#	Description	Status	Notes
1	Update Town Floodplain Ordinances to be consistent with the most recent Connecticut Building Code and DEEP model regulations.	Carry Forward	New FEMA mapping is expected and this action will be carried forward to account for the need to adopt.
2	Increase Substantial Damage and Substantial Improvement lookback periods to two or more years.	Carry Forward	No progress due to lack of staffing, commission interest, and development pressures.
3	Back up IT systems on the cloud and enable remote access of systems in case the physical systems are damaged or inaccessible during a natural disaster.	Capability	Town Hall is now on the cloud, can remote access in as long as there is internet and power (short term). Fire House is the same.
4	Identify locations for stormwater detention/retention in the town center area and along Route 133 to reduce peak flows that cause flashy conditions and streambank erosion along Clapboard Oak Brook.	Completed	The State has done some work on Route 133. Two events in the last five years where there was significant flooding, but not a lot of homes are impacted (small number of homes 1-3). State upgraded a pipe and installed erosion controls (large rocks). August 2024 storm did not produce the same level of flooding seen elsewhere. Town will continue to monitor.

#	Description	Status	Notes
5	Coordinate with CT SHPO to conduct historic resource surveys, focusing on areas within natural hazard risk zones (flood zones, wildfire hazard zones, steep slopes) to identify historic resources at risk and support the preparation of resiliency plans across the state.	Remove	This was an action pushed by the State 5 years ago. Could discard or turn into a regional action with WestCOG as the lead
6	Annually conduct an emergency operations exercise for a local terrorism, sabotage, or mass casualty event.	Capability	This could be a capability if the Town participates in DEMHS's annual exercise - They do a table top (40 people) every year and invite mutual aid and other agencies to participate
7	Conduct a Wewaka Brook flood mitigation study to identify appropriate methods of reducing flood risk along the stream corridor.	Remove	The state has increased the culvert side where Wewaka Brook reaches Route 133. Over the last 12 years this has not been an issue.
8	Pursue funding to acquire portable generators and acquire transfer switches to facilitate the use of portable generators when needed	Carry Forward	Would be nice to have 5-10 portable generators to provide backups, but there is concern if they just sit there without use. Will keep an eye on possible funding opportunities but this is more of a "nice to have" than a "need to have".

4.3 Prioritization of Strategies and Actions

The STAPLEE method, described in the Multi-Jurisdictional document, was used to score mitigation activities. The STAPLEE matrix in Appendix A provides the total scores. Actions have been further prioritized based on implementation cost, project urgency, and municipal and public input. The strategies below are presented in priority order, with qualitative priority levels listed for each.

4.4 Mitigation Strategies and Actions Implementation Table

The Town proposed to initiate several new mitigation actions for the upcoming five years. Additionally, a number of actions from the previous planning period are being carried forward or replaced with revised actions. These are listed below.

APPENDIX A

Appendix A: STAPLEE Matrix

Action #	Action Description	Responsible Entity	Cost Range	Funding Sources	Timeframe	Community Priority	Type of Action	Hazard	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Admin Benefit	Admin Cost	Political Benefit	Political Cost	Legel Benefit	Legal Cost	Economic Benefit	Economic Cost	Environ. Benefit	Environ. Cost	STAPLEE Score
BWR-01	Compare local floodplain regulations with Revised State Model Flood Regulations to identify opportunities for improved consistency when adopting the new FEMA maps for the Saugatuck, Southwestern CT, and Housatonic studies. Ensure that freeboard is consistent with the State Building Code.	P&Z	$0 - $25,000	Operating Budget	2026 or when directed by the State NFIP Coordinator	High	Prevention	Flooding	1	0	1	0	1	0	1	0	1	0	1	0	1	0	**9**
BWR-02	Increase Substantial Damage and Substantial Improvement lookback periods to two or more years.	P&Z	$0 - $25,000	Operating Budget	2028	Low	Prevention	Flooding	0	0	1	0	1	0	0	0	1	0	0	0	1	0	**5**
BWR-03	Pursue funding to acquire portable generators and acquire	EMD	$100,000 -	Capital Improvement Plan,	2027-2028	Low	More than one category	All Hazards	1	0	1	0	1	0	1	0	1	0	1	1	1	0	**7**

	transfer switches to facilitate the use of portable generators when needed		$500,000	FEMA HMA, STEAP																					
BWR-04	Identify and adopt a public alert system with improved capabilities for townwide emergency alert system such as CTAlerts or Everbridge.	EMD, BOS	$25,000 - $50,000	Capital Improvement Plan	2027-2028	High	Preparedness & Emergency Response	All Hazards	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	**5**
BWR-05	Acquire a fixed, permanent generator for the school to support the use of the facility as a backup shelter.	EMD	$100,000 - $500,000	Capital Improvement Plan, FEMA HMA, STEAP	2028-2029	Low	More than one category	All Hazards	1	0	1	0	1	0	1	0	1	0	1	1	1	0	**7**
BWR-06	As the opportunity arises, collaborate with CIRCA on the "Resilient Connecticut" project to advance further study in areas with flood and extreme heat risks.	BOS	$0 - $25,000	Operating Budget plus CIRCA funds from State and Federal sources	2028-2030	Low	More than one category	Multiple Hazards	1	0	1	0	1	1	1	0	0	0	1	0	1	0	**7**