TOWNS OF ABINGTON, EASTON, AND STOUGHTON

NATURAL HAZARD MITIGATION PLAN
2024 UPDATE

HAZARD MITIGATION PLAN

AUGUST 2024

BETA

IMPROVING COMMUNITIES TOGETHER

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1.0 INTRODUCTION

1.1 HAZARD MITIGATION PLANNING

Natural hazard mitigation planning explores the natural hazards of concern to a given community or region, identifies specific locations within the Planning Area that are vulnerable to those hazards, and develops strategies to permanently reduce or eliminate the risk to human life and property. The hazard mitigation planning process coordinates available resources and identifies locally appropriate policies, actions, and tools that will mitigate the impacts of hazards known to affect the community. The Federal Emergency Management Agency (FEMA) provides guidance on the local hazard mitigation planning process and relies on municipal and regional Hazard Mitigation Plans (HMPs) to help focus federal resources and make cost-effective funding decisions on mitigation projects that address locally identified needs. Approved mitigation plans are a requirement for local governments to be eligible for the projects funded under the Hazard Mitigation Assistance (HMA) and other FEMA programs, including the Rehabilitation of High Hazard Potential Dams (HHPD). Therefore, an approved and adopted HMP supports federal mitigation objectives while also serving as a local hazard mitigation roadmap with action recommendations that can be updated and revised to keep the plan current, relevant, and effective.

The Towns of Abington, Easton, and Stoughton were part of a multi-jurisdictional HMP facilitated by the Old Colony Planning Council (OCPC) in 2015, but when that plan expired all three communities were left without an active document to guide mitigation actions. The impacts of climate change are also an impetus for an update to the HMP in Abington, Easton, and Stoughton. Planning for natural hazards requires an understanding of the projected impacts of climate change, and how the warming of the earth's atmosphere will continue to impact global weather patterns and local severe weather events. Climate change will alter precipitation patterns, the severity of weather events, and temperature, all of which have impacts that can already be seen in Massachusetts. These changes demand forward thinking analysis of future risks and future vulnerabilities to mitigate the variable extent and severity of climate-influenced natural hazards. Figure 1.1 below shows the climate change projections for Massachusetts detailed in the 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan.

Figure 1.1: Priority impacts from the MA Climate Assessment

Source: Massachusetts State Hazard Mitigation and Climate Adaptation Plan, 2023.

Incorporation of climate change considerations into local and multi-jurisdictional HMPs helps to align the towns' goals with those of the State. The Massachusetts State Hazard Mitigation and Climate Adaptation Plan (SHMCAP) developed in 2018 was the first FEMA-approved State Hazard Mitigation Plan to actively consider the impacts of climate change in relation to the potential impacts of natural hazards.[1] Updated in 2023, the mission of the SHMCAP is to:

> Increase the capacity of the Commonwealth to prepare for, mitigate against, adapt to, and reduce the risk of natural and other hazards and climate impacts through the development of a comprehensive and integrated hazard mitigation and climate change adaptation program. … reduce risks from hazards and climate change impacts through an equitable and just approach to advance wellbeing in an equitable and sustainable manner; reduce loss of life; protect social, environmental, and economic wellbeing; and ensure health and safety of those living and visiting Massachusetts, including the built and natural environment that sustains it.[2]

The six goals set within the 2023 SHMCAP emphasize increasing statewide climate resilience and reducing the impacts of both natural hazards and climate change. Aligning local HMPs with the SHMCAP increases opportunities for local jurisdictions to receive funding and assistance from state and federal partners to mitigate impacts of hazards as they grow more dangerous and unpredictable with time due to climate change.

[1] "Chapter 7, State Strategy, Actions, and Implementation Plan ," Massachusetts State Hazard Mitigation and Climate Adaptation Plan, 2023.
[2] "Hazard Mitigation and Climate Adaptation Strategy," Massachusetts State Hazard Mitigation and Climate Adaptation Plan, 2023.

1.2 A MULTIJURISDICTIONAL APPROACH

The Disaster Mitigation Act of 2000 (DMA) places high priority on the continuation of the planning process after initial submittal of a Hazard Mitigation Plan. The previous plan relevant to the towns of Abington, Easton, and Stoughton was the 2015 Natural Hazard Mitigation Plan for the Old Colony Planning Council (OCPC) Region (henceforth referred to as the 2015 plan).[3] That plan updated a 2006 regional HMP and included hazard profiles and risk assessment for all 15 municipalities in the OCPC region. Many participating municipalities of the 2015 plan subsequently elected to develop single-jurisdictional HMPs, while others elected to continue with a multi-jurisdictional approach, only with smaller groupings. This 2024 multi-jurisdictional HMP serves as an update to the 2015 plan only for the Towns of Abington, Easton, and Stoughton. These towns will be referenced throughout the HMP update by name or collectively as the Planning Area.

This plan includes community and natural hazard profiles, risk assessments, and mitigation strategies for three municipalities across three counties: The Town of Abington in Plymouth County, the Town of Easton in Bristol County, and the Town of Stoughton in Norfolk County. These towns also span three watersheds: the Boston Harbor, South Coastal, and Taunton Watersheds. These three municipalities came together to update their HMP based on their regional connectedness in the Greater Brockton Area, but each community is presented with unique challenges and has developed individual mitigation strategies to mitigate future risk.

In order to complete this plan, the Committee reviewed the 2015 plan, the 2023 SHMCAP, each town's Municipal Vulnerability Plan (MVP), each town's Master Plan, Hazus analyses, and more. These plans helped to define the risk assessment and determine what each municipality has already done to incorporate climate resilience into the

[3] "Natural Hazard Mitigation Plan for the Old Colony Region," May 2015, Brockton, Old Colony Planning Council.

2.0 REGIONAL PROFILE

2.1 HISTORY

2.1.1 ABINGTON

The Town of Abington was founded in 1712 and developed its agricultural base until the mid-1800s, when it became an important center for the manufacture of shoes. With the decline of the shoe industry, the population of the town stabilized and varied little until after World War II.

Abington was impacted by rapid residential growth and development after the war and into the 1970's. Today, the town can be described as a small bedroom community of over 17,000 people with several small and medium sized businesses. Its primary residential character is a distinct departure from its manufacturing and agricultural past.[4] Abington is located in Plymouth County is bordered by Holbrook and Weymouth to the north, Rockland to the east, Whitman to the south, and by Brockton to the west.

2.1.2 EASTON

Easton is a rapidly growing suburban town located halfway between Boston and Providence. From 1970 to 2020 the population more than doubled, from 12,157 to 25,058. Situated on the northeastern edge of Bristol County, Easton borders both Norfolk and Plymouth counties. Historically, Easton's Bay Road served as the important link between Boston, an important port in the 19th century, and Taunton, the county seat of Bristol County.

Today, the town is conveniently located near Routes 24, 95, and 495. Easton is located in Bristol County and is bordered on the north by Stoughton and Sharon, on the east by Brockton and West Bridgewater, on the south by Raynham, Taunton, and Norton and on the west by Mansfield. [5]

2.1.3 STOUGHTON

The Town of Stoughton was officially incorporated in 1726 from a southwestern portion of Dorchester. Like its neighbors, Stoughton's early economy was primarily based on agriculture and shoemaking. Population growth remained stable until the mid-twentieth century, when the Town experienced a "substantial growth spurt," in the years after World War II.[6] In recent years, the town has been characterized by a primarily residential population, with major employers such as IKEA serving as anchors for commercial and retail activity.

The Town of Stoughton is located in Norfolk County and is bordered by Avon and Randolph to the east, Brockton and Easton to the south, Canton to the north, and Sharon to the west.

2.2 DEMOGRAPHICS

Table 2.1 below shows a breakdown of key demographic information in the towns of Abington, Easton, and Stoughton.

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[4] Town of Abington, Massachusetts. 2009. "Master Plan Update." https://www.abingtonma.gov/planning-board/pages/master-plan-update-2009

[5] Town of Easton, Massachusetts. 2008. "Historic Preservation Plan." https://www.easton.ma.us/departments/planning_and_community_development/plans_and_maps.php

[6] Town of Stoughton, Massachusetts. 2013. "Master Plan." https://www.stoughton.org/planning-board/pages/master-plan

Table 2.1: Planning Area Demographic Profile, U.S. Census, 2020

Profile Topic	Abington	Easton	Stoughton
Population	17,062	25,058	29,281
Population per square mile	1713	871	1820
Persons under 18 years, percent	23.1%	20.5%	19.0%
Persons 65 years and over, percent	13.6%	17.2%	19.4%
White alone, percent	87.3%	87.7%	69.0%
Black or African American alone, percent	2.5%	4.1%	17.0%
Asian alone, percent	3.2%	2.4%	5.1%
Hispanic or Latino, percent	3.1%	4.6%	3.7%
Median Household income (in 2020 dollars), 2016-2020	$106,001	$106,900	$90,201
High school graduate or higher, percent of persons aged 25 years+, 2016-2020	95.1%	95.9%	91.2%
Bachelor's degree or higher, percent of persons aged 25 years+, 2016-2020	38.2%	49.1%	40.3%
Owner-occupied housing unit rate, 2016-2020	74.2%	76.3%	74.6%
Median value of owner-occupied housing units, 2016-2020	$385,000	$421,800	$374,300

Source: U.S. Census, 2020

2.3 Land Use Characteristics

All four participating communities in this updated 2024 Hazard Mitigation Plan (HMP) – the Towns of Abington, Easton, and Stoughton – are part of what the 2015 Old Colony HMP describes as the "Greater Brockton" area.[7] Together, the three towns comprise a total area of approximately 56 square miles.[8]

Table 2.2: Planning Area Land Area

Town	Area (acres)	Area (sq mi)
Abington	6,505	10.17
Easton	18,670	29.2

[7] *Old Colony Hazard* Mitigation Plan, 2015: http://www.ocpcrpa.org/hmp.html
[8] 2020 Census Official Population Numbers

Town	Area (acres)	Area (sq mi)
Stoughton	10, 412	16.4

Source: MassGIS Town Data

Landforms in Southeastern Massachusetts are part of the Northeast Coastal Lowlands/Coastal Plain region, which was formed during the recession of the last glaciers 12,000 years ago. The area is characterized by low oval hills generally oriented north-south (drumlins), pockets of highly porous soils and major sand and gravel deposits, many swamps, rivers and ponds including un-drained kettle holes, and many areas with a high water table.[9] A high water table occurs when rock and ground materials join the upper soil layer due to an excessive amount of water due to heavy rain or water from higher elevations spreading into often low-lying areas containing soil with poor drainage. With high water tables fully saturating soil and decreasing the ability for soil to naturally drain, water may settle above ground and cause flooding or may seep into basements and foundations to cause damage.[10]

Table 2.3: Land Use per Square Mile and Percentage shows the breakdown of land cover in each town by their use. The largest portion of land cover in every town is residential land use.

Table 2.3: Land Use per Square Mile and Percentage

Town	Abington		Easton		Stoughton	
Commercial	0.63 sq mi.	6.20%	0.82 sq mi.	2.79%	0.94 sq mi.	5.73%
Industrial	0.09 sq mi.	0.87%	0.50 sq mi.	1.70%	0.74 sq mi.	4.51%
Open Space	2.46 sq mi.	24.17%	10.83 sq mi.	37.05%	5.36 sq mi.	32.59%
Other	2.09 sq mi.	20.55%	6.25 sq mi.	21.39%	2.75 sq mi.	16.73%
Residential	4.68 sq mi.	46.06%	10.38 sq mi.	35.50%	6.43 sq mi.	39.10%
Water	0.22 sq mi.	2.15%	0.46 sq mi.	1.57%	0.22 sq mi.	1.34%

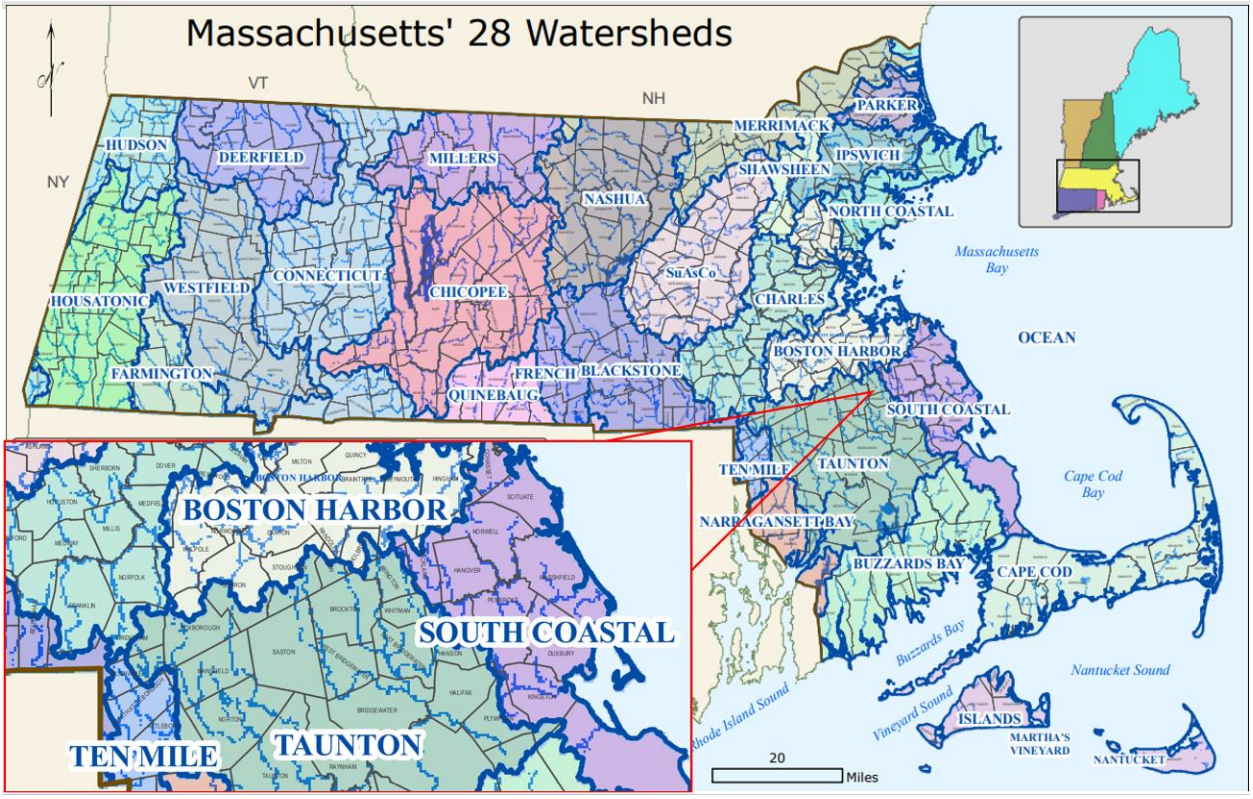
Source: Land Cover Land Use Data, MassGIS and the NOAA Office of Coastal Management (OCM), 2016[11]

2.4 WATER RESOURCES

The municipalities discussed in this HMP are in the Boston Harbor, South Coastal, and Taunton Watersheds, shown in Figure 2.1 below.

[9] Old Colony Hazard Mitigation Plan, 2015: http://www.ocpcrpa.org/hmp.html
[10] "High Water Table & Your Home: Basement Waterproofing, Groundworks, https://www.groundworks.com/glossary/high-water-table/.
[11] Note: Calculations for this table were based on MassGIS data, categorizations should be considered estimates.

Figure 2.1: Massachusetts Watersheds



Source: MassGIS Watershed Map

The Old Colony Planning Council (OCPC) region has a variety of water resources within its borders, including several rivers and streams, lakes and ponds (often man-made), and wetlands. Communities in the planning area are close to the headwaters of several basins. Historic development patterns have confined some stream segments to narrow walled channels to protect nearby buildings. This leaves no room for safe flooding and informal flood storage, and results in frequent bank overtopping during heavy rainfall events. The region also has many sections with "relatively tight soils limiting on-site disposal opportunities and groundwater yields."[12]

Most of the OCPC region is drained by the Taunton River and its tributaries with approximately 18 smaller rivers, streams, and brooks flowing into it. The Taunton River is the largest river in the region, running more than 37 miles from its headwaters at the confluence of Matfield and Town Rivers in Bridgewater to Mount Hope Bay. The region is also drained by three other watersheds, including the Neponset Watershed, which drains the northern parts of Avon and Stoughton; the South Coastal Watershed, which drains parts of Abington, Hanson, Pembroke, Kingston, Plympton and Plymouth; and the Buzzards Bay Watershed, which drains the western part of Plymouth.

The region also has a number of lakes and ponds. Some are natural glacial products, while others are impoundments made for power and water supplies. Major lakes and ponds in the region include the 354-acre Lake Nippenicket in Bridgewater.

[12] Old Colony Hazard Mitigation Plan, 2015: http://www.ocpcrpa.org/hmp.html

In addition to the water resources mentioned above, the Old Colony region is also home to a vast number of wetlands. More than 18% of the region rests in either a wetland or waterbody. The largest wetland area in the region is the 16,950-acre Hockomock Swamp Area of Critical Environmental Concern (ACEC), parts of which are located in portions of the communities of Bridgewater, Easton and West Bridgewater.

2.5 Assessed Valuations

The Massachusetts Department of Revenue (DOR) requires each community in the state to assess the value of all property every year and do a complete re-certification every third year. Both a re-certification and an interim year adjustment (the two years in between the triennial re-certification) include a detailed analysis of the appropriate sales data as a basis for adjusting property values. The goal is to keep the values as close to market value as possible and avoid an excessive swing in assessments in any one year. Table 2.4 below contains the FY2022 Assessed Values for all property classes in each community.[13]

Table 2.4: FY2022 Assessed Values by Class[14]

Town	Abington	Easton	Stoughton
Residential	$2,310,826,550	$3,658,935,702	$3,861,083,827
Commercial	$218,827,950	$271,013,298	$522,416,001
Industrial	$23,853,800	$111,006,700	$242,954,000
Open Space[15]	$56,752,400	$91,288,200	$92,394,784
Personal Property	$61,005,100	$100,704,435	$189,140,330
Total	$2,614,513,400	$4,141,660,135	$4,815,594,158

Source: Massachusetts Department of Revenue, Division of Local Services Municipal Databank: https://www.mass.gov/municipal-databank-data-analytics-including-cherry-sheets

2.6 Critical Infrastructure

The updated maps for each Town's critical facilities list are attached in Appendix A: Maps.

[13] Note: The Hazus outputs used in the HMP's Risk Assessment were run in 2021 and therefore use Assessor's data from the previous year (2020), so there is some discrepancy throughout the plan based on data availability.

[14] Massachusetts Department of Revenue, Division of Local Services Municipal Databank: https://www.mass.gov/municipal-databank-data-analytics-including-cherry-sheets

[15] Note: Open Space Numbers are estimates from the Land Cover Land Use Data from MassGIS found from using parcel data and finding the sum of all vacant land identifications under the "Style" field.

3.0 PLANNING PROCESS

3.1 OVERVIEW

The Towns of Abington, Easton, and Stoughton initiated a hazard mitigation plan update in 2022. The Towns' previous HMP was a regional plan that was prepared by the Old Colony Planning Council from 2011 – 2013 and was adopted by Abington in September 2015, and by Easton and Stoughton in October 2015. The Towns elected to come together as a group and hire a consultant to support the plan update process, and BETA Group, Inc. (BETA) was brought on in mid-2022 to lead the effort under the guidance of the Planning Area Hazard Mitigation Planning Committee (HMPC). This HMP is the result of a dedicated group of individuals working for several months to propose ways to improve and sustain Abington, Easton, and Stoughton's resiliency and mitigation practices.[16]

3.2 HAZARD MITIGATION PLANNING COMMITTEE

3.2.1 CORE COMMITTEE

In order to better facilitate the flow of data and information in between BETA and each town, the HMPC was led primarily by a Core Committee with one Town official from each jurisdiction. The members of the core committee are listed in Table 3.1.

Table 3.1: Members of the Core Committee

Name	Town	Title	Representing
Liz Shea	Abington	Assistant Town Planner	Town Planning
Stephanie Danielson	Easton	Director of Planning and Economic Development	Planning and Economic Development
Sara Blackader*	Stoughton	Fire Department Office Administrator	Fire Department

*Sara Blackader replaced Michael Carroll in the Core Committee in December 2022.

3.2.2 GENERAL COMMITTEE MEMBERS

The HMPC was organized by the members of the Core Committee with input from BETA Inc. The Committee members are listed in Table 3.2. Team members were asked to participate throughout the planning process by providing local expertise and reviewing consultant work.

Table 3.2: HMPC Members

Name	Town	Title	Representing
Albert Benson	Easton	Conservation Commission Member	Conservation Commission
Craig Horsfall	Stoughton	Assistant Town Engineer	Engineering Department

[16] The initial drafts of this document included the Town of East Bridgewater, which was later removed as of November 14, 2023 through coordination with MEMA.

Name	Town	Title	Representing
David DelPapa	Abington	Police Chief, Emergency Management Director	Police Department, Emergency Management
David Field	Easton	Director of Public Works	Public Works
Dottie Fulginiti	Easton	Chair of Select Board	Select Board
Gregory Swan	Easton	Director of Public Works	Department of Public Works
Jack Erickson	Stoughton	Building Commissioner & Zoning Officer	Building Department
James Conlon	Stoughton	Environmental Affairs Officer	Engineering Department
Jason Harris	Abington	Building Commissioner/Zoning Enforcement Officer	Inspectional Services/Building Department
Jeanne White	Abington	Administrative Assistant DPW and Board of Sewer Commissioners Member	Department of Public Works
Jennifer Carlino	Easton	Land Use and Environmental Planner	Environmental Protection
John M. Nuttall	Abington	Fire Chief	Fire Department
John Stone	Abington	Director of DPW	Department of Public Works
Justin Alexander	Easton	Fire Chief, Emergency Management Director	Fire Department, Emergency Management
Keith Boone	Easton	Police Chief	Police Department
Kelly Johnson	Abington	Recreation Director	Parks and Recreation and Department of Public Works
Kevin Greiner	Easton	Inspector of Buildings	Building Department
Kristin Kennedy	Easton	Director of Health and Community Services	Health & Community Services
Larry Langlois	Stoughton	Geographic Information System (GIS) Coordinator	Engineering Department
Lindsay Wright	Abington	Public Health RN	Health Department
Lynne LeBlanc	Easton	Chair of the Board of Health	Board of Health

Name	Town	Title	Representing
Marc Tisdelle	Stoughton	Town Engineer	Engineering Department
Michael Carroll	Stoughton	Fire Chief, Emergency Management Director	Fire Department, Emergency Management
Pamela McCarthy	Stoughton	Economic Development Director/Acting Town Planner	Planning Department
Paul Bunker	Abington	Chairman of Conservation Commission	Conservation Commission
Paul Giffune	Stoughton	DPW Superintendent	DPW
Phil McNulty	Stoughton	Water/Sewer Superintendent	DPW
Rich Tierney	Easton	Water Operations Manager	Water Operations

3.3 THE PLANNING PROCESS

The HMP planning process was designed to provide opportunities for stakeholders to be involved, through invitations to participate and direct requests for information or input to inform the plan's content. The planning process consisted of HMPC meetings; public postings and press releases; public input via an online survey and public meetings; HMPC, public, neighboring community, and local organization review of the plan; and the MEMA, FEMA, and local adoption review processes to achieve the final adoption of the plan. No stakeholder groups offered input on the development of the plan beyond those involved with the committee. Members of the public contributed through the public survey and public workshop.

The first kickoff meeting was held October 11, 2022, between BETA Inc. and the initial members of the Core Committee, Liz Shea, Stephanie Danielson, and Michael Carroll. The meeting laid out the timeline and goals for completing the project, as well as described the level of collaboration required by HMPC members, recommendations for the HMPC, and levels of public outreach necessary for the project.

The first full Committee Meeting was held October 27, 2022. The meeting discussed the scope of the project, scheduled the following four meetings of the HMPC and formalized the list of hazards to be addressed in the plan. This meeting also introduced the HMPC to the hazard mitigation planning process and their role providing information about the Town's critical facilities, sites of new developments, and local historic hazard events. At this meeting committee members discussed the most effective methods of public outreach available to them to encourage local residents, businesses, institutions, and organizations to participate in the planning process. Committee members decided that each Town's social media, project webpages, and Town calendars have strong community viewership and participation from the stakeholders mentioned above, and would be effective outlets for transmitting project information for the public. Each committee member also agreed to use their own platforms, whether that be as a member of a town board, committee, or neighborhood association, to keep constituents up to date and actively invite participation and input to the process.

The public survey was sent out November 11, 2022. The survey was directed at Planning Area residents and organizations. The public survey received 296 total responses and was closed on May 1, 2023. Of the responses, 91 came from Abington, 78 from Easton, 15 from Stoughton, and 3 other responses included town employees. The results of the public survey, including each question, are in Appendix C: Public Survey. The public survey was delivered to each town's Senior Center by Committee Members to reach out to vulnerable populations.

The second full Committee Meeting was held December 8, 2022. The meeting included a review and update of local critical facilities, review of past hazard events, discussion of the public survey and preparation for the public meeting to be held on January 17, 2023.

The Public Meeting was held January 17, 2023. Attendees from all three towns were present and engaged in discussion about potential natural hazard events and how those events have impacted their towns and neighborhoods previously. Discussion also focused on potential mitigation actions to take to reduce each community's vulnerability. A full summary of the meeting is located in Appendix B: Public Engagement. Advertising for the public meeting was completed on each town's social media and town calendars. The meeting was held virtually for optimal accessibility of attendance.

The third Committee Meeting was held virtually on February 3, 2023. Committee members reflected on the Public Meeting and reviewed and provided a status update on the 2015 mitigation strategies and updated the plan goals first established in 2015.

The fourth Committee Meeting was held virtually on April 6, 2023. The Committee broke into separate groups and continued review of 2015 mitigation actions, expanded upon new actions, and began a STAPLEE process to prioritize the new actions. This work was continued by each committee offline. The Committee then went over the details for mitigation action implementation and the process of local, state, and federal adoption for the HMP.

The Town of Easton Core Committee Member and BETA met with the representatives of Morse Pond Dam, the only High Hazard Potential Dam in the Planning Area, on August 14, 2023. The representatives provided information about the current status of the dam and the Town and representatives agreed that future collaboration regarding the dam's condition should be included as a mitigation action for Easton within the HMP.

The first semi-full draft of the plan was released to the public September 20, 2023 and sent to neighboring municipalities' emergency management agencies and planning departments. The plan was posted on each Town's official website and social media for local organizations and institutions to sit for a 30-day public comment and review period. This draft was missing several portions of East Bridgewater's of information due to slow receipt of Town input. The draft was sent on September 21, 2023 to planning staff and boards in Avon, Bridgewater, Brockton, Mansfield, Rockland, Sharon, West Bridgewater, and Whitman; the plan was also sent to the OCPC. The draft plan received no public comments.

Throughout the plan, committee members sought input from local representatives of businesses, academia and non-profit organizations, including community-based organizations by keeping project webpages updated and publishing all public events and interaction on Town social media. Members of the Planning and Economic Development offices were also present on the committee to help represent and make the connection between the planning process and local businesses.

The full draft was submitted to MEMA on December 26, 2023 after the removal of East Bridgewater from the plan.

Table 3.3: Summary of HMPC Activities

Date	Summary of Action
10/11/2022	Kickoff Meeting
10/27/2022	First Committee Meeting
11/11/2022	Public Survey Sent to public
12/08/2022	Second Committee Meeting
01/17/2023	Public Outreach Meeting
02/03/2023	Third Committee Meeting
04/06/2023	Fourth Committee Meeting
08/14/2023	Meeting with Representatives of Morse Pond Dam
08/18/2023	Draft Plan provided to Committee
9/20/2023	Draft Plan released for 30-day public comment and sent to neighboring communities
12/16/2023	Full draft submitted to MEMA
5/13/2024	Full draft submitted to FEMA
7/23/2024	FEMA Comments Received
8/1/2024	Final draft submitted to FEMA
TBD	Final plan adopted by the Abington Board of Selectmen and the Easton and Stoughton Select Boards

4.0 Risk Assessment

4.1 Introduction to Natural Hazards and Risk Assessment

The Risk Assessment chapter identifies the hazards that can affect the Planning Area, and analyzes each of these hazards with respect to: where each hazard might affect the planning area (location); its potential magnitude (extent); how often events have happened in the past (previous occurrences); how likely they are to occur in the future (future probability); what parts of the community are most likely to be affected (vulnerability); and the potential consequences (impacts).

Risk, for the purpose of hazard mitigation planning, is the potential for damage or loss created by the interaction of natural hazards with assets, such as buildings, infrastructure, or natural and cultural resources.

The 2015 Old Colony HMP identified the following hazards of concern across the entire OCPC region:

- Flood-Related Hazards – Flooding
- Wind-Related Hazards – Hurricanes & Tropical Storms, Tornadoes
- Winter-Related Hazards – Winter Storms
- Coastal Related Hazards – Coastal Erosion & Shoreline Change
- Fire-Related Hazards – Wildfires, Major Urban Fires
- Geologic Hazards – Earthquakes, Landslides and Tsunamis
- Other Natural Hazards – Extreme Temperatures

The 2015 plan hazards were re-assessed by the HMPC and minor adjustments to the list were made. This plan does not include any coastal communities; therefore, the 2024 HMP will not profile any coastal related hazards including tsunamis, coastal erosion, or shoreline change. The 2024 plan also excludes the landslide hazard, which was determined by the HMPC to be low risk and low severity, and not of concern in the Planning Area. The 2024 plan reorganizes several of the 2015 plan natural hazards into new categories:

- Flood-Related Hazards – Flooding, Dam Failure
- Wind-Related Hazards – Hurricanes & Tropical Storms, Severe Storms, Tornadoes
- Winter-Related Hazards – Winter Storms
- Fire-Related Hazards – Wildfires
- Geologic Hazards – Earthquakes
- Other Natural Hazards – Extreme Temperatures, Drought, Invasive Species

This chapter describes each natural hazard of concern in the Planning Area, each hazard's location of occurrence, each hazard's history within the area, the natural hazard's potential severity and magnitude of impact, and the frequency of a natural hazard event/the probability of an event's future occurrence. **Impacts** are the consequences or effects of each hazard on the community's assets identified in the vulnerability assessment. The chapter's vulnerability assessment estimates the exposure of people, buildings, and infrastructure to the impacts of a natural hazard, and helps to assess the scale and severity the hazards may have on each community. Multiple factors of vulnerability are discussed in this chapter. The vulnerability assessment within each hazard profile includes qualitative analyses based on community

and HMPC input and based on Hazus data collected and analyzed in 2021 from the OCPC,[17] to determine the risk each natural hazard has on each community.

The Hazus Program (also known as Hazus-MH) is a FEMA tool that analyzes potential risks by modelling for future potential damages from earthquakes, floods, tsunamis, and hurricanes. The final output provides a glimpse at community vulnerabilities and potential losses associated with large natural hazard events. The full Hazus reports for selected hazards are attached in Appendix D: Hazus Reports.

The factors for rating the risk of each natural hazard are listed in Table 4.1 below. The Risk Rating will help Abington, Easton, and Stoughton determine what actions to prioritize to best mitigate the natural hazards that pose the highest risks to each town.

Table 4.1: Guidelines for 2024 HMP Hazard Risk Rating

Rating Category	Levels of Risk	Risk Rating
Frequency/ Likelihood of Occurrence	**Unlikely:** Less than 1% probability in the next year **Possible:** Between 1-10% probability in the next year **Likely:** Between 10-100% probability in the next year **Highly Likely:** Near 100% probability in the next year	Unlikely = 0 Possible = 1 Likely = 2 Highly Likely = 3
Location of Occurrence/ Impact Area Assessment	**Small:** Less than 10% of the town affected **Medium:** 10 to 50% of the town affected **Large:** More than 50% of the town affected	Small = 1 Medium = 2 Large = 3
Severity/ Extent of Impacts	**Minor:** Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of facilities. **Limited:** Minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 day. **Critical:** Multiple injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 week. **Catastrophic:** Multiple deaths and injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of facilities for 30 days or more.	Minor = 0 Limited = 1 Critical = 2 Catastrophic = 3

Source: Frequency and Severity ratings reworked from 2023 Massachusetts State Hazard Mitigation Plan

4.2 Cumulative Risk Rating

The tables below detail the individual risk assessment ratings for each community. Scores were determined after the completion of the risk assessment from the rating scale listed in Table 4.1. Hurricanes & Tropical Storms and Winter Storms are the consistent highest risk natural hazards across all four towns.

[17] The Hazus results were completed in 2021 and use 2010 Census data to perform analyses involving population so they do not align with 2022 population counts. This Hazus data set will be use as a representative depiction of possible damage in each municipality.

Table 4.2: Abington Risk Assessment

Hazard	Frequency/Probability of Future Occurrence	Impact Area Assessment	Severity/Extent	Risk Rating
Hurricanes & Tropical Storms	Likely	Large	Critical	8
Winter Storms	Highly Likely	Large	Critical	8
Severe Storms	Likely	Large	Limited	7
Extreme Temperatures	Highly Likely	Large	Limited	7
Flooding	Highly Likely	Small	Limited	5
Tornadoes	Possible	Small	Critical	5
Earthquakes	Unlikely	Large	Critical	5
Wildfires	Likely	Small	Limited	4
Drought	Likely	Medium	Minor	4
Dam Failure	Possible	Medium	Limited	3
Invasive Species	Likely	Small	Minor	3

Table 4.3: Easton Risk Assessment

Hazard	Frequency/Probability of Future Occurrence	Impact Area Assessment	Severity/Extent	Risk Rating
Hurricanes & Tropical Storms	Likely	Large	Critical	8
Winter Storms	Highly Likely	Large	Critical	8
Extreme Temperatures	Highly Likely	Large	Limited	7
Severe Storms	Likely	Large	Limited	6
Tornadoes	Possible	Small	Critical	5
Earthquakes	Unlikely	Large	Critical	5
Drought	Likely	Large	Minor	5
Flooding	Highly Likely	Small	Minor	4
Wildfires	Likely	Small	Limited	4
Dam Failure	Possible	Small	Limited	3
Invasive Species	Likely	Small	Minor	3

Table 4.4: Stoughton Risk Assessment

Hazard	Frequency/Probability of Future Occurrence	Impact Area Assessment	Severity/Extent	Risk Rating
Hurricanes & Tropical Storms	Likely	Large	Critical	8
Winter Storms	Highly Likely	Large	Critical	8
Extreme Temperatures	Highly Likely	Large	Limited	7
Severe Storms	Likely	Large	Limited	6
Tornadoes	Possible	Small	Critical	5
Earthquakes	Unlikely	Large	Critical	5
Flooding	Highly Likely	Small	Minor	4
Wildfires	Likely	Small	Limited	4
Drought	Likely	Medium	Minor	4
Invasive Species	Likely	Small	Minor	3
Dam Failure	Possible	Small	Minor	2

4.3 FEMA AND STATE DECLARED DISASTERS

Table 4.5 below shows the FEMA Declared Disaster Events that have occurred in the Planning Area since the 2015 plan was developed. These disaster declarations[18] are designated under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, (42 U.S.C. 5121 et seq.), also known as the Stafford Act. The Stafford Act provides the mechanism by which the President of the United States can declare a disaster and therefore designate counties eligible for Hazard Mitigation Assistance.[19]

Table 4.5: FEMA Declared Disaster Events Since 2015

FEMA Declaration	Event Date	MA Counties Designated	Title/Description and Damage Amount (if available)
DR-4110-MA	February 8-9, 2013	Statewide	Severe Winter storm, blizzard conditions, and flooding
DR-4214-MA	January 26-29, 2015	Barnstable, Bristol, Dukes, Essex, Middlesex, Nantucket, Norfolk,	Severe Winter Storm, two fatalities were reported

[18] Table 4.5 only shows natural hazard-related disasters from FEMA and excludes other events like the SARS-CoV-2 pandemic as this plan does not address public health or infectious disease hazards.
[19] Robert T. Stafford Disaster Relief and Emergency Assistance Act, PL 100-707, signed into law November 23, 1988; amended the Disaster Relief Act of 1974, PL 93-288.

FEMA Declaration	Event Date	MA Counties Designated	Title/Description and Damage Amount (if available)
		Plymouth, Suffolk, Worcester	
DR-4372-MA	Mar 2-3, 2018	Barnstable, Bristol, Essex, Nantucket, Norfolk, Plymouth	Severe Winter Storm. There were two storm-related deaths.
DR-4379-MA	March 13-14, 2018	Essex, Middlesex, Norfolk, Suffolk, Worcester	Severe Winter Storm
DR-4651-MA	Jan 28, 2022 - Jan 29, 2022	Bristol, Norfolk, Plymouth, Suffolk	Strong Winter Storm

Source: Declared Disasters, Massachusetts, FEMA, 2013-2022, https://www.fema.gov/disaster/declarations.

The FEMA Declared Disasters that occurred within Bristol, Norfolk, and Plymouth counties are all related to Winter Storm events. Any other Declared Disaster event did not directly impact one of this HMP's Planning Area– but may have still had a significant impact on Massachusetts and the Planning Area's surrounding communities. The other declared disasters within this time period include all declarations of major disaster and emergency related to the Massachusetts Covid-19 Pandemic (DR-4496-MA, EM-3484, EM-3497, and EM-3438-MA). These disaster declarations are not recorded in Table 4.5 due to the HMP's focus on natural hazards only.

The State of Massachusetts also declares local States of Emergency which are declared by the Governor in the event or imminent threat of a disaster, including severe natural hazard events. The announcement of a State of Emergency does not guarantee any state funding as there is no state disaster relief fund. A list of recently declared States of Emergency in the Massachusetts are listed in the table below.

Table 4.6: Massachusetts State of Emergency Declarations[20]

Declaration Date	Termination Date	Event
2/8/13	2/13/13	Winter Storm
1/26/15	1/28/15	Winter Storm
2/9/15	2/25/15	Winter Storm
3/3/18	3/6/18	Coastal Storm

[20] State of Emergency Information, Massachusetts Emergency Management Agency (MEMA), https://www.mass.gov/info-details/state-of-emergency-information?_gl=1*tdhzc9*_ga*MTI0NDc3MjU4MC4xNjA1MDMyODc4*_ga_MCLPEGW7WM*MTcyMjQyMzg4OS4yOS4wLjE3MjI0MjM4ODkuMC4wLjA

Declaration Date	Termination Date	Event
9/12/23	9/16/23	Severe Weather & Flooding
9/15/23	9/16/23	Hurricane Lee

4.4 New and Upcoming Developments

Each town within the Planning Area provided a list of new and upcoming developments to determine if any of these developments interacted with areas where natural hazard events may occur. Each Town identified the areas of new development and how they may be impacted by natural hazards due to their location within any higher risk areas. The tables below showcase the new and upcoming development projects in each town in the Planning Area, including the number of developments since the previous 2015 HMP, and those known to be upcoming within the next five years. Several smaller projects, including those of single-family residential homes, are not included in the matrices below to protect the privacy of residents.

The tables below showcase the new and upcoming development projects in Abington, Easton, and Stoughton that may have an impact on flooding in town. Information includes the number of developments since the previous 2015 HMP, and those known to be upcoming within the next five years. The final column in each table describes any of the previous or potential impacts to hazard areas or hazard mitigation efforts from each new or upcoming development.

In Abington, the largest impacts from new developments include increases to impervious surface in town, which may impact the town's ability to mitigate flooding. No other additional hazard mitigation impacts other than traffic impacts were noted, and the upcoming developments will not increase or decrease Abington's vulnerability to natural hazards.

In Easton, recent development adheres to the trend of benefiting at risk populations, including having a positive impact water supply distribution capability, providing shelter or care for vulnerable populations, and having a positive impact on water quality. Upcoming developments were not noted to have any additional impacts to Easton's vulnerability during natural hazard events.

Stoughton's recent developments were not noted to have any impact on hazard areas and did not increase or decrease Stoughton's vulnerability to natural hazards. The one upcoming development is noted to provide enhanced emergency response.

Table 4.7: Abington Recent and Planned Development

Property or Development Name	Type	Status	# of Structures	Known Hazard Zone(s)	Natural Hazard Risk and Mitigation Measures Taken
Recent Development from 2015 to Present					
154 Bedford St	Residential	Complete	10	No	Increase in the impervious surface
323 Centre Ave	Commercial	Complete	1	No	Traffic congestion
Add to bldg. 999 Adams St	Commercial	Complete	1	No	Land disturbance, detention basin constructed
1148 Bedford St	Residential	Complete	7	No	Increase in impervious surface
351 Summer St	Residential	Complete	10	Some wetlands	Increase impervious surface, near a stream, Raingarden installed
194 Bedford St	Commercial	Complete	Daycare	No	Increased pavement
1145 Bedford St	Commercial	Complete	1	No	Potential drainage impact. Bldg. set on a hill
500 Chestnut St	Commercial	Partially complete	5	Near wetlands	Large project, impervious surfaces set well off road
121 Randolph St	Residential	Almost complete	50	River runs adjacent and under	Wetlands and river all intertwined
176 Wales St	Residential	Just begun	10	No	Increase in imperious surface
Known or Anticipated Development in the Next Five (5) Years					
0 Plymouth St	Residential	Permitted 40B	144	Potential wetlands	Increase in traffic
0 Summer St	Residential	Permitted 40B	199	Wetlands	The site has very wet areas, traffic
0 Hancock St	Commercial	Current staging area for utility		Wetlands	Portions of the site are wet; traffic could be an issue as well

Table 4.8: Easton Recent and Planned Development

Property or Development Name	Type	Status	# of Structures	Known Hazard Zone(s)	Natural Hazard Risk and Mitigation Measures Taken
Recent Development from 2015 to Present					
530 & 550 Turnpike Street	Industrial/Warehouse	Under Construction	2	No	N/A
Fusion Investments, 464 & 466 Foundry St.	Residential	Future	1	No	N/A
PFAS Treatment Facility 95R & 100R Washington	Pump Stations, Water Supply	Under Construction	1	Close to Special Flood Hazard Area (SFHA)	Will have a positive impact water supply distribution capability
PFAS Treatment Facility, 218R Center Street	Pump Station, Water Supply	Under construction	1	Close to SFHA	Will have a positive impact on water quality
Water Quality Treatment Facility, 12 Red Mill Road	Pump Station, Water Supply	Under construction	1	No	Will have a positive impact on water quality
House of Possibilities, 350 Washington St	Community Based Respite Care Service Programs	Under construction	1	No	Provides shelter for vulnerable population
Easton Early Elementary School K-2, 50 Spooner Street	School	Completed	1	No	Will provide care for vulnerable population (children)
Stonehill College School of Business, 320 Washington Street	Academic Building	Existing	1	No	N/A
Langwater Farm, 215 Washington St	Farm	Completed	1	No	N/A
Known or Anticipated Development in the Next Five (5) Years					

Property or Development Name	Type	Status	# of Structures	Known Hazard Zone(s)	Natural Hazard Risk and Mitigation Measures Taken
Baron Estates, 71 Mill Street	Residential	Under construction	26	No	N/A
Owl Ridge Estates, 58 Mill Street	Residential	Under construction	6	No	N/A
Sawmill Village, 560 Foundry Street	Residential	Future	44	SFHA	N/A
Goodspeed Estates, 345 Center Street	Residential	Under construction	8	No	N/A
Webber Farm, 363 Bay Road	Residential	Under construction	14	No	N/A

Table 4.9: Stoughton Recent and Planned Development

Property or Development Name	Type	Status	# of Structures	Known Hazard Zone(s)	Natural Hazard Risk and Mitigation Measures Taken
Recent Development from 2015 to Present					
Village at Goddard Highlands, McEachron Dr, Murray Circle, Ripley Dr, Scofield Dr	Residential	Complete	70	No	N/A
1781-1795 Central St	Residential/Apt Building	Under Construction	5	No	N/A
Stoughton High School, 232 Pearl St	Commercial	Complete	1	No	N/A
Town of Stoughton DPW Water, 742 Plain St	Commercial	Complete	1	No	N/A

Property or Development Name	Type	Status	# of Structures	Known Hazard Zone(s)	Natural Hazard Risk and Mitigation Measures Taken
Town of Stoughton DPW Pump, 1000 Bay Rd	Commercial	Complete	1	No	N/A
3 Morton St	Mixed Use	Complete	1	No	N/A
760-770 Washington St	Mixed Use	Under Construction	3	No	N/A
630 Washington St	Commercial	Complete	1	No	N/A
104 Page St	Commercial	Complete	1	No	N/A
Harbor One Bank, 470 Washington St	Commercial	Complete	1	No	N/A
The Learning Center	Commercial	Complete	1	No	N/A
Known or Anticipated Development in the Next Five (5) Years					
Stoughton Fire Dept -Station 1, 400 Prospect St	Commercial	Future	1	No	Will provide enhanced emergency response

4.5 FLOOD-RELATED HAZARDS

4.5.1 FLOODING

DESCRIPTION

Floods are some of the most frequent natural hazard events to occur in the U.S.[21] Floods are defined by FEMA's National Flood Insurance Program (NFIP) as:

> A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from: overflow of inland or tidal waters; unusual and rapid accumulation or runoff of surface waters from any source; or a mudflow; or the collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above.[22]

For this plan, flood-related hazards include riverine flooding and urban drainage flooding. Riverine flooding occurs when persistent moderate to heavy rain falls over a period causing local rivers and streams to crest their banks and flow into the adjacent floodplain. Severe storms with heavy rain can generate flash floods which strike and end quickly. Urban drainage flooding due to runoff occurs when water runs over impervious surfaces (paved areas, building roofs, and highways) whether from overbank flooding from rivers or in a flash flood scenario.

The number of flooding events is only expected to increase as climate change impacts the severity and frequency of precipitation events. Heavy precipitation or overbank flooding could also have a more intense impact on areas where vegetation has been depleted due to increased drought events through climate change.

LOCATION OF OCCURRENCE

Flood extent can be defined through many means, including but not limited to land area inundated, volume of water, velocity of flow, extent of damages, etc. In order to develop risk-based standards and policies for the NFIP, FEMA flood risk products focus primarily on two extents of flooding: the 100- and 500-year events. The 100-year flood, defined as a flood that has a 1 in 100 chance of occurring each year, is a larger and higher risk flood. Lower risk but more frequent floods, such as the 10-year or 10% chance flood, have a higher chance of occurring. The standard for ranking floods for the NFIP is the 100-year or base flood.[23]

The base flood is recorded spatially in floodplains as a Special Flood Hazard Area (SFHA) on Flood Insurance Rate Maps (FIRMs) that show where NFIP policies are regulated. FIRMs are used to provide the minimum standards for delineated floodplains to protect the natural ecosystems from the impacts of development and to protect home and property owners from flood damage. Floodplains are low-lying areas adjacent to rivers, lakes, oceans, or other water bodies that are part of a complex system subject to geomorphic and hydrologic processes.[24] In Massachusetts, floodplain management is addressed through coordination with the NFIP, through the statewide mandatory building code, and by local floodplain and

[21] FEMA Building Science Branch, Hazard Overview: Floods, FEMA P-1086, March 2017
[22] National Flood Insurance Program Requirements, 59.1 - Flood Definition, 2020.
[23] National Flood Insurance Program (NFIP) Floodplain Management Requirements, A Study Guide and Desk Reference for Local officials – FEMA 480, 2005
[24] "Floodplains," Massachusetts State Hazard Mitigation and Climate Action Plan, 2023.

wetlands protections discussed in Existing Capabilities and Mitigation Measures to ensure flood resistant construction.[25]

The impact area for flooding will be determined by looking at areas of repeated flooding, and a comparison of the Town's total acreage compared to the portion of the Town covered by the SFHA.

ABINGTON

The HMPC and survey respondents identified areas of repeated flooding in Abington, primarily caused by urban drainage flooding. Currently, known areas of flooding in Abington include:

- Route 123 and Route 139
- Lynwood Street towards Mill Street (in the front of new development and former farm property)
- John L. Sullivan Way
- Centre Avenue
- Buckboard Lane
- Carriage Hill Drive
- Dorsey Street
- Green Street Park
- Meadow on Platt Street that borders French Stream
- West Chapel Street (area reported since new development)
- Lincoln Street
- Hancock Street
- Central Street east of Route 58
- Route 18
- Wyman Road and Summit Road
- Behind Frolio Middle School

According to the Plymouth County Flood Insurance Study, potential flooding sources in Abington include the Shumatuscacant River and tributaries thereof, Stream River, Beaver Brook, French Stream, and Meadow Brook.[26]

In Abington, around 672 acres of the town lies within the SFHA.[27] Of properties in town, seven properties are located in the SFHA, two in Zone A and five in Zone AE, while nine properties are located in Zone X (where insurance is not required due to a more moderate risk of flooding). The total impact area for riverine flooding and urban drainage flooding in Abington is **Small:** *Less than 10% of the town affected.*

As Table 4.7 suggests, future development along Hancock Street may increase flooding risk for properties in the area. Similarly, the Town's Master Plan contains goals to focus development in the downtown Abington and North Abington commercial centers,[28] which may increase flood risk along Centre Avenue, Route 123 and Route 139, Central Street east of Route 58, and Route 18 if proper mitigation measures for retaining stormwater onsite are not taken.

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[25] Commonwealth of Massachusetts, "Floodplain Management," Mass.gov, n.d., https://www.mass.gov/guides/floodplain-management.
[26] Flood Insurance Study, Plymouth County, Massachusetts, Number 25023CV001D, FEMA, July 22, 2020.
[27] Determined through GIS analysis using National Flood Hazard Layer.
[28] Abington Master Plan Update, Town of Abington Planning Board, 2019.

EASTON

The HMPC and survey respondents identified areas of repeated flooding in town. Currently, known areas of flooding in Easton include:

- Sawmill Pond Rd at Bay Rd around #486
- Prospect Road around #80 and #33
- Culvert under Route 138 near the mobile home park
- Bay Rd near #224 has a confluence of three culverts
- Purchase Street near Easton Country Club
- Linden Street
- Eleanore Strasse Road
- Chester Avenue

According to the Plymouth County Flood Insurance Study, potential flooding sources in Easton include the Black Brook, Gowards Brook, Mulberry Brook, Poquanticut Brook, Queset Brook, and Whitman Brook. Of these, the Black Brook and Queset Brook drain the largest areas, with 6.2 square miles and 9.5 square miles, respectively. These larger collection areas lead to higher flows during rain events – the peak discharge rate of the Black Brook below Foundry Street in Easton during a 1% annual chance event is 550 cfs (cubic feet per second), while Queset Brook at State Route 138 in Easton passes 600 cfs during the same type of event.[29]

In Easton, around 5,056 acres of the town lies within the SFHA.[30] Of all properties in town, 32 properties are located in the SFHA, 23 in Zone A and nine in Zone AE, while 32 properties are located in Zone X.[31] The total impact area for riverine flooding and urban drainage flooding in Easton is **Small:** *Less than 10% of the town affected.*

The planned residential development at Bay Road noted in Table 4.8 may impact the flooding noted in multiple areas along that route, and the addition of residential structures has the potential to increase the number of vulnerable people in the area.[32]

STOUGHTON

The HMPC and survey respondents identified areas of repeated flooding in town. Currently, known areas of flooding in Stoughton include:

- Red Wing Brook area
- Pratts Court
- Ames Long Pond (specifically culvert on West Street at Ames Long Pond between Highland Street and Lake Drive)
- Storm drain behind Police Station
- Steep Hill Brook

According to the Norfolk County Flood Insurance Study, potential flooding sources in Stoughton include Dorchester Brook, Norroway Brook (upper) and its tributaries, Pinewood Pond, Redwing Brook and its tributary, upper and lower Steep Hill Brook and its tributaries, a tributary to Steep Hill Brook, Woods Pond, and York Brook. The most significant of these is Steep Hill Brook, which drains an area of 5.3 square miles

[29] Flood Insurance Study, Bristol County, Massachusetts, Number 25005CV001D, FEMA, July 6, 2021.
[30] Determined through GIS analysis using National Flood Hazard Layer.
[31] Flood Insurance Study, Bristol County, Massachusetts, Number 25005CV001D, FEMA, July 6, 2021.
[32] Envision Easton Community Master Plan, December, 2014.

and produces a discharge of 1,225 cfs at the Stoughton/ Canton corporate limits during the 1% annual chance rainfall event.[33]

In Stoughton, round 1,389 acres of the town lies within the SFHA.[34] Of all properties in town, 13 properties are located in the SFHA, 11 in Zone A and two in Zone AE, while 41 properties are located in Zone X.[35] The total impact area for riverine flooding and urban drainage flooding in Stoughton is **Small:** *Less than 10% of the town affected*.

Stoughton's Master Plan promotes infill development in the Town Center, which may increase stormwater runoff by introducing more impervious surfaces and place greater strain on the existing storm sewer network. Appropriate stormwater management design and implementation as part of new developments will be imperative to ensure new development does not increase flood risk in the Town Center.

History of Localized Flooding

Abington

The Shumatuscacant River, though relatively small, has in the past overtopped its banks. This overtopping was primarily due to inadequate culverts, which could not pass the storm runoff. Landfilling in some areas has contributed to this problem. In 1955, the Town of Abington experienced flooding problems due to two successive tropical hurricanes. Inadequate culverts at Adams, Central, and Center Streets caused localized flooding along the Shumatuscacant River. In March 1968, a relatively heavy rainstorm, preceded by another storm one week earlier, again caused high flows; but, due to the construction of three new bridges at Adams, Central, and Center Streets, the Shumatuscacant River did not cause any significant flooding problems. [36]

Table 4.10 below lists known flooding events and damages recorded in the Planning Area Counties of Plymouth, Bristol, and Norfolk from 2015 through 2022. Specific losses incurred by Abington, Easton, and Stoughton are noted where information was available. This table does not list every natural hazard event that has occurred in the Planning Area, but does list those that impacted Abington, Easton, or Stoughton directly, or which resulted in a high damage cost in any of the associated counties.

Table 4.10 Flooding History in Bristol, Norfolk, and Plymouth Counties

Date	Type	County Affected	Damage (County-wide)	Comments
3/29/2010	Flooding	Bristol, Plymouth, Norfolk	$23,580,000 (B)*, $8,320,000 (N) $8,070,000 (P)	Flooding occurred across the Planning Area closing roads, and school and causing major damage. (Related to FEMA-1895-DR declared in 2010)
7/28/2015	Flooding	Plymouth	$15,000	Showers and thunderstorms blocked several roads and trapped 2 cars.
6/21/2016	Flash Flood	Bristol	$30,000	Over an inch of rain fell in 30 minutes in one area and several streets flooded.

[33] Flood Insurance Study, Norfolk County, Massachusetts, Number 25021CV001D, FEMA, July 6, 2021.
[34] Determined through GIS analysis using National Flood Hazard Layer.
[35] Flood Insurance Study, Norfolk County, Massachusetts, Number 25021CV001D, FEMA, July 6, 2021.
[36] Flood Insurance Study, Plymouth County, Massachusetts, Number 25023CV001D, FEMA, July 22, 2020.

Date	Type	County Affected	Damage (County-wide)	Comments
10/25/2017	Flooding	Bristol	No damages documented	Flooding in Easton on Belmont St., public report of a Storm Total Rainfall of 2.96 inches.
7/6/2018	Flooding	Norfolk	$10,000	Rainfall of 1.90 inches was reported in Stoughton.
7/12/2019	Flash Flood	Plymouth	$70,000	Heavy rain and thunderstorms, Plymouth recorded 5.32 inches of rain in just six hours.
6/28/2020	Flash Flood, Flooding	Norfolk, Plymouth	$30,000,000 (N) and $15,000 (P)	Flash flood caused intense damage to Norwood Hospital, cars, and nearly 250 homes. Flooding reported on Pearl St. in Stoughton and several other streets in Plymouth County.
9/2/2021	Flash Flood	Bristol, Plymouth	$120,000 (B) and $25,000 (P)	Flash flooding in Fall River blocked roads and damaged vehicles. In Plymouth County, floods washed out a portion of a road in Wareham.

Source: National Centers for Environmental Information Storm Events Database, NOAA, 2015-2022.

*Notes: (B) – Bristol County; (N) – Norfolk County; (P) – Plymouth County

Severity & Potential Extent of Impact

Flooding can cause injury or death to at-risk populations like seniors, Environmental Justice populations, low-income population, and populations with mobility challenges and can cause significant damage to property, crops, and livestock. At-risk populations may also struggle to respond physically to a flooding event that requires evacuation, or financially if property damage were to occur. People and property in FEMA defined floodplains or areas that are in close vicinity to a waterbody are most at risk from floods. Additionally, certain types of infrastructure are at a higher risk from floods including dams, bridges, culverts and roadways. Unmaintained stormwater infrastructure can also exacerbate flooding issues during high precipitation events because of the lack of sufficient drainage.[37]

Abington

According to the Plymouth County FIS, the 1955 flood was a catalyst for major flood mitigation investment in the Town of Abington. In 1956, three new bridges were constructed at Adams, Central, and Center Streets to replace the culverts damaged in 1955. These bridges were designed to safely pass the "rare" flood that, in 1955, was considered to be the flood flow expected to occur once every 500 to 1,000 years. These bridges have decreased the potential for major flooding. The bridge at Center Street serves as the outlet for Island Grove Pond. At the upstream face of the bridge, an overflow weir was constructed and

[37] Abington Conservation Commission Chairman, Public Meeting held January 17, 2023

provided with stop planks and the capability of being adjusted to different weir elevations, providing some flood protection capabilities.[38]

The Hazus data for Abington discusses the potential severity of 100-year and 500-year flood events. The potential severity for a major flood event occurring in Abington is **Limited:** *Minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 day.* This rating was determined by taking the replacement cost value of all buildings in the SFHA and then calculating what percentage of that number is the Value of Damages to determine around 7.8% of all the total replacement value will be damaged in a 100-year event, and 14.6% in a 500-year event.

Table 4.11: Abington Flood Hazus Data, 2021

Abington		100-Year	500-Year
Building Characteristics	Estimated Total Number of Buildings	5,222	5,222
	Estimated total building replacement value	$2,154,962,000	$2,154,962,000
	Estimated residential building value	$1,751,843,000	$1,751,843,000
	Estimated non-residential building value	$403,119,000	$403,119,000
Building Damages	Damage Level 1-10	11	24
	Damage Level 11-20	4	11
	Damage Level 21-30	0	1
	Damage Level 31-40	0	0
	Damage Level 41-50	0	0
	Damage Level >50	0	0
Population Needs	# of households displaced	72	125
	# of people seeking public shelter	0	1
Debris	Building debris generated (tons)	93	251
	# of truckloads to clear building debris (@ 25 tons/truck)	4	11
Value of Damages (Millions of dollars)	Value of Damages (Millions of dollars)	$16,960,000	$31,430,000
	Total property damage	$5,090,000	$10,070,000
	Total losses due to business interruption	$11,870,000	$21,360,000

Approximately 91% of the building damages (and 81% of the building value) under the 100-year flood scenario were associated with residential housing.[39] A 100-year flood event has the potential to cause damage to a total of 15 buildings, 2 commercial and 13 residential buildings. The 500-yr flood event has the potential to cause damage to 36 buildings, 5 commercial and 31 residential buildings. Hazus also measures for potential losses of emergency operation centers, fire stations, hospitals, police stations, and

[38] Flood Insurance Study, Plymouth County, Massachusetts, Number 25023CV001D, FEMA, July 22, 2020.
[39] FEMA Hazus: Flood Global Risk Report (100-year flood events), May 2021

schools.[40] In both the 100- and 500-year flood events Hazus estimates no damage will be done to any essential facilities (critical facilities) in Abington. With the possibility of increased frequency and severity of storms and precipitation due to climate change, the number of damaging flood events in Abington will increase in coming years, with the potential to cause more damage than current estimates predict.

EASTON

The Hazus data for Easton discusses the potential severity of 100-year and 500-year flood events. The potential severity for a major flood event occurring in Easton is **Minor:** *Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of facilities*. Around 0.71% of all the total replacement value will be damaged in a 100-year event, and 1.1% in a 500-year event.

Table 4.12: Easton Flood Hazus Data, 2021[41]

Easton		100-Year	500-Year
Building Characteristics	Estimated Total Number of Buildings	7,494	7,494
	Estimated total building replacement value	$3,588,253,000	$3,588,253,000
	Estimated residential building value	$2,683,317,000	$2,683,317,000
	Estimated non-residential building value	$904,936,000	$904,936,000
Building Damages	Damage Level 1-10	27	37
	Damage Level 11-20	6	9
	Damage Level 21-30	2	3
	Damage Level 31-40	0	1
	Damage Level 41-50	0	0
	Damage Level >50	0	0
Population Needs	# of households displaced	154	203
	# of people seeking public shelter	2	9
Debris	Building debris generated (tons)	200	621
	# of truckloads to clear building debris (@ 25 tons/truck)	9	25
Value of Damages (Millions of dollars)	Value of Damages (Millions of dollars)	$25,470,000	$38,990,000
	Total property damage	$13,610,000	$23,020,000
	Total losses due to business interruption	$11,860,000	$15,960,000

Approximately 90% of the buildings (and around 75% of the building value) under the 100-year flood scenario were associated with residential housing.[42] A 100-year flood event has the potential to cause

[40] FEMA Hazus: Flood Global Risk Report (100 and 500-year flood events), May 2021
[41] Ibid.
[42] FEMA Hazus: Flood Global Risk Report (100-year flood events), May 2021

damage to a total of 35 buildings, all of which are residential buildings. The 500-yr flood event has the potential to cause damage to 50 buildings, also all residential buildings. Hazus measures for potential losses of emergency operation centers, fire stations, hospitals, police stations, and schools. In both the 100- and 500-year flood events Hazus estimates no damage will be done to any essential facilities (critical facilities) in Easton.[43] With the possibility of increased frequency and severity of storms and precipitation due to climate change, the number of damaging flood events in Easton will increase in coming years, with the potential to cause more damage than current estimates predict.

STOUGHTON

The Hazus data for Stoughton discusses the potential severity of 100-year and 500-year flood events. The potential severity for a major flood event occurring in Stoughton **Minor:** *Very few injuries, if any. Only minor property damage and minimal disruption on quality of life.* Around 0.51% of all the total replacement value will be damaged in a 100-year event, and 0.59% in a 500-year event.

Table 4.13: Stoughton Flood Hazus Data, 2021[44]

Stoughton		100-Year	500-Year
Building Characteristics	Estimated Total Number of Buildings	9,285	9,285
	Estimated total building replacement value	$4,325,604,000	$4,325,604,000
	Estimated residential building value	$3,087,567,000	$3,087,567,000
	Estimated non-residential building value	$1,238,037,000	$1,238,037,000
Building Damages	Damage Level 1-10	22	25
	Damage Level 11-20	3	6
	Damage Level 21-30	0	0
	Damage Level 31-40	0	0
	Damage Level 41-50	0	0
	Damage Level >50	0	0
Population Needs	# of households displaced	83	99
	# of people seeking public shelter	7	6
Debris	Building debris generated (tons)	114	144
	# of truckloads to clear building debris (@ 25 tons/truck)	5	6
Value of Damages (Millions of dollars)	Value of Damages (Millions of dollars)	$22,200,000	$25,650,000
	Total property damage	$11,460,000	$13,190,000
	Total losses due to business interruption	$10,740,000	$12,470,000

[43] FEMA Hazus: Flood Global Risk Report (100 and 500-year flood events), May 2021
[44] Ibid.

Approximately 90% of the buildings (and around 71% of the building value) under the 100-year flood scenario were associated with residential housing.[45] A 100-year flood event has the potential to cause damage to a total of 25 buildings, all of which are residential buildings. The 500-yr flood event has the potential to cause damage to 31 buildings, also all residential buildings. Hazus measures for potential losses of emergency operation centers, fire stations, hospitals, police stations, and schools. In both the 100- and 500-year flood events Hazus estimates no damage will be done to any essential facilities (critical facilities) in Stoughton. [46] With the possibility of increased frequency and severity of storms and precipitation due to climate change, the number of damaging flood events in Stoughton will increase in coming years, with the potential to cause more damage than current estimates predict.

FREQUENCY & PROBABILITY OF FUTURE OCCURRENCE

Based on the frequency of past flood events, and the projections for increased frequency and intensity of precipitation events in the coming years due to climate change, the probability of future occurrence of the flood hazard is **Highly Likely:** *Near 100% probability in the next year.*

4.5.2 DAM FAILURE

DESCRIPTION

Dam failures can result from natural events, human-induced events, or a combination of both. Failures due to natural events such as prolonged periods of rainfall and flooding can result in overtopping, which is the most common cause of dam failure. Overtopping happens when a dam's spillway capacity is exceeded and portions of the dam begin to pass water, erode, and ultimately fail. Other causes of dam failure include design flaws, foundation failure, internal soil erosion, inadequate maintenance, or misoperation.

Complete failure can occur if internal erosion or overtopping causes a structural breach, which releases a high-velocity wall of debris-laden water that rushes downstream, damaging or destroying everything in its path. An additional hazard concern is the cascading effect of one dam failure causing multiple dam failures downstream due to the sudden release of flow.

Dams are classified by size and hazard ratings. The size classification provides a relative description of small, medium, or large, based on the storage capacity and height of the impounded water. The hazard classification relates to the probable consequences of failure or misoperation of the dam; however, the categorization does not relate to the current condition of the dam. The hazard classifications are defined by the MA Department of Conservation and Recreation's Office of Dam Safety (ODS) as follows:

- **High** – Failure or misoperation will result in a probable loss of human life serious damage to homes, industrial or commercial facilities, important public utilities, main highways or railroads.
- **Significant** – Failure or misoperation may result in loss of human life and damage to homes, industrial or commercial facilities, secondary highways or railroads or cause interruption of use or service of relatively important facilities.
- **Low** –Failure or misoperation results in minimal property damage to others. Loss of life is not expected.[47]

The condition of a dam reflects the state of the dam structure itself. The ratings of dams are satisfactory, poor, unsafe, and emergency. A dam's condition will impact how often it should be inspected or how

[45] FEMA Hazus: Flood Global Risk Report (100-year flood events), May 2021
[46] FEMA Hazus: Flood Global Risk Report (100 and 500-year flood events), May 2021
[47] Dam Hazard Potential Classification Table, MA Department of Conservation and Recreation 302 CMR 10.00.

urgent repairs should take place. For emergency dams, repairs need to occur upon notification of the condition to the Commissioner of the Department of Conservation and Recreation and monitoring of the condition should occur hourly. Meanwhile, poor or unsafe dams "must be inspected and reported at least every three months by a registered professional engineer employed by the owner until the dam safety repairs are completed and the dam is found to be in satisfactory condition."[48]

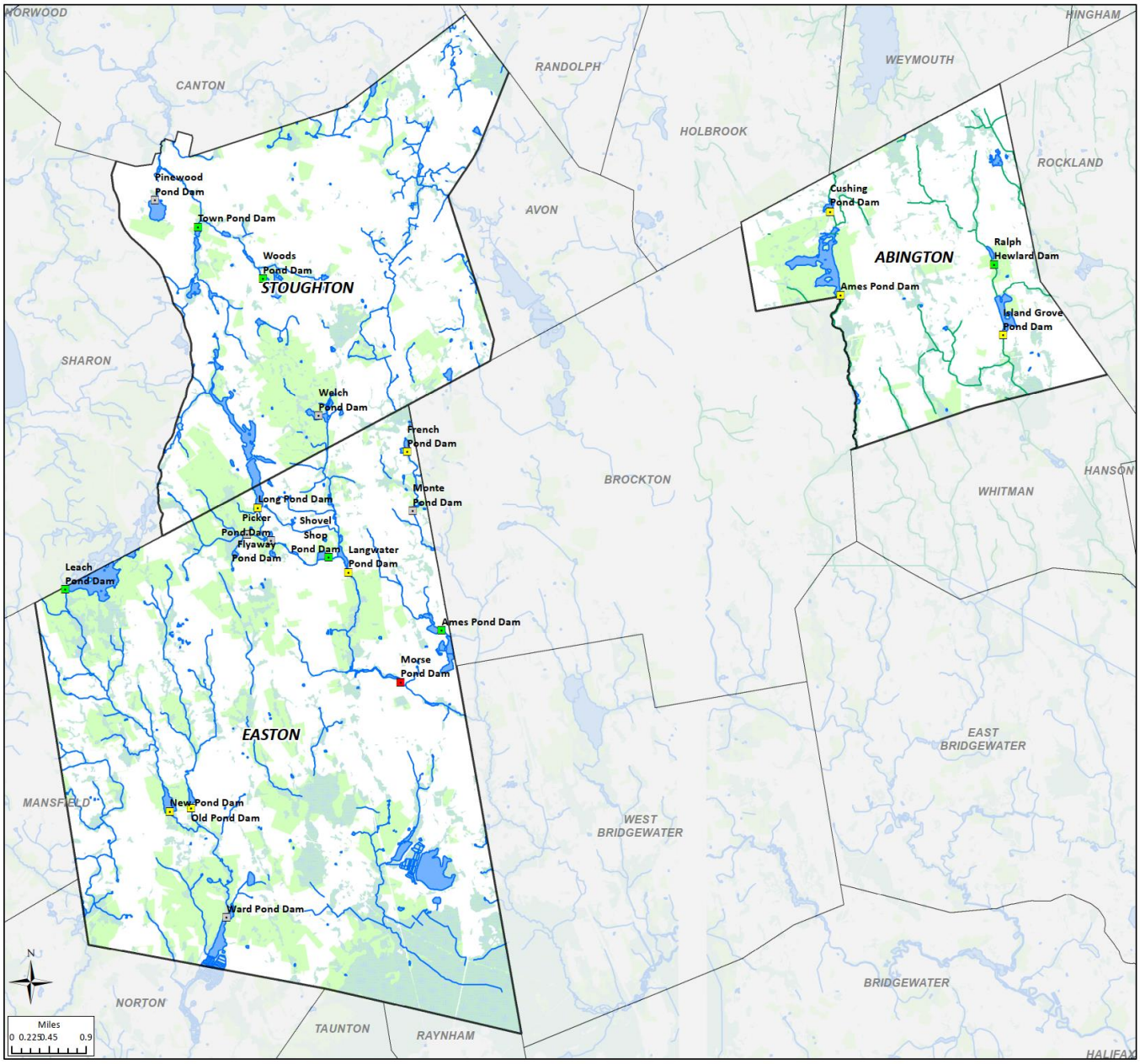
The Planning Area contains only one High Hazard Potential Dam (HHPD) – Morse Pond Dam in Easton. The condition and status of coordination with the dam owner for Morse Pond Dam is discussed in the Easton section below.

DAM LOCATIONS

The locations of the dams in each town with their corresponding hazard classification are shown in Appendix A: Maps. The impact area for dam failure will be determined by the number and location of dams within each town alongside each dam's hazard potential classification and condition.

[48] MA Department of Conservation and Recreation 302 CMR 10.00. Inspection Schedule.

Figure 4.1: Dams in the Planning Area by Hazard Potential



Dams in the Planning Area by Hazard Potential

Abington, Easton, and Stoughton Hazard Mitigation Plan

Legend

Dam Hazard Code

- High Hazard
- Significant Hazard
- Low Hazard
- N/A

- Streams
- Waterbodies
- Wetland
- Open Space

This map is not the product of a Professional Land Survey. It was created by BETA Group, Inc. for general reference, informational, planning, or guidance use, and is not a legally authoritative source as to location of natural or manmade features. Proper interpretation of this map may require the assistance of appropriate professional services. BETA Group, Inc. makes no warranty, express or implied, related to the spatial accuracy, reliability, completeness, or currentness of this map.

Source:
DCR Office of Dam Safety, 2022.
MassGIS, Prot. and Rec. Open Space, 2022.
MassDEP, Hydrography, 2019.
MassDEP, Wetlands, 2017.

This map is intended for planning purposes only
Date: 7/25/2023

ABINGTON

Abington has five dams, four of which are rated as having significant hazard potential, meaning their failure may result in loss of human life and damage to homes, industrial or commercial facilities, secondary highways or railroads or cause interruption of use or service of relatively important facilities.

Table 4.14: Abington Dam List

Dam Name	Ownership	Hazard Potential Classification	Condition at Last Inspection
Island Grove Pond Dam	Public	Significant	Fair
Ames Pond Dam	Public	Significant	Satisfactory
Ralph Hewlard Dam	Public	Low	Satisfactory
Cushing Pond Dam	Public	Significant	Fair
Hunt's Pond Dam	Public	Significant	Unsafe

Source: Office of Dam Safety, Massachusetts Department of Conservation and Recreation, 2022.

Hunt's Pond Dam, owned by the Town of Brockton and the Town of Abington, is located on the border of Abington and Brockton. A 2022 inspection designated Hunt's Pond Dam as a Significant hazard dam in an Unsafe condition. The report recorded large trees and heavy brush on the embankment, erosion and undermining of the concrete auxiliary spillway, displaced stones in the retaining wall, exposed roots and undulations at the dam's crest, two sinkholes near the primary spillway channel, and depressions behind the right primary spillway discharge channel. The Town of Abington submitted an Emergency Action Plan (EAP) for the dam in 2019, but the most recent March 2022 inspection recommends further analysis, repairs, and modification to endure dam safety.

Island Grove Pond Dam was last inspected in 2017 and was rated as is a Significant hazard dam in Fair condition. The inspection recorded debris along the primary spillway, displaced stones in the masonry walls, eroded riprap and cracks and seepage in the auxiliary spillway.

If any Abington dams were to fail, the total impact area would be **Medium:** *10 to 50% of the town affected.*

EASTON

Easton is the Town in this plan with the most dams, with a total of 13. It also contains the one HHPD in the Planning Area, Morse Pond Dam. Morse Pond Dam was built prior to 1775, and the last recorded inspection of the dam was in 2019. The 2018 Easton MVP workshop also recommended attention to the dam, including the need to verify ownership to maintain communication with the owner and observe regularly for upkeep. Like many dams in New England, Morse Pond Dam's age is the critical factor for protecting against dam failure; the dam needs constant maintenance and inspections in order to keep it up to State safety standards.

The EAP for the dam was last updated in 2016 by GZA GeoEnvironmental, Inc. (GZA) for ODS – and a new EAP is recommended so the Town and dam owner can begin to take action to protect the surrounding area and ensure the dam is more resilient to climate change. The EAP for Morse Pond Dam, including inundation maps, was provided to the Town after a meeting with dam owner representatives on August 14, 2023. It states that a failure of the dam would result in damages to downstream residents in Easton

and West Bridgewater.[49] Within the 2016 EAP, the GZA recommends the development of an Operation and Maintenance Manual for the dam, vegetation clearing, and repairs to the spillway, safety railing, and training walls. A previous Certificate of Non-Compliance report from April of 2015 recommends follow-up inspections every six-months, a Phase II evaluation from GZA, and the repair or breach of the dam. The dam is currently in poor condition according to the most recent inspection, and maintenance is critical to ensuring the safety of the dam and inundation area in the event of a dam breach. In 2015 dam owners also received an estimate for probable repair cost for the dam due to the recommendations within the Certificate of Non-Compliance.

No work or updates were completed on Morse Pond Dam due to a lack of funding necessary to complete repairs. There is also a need for increased coordination between the Town, ODS, and dam representatives to update dam-related documents and plans to gain a better understanding of the dam's current condition since the most recent 2019 inspection and 2015 estimates for repair.

The existing 2016 EAP provides inundation maps that detail how downstream of the dam are a residential, commercial, and industrial area, and that the discharge channel flows through a developed residential area. The area at risk in a potential dam break is four miles downstream along Queset Brook and the Hockomock River. During a "sunny day" scenario,[50] the approximate dam break flood inundation area includes portions of the occupied buildings along Central Street, presenting the potential for loss of life. A "wet weather" scenario is consistent with the inundation from the model baseflow of a 500-year flood. The current EAP does not include an estimate size of population at risk in the event of a dam failure event.

The EAP also includes the most recent Dam break and Failure evaluations completed in 2009, which, if a breach were to occur, could impact three downstream culverts and the Turnpike Street Bridge, as well as the potential to impact houses and businesses downstream in a trapezoidal area around one to six feet of depth.[51] The 2016 EAP is accessible through Easton's Department of Planning and Economic Development.

Dam representatives emphasized the importance of coordination between the Town, dam owners, and ODS for securing funding of inspections and repairs on the dam in order for it to be properly maintained. Morse Pond Dam is intended to be assessed every two years and is therefore in need of a new inspection.[52] Representatives also provided the HMPC and Town of Easton with a copy of the dam's most recent EAP for record.

Easton's actions in Section 6.2.2 discuss the Town's mitigation actions and recommend several actions required for the Town and dam owner to take in order to be compliant with FEMA's HHPD protocols. Morse Pond Dam has the potential to cause damage the developed commercial and occupied residential areas, which prompted GZA to rank the dam as High Hazard Potential.[53] As climate change impacts the severity and intensity of precipitation events to these areas, they become more vulnerable were the dam to fail.

[49] Emergency Action Plan. MA00785 Morse Pond Dam. Easton, MA. GZA GeoEnvironmental, Inc., March 2016.
[50] A "sunny day" failure with assumes starting pool elevations in the impoundment coincident with the normal pool elevation and a "wet weather" failure with a starting pool elevation coincident with the top of dam and the FEMA 500-year flood constant flow routed through Morse Pond.
[51] Ibid.
[52] National Inventory of Dams, MA00785
[53] Emergency Action Plan. MA00785 Morse Pond Dam. Easton, MA. GZA GeoEnvironmental, Inc., March 2016.

Table 4.15: Easton Dam List

Dam Name	Ownership	Hazard Potential Classification	Condition at Last Inspection
Langwater Pond Dam	Public	Significant	Satisfactory
Monte Pond Dam	Private	Non-Jurisdictional	N/A
French Pond Dam	Private	Significant	Poor
New Pond Dam	Public	Significant	Fair
Morse Pond Dam	Private	High	Poor
Ames Pond Dam	Private	Low	Fair
Shovel Shop Pond Dam	Public	Low	Fair
Old Pond Dam	Public	Significant	Poor
Long Pond Dam	Public	Significant	Fair
Picker Pond Dam	Public	Non-Jurisdictional	N/A
Ward Pond Dam	Public	Non-Jurisdictional	N/A
Flyaway Pond Dam	Public	Non-Jurisdictional	N/A
Leach Pond Dam	Public	Low	Poor

Source: Office of Dam Safety, Massachusetts Department of Conservation and Recreation, 2022.

If the Morse Pond Dam or French Pond Dam were to fail in a high precipitation event, the total impact area has the potential to be **Medium:** *10 to 50% of the town affected.* However due to the state and hazard rating of the majority of Easton Dams, the overall impact area is **Small:** *Less than 10% of the town affected.*

STOUGHTON

Stoughton has four total dams, none of which have a hazard classification higher than Low.

Table 4.16: Stoughton Dam List

Dam Name	Ownership	Hazard Potential Classification	Condition at Last Inspection
Pinewood Pond Dam	Public	Non-Jurisdictional	N/A
Town Pond Dam	Public	Low	Fair
Welch Pond Dam	Public	Non-Jurisdictional	N/A
Woods Pond Dam	Public	Low	Poor

Source: Office of Dam Safety, Massachusetts Department of Conservation and Recreation, 2022.

If any Stoughton dams were to fail, the impact area would be **Small:** *Less than 10% of the town affected.*

History of Dam Failure

Date	Type	County Affected	Damage (County-wide)	Comments
1/27/2023	Dam Failure, Flooding	Plymouth	Not yet calculated	A privately owned dam in Halifax failed, causing flooding in homes in East Bridgewater

In January of 2023, 20 feet of a privately owned earthen dam on the border of Halifax and East Bridgewater failed, causing damage to 10-12 properties.[54] Water began to drain into Robbins Pond in East Bridgewater and roads were closed, but no injuries were reported. Both the East Bridgewater fire Department and MEMA responded to the incident which was ultimately taken over by the Massachusetts Department of Conservation and Recreation's Office of Dam Safety as the owner began the process of repairs.[55]

Severity & Potential Extent of Impact

The potential consequences of failure or misoperation of a dam are based on both hazard classification and current condition of the dam. Dams with a High hazard potential and/or current unsafe or emergency conditions may cause loss of human life and serious damage to homes, industrial or commercial facilities, important public utilities, and main highways or railroads – and have a higher probability of failing due to their condition. Populations at risk include those residing in the inundation areas of dams, especially seniors and residents with mobility challenges and those in the inundation areas of HHPDs. For these populations, access to information about the dam failure may be lacking or not timely, and access to transportation and mobility in the case of an evacuation is important to protecting these populations.

HHPDs are especially at risk to the cascading impacts of storms, earthquakes, landslides, wildfires, and other natural hazard events that may affect upstream and downstream flooding potential. HHPDs also have a higher risk potential for significant economic, environmental, or social impacts, as well as multi-jurisdictional impacts, from a dam incident. The expanded potential impact of HHPDs increases the number of locations and vulnerable populations at risk as well as increasing the potential impacts to institutions and critical infrastructure and facilities. Additionally, assumptions made from risk-based data and modeling can potentially increase the emergency response operations in the case of a dam breach, so having an updated EAP and inundation maps for HHPDs is critical to ensuring the safety of locations and populations.

Dams like Hunt's Pond Dam in Abington that have an unsafe condition and Significant hazard potential and Morse Pond Dam in Easton which has a poor condition and High hazard potential should be monitored closely to mitigate the risk of dam failure impacting the town.

Abington

Because of the four Significant hazard dams, the potential severity for dam failure events is **Limited:** *Minor injuries only. More than 10% of property in affected area damaged or destroyed*. *Complete shutdown of*

[54] "MEMA (@MassEMA)," Twitter, January 31, 2023, https://twitter.com/MassEMA.
[55] Leah Comins, "East Bridgewater Fire Responds to Flooding in Town Following Dam Breach," East Bridgewater Fire Department, January 27, 2023, https://ebfire.org/2023/01/27/east-bridgewater-fire-responds-to-flooding-in-town-following-dam-breach/.

facilities for more than 1 day. Increased precipitation levels due to climate change may impact this rating in the next iteration of this plan.

EASTON

Because of the one High hazard and five Significant hazard dams, the potential severity for dam failure events is **Limited:** *Minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 day.* Increased precipitation levels due to climate change may impact this rating in the next iteration of this plan.

STOUGHTON

Because of the hazard rating of the dams, the potential severity for dam failure events is **Minor:** *Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of facilities.* Increased precipitation levels due to climate change may impact this rating in the next iteration of this plan.

FREQUENCY & PROBABILITY OF FUTURE OCCURRENCE

As discussed in the next chapter, the general condition and location of dams in the Abington, Easton, and Stoughton makes the likelihood of a future dam failure **Possible:** *Between 1-10% probability in the next year.* The risk of dam failure is expected to rise with the impacts of climate change, due to the increase in risk of flooding events – dam failure may become a higher risk, especially as longer periods of drought leave areas more susceptible to the impacts of flooding.

4.6 WIND RELATED HAZARDS

4.6.1 HURRICANES & TROPICAL STORMS

DESCRIPTION

Hurricanes that strike the Eastern United States originate in the tropical and subtropical North Atlantic Ocean, the Caribbean Sea, and the Gulf of Mexico. The Atlantic hurricane season spans a six-month period (June 1 through November 30). Storms in this period may hit Massachusetts as tropical depressions, tropical storms, or hurricanes – each a different level of a tropical cyclone, or low-pressure systems that usually form over the tropics. Most of the destruction in a tropical cyclone or hurricane event is caused by very high winds, heavy rain, lightning, tornadoes, and storm surges.

- Tropical Depression – Maximum sustained surface wind speed is less than 39 MPH
- Tropical Storm – Maximum sustained surface wind speed from 39-73 MPH
- Hurricane – Maximum sustained surface wind speed exceeds 73 MPH

Hurricane damage is rated by the Saffir-Simpson Wind Rating Scale. The scale does not consider the other forms of damage that may be cause by hurricane storm surges or tornadoes. Instead, it considers potential property damage cause by the high-sustained winds brought by hurricane forces. Below is a description from each ranking on the scale. Most hurricanes that reach Massachusetts are not as severe as their initial strength at formation, often weakening over landfall and approaching MA as tropical storms.

Due to climate change, the severity of tropical storms is expected to increase because warmer ocean temperatures cause the formation of stronger storms. Paired with increases in precipitation due to climate change, hurricanes will only become more dangerous over time for Massachusetts communities.

Table 4.17: Saffir Simpson Hurricane Wind Scale

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 MPH	**Very dangerous winds will produce some damage**: Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap, and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 MPH	**Extremely dangerous winds will cause extensive damage**: Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 (major)	111-129 MPH	**Devastating damage will occur**: Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 (major)	130-156 MPH	**Catastrophic damage will occur**: Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 (major)	157 MPH or higher	**Catastrophic damage will occur**: A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Source: NOAA, Saffir-Simpson Hurricane Wind Scale, https://www.nhc.noaa.gov/aboutsshws.php

Location of Occurrence

Though none of the municipalities in this plan are coastal communities, hurricanes and tropical storms still have the potential to cause damage across the region. The towns may experience wind damage or inland flooding, as demonstrated in the History of Hurricanes and Tropical Storms in Table 4.18.

Abington, Easton, and Stoughton all experience hurricane and tropical storm events town-wide, so the total impact area is **Large:** *More than 50% of the town affected.*

History of Hurricanes and Tropical Storms

Table 4.18 below lists known significant hurricane and tropical storm events and damages recorded in Plymouth, Bristol, and Norfolk County from 2015 through 2022. Specific losses incurred by Abington, Easton, and Stoughton are noted where information was available. This table does not list every event that has occurred in the area but does list those that impacted Abington, Easton, or Stoughton directly, or had a high damage cost to the county.

Table 4.18: Hurricane and Tropical Storm History in Bristol, Norfolk, and Plymouth Counties

Date	Type	County Affected	Damage (County-wide)	Comments
9/5/2016	Tropical Storm	Norfolk	$21,000	Tropical Storm Hermine caused high winds that knocked down trees and wires across roads in Norfolk County
9/20/2017	Tropical Storm	Bristol, Norfolk, Plymouth	$20,000 (B)*, $25,000 (N), $40,000 (P)	Tropical Storm Jose brought strong wind gusts and heavy downpours, cause multiple trees and wires down.
9/7/2019	Tropical Storm	Plymouth	$500	Hurricane Dorian cause minor wind damage.
8/4/2020	Tropical Storm	Bristol, Norfolk, Plymouth	$7,000 (B), $500 (N), $500 (P)	Tropical Storm Isaias recorded high wind gusts with tree and power line damage.
8/22/2021	Tropical Storm	Norfolk	$500	Tropical Storm Henri caused flash flooding, waterspouts, and heavy winds across MA.

Source: National Centers for Environmental Information Storm Events Database, NOAA, 2015-2022.

*Notes: (B) – Bristol County; (N) – Norfolk County; (P) – Plymouth County

Severity & Potential Extent of Impact

The Hazus results of potential hurricane events for each municipality showcase the possible damage from 100-year and 500-year hurricane events, which have a 1% or 0.2% chance of occurring each year, respectively. The 500-year (0.2% chance) is the more severe storm of the two. The hurricane models were based on a potential hypothetical hurricane scenario where the storm passed through the center of each town.

In each town, populations including senior and Environmental Justice populations are more vulnerable in a potential hurricane or tropical storm scenario. Maps identifying where these populations may reside in each Town are provided in Appendix A. Ensuring critical facilities maintain safe construction and maintenance to withstand wind speeds and severe storms will help to reduce risk for the critical facilities and other buildings that may be impacted by hurricanes and tropical storms. The Hazus data outlines in the sections below describes the potential for property damage and any interruption to regular operations from a hurricane or tropical storm event.

Abington

A 100-year hurricane event has the potential to cause damage to around 416 buildings, 388 being residential, 19 being commercial, and the rest being agricultural (2), educational (1), governmental (½), industrial (5), or religious (½). A 500-year hurricane event has the potential to impact 1,508 residential buildings and 93 commercial buildings along with the other categories: agricultural (6), educational (3), governmental (2), industrial (25), or religious (6). In both the 100- and 500-year hurricane events Hazus estimates no damage will be done to any essential facilities (critical facilities) in Abington. Hazus does estimate an expected loss of use for several critical facilities, including one day of loss for emergency

operation centers in the 100- and 500-year events, two days loss for fire stations for both events, one day for police stations in both events, and eight days of school loss in the 100-year hurricane event. [56]

Table 4.19 shows the Hazus data for a potential hypothetical hurricane scenario where the storm passed through the center of Abington.

Table 4.19: Abington Hurricane Hazus Data, 2021[57]

Abington		100-Year	500-Year
Building Characteristics	Estimated Total Number of Buildings	5,222	5,222
	Estimated total building replacement value	$2,154,962,000	$2,154,962,000
	Estimated residential building value	$1,751,843,000	$1,751,843,000
	Estimated non-residential building value	$403,119,000	$403,119,000
Building Damages	No damage	4,805.77	3,578.60
	Minor damage	367.43	1,264.87
	Moderate damage	46.94	334.68
	Severe damage	1.49	29.16
	Destruction	0.04	14.69
Population Needs	# of households displaced	15	95
	# of people seeking public shelter	9	51
Debris (tons)	Building debris generated (tons)	5,327	14,639
	Tree debris (tons)	3,941	9,083
	# of truckloads to clear building debris (@ 25 tons/truck)	55	222
Damages	Value of Damages	$21,983,170	$87,288,730
	Total property damage	$21,112,120	$80,317,320
	Total losses due to business interruption	$871,050	$6,971,410

The potential severity for a hurricane event is **Critical:** *Multiple injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 week.* Hurricane event damage is hard to predict due to factors such as the severity of the incoming storm and abrupt or unexpected changes in weather patterns. Around the nation, extreme hurricane events have caused severe damage through flooding and severe storm conditions; this damage is expected to increase with climate change.

[56] FEMA Hazus: Hurricane Global Risk Report (100 and 500-year hurricane events), May 2021
[57] Ibid.

EASTON

The Hazus data shows a potential hypothetical hurricane scenario where the storm passes through the center of Easton. A 100-year hurricane event has the potential to cause damage to around 582 buildings, 525 being residential, 27 being commercial, and the rest being agricultural (3), educational (1), governmental (less than 1), industrial (10), or religious (1). A 500-year hurricane event has the potential to impact 2,108 residential buildings and 124 commercial buildings along with the other categories: agricultural (12), educational (9), governmental (3), industrial (45), or religious (5).

In the 100-year hurricane event Hazus estimates no damage will be done to any essential facilities (critical facilities) in Easton while one school has the probability of at least moderate damage (less than 50%) in the 500-year hurricane event. Hazus estimates an expected loss of use for several critical facilities, including two days of loss for emergency operation centers in the 100- and 500-year events, three days loss for fire stations for both events, one day for police stations in both events, ten days of school loss in the 100-year hurricane event and one day of loss for schools in the 500-year hurricane event. [58]

Table 4.20: Easton Hurricane Hazus Data, 2021[59]

Easton		100-Year	500-Year
Building Characteristics	Estimated Total Number of Buildings	7,494	7,494
	Estimated total building replacement value	$3,588,253,000	$3,588,253,000
	Estimated residential building value	$2,683,317,000	$2,683,317,000
	Estimated non-residential building value	$904,936,000	$904,936,000
Building Damages	No damage	6,926	5,190
	Minor damage	508	1,785
	Moderate damage	58	461
	Severe damage	2	39
	Destruction	0	18
Population Needs	# of households displaced	14	100
	# of people seeking public shelter	9	59
Debris (tons)	Building debris generated (tons)	14,824	37,308
	Tree debris (tons)	13,047	29,858
	# of truckloads to clear building debris (@ 25 tons/truck)	71	298
Damages	Value of Damages	$33,902,250	$134,628,470
	Total property damage	$32,772,240	$124,175,840

[58] FEMA Hazus: Hurricane Global Risk Report (100 and 500-year hurricane events), May 2021
[59] Ibid.

Easton		100-Year	500-Year
	Total losses due to business interruption	$1,130,010	$10,452,630

The potential severity for a hurricane event is **Critical:** *Multiple injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 week.* Hurricane event damage is hard to predict due to factors such as the severity of the incoming storm and abrupt or unexpected changes in weather patterns. The severity of damage is expected to increase with climate change.

STOUGHTON

A 100-year hurricane event that passes through the center of Stoughton has the potential to cause damage to around 548 buildings, 509 being residential, 26 being commercial, and the rest being agricultural (2), educational (less than 1), governmental (less than 1), industrial (8), or religious (2). A 500-year hurricane event has the potential to impact 2,241 residential buildings and 141 commercial buildings along with the other categories: agricultural (9), educational (4), governmental (2), industrial (43), or religious (9). In both the 100- and 500-year hurricane events Hazus estimates no damage will be done to any essential facilities (critical facilities) in Stoughton. Hazus does estimate an expected loss of use for several critical facilities, including two days of loss for emergency operation centers in the 100- and 500-year events, one day loss for fire stations for both events, two days for hospitals Stoughton is the only town with hospital beds), one day loss for police stations in both events, nine days of school loss in the 100-year hurricane event and three days loss for schools in the 500-year hurricane event. [60]

Table 4.21: Stoughton Hurricane Hazus Data, 2021[61]

Stoughton		100-Year	500-Year
Building Characteristics	Estimated Total Number of Buildings	9,285	9,285
	Estimated total building replacement value	$4,325,604,000	$4,325,604,000
	Estimated residential building value	$3,087,567,000	$3,087,567,000
	Estimated non-residential building value	$1,238,037,000	$1,238,037,000
Building Damages	No damage	8,737	6,836
	Minor damage	487	1,947
	Moderate damage	59	457
	Severe damage	2	33
	Destruction	0	12
Population Needs	# of households displaced	13	111
	# of people seeking public shelter	8	64

[60] FEMA Hazus: Hurricane Global Risk Report (100 and 500-year hurricane flood events), May 2021
[61] Ibid.

Stoughton		100-Year	500-Year
Debris (tons)	Building debris generated (tons)	8,589	23,462
	Tree debris (tons)	6,744	15,634
	# of truckloads to clear building debris (@ 25 tons/truck)	74	313
Damages	Value of Damages	$33,152,390	$127,341,740
	Total property damage	$31,903,430	$118,209,610
	Total losses due to business interruption	$1,248,960	$9,132,140

The potential severity for a hurricane event is **Critical:** *Multiple injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 week.* Hurricane event damage is hard to predict due to factors such as the severity of the incoming storm and abrupt or unexpected changes in weather patterns. The severity of damage is expected to increase with climate change.

Frequency & Probability of Future Occurrence

Based on the frequency of past hurricane and tropical storm events, the projections for increased frequency and intensity of storm events in the coming years due to climate change, the probability of future occurrence is **Likely:** *Between 10-100% probability in the next year*.

4.6.2 Severe Storms

Description

Severe storms beyond tropical and winter storms can occur in Massachusetts, often containing high winds, hail or thunderstorm conditions.

Thunderstorms are formed when the right atmospheric conditions combine to provide moisture, lift, and warm unstable air that can rise rapidly. Thunderstorms occur any time of the day and in all months of the year but are most common during summer afternoons and evenings and in conjunction with frontal boundaries. These events usually bring heavy rains (which can cause flash floods), strong winds, hail, lightning, and tornadoes.[62] Thunderstorms can be dangerous and destructive for several reasons. Storms can form in less than 30 minutes, giving very little warning; they have the potential to produce lightning, hail, tornadoes, powerful straight-line winds, and heavy rains that produce flash flooding.[63] During a thunderstorm, severe downdrafts may cause microbursts, a rapid column of airflow with the force of tornado able to knock down mature tree that can create wind speeds over 150 MPH. In Massachusetts, thunderstorms generally occur with precipitation, but dry thunderstorm events also have the potential to start fires.

Hail is formed in towering cumulonimbus clouds (thunderheads) when strong updrafts carry water droplets to a height at which they freeze. Eventually, these ice particles become too heavy to hold up and they fall to the ground at speeds of up to 120 MPH. Hail falls along paths called swaths, which can vary

[62] "Thunderstorms," National Oceanic and Atmospheric Administration, https://www.nssl.noaa.gov/education/svrwx101/thunderstorms/
[63] Massachusetts State Hazard Mitigation and Climate Adaptation Plan, 2018

from a few square acres to up to 10 miles wide and 100 miles long. Hail larger than ¾ inch in diameter can do great damage to both property and crops, and some storms produce hail over two inches in diameter. Hail causes about $1 billion in damages annually in the U.S.[64] High winds and damaging hail can take down trees, knock out power, and damage infrastructure. The size of hailstones is best determined by measuring their diameter with a ruler. Table 4.22 shows a list of recorded hail sizes and their reference object counterpart.

Table 4.22: Hail Size Chart and Object Reference

Hail Size (in.)	Object Analogue Reported
0.5	Marble, moth ball
0.75	Penny
0.88	Nickel
1	Quarter
1.25	Half dollar
1.5	Walnut, ping pong
1.75	Golf ball
2	Hen egg
2.5	Tennis ball
2.75	Baseball
3	Teacup
4	Softball
4.5	Grapefruit

Source: NOAA Storm Prediction Center

There is no single standard for measuring the strength or magnitude of a lightning storm. Lightning events are often measured by the damage they produce. The charge and temperature of each bolt of lightning is different yet could be lethal or cause damage. June, July, and August are peak months for lightning activity in the United States. In 2021, Massachusetts had a total lightning count of 109,277 which includes cloud-to-ground strokes and cloud-only lightning events.[65]

Table 4.23 shows the levels of wind speed categorized by damage type in severe storm events. Severe Storm conditions can cause damage like power outages due to downed trees or other wind damage, road blockages and some flooding.

Table 4.23: Wind Speed Estimates and Descriptions of Damage for Severe Storms

Wind Speed Estimate	Description
25-31 MPH	Large branches in motion; whistling heard in telephone wires

[64] "Hail," NOAA National Severe Storms Laboratory, https://www.nssl.noaa.gov/education/svrwx101/hail/
[65] "2021 Annual Lightning Report", Vaisala, 2021.

32-38 MPH	Whole trees in motion; inconvenience felt walking against the wind
39-54 MPH	Twigs break off trees; wind generally impedes progress
55-72 MPH	Damage to chimneys and TV antennas; pushes over shallow rooted trees
73-112 MPH	Peels surfaces off roofs; windows broken; light mobile homes pushed or overturned; moving cars pushed off road
113-157 MPH	Roofs torn off houses; cars lifted off ground

Source: National Weather Service

LOCATION OF OCCURRENCE

The entire state of Massachusetts experience severe storms including thunderstorms and high wind events. Coastal areas are more prone to high winds. Eastern Massachusetts experiences an average of 10-20 thunderstorms per year according to NOAA.[66]

Abington, Easton, and Stoughton all experience severe storm events town wide, the total impact area is **Large:** *More than 50% of the town affected.*

HISTORY OF SEVERE STORMS

Table 4.24 lists known severe storm-related events and damages recorded in Plymouth, Bristol, and Norfolk County from 2015 through 2022. Specific losses incurred by Abington, Easton, and Stoughton are noted where information was available. Some of these events will overlap with those listed in Table 4.28 for winter storms due to the recorded presence of high winds or other conditions characteristic of severe storms. This table does not list every event that has occurred in the area but does list those that impacted Abington, Easton, or Stoughton directly, or had a high damage cost to the county.

Table 4.24: Severe Storm History in Bristol, Norfolk, and Plymouth Counties

Date	Type	County Affected	Damage (County-wide)	Comments
2/25/2016	High Wind	Bristol, Norfolk, Plymouth	$15,000 (B)*, $50,000 (N), $20,000 (P)	Thunderstorms and winds knocked down trees and power lines
3/31/2016	High Wind	Plymouth	$30,000	Wind damage across MA and RI, trees downed on service wires in Abington
4/3/2016	Strong Wind	Plymouth	$15,000	Strong winds and snow brought a tree down and caused 2 deaths in Abington.
7/22/2016	Thunderstorm Winds	Bristol, Norfolk	$5,000 (B), $50,000 (N)	Showers and thunderstorms in the area caused downed trees in Stoughton and Easton

Date	Type	County Affected	Damage (County-wide)	Comments
3/2/2018	High Wind	Norfolk, Plymouth	$35,000 (N), $45,000 (P)	Trees and wires down in Norfolk County, high wind, heavy snow, flooding, one death reported in Plymouth County
1/24/2019	High Wind	Bristol, Plymouth	$2,000 (B) $15,000 (P)	Trees and wires down from high winds
10/16/2019 and 10/17/2019	Strong Wind	Bristol, Plymouth	$3,000 (B), $500 (P)	Trees down due to strong winds
2/7/2020	High Wind	Plymouth	$3,000	Damaging winds caused power outages and trees down, in Abington a tree fell, blocking Route 18
6/28/2020	Thunderstorm Winds	Plymouth	$8,000	Thunderstorms and flash flooding cause downed trees
11/30/2020	High Wind	Bristol	$12,500	Wind gusts toppled trees in Easton and across Bristol County
6/8/2021	Thunderstorm Winds	Norfolk	$3,200	Scattered thunderstorms and flash flooding, trees down in Stoughton
7/23/2021	Hail	Plymouth	No damages documented	Dime sized hail reported
10/26/2021	High Wind	Bristol, Norfolk, Plymouth	$1,880,039 (B), $276,553 (N) $2,650,000 (P)	Nor'easter underwent bombogenesis and caused mass power outages and delays to municipal and school operations, and damaged utilities requiring cleanup in Bristol and Norfolk Counties

Source: National Centers for Environmental Information Storm Events Database, NOAA, 2015-2022.

*Notes: (B) – Bristol County; (N) – Norfolk County; (P) – Plymouth County

SEVERITY & POTENTIAL EXTENT OF IMPACT

Like hurricanes and tropical storms, populations including senior populations, populations with mobility challenges, and Environmental Justice populations are more vulnerable according to their physical and financial ability to respond in a potential severe storm scenario. Maps identifying where these populations may reside in each Town are provided in Appendix A. Ensuring critical facilities maintain safe construction and maintenance to withstand wind speeds and severe storms will help to reduce risk for the critical facilities and other buildings that may be impacted by a severe storm event.

ABINGTON

Severe storm and thunderstorm conditions often occur in Abington, causing damage like power outages due to downed trees or other wind damage, road blockages and some flooding. Severe winds also occur within or outside of thunderstorm events, which increases the overall frequency of these events.

Populations relying on electricity for medical devices, low-income individuals, and those without personal transportation means are especially vulnerable to severe storms that result in power outages. In severe storm scenarios, ensuring vulnerable populations in each town in the Planning Area have access to safe and reliable electricity and mobility sources could help save lives.[67]

Protection against wind damage is key to mitigating severe storm damage. Several past severe wind and storm events have caused casualties and blocked important roads like Route 18 due to fallen trees. The HMPC specifically noted that diseased trees in each town were a cause for concern as severe storm events increase in severity due to climate change. The potential severity for severe storms is **Limited:** *Minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 day.*

EASTON AND STOUGHTON

Severe storm and thunderstorm conditions often occur in Easton, and Stoughton as well, causing damage like power outages due to downed trees or other wind damage, road blockages and some flooding. Easton has struggled with windstorms knocking down power lines and trees that block roadways. Downed power lines have resulted in at least one and sometimes many days of outages in many areas of town. In Stoughton, diseased trees in town are a cause for concern as severe storm events increase in severity due to climate change. The HMPC specifically noted that diseased trees in town were a cause for concern as severe storm events increase in severity due to climate change. The potential severity for severe storms in Easton, and Stoughton is **Limited:** *Minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 day.*

FREQUENCY & PROBABILITY OF FUTURE OCCURRENCE

Based on the frequency of extreme thunderstorm and lightning events and the projections for climate change, the probability of future occurrence of the thunderstorm hazard is **Likely:** *Between 10-100% probability in the next year.*

4.6.3 TORNADOES

DESCRIPTION

A tornado is a violent windstorm with a twisting, funnel-shaped cloud. Winds in most tornadoes are less than 100 MPH, but in the most violent, and least frequent tornadoes, wind speeds can exceed 250 MPH. Tornadoes typically track along the ground for a few miles or less and are less than 100 yards wide, though some can remain in contact with the earth for well over fifty miles and exceed one mile in width. They are often spawned by thunderstorms or hurricanes. Tornadoes are produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. The damage from a tornado is a result of high wind velocity and wind-blown debris.

Tornadoes are ranked by severity on the Enhanced Fujita Scale (EF Scale) from F0, weak with light damage, to F5, violent with incredible damage. Each rating on the scale increases in wind speed and damage

[67] Abington Resident, Abington Public Health Nurse, and Chair of the Town of Easton Commission on Disability, Public Meeting held January 17, 2023

inflicted.[68] The speed of a tornado is difficult to safely calculate and is not necessarily a reflection of the storm's strength. Severity is measured by the amount of damage inflicted on an area. The EF Scale, adapted from the National Weather Service's depiction, is shown in Table 4.25.

Tornadoes may cause infrastructure damage, storm drainage issues, dangerous debris and loss of electricity depending on their strength.

Table 4.25: Enhanced Fujita Scale with Descriptions

EF Rating	3 Second Gust (mph)	Description
0	65-85	Light Damage. Some damage to chimneys; branches broken off trees, shallow-rooted trees uprooted, sign boards damaged.
1	86-110	Moderate damage. Roof surfaces peeled off; mobile homes pushed foundations or overturned; moving autos pushed off road.
2	111-135	Considerable damage. Roofs torn from frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light objects become projectiles.
3	136-165	Severe damage. Roofs and some walls torn from well- constructed houses; trains overturned; most trees in forested area uprooted; heavy cars lifted and thrown.
4	166-200	Devastating damage. Well- constructed houses leveled; structures with weak foundation blown some distance; cars thrown; large missiles generated.
5	Over 200	Incredible damage. Strong frame houses lifted off foundations, carried considerable distances, and disintegrated; auto-sized missiles airborne for several hundred feet or more; trees debarked.

Source: "The Enhanced Fujita Scale," National Weather Service.

Location of Occurrence

Tornado events are not a common occurrence in Massachusetts, and most of the tornadoes that do occur do not incur severe damage or have long lives. According to the SHMCAP, the areas at greatest risk of a tornado touchdown in Massachusetts run from central to northeastern part of the state. On average, six tornadoes touch down in the Northeast every year. Some portions of Norfolk County are also more tornado-prone than the rest of the state.[69] Though damage may be severe, the overall area of impact of a tornado would likely be **Small:** *Less than 10% of the town affected.*

History of Tornadoes

Table 4.26 below lists known tornado events and damages recorded in Plymouth, Bristol, and Norfolk County from 2015 through 2022. Specific losses incurred by Abington, Easton, or Stoughton are noted where information was available. This table does not list every event that has occurred in the area, but does list those that impacted one of Abington, Easton, and Stoughton directly, or had a high damage cost to each county.

[68] National Weather Service, The Enhanced Fujita Scale (EF Scale), https://www.weather.gov/oun/efscale).
[69] "Tornado Hazard Profile," Massachusetts State Hazard Mitigation and Climate Adaptation Plan, 2018.

Table 4.26: Tornado History in Bristol, Norfolk, and Plymouth Counties

Date	Type	County Affected	Damage (County-wide)	Comments
6/23/2015	Tornado	Norfolk	$20,000	EF0 tornado touched down in Wrentham and downed several trees related to a thunderstorm with damaging wind sheer
10/23/2018	Tornado	Bristol	$20,000	Wind shear caused an EF0 to touch down in Norton with trees down that caused damage to some structures
10/7/2020	Tornado	Norfolk	$6,000	EF0 spotted in Millis that downed trees and a streetlamp, related to a derecho that left many out of power in the state

Source: National Centers for Environmental Information Storm Events Database, NOAA, 2015-2022.

SEVERITY & POTENTIAL EXTENT OF IMPACT

Tornadoes and their associated winds can cause damage to buildings, trees, and power lines. Evacuation routes may be blocked by downed trees and other debris. Tornadoes are a town-wide hazard, however damage due to tornadoes depends on the track of the tornado and is limited.

Vulnerable populations during a tornado event include seniors, populations with mobility challenges, and Environmental Justice due to each group's physical and financial ability to respond in a potential tornado scenario. Maps identifying where these populations may reside in each Town are provided in Appendix A. Ensuring critical facilities maintain safe construction and maintenance to withstand extreme wind speeds will help to reduce risk for the critical facilities and other buildings that may be impacted by a tornado storm event.

For Abington, Easton, and Stoughton, the infrequency of tornado occurrence creates the possibility for a severe tornado to wreak havoc on an area not used to or prepared for this type of event. Because the severity of a tornado is based on damage, the potential severity for tornadoes is **Critical:** *Multiple injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 week.*

FREQUENCY & PROBABILITY OF FUTURE OCCURRENCE

Due to the landscape and type of severe storms in Massachusetts, especially in the eastern parts of the state, the probability of a tornado occurring is **Possible:** *Between 1-10% probability in the next year in Bristol, Norfolk, and Plymouth Counties.*

4.7 WINTER RELATED HAZARDS

4.7.1 WINTER STORMS

DESCRIPTION

Winter storms are categorized by heavy amounts of snow, ice, and extreme cold, all of which may occur independently or at the same time. Winter storms vary in size and strength and can be accompanied by strong winds that create blizzard conditions and dangerous wind chill. There are three categories of winter storms:

- A blizzard is the most dangerous of the winter storms; it consists of low temperatures, heavy snowfall, and winds of at least 35 miles per hour.
- Snow squalls are brief, intense snow showers accompanied by strong, gusty winds where accumulation may be significant.[70]
- Ice storms occur when moisture falls and freezes immediately upon impact.

Ice storms result from the accumulation of freezing rain, which is rain that becomes super-cooled and freezes upon impact with cold surfaces.[71] The Sperry–Piltz Ice Accumulation (SPIA) Index is a scale for rating ice storm intensity, based on the expected storm size, ice accumulation, and damages on structures, especially exposed overhead utility systems.[72] The SPIA Index uses forecast information to rate an upcoming ice storm's impact from zero (little impact) to five (catastrophic damage to exposed utility systems) measured by radial ice accumulation, wind speeds, and temperatures during the storm event. Because the SPIA Index includes measures for wind speeds and temperature in its rating system, damages from the Index can be applied to other winter storm events that accumulate ice and include high winds.

Table 4.27: Sperry-Piltz Ice Accumulation (SPIA) Index

Ice Damage Index	Damage Descriptions
0	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
2	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
3	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 to 5 days.
4	Prolonged and widespread utility interruptions with extensive damage to main distribution feeder lines and some high voltage transmission lines/structures. Outages lasting 5 to 10 days.

[70] "Winter Storms," NOAA National Severe Storms Laboratory, https://www.nssl.noaa.gov/education/svrwx101/winter/types/
[71] Ibid.
[72] "SPIA Index," https://www.spia-index.com/

Ice Damage Index	Damage Descriptions
5	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.

Source: SPIA® Index

LOCATION OF OCCURRENCE

Abington, Easton, and Stoughton are all susceptible to winter storms. Though they may experience different icy conditions or inches of snow, the nature of winter storms means that all the towns will be impacted within one storm system. While higher snow accumulations are more prevalent in Western and Central Massachusetts and nor'easters may heavily impact coastal areas[73], municipalities between these two extremes still face the extreme conditions of winter storms on a nearly yearly basis.

Abington, Easton, and Stoughton all experience winter storm events town wide, the total impact area is **Large:** *More than 50% of the town affected*.

HISTORY OF WINTER STORMS

Table 4.28 below lists known significant winter storm events and damages recorded in Plymouth, Bristol, and Norfolk County from 2015 through 2022. Specific losses incurred by Abington, Easton, and Stoughton are noted where information was available. This table does not list every event that has occurred in the area but does list those that impacted Abington, Easton, or Stoughton directly, or had a high damage cost to the county.

Table 4.28: Winter Storm History in Bristol, Norfolk, and Plymouth Counties

Date	Type	County Affected	Damage (County-wide)	Comments
2/8/2013	Severe Winter Storm	Bristol, Norfolk, Plymouth	$245,000 (B), $508,000 (N), $9.3 Million (P)*	Severe Winter storm conditions, blizzard conditions with high wind gusts, and flooding caused extreme damage to coastal communities. Recorded average of 2-2.5 ft of snow, FEMA declared disaster DR-4110-MA
1/26/2015	Severe Winter Storm	Bristol, Norfolk, Plymouth	No damages documented	Average snowfall reported 2-3 feet, two storm-related fatalities reported in MA, FEMA declared disaster DR-4214-MA

[73] "Severe Winter Storm/Nor'easter Profile." Massachusetts State Hazard Mitigation and Climate Adaptation Plan, 2018.

Date	Type	County Affected	Damage (County-wide)	Comments
2/14/2015	Heavy Snow	Bristol, Norfolk, Plymouth	$10,000 (P)	8-17 inches of snow in Bristol County, a barn collapsed in Stoughton. 12-19 inches of snow in Norfolk County, blizzard conditions and 12-17 inches in Plymouth County
2/5/2016	Heavy Snow	Bristol, Plymouth	$40,000 (B), $150,000 (P)	6-11 inches of snow in Bristol County, trees and powerlines downed in Easton. 1-10 inches in Plymouth County
12/22/2017	Winter Weather	Bristol, Plymouth	$20,000 (B) $20,000 (P)	Icy conditions cause multi-car accident on I-95, roughly one tenth ice accumulation recorded in Plymouth County causing several vehicle accidents
3/3/2018	Nor'easter, Flooding	Bristol, Norfolk, Plymouth	No damages documented	Heavy snow, rainfall, and winds cause storm conditions that took out power and caused two storm-related deaths reported in the state, FEMA declared disaster DR-4372-MA
3/13/2018	Winter Storm	Bristol, Norfolk	$100,000 (B), $57,000 (N), $50,000 (P)	11-7 inches of snow in Bristol County, trees and wires down across the county. 10-20 inches across Norfolk County with similar results. There were two storm related deaths in the state, FEMA declared disaster DR-4379-MA
10/30/2020	Winter Weather, Heavy Snow	Bristol, Norfolk, Plymouth	$2,400 (B), $1,800 (N)	3-4 inches of very heavy, wet snow fell across Bristol County, caused tree and powerlines to collapse, 5-7 inches in Norfolk County, and 11-18 inches in Plymouth County

Date	Type	County Affected	Damage (County-wide)	Comments
12/16/2020	Heavy Snow	Bristol, Norfolk, Plymouth	No damages documented	7-10 inches in Bristol County, 12-17 inches of snow in Norfolk County, and 8-14 in Plymouth County
1/28/2022	Strong Winter Storm	Bristol, Norfolk, Plymouth	$2,500 (P)	Southeast MA covered in 30 in of snow with high wind gusts, FEMA declared disaster DR-4651-MA

Source: National Centers for Environmental Information Storm Events Database, NOAA, 2013-2022.

*Notes: (B) – Bristol County; (N) – Norfolk County; (P) – Plymouth County

Severity & Potential Extent of Impact

Even as winters are globally becoming warmer, blizzard and severe storm conditions are increasing due to climate change. These types of storms already occur frequently, and climate change will exacerbate that frequency and severity, putting more focus on higher damage predictions.[74] The combined impacts of winter storm events come from high winds, heavy snow, icy conditions, and possible extremely cold temperatures.

For Abington, Easton, and Stoughton, this means power outages, blocked roads, and damaged infrastructure as well as potential loss of human life from a multitude of secondary impacts like vehicular accidents or hypothermia. Especially vulnerable populations include those with limited access to mobility, including senior citizens and those with mental or physical disabilities due to extreme cold and dangerous conditions that could potentially leave people stranded or isolated for long periods of time.

The potential severity for winter storms in the Planning Area is **Critical:** *Multiple injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 week.*

Frequency & Probability of Future Occurrence

The probability of future occurrences of winter storm events impacting Abington, Easton, and Stoughton based on past event occurrences and the impact of climate change is **Highly Likely:** *Between 10-100% probability in the next year.* Even as winters are globally becoming warmer, blizzard and severe storm conditions are increasing due to climate change.

4.8 Fire-Related Hazards

4.8.1 Wildfires

Description

A fire that burns through vegetation that is predominantly shrubs, brush, and scrub growth is known as a brushfire. Favorable fire conditions arise from extended periods of hot, dry weather and accumulated

[74] "Climate Change and Natural Hazard Taxonomy," Massachusetts State Hazard Mitigation and Climate Adaptation Plan, 2018.

vegetation. While wildfires are generally associated with thousands of acres of trees burning, brushfires tend to be smaller, confined to the understory, and manageable. Both wildfires and brushfire spread faster in hot, dry conditions where fuels like shrubs, trees, and dry grasses are available.

Wildfires and brushfires can be caused by human interference (i.e., campfires or auto accidents) or by various natural (i.e., lightning) actions. Wildfire season in Massachusetts lasts from March to June, with April being the month that fires are most likely to occur. Factors like yearly snowpack, droughts, and weather conditions like wind can all impact the start, strength, and spread of brushfires in the area.

Wildfires are classified by their size and progression through the National Fire Danger Rating System (NFDRS). Once a wildfire has been detected and the area assessed, the wildfire is assigned one of the following categories from lowest to highest:

- Fire Danger Level: Low (usually burn off after a few hours of water, caused by intense heat sources like lightning)
- Fire Danger Level: Moderate (growing and threatening, especially on windy days, easier to control)
- Fire Danger Level: High (aggressive fires that spread easily in small fuel and ignite readily)
- Fire Danger Level: Very High (spread rapidly and intensely after ignition and are visible from far away)
- Fire Danger Level: Extreme (major very aggressive fire that may last for days and is visible from far distances).[75]

These categories may change as the wildfire continues to burn depending on the types of fuels, weather conditions, and slopes in the vicinity of the fire.

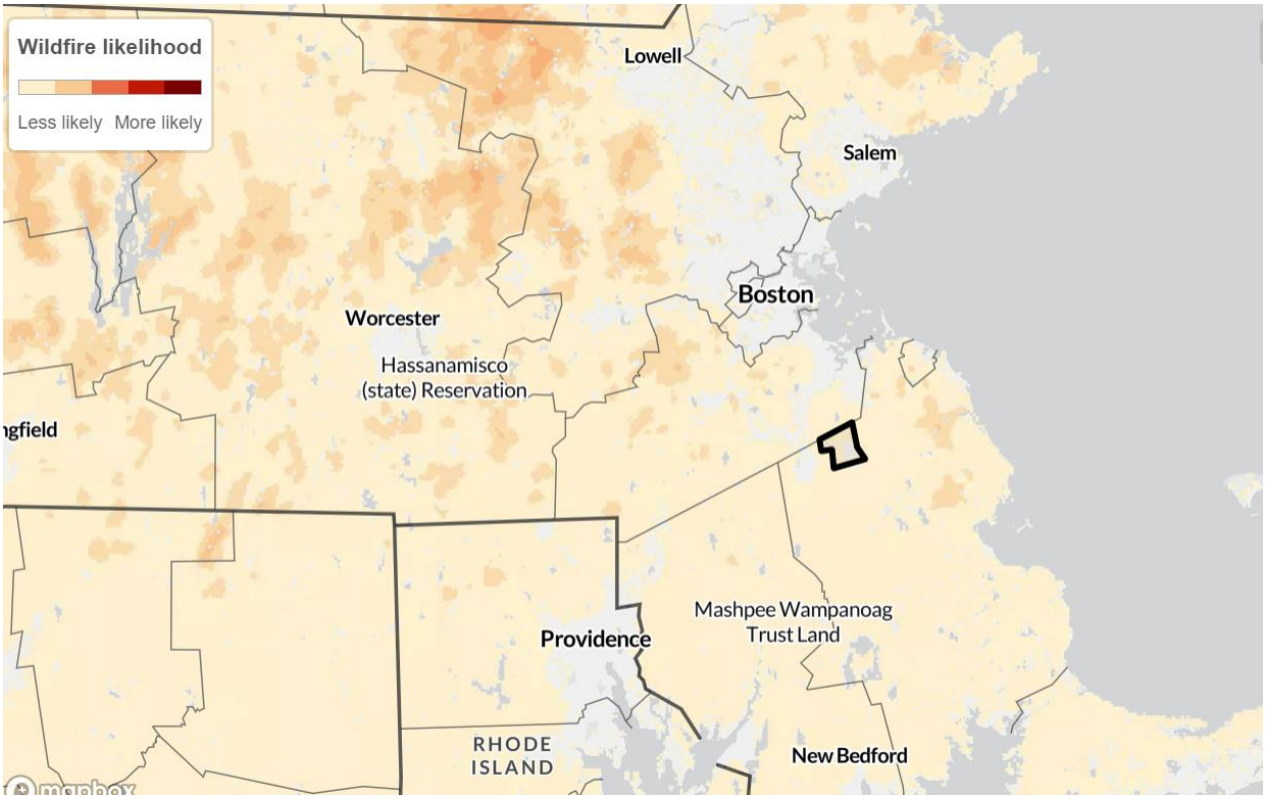
LOCATION OF OCCURRENCE

The ecosystems that are most susceptible to the wildfire hazard are pitch pine, scrub oak, and oak forests, as these areas contain the most flammable vegetative fuels.[76]

Within the context of the United States wildfires do not commonly occur in Massachusetts. Figure 4.2 shows the potential of wildfire occurrences within the region. Within Abington, Easton, and Stoughton the impact area of a wildfire is **Small:** *Less than 10% of the town affected.*

[75] "National Fire Danger Rating System," United States Department of Agriculture, https://www.fs.usda.gov/detail/cibola/landmanagement/resourcemanagement/?cid=stelprdb5368839
[76] "Fire-Related Hazards," Natural Hazard Mitigation Plan for the Old Colony Region, 2015.

Figure 4.2: Wildfire Risk in the United States



Source: Wildfire Risk to Communities. USDA Forest Service. https://wildfirerisk.org/

HISTORY OF WILDFIRES

No wildfires were recorded from 2015 - 2023 in the Planning Area by the National Centers for Environmental Information Storm Events Database from NOAA or the Fire, Weather & Avalanche Center.

SEVERITY & POTENTIAL EXTENT OF IMPACT

Due to the impacts of climate change, longer periods of drought and more severe storms that bring lightning strikes greatly increase the potential for ignition of fires in town. A large brushfire on could destroy large tracts of forest, homes, and utility lines affecting power, internet, and phone service. Smoke inhalation could cause breathing problems to residents, especially to vulnerable populations like seniors, low-income residents without sufficient access to safe air quality, or those with pre-existing conditions including Asthma.

In Abington, though high rates of development are lessening the risk for wildfires, areas like Ames Nowell State Park, that contain a majority deciduous forest, may be susceptible to fires in their driest season.[77] [78] Areas of potential fire spread in Abington, however, are not near to densely populated areas, so Abington's neighborhoods are not extremely vulnerable to large wildfires.

[77] Commonwealth of Massachusetts, "MassGIS Data: 2016 Land Cover/Land Use," Mass.gov, n.d., https://www.mass.gov/info-details/massgis-data-2016-land-coverland-use.
[78] "How different tree species impact the spread of wildfire," Alberta Government, 2012.

Much of Easton is covered in forested wetland, which are less likely to promote fire spread.[79] The area most at risk for the spread of fire is likely the area containing the Clifford G. Grant Reservation, Easton Town Forest, and Oliver Ames Parker Reservation. This large area contains a mix of deciduous and evergreen forest and is close to Easton Middle school – but it also contains wetlands, which may help to slow the spread of a wildfire if one were to occur. The Easton Fire Department is also located less than 1000 feet away from the property, providing quick response.[80]

In Stoughton, areas like the Chemung Hill Conservation Area, Ames Long Pond Area, and Stoughton Memorial Conservation Land present potential for fire spread due to their deciduous and evergreen forest makeup. Of these three locations, only the Chemung Hill conservation Area is adjacent to a more populous neighborhood and approximately 2 miles from the Stoughton Fire Department.[81]

Even after a fire has been stopped by fire services, there are lasting impacts to individuals and communities like the potential loss of property or life. Because of this, the damage potential for brushfires in Abington, Easton, and Stoughton is rated as **Limited:** *Minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 day.*

FREQUENCY & PROBABILITY OF FUTURE OCCURRENCE

Yearly snowpack is expected to decrease because of climate change, meaning that there will be fewer water sources resulting from snow melt and drier spring and summer groundwater conditions – causing more ample opportunity for the spread of wildfires or brushfires on dried vegetation and ground. Increased periods of drought will also cause the potential for wildfire to start and spread to increase. Rising temperatures also impact the number of lightning events per year, meaning the chance of lightning ignition of wildfires becomes a higher risk. Therefore, the probability of future occurrence is **Possible:** *Between 1-10% probability in the next year.*

4.9 GEOLOGIC HAZARDS

4.9.1 EARTHQUAKES

DESCRIPTION

An earthquake is the result of a sudden release of energy in the Earth's crust that creates seismic waves. The felt motion is the result of several kinds of seismic vibrations. The primary, secondary, and surface waves cause different vibrations that may impact structure. Primary waves are the first waves to cause the vibrations of a building and secondary waves can cause structures to vibrate from side to side. Surface waves arrive last and may cause low-frequency vibrations and are more likely to cause tall buildings to vibrate. Surface waves decline less rapidly than body waves, so as the distance from the fault increases, tall buildings located at farther distances from the epicenter can still be damaged. Damaging earthquakes can cause soil liquification, ground displacement, flooding, and increase fire risks.[82]

Earthquakes are measured on the Mercalli scale; a modified version that is commonly used in news stories and public communication is shown in Figure 4.3.

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[79] Robert Sanders, "Wildfire Management vs. Fire Suppression Benefits Forest and Watershed," Berkeley News, October 29, 2018, https://news.berkeley.edu/2016/10/24/wildfire-management-vs-suppression-benefits-forest-and-watershed/.

[80] Commonwealth of Massachusetts, "MassGIS Data: 2016 Land Cover/Land Use," Mass.gov, n.d., https://www.mass.gov/info-details/massgis-data-2016-land-coverland-use.

[81] Ibid.

[82] "Geological and Mining Engineering and Sciences: Earthquakes," Michigan Technological University.

Figure 4.3: Modified Mercalli Scale

Earthquake Magnitude Scale

Magnitude	Earthquake Effects	Estimated Number Each Year
2.5 or less	Usually not felt, but can be recorded by seismograph.	Millions
2.5 to 5.4	Often felt, but only causes minor damage.	500,000
5.5 to 6.0	Slight damage to buildings and other structures.	350
6.1 to 6.9	May cause a lot of damage in very populated areas.	100
7.0 to 7.9	Major earthquake. Serious damage.	10-15
8.0 or greater	Great earthquake. Can totally destroy communities near the epicenter.	One every year or two

Source: "Modified Mercalli Intensity Scale," Michigan Technological University.

Location of Occurrence

Earthquakes can occur anywhere within Massachusetts, which is situated on the North American Plate, though the Planning Area is more likely to feel the aftershocks of earthquakes originating from Canada, where the plates are more seismically active.[83] A significant earthquake event has the potential to impact a large area – **Large:** *More than 50% of the town affected.*

History of Earthquakes

No earthquakes of note have been recorded in the years since the 2015 plan.

Severity & Potential Extent of Impact

Hazus tracks the building damage by building type and zoning type for earthquake scenarios. It also estimates the number of people that will be injured and killed, broken down into four levels that describe the extent and severity of injuries. The levels are:

1. Severity Level 1: Injuries will require medical attention, but hospitalization is not needed.
2. Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
3. Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
4. Severity Level 4: Victims are killed by the earthquake.[84]

All new buildings and developments in each municipality are required to meet the MA State standards for structural design that are based on the 2015 International Building Code from the International Code Council (ICC). The standards use an equation to determine the seismic loads for foundation and retaining walls that must be examined by a design professional for approval.[85] While new buildings uphold international standard, the buildings most at risk during an earthquake are structures built before 1975 when the first edition of the Massachusetts State Building Code became effective.[86] Earthquakes could also cause severe damage to dams and other important infrastructure.

[83] "Earthquake Hazard Profile," Massachusetts State Hazard Mitigation and Climate Adaptation Plan, 2018.
[84] FEMA Hazus: Earthquake Global Risk Report (Center of Town event), May 2021
[85] 780 CMR: Massachusetts Amendments to the International Building Code 2015
[86] Commonwealth of Massachusetts, "Dates and Editions of Massachusetts Building Code (780 CMR)," Mass.gov, n.d., https://www.mass.gov/service-details/dates-and-editions-of-massachusetts-building-code-780-cmr.

In each town, populations including seniors, populations with mobility challenges, and Environmental Justice populations are more vulnerable in a potential earthquake scenario. Maps identifying where these populations may reside in each Town are provided in Appendix A. Ensuring the residential buildings of vulnerable populations and other critical facilities maintain safe construction and maintenance to withstand earthquakes will help to reduce risk for damage to buildings and potential injuries or fatalities. The Hazus data outlines in the sections below describes the potential for property damage, injury, casualties, and any interruption to regular operations from a hurricane or tropical storm event

As shown in the Tables below, the potential severity for a major earthquake event in each town represented from the Hazus analyses for the Planning Area is close to exactly **Critical:** *Multiple injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 week.*

ABINGTON

The Hazus analysis for earthquakes is based on a potential event where the epicenter of a magnitude 5 earthquake originated in the center of Abington. In this scenario, 2,650 buildings in town suffer damage, and 59 of those buildings are potentially destroyed completely. This potential earthquake event causes $244,992,900 in property damage. Most of the impacted buildings (1,978) are single family residential homes, followed by other residential and commercial buildings. Hazus estimates at least moderate damage (more than 50%) will be done to essential facilities, including five schools, the emergency operation center, the police station, and the fire station.

Table 4.29: Abington Earthquake Hazus Data, 2021[87]

Abington		5 Magnitude, Center of Town
Building Characteristics	Estimated Total Number of Buildings	5,222
	Estimated total building replacement value	$2,154,962,000
	Estimated residential building value	$1,751,843,000
	Estimated non-residential building value	$403,119,000
Building Damages	# of buildings sustaining no damage	2,571
	# of buildings sustaining slight damage	1,531
	# of buildings sustaining moderate damage	829
	# of buildings sustaining extensive damage	231
	# of buildings completely damaged	59
Population Needs	# of households displaced	301
	# of people seeking public shelter	162
Debris	Building debris generated (tons)	50,000
	Brick/Wood	21,000

[87] Ibid.

Abington		5 Magnitude, Center of Town
	Reinforced Steel/Concrete	29,000
	# of truckloads to clear building debris (@ 25 tons/truck)	2,000
Damages	Value of Damages	$291,820,000
	Total property damage	$244,992,900
	Total losses due to business interruption	$46,855,600
Casualties **[1]Injuries will require medical attention but hospitalization is not needed.** **[2]Injuries will require hospitalization but are not considered life-threatening.** **[3]Injuries will require hospitalization and can become life threatening if not promptly treated.**	**2:00 AM**	
	Level 1 Injuries[1]	36
	Level 2 Injuries[2]	8
	Level 3 Injuries[3]	1
	Deaths	2
	2:00 PM	
	Level 1 Injuries[1]	106
	Level 2 Injuries[2]	26
	Level 3 Injuries[3]	4
	Deaths	7
	5:00 PM	
	Level 1 Injuries[1]	68
	Level 2 Injuries[2]	17
	Level 3 Injuries[3]	2
	Deaths	4

EASTON

The Hazus analysis for earthquakes is based on a potential event where the epicenter of a magnitude 5 earthquake originated in the center of Easton. In this scenario, 3,792 buildings in town suffer damage to some degree, and 88 of those buildings are potentially destroyed completely. This potential earthquake event causes $429,643,100 in total property damage. Most of the impacted buildings (around 2,813) are single family residential homes, followed by other residential and commercial buildings. Hazus estimates at least moderate damage (more than 50%) will be done to essential facilities, including seven schools, one emergency operation center, the police station, and one fire station.

Table 4.30: Easton Earthquake Hazus Data, 2021[88]

Easton		5 Magnitude, Center of Town
Building Characteristics	Estimated Total Number of Buildings	7,494
	Estimated total building replacement value	$3,588,253,000
	Estimated residential building value	$2,683,317,000
	Estimated non-residential building value	$904,936,000
Building Damages	# of buildings sustaining no damage	3,703
	# of buildings sustaining slight damage	2,161
	# of buildings sustaining moderate damage	1,194
	# of buildings sustaining extensive damage	349
	# of buildings completely damaged	88
Population Needs	# of households displaced	273
	# of people seeking public shelter	159
Debris	Building debris generated (tons)	98,000
	Brick/Wood	37,240
	Reinforced Steel/Concrete	60,760
	# of truckloads to clear building debris (@ 25 tons/truck)	3,920
Damages	Value of Damages	$507,680,000
	Total property damage	$429,643,100
	Total losses due to business interruption	$78,036,500
Casualties **[1]Injuries will require medical attention but hospitalization is not needed.** **[2]Injuries will require hospitalization but are not considered life-threatening.** **[3]Injuries will require hospitalization and can become life threatening if not promptly treated.**	**2:00 AM**	
	Level 1 Injuries[1]	58
	Level 2 Injuries[2]	13
	Level 3 Injuries[3]	2
	Deaths	3
	2:00 PM	
	Level 1 Injuries[1]	152
	Level 2 Injuries[2]	38
	Level 3 Injuries[3]	5

[88] Ibid.

Easton		5 Magnitude, Center of Town
	Deaths	10
	5:00 PM	
	Level 1 Injuries[1]	103
	Level 2 Injuries[2]	25
	Level 3 Injuries[3]	4
	Deaths	7

STOUGHTON

The Hazus analysis for earthquakes is based on a potential event where the epicenter of a magnitude 5 earthquake originated in the center of Stoughton. In this scenario, 4,692 or 49.4% buildings in town suffer damage to some degree and 106 of those buildings are potentially destroyed completely. This potential earthquake event causes $537,601,400 in total property damage. Most of the potentially damaged buildings (around 3,541) are single family residential homes, followed by other residential and commercial buildings. Hazus estimates at least moderate damage (more than 50%) will be done to essential facilities, including one hospital, eight schools, two emergency operation centers, the police station, and the fire station.

Table 4.31: Stoughton Earthquake Hazus Data, 2021[89]

Stoughton		5 Magnitude, Center of Town
Building Characteristics	Estimated Total Number of Buildings	9,285
	Estimated total building replacement value	$4,325,604,000
	Estimated residential building value	$3,087,567,000
	Estimated non-residential building value	$1,238,037,000
Building Damages	# of buildings sustaining no damage	4,594
	# of buildings sustaining slight damage	2,707
	# of buildings sustaining moderate damage	1,467
	# of buildings sustaining extensive damage	412
	# of buildings completely damaged	106
Population Needs	# of households displaced	425
	# of people seeking public shelter	245
Debris	Building debris generated (tons)	119,000
	Brick/Wood	45,220
	Reinforced Steel/Concrete	73,780

[89] Ibid.

Stoughton		5 Magnitude, Center of Town
	# of truckloads to clear building debris (@ 25 tons/truck)	4,760
Damages	Value of Damages	$633,210,000
	Total property damage	$537,601,400
	Total losses due to business interruption	$95,610,700
Casualties **[1]Injuries will require medical attention but hospitalization is not needed.** **[2]Injuries will require hospitalization but are not considered life-threatening.** **[3]Injuries will require hospitalization and can become life threatening if not promptly treated.**	**2:00 AM**	
	Level 1 Injuries[1]	59
	Level 2 Injuries[2]	13
	Level 3 Injuries[3]	2
	Deaths	3
	2:00 PM	
	Level 1 Injuries[1]	173
	Level 2 Injuries[2]	43
	Level 3 Injuries[3]	6
	Deaths	12
	5:00 PM	
	Level 1 Injuries[1]	112
	Level 2 Injuries[2]	27
	Level 3 Injuries[3]	4
	Deaths	7

FREQUENCY & PROBABILITY OF FUTURE OCCURRENCE

Earthquakes are a geologic hazard, not impacted by changes in the climate; therefore, the probability of future earthquake events occurring is still **Possible:** *Between 1-10% probability in the next year.*

4.10 OTHER NATURAL HAZARDS

4.10.1 DROUGHT

DESCRIPTION

Drought is characterized as a continuous period in which rainfall is significantly below the normal amount for a particular area. These events are a gradual phenomenon that occur slowly, over a multi-year period.

The National Drought Mitigation Center uses five classes of categorization for the impact of drought:

- Meteorological – A measure of departure of precipitation from normal, defined solely on the degree of dryness. Due to climatic differences, what might be considered a drought in one location of the country may not be a drought in another location.

- Hydrological – The effects of periods of precipitation shortfalls on the surface or subsurface water supply. Occurs when these water supplies are below normal.
- Agricultural – It occurs when there is not enough water available for a particular crop to grow at a particular time. Agricultural drought is defined in terms of soil moisture deficiencies relative to the water demands of plant life, primarily crops.
- Socioeconomic – Occurs when the demand for an economic good exceeds the supply as a result of a weather-related shortfall in the water supply.
- Ecological – An episodic deficit in water availability that drives ecosystems beyond thresholds of vulnerability, impacts ecosystem services, and triggers feedbacks in natural and/or human systems (Crausbay et al., 2017).[90]

The U.S. Drought Monitor (USDM) uses the frequency of occurrence of a drought event "relative to all historical measured events expressed as percentiles to gage the severity of a measurement at individual stations and to gage the severity of overall drought."[91] The 2019 MA Drought Management Plan (DMP) revises the USDM percentages of drought and splits them into four categories instead of USDM's five. Using local streamflow data instead of national averages, the 2019 DMP specifies the USDM data for Massachusetts conditions and sets local expectations and definitions for drought definitions.

Figure 4.4: Comparison of Percentile Ranges for the Massachusetts DMP and the USDM

USDM Names	Recurrence	Percentile Ranges	MA DMP Levels	MA Percentile Ranges	MA DMP Names
D0: Abnormally Dry	once per 3 to 5 years	21 to 30	1	>20 and ≤30%	Mild Drought
D1: Moderate	once per 5 to 10 years	11 to 20	2	>10 and ≤20%	Significant Drought
D2: Severe Drought	once per 10 to 20 years	6 to 10	3	>2 and ≤10%	Critical Drought
D3: Extreme Drought	once per 20 to 50 years	3 to 5			
D4: Exceptional Drought	once per 50 to 100 years	0 to 2	4	≤2%	Emergency

Source: "Exhibit 1. Comparison of Percentile Ranges for the Massachusetts DMP and the USDM," Massachusetts Drought Management Plan 2019.

LOCATION OF OCCURRENCE

All four towns are susceptible to drought conditions. Each drought period can affect all or parts of each community at different levels of intensity based on long term-factors like the volume of groundwater recharge accumulated from yearly snowpack and precipitation. The state measures droughts in six regions in the Massachusetts Drought Management Plan to better focus on specific watersheds and tailor drought response actions.[92] For Abington and Stoughton, the impact area of a drought is **Medium:** *10 to 50% of*

[90] Wilhite, D.A.; and M.H. Glantz, "Understanding the Drought Phenomenon: The Role of Definitions," Water International 10(3):111–120, 1985, Retrieved from the National Drought Mitigation Center, 2022.
[91] U.S. Drought Monitor
[92] "Drought Hazard Profile," Massachusetts State Hazard Mitigation and Climate Adaptation Plan, 2018.

the town affected. These two towns rely on water services from authorities. Abington receives water service from the Abington - Rockland Joint Water Works[93] and Stoughton relies on the Massachusetts Water Resources Authority.[94]

Easton has a potential drought impact area that is **Large:** *More than 50% of the town affected*, due to use of a well-based system in both towns. Easton has six wells and one well field.[95] Droughts have the potential to lower the water table and well output, increase water costs, and may influence overall water quality due to a lower dilution of contaminants.[96]

HISTORY OF DROUGHTS

Table 4.32 below lists known drought periods and damages recorded in Plymouth, Bristol, and Norfolk County from 2015 through 2022. Specific losses incurred by Abington, Easton, and Stoughton are noted where information was available. This table does not list every event that has occurred in the area but does list those that impacted Abington, Easton, or Stoughton directly, or had a high damage cost to each county.

Table 4.32 Drought History in Bristol, Norfolk, and Plymouth Counties

Date	Type	County Affected	Damage (County-wide)	Comments
8/31/2016 - 1/24/2017	Drought	Bristol, Norfolk, Plymouth	N/A	An extended period of drought that shifted between severe, extreme and moderate in MA.
7/7/2020 - 12/8/2020	Drought	Bristol, Norfolk, Plymouth	N/A	An extended period of drought that shifted between severe, extreme and moderate in MA.
5/10/2022 - Ongoing as of this plan	Drought	Bristol, Norfolk, Plymouth	N/A	An extended period of drought that shifted between severe, extreme and moderate in MA. Abington and Easton instated a Water Ban in the worst weeks of the drought.

Source: National Centers for Environmental Information Storm Events Database, USDM, NOAA, 2015-2022.

SEVERITY & POTENTIAL EXTENT OF IMPACT

Though drought events may not have a notable severe impact in any of the Planning Area's counties, they are likely to result in meteorological and hydrological consequences that could make natural and urban

[93] "Abington - Rockland Joint Water Works | Abington MA," n.d., https://www.abingtonma.gov/abington-rockland-joint-water-works.
[94] "MWRA: About MWRA," n.d., https://www.mwra.com/02org/html/whatis.htm.
[95] "Annual Water Quality Report: Reporting Year 2021," 2021 Consumer Report, n.d., https://cms2.revize.com/revize/eastonma/departments/dpw/water_division/docs/2021ConsumerConfidenceReport.pdf.
[96] Bobby Magill and Emily Dooley, "It's Not Just Water Supply: Drought Harms Water Quality, Too," July 12, 2021, https://news.bloomberglaw.com/environment-and-energy/its-not-just-water-supply-drought-harms-water-quality-too.

landscapes more vulnerable to flood conditions. Dry and compacted ground conditions limit the absorption of water in heavy precipitation events, increasing the risk of flooding and dam failure.[97] Droughts also impact local habitats and may cause water shortages for the populations of each town.

Droughts also have the potential to cause health problems associated with poor water quality, decrease opportunity for recreation, and increase the potential for heat stroke. Increased drought magnitude may also increase water costs, so vulnerable populations like seniors, and low-income or Environmental Justice Populations may be more severely impacted economically and physically by drought events.

ABINGTON

Abington belongs to the Abington - Rockland Joint Water Works, and very few residents rely on private wells.[98] In August 2022, the Water Authority instated an outside use water ban due to drought conditions and experience high levels of PFAS in town water. A major project to redesign one of the system's plants is set to begin in 2023.[99] Due to MA drought trends and climate change, the potential severity for these increasingly common events is **Minor:** *Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of facilities.*

EASTON

Though drought events may not have a notable severe impact in any of the Planning Area's counties, they are likely to result in meteorological and hydrological consequences that could make stormwater systems more vulnerable to flood conditions. Easton, relies on a well-system for water supply. A drought event could impact water quality and levels for many residents, causing harm to the health, safety, and welfare of the community.[100] Agricultural resources in town have been impacted by recent severe droughts.

The potential severity for these increasingly common events is **Minor:** *Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of facilities*, but that may change in the next iteration of the HMP depending on the impacts of climate change and the frequency of severe droughts that may have a more of an impact on local agricultural operations.

STOUGHTON

Though the historic data is gathered at a county level, the Town of Stoughton keeps records of water events through the News tab on their website and publishes any information to the public. Several Town meetings minutes and reports in 2016 note that the drought at the time impacted gravel and grass landscaping around school complexes and noted that trees and their roots may have weakened due to lack of sufficient water.[101]

In early August 2022 the Stoughton Fire Department published warnings on their social media accounts regarding the extreme heat and drought of the time and the increased possibility for wildfires to start. The Department's notification is an example of how notification of a hazard event could help to prevent

[97] "Drought, Floods and the Climate Crisis," Tearfund, n.d., https://www.tearfund.org/stories/2022/08/drought-floods-and-the-climate-crisis.
[98] Assistant Town Planner, Public Meeting held January 17, 2023
[99] "PFAS Levels in Water Again Rise above Limits," Abington News, September 1, 2022, https://abingtonnews.org/2022/09/01/pfas-levels-in-water-again-rise-above-limits/.
[100] "Water Supply," Drought.gov, July 21, 2020. https://www.drought.gov/topics/water-supply.
[101] Conservation Committee Meeting Minutes, Abington, MA, October 6, 2016.

further natural hazard events from occurring. Drought levels impact the chance of wildfire occurrences because they provide the opportunity for more dry fuel to be at risk of spreading fires.[102]

The potential severity for these increasingly common events is **Minor:** *Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of facilities.* Drought events do have the potential to cause other natural hazard events like wildfires to begin, so this ranking is based solely on drought events alone.

Frequency & Probability of Future Occurrence

Climate change may be bringing more annual precipitation events and totals, but it will also cause more unpredictable and severe drought periods seasonally. These droughts will impact groundwater and reservoir water supply systems, which will exacerbate dry periods due to reduced evaporation and ground absorption levels. More drought events mean flooding events become more common because of saturation levels, and more brushfire events because of an increase in dry fuels for fire spread. The probability of future occurrences of severe or extreme drought events impacting the Planning Area based on past event occurrences and the impact of climate change is **Likely:** *Between 10-100% probability in the next year*.

4.10.2 Extreme Temperatures

Description

The State HMP states that an average of two extreme heat and one and a half extreme cold weather events per year have occurred in the last two decades, and the number of these events is only expected to rise as climate change impacts global temperatures and weather patterns.[103]

Extreme heat is rated on a scale that includes more than just temperature. The measurement also includes relative humidity to account for the physical impact of heat on humans. The scale is also based on low-wind and shady conditions since exposure to full sun can increase overall temperatures.[104] Extreme heat can also be impacted by the level of development in an area; areas with more asphalt and less greenery or fewer trees can be measured at much hotter temperatures than nearby green space.

Extreme cold is regionally defined. In Massachusetts, it involves temperatures below 0° Fahrenheit.[105] Extreme cold is measured through the wind chill index. The index attempts to quantify the cooling effect of wind with the actual outside air temperature to determine a wind chill temperature, which is often colder than the base temperature. The wind chill temperature represents how cold it feels to humans and animals, based on the rate of heat loss from exposed skin. Extreme cold conditions may occur during, after, or without any connection to a winter storm.

The two figures below show the National Weather Service's indices for windchill and extreme heat – both are coded to give a sense of what temperatures are extremely dangerous to exist in based of temperature and humidity for the Heat Index and temperature and wind chill for the windchill chart.

[102] "Oppressive Heat and Increased Fire Danger Through This Weekend 5-8 August 2022," Town of Stoughton News and Announcements, 2022.
[103] Massachusetts State Hazard Mitigation and Climate Adaptation Plan, 2018.
[104] Ibid.
[105] Ibid.

Figure 4.5 National Weather Service Heat Index

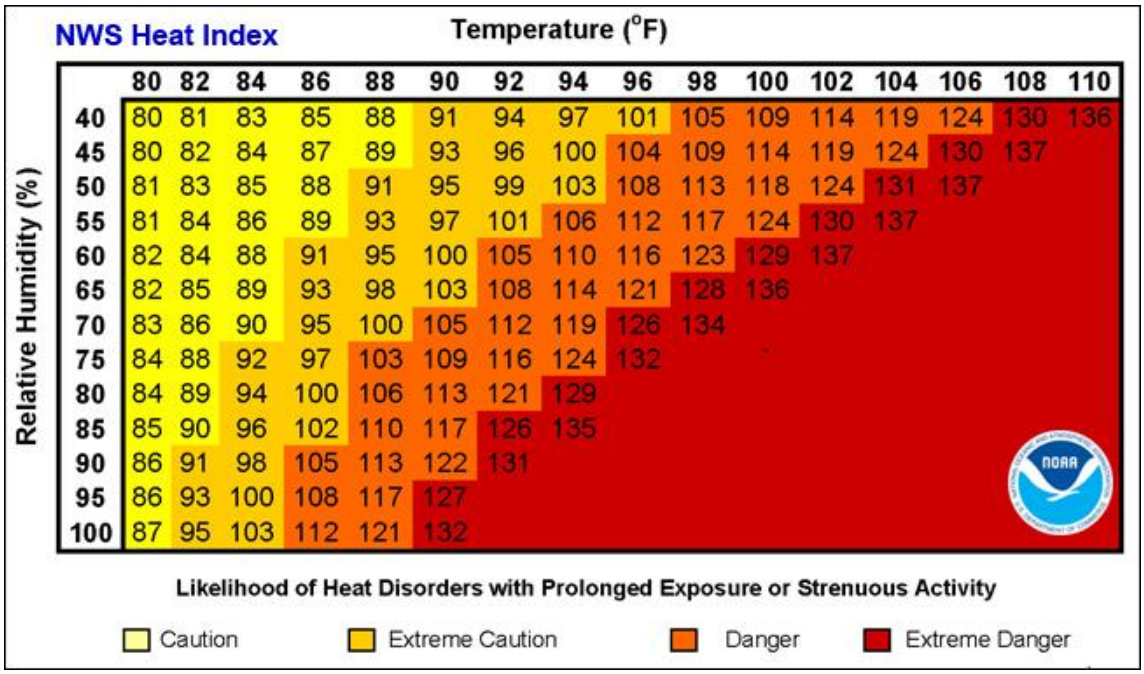
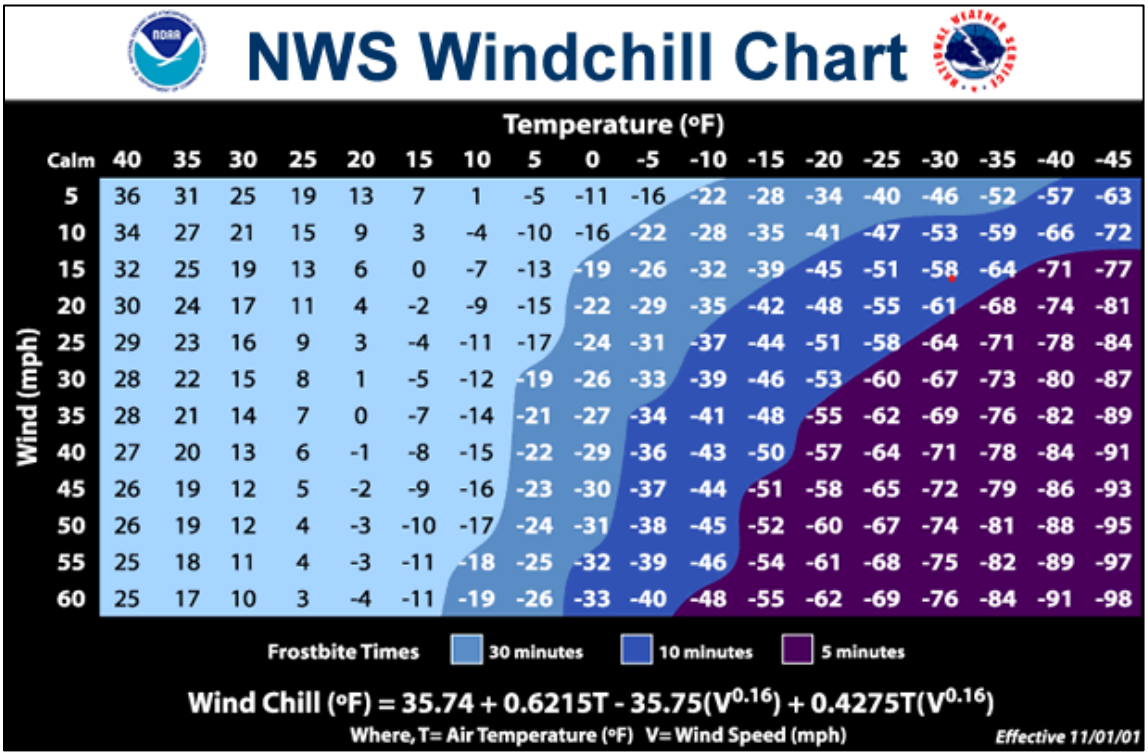


Figure 4.6 National Weather Service Windchill Chart



LOCATION OF OCCURRENCE

According to NOAA, Massachusetts is made up of three climate divisions: Western, Central, and Coastal. Abington, Easton, and Stoughton fall within the Coastal division despite not being literal coastal communities. Average annual temperatures vary slightly over the divisions, with annual average

temperatures of around 50°F in the Coastal division. Extreme temperature events occur more frequently and vary more in the inland regions where temperatures are not moderated by the Atlantic Ocean.

Extreme temperature events will impact all Towns, and their impact area is **Large:** *More than 50% of the town affected.*

HISTORY OF EXTREME TEMPERATURES

Table 4.33 below lists periods of extreme temperature and damages recorded in Plymouth, Bristol, and Norfolk County from 2015 through 2022. The National Centers for Environmental Information Storm Events Database defines both extreme heat and extreme cold by locally/regionally established excessive thresholds and rely on the NWS Heat Index and Windchill Charts shown in Figures Figure **4.5** and Figure **4.6**. Specific losses incurred by Abington, Easton, and Stoughton are noted where information was available. This table does not list every event that has occurred in the area but does list those that impacted Abington, Easton, or Stoughton directly, or had a high damage cost to each county.

Table 4.33: Extreme Temperature History for Bristol, Norfolk, and Plymouth Counties

Date	Type	County Affected	Damage (County-wide)	Comments
2/16/2015	Extreme Cold/Wind Chill	Norfolk, Plymouth	No damages documented	Norfolk County recorded wind chills as low as 29 below zero, and Plymouth County recorded 28 below zero – all related to a serious winter storm
2/13/2016 - 2/14/2016	Extreme Cold/Wind Chill	Bristol, Norfolk, Plymouth	No damages documented	Wind chills as low as 28 below zero were reported in Bristol County, wind chills as low as 40 below zero in Norfolk County, and 36 below zero were reported in Plymouth County - from Arctic high pressure
7/3/2018	Excessive Heat	Plymouth	No damages documented	From Marshfield, Plymouth County reported a Heat Index of 107 after a period of high pressure and humidity

Source: National Centers for Environmental Information Storm Events Database, NOAA, 2015-2022.

SEVERITY & POTENTIAL EXTENT OF IMPACT

Extreme cold or heat are dangerous to human life, livestock, crops, and infrastructure. Heat stroke, hypothermia, freezing and bursting pipes, and utility failure are some of the common impacts of extreme temperatures. Extreme heat can cause heat stroke or other heat-related illnesses and occur alongside or exacerbate drought and brushfire conditions. Extreme cold can cause dangerous or icy road conditions, power outages, and chances of hypothermia are a real threat to Massachusetts citizens, especially vulnerable populations with limited access to mobility like senior citizens, those with mental or physical disabilities, or children.

The potential severity for extreme temperature is **Limited:** *Minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 day.* Though infrastructural damage may be less common, the highest risk for extreme temperature events is the potential for loss of life.

FREQUENCY & PROBABILITY OF FUTURE OCCURRENCE

The risk of extreme heat is increasing due to climate change. A heat wave is defined as 3 or more days of temperatures of 90° Fahrenheit or above. By the end of the century the number of days in Massachusetts's summers above 90° Fahrenheit could increase to 13-56 days per summer.[106] Meanwhile, while the overall number of days of extreme cold may decrease, Arctic warming may cause a disruption to the Arctic polar vortex, pushing the extent of extreme cold and severe winter weather farther into the United States.[107]

The increase of extreme heat events causes the potential for power outages, heat-related illnesses, and other secondary impacts. The probability of future occurrences of extreme temperature events based on past event occurrences and the impact of climate change is **Likely:** *Between 10-100% probability in the next year.*

4.10.3 INVASIVE SPECIES

DESCRIPTION

The Massachusetts Invasive Plant Advisory Group (MIPAG) defines invasive species as "non-native species that have spread into native or minimally managed plant systems in Massachusetts, causing economic or environmental harm by developing self-sustaining populations and becoming dominant and/or disruptive to those systems."[108] These invasive species can come in the form of plants, insects, disease, or other wildlife, and often harm or even overtake the species that are natural to the area.

MIPAG defines invasive species for Massachusetts as "invasive," "likely invasive," and "potentially invasive" through meeting a number of criteria. "Invasive" plants are non-native species that cause economic or environmental harm, "likely invasive" are those that do not fully meet the "invasive" qualities of harm, and "potentially invasive" species are non-native and not yet naturalized in the state but have the potential to become more invasive. To come to a complete definition the criterion must be met in specific groupings and order. The criteria are:

1. Be nonindigenous to Massachusetts.
2. Have the biologic potential for rapid and widespread dispersion and establishment in minimally managed habitats.
3. Have the biologic potential for dispersing over spatial gaps away from site of introduction.
4. Have the biologic potential for existing in high numbers away from intensively managed artificial habitats.
5. Be naturalized in Massachusetts (persists without cultivation in Massachusetts).
6. Be widespread in Massachusetts, or at least common in a region or habitat type(s) in the state.
7. Have many occurrences of numerous individuals in Massachusetts that have high numbers of individuals forming dense stands in minimally managed habitats.
8. Be able to out-compete other species in the same natural plant community.
9. Have the potential for rapid growth, high seed or propagule production and dissemination, and establishment in natural plant communities.
10. Have at least one occurrence in Massachusetts that has high numbers of individuals forming dense stands in minimally managed habitats.

[106] Massachusetts State Hazard Mitigation and Climate Adaptation Plan, 2018.
[107] "Research Links Extreme Cold Weather in the United States to Arctic Warming," NOAA, September 2021.
[108] "About the group," Massachusetts Invasive Plant Advisory Group (MIPAG) https://www.massnrc.org/mipag/.

11. Have the potential, based on its biology and its colonization history in the northeast or elsewhere, to become invasive in Massachusetts.
12. Be acknowledged to be invasive in nearby states but its status in Massachusetts is unknown or unclear. This may result from lack of field experience with the species or from difficulty in species determination or taxonomy.
13. The species, if it becomes naturalized in Massachusetts, based on its biology and biological potential, would pose an imminent threat to the biodiversity of Massachusetts and
14. Its naturalization in Massachusetts is anticipated, and
15. The species has a documented history of invasiveness in other areas of the Northeast.[109]

Of the 725 non-native plants in Massachusetts, MIPAG has identified 72 species in the state as "Invasive," "Likely Invasive," or "Potentially Invasive."[110]

Instances of Invasive Species (Location and History)

Several invasive species are present throughout the Planning Area. According to invasive species trackers, state and local inventories, these species include oriental bittersweet (*Celastrus orbiculatus Thunb*.), European buckthorn (*Rhamnus cathartica L*.), purple loosestrife (*Lythrum salicaria*), Eurasian watermilfoil (*Myriophyllum spicatum L*.), Norway Maple (*Acer platanoides*), Common Reed (*Phragmites australius*), and knotweed (*Polygonum*).

Each participating town's Conservation Commission routinely issue Notices of Intent to clear invasive species from development sites. Though each town has a different experience with invasive species, all have noted the impact of oriental bittersweet on tree health, which is important to consider alongside damaging events like high wind or heavy snow events. Towns also noted the danger of plants like purple loosestrife and phragmites taking over wetlands areas that otherwise may provide flood storage, though no instances of this have been recorded at this time.

Severity & Potential Extent of Impact

There is no distinct impact on specific populations dies to invasive species, though agriculture may be impacted and therefore impact the livelihood of those working in this sector.

Abington

A 2019 Town report recommends an approval of a vote of Community Preservation Act funds to assist in clearing invasive species out of Island Grove. The Abington Master Plan also strategizes on how to protect Ames Nowell State Park from in invasive species in the pond there.[111]

The potential severity for invasive species encroachment is **Minor:** *Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of facilities.* The largest impact that invasive species have is on the health of the natural habitat of the area – which could have secondary effects on crops and water supply over time, raising the severity to medium or even high depending on how long an invasive species goes unchecked.

[109] "The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts" Massachusetts Invasive Plant Advisory Group, February 28, 2005
[110] "Invasive Plants ," Mass Audubon, https://www.massaudubon.org/learn/nature-wildlife/invasive-plants.
[111] "Strategy 2, Action 2.2," Abington Master Plan, 2019.

EASTON

Easton protects against the further encroachment of invasive species in their Low Impact Development (LID) requirements for landscaping design and stormwater management in their zoning bylaw. Invasive species have been especially noted for control in the Olmsted Rockery Area.

The potential severity for invasive species encroachment is **Minor:** *Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of facilities.* The largest impact that invasive species have is on the health of the natural habitat of the area – which could have secondary effects on crops and water supply over time, raising the severity to medium or even high depending on how long an invasive species goes unchecked.

STOUGHTON

Invasive species, especially buckthorn (*Rhamnus cathartica*), Norway Maple (*Acer platanoides*), Common Reed (*Phragmites australius*), and knotweed (*Polygonum*) have been noted as encroaching on Harris Pond and several detention basins across town. The Conservation Commission approved the treatment and removal of invasives in a detention basin of Turnpike Street in 2018, Ames Pond in 2016, and off Carson Road in 2015, along with several other sites across town.

The potential severity for invasive species encroachment is **Minor:** *Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of facilities*. The largest impact that invasive species have is on the health of the natural habitat of the area – which could have secondary effects on crops and water supply over time, raising the severity to medium or even high depending on how long an invasive species goes unchecked.

FREQUENCY & PROBABILITY OF FUTURE OCCURRENCE

The probability of future occurrences of invasive species based on past growth and the impact of climate change is **Likely:** *Between 10-100% probability in the next year*. Warming temperatures due to climate change may weaken native species and give way to the opportunity for invasive warmer-climate species.

5.0 Existing Capabilities and Mitigation Measures

5.1 Purpose

The purpose of this section is to identify the relevant assets, policies, and tools that the Towns of Abington, Easton, and Stoughton have at their disposal to address any needs related to hazard mitigation, and to identify any gaps and areas for improvement. This review of existing capabilities includes an analysis of any mitigation actions identified in the 2015 Old Colony Hazard Mitigation Plan and is an important step in in developing an updated strategy for the town to pursue during the next planning cycle.

The National Mitigation Framework emphasizes the valuable role of collaboration among various sectors to ensure that mitigation capabilities continue to grow and that comprehensive mitigation includes strategies for all community sectors. Examples of sectors with mitigation capabilities are those agencies and stakeholders responsible for:

- Emergency management.
- Economic development.
- Land use and development.
- Housing.
- Health and social services.
- Infrastructure (including transportation and other community lifelines).
- Natural and cultural resources.

In addition, FEMA's National Response Framework, 4th Edition identifies critical community lifelines, which are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. Community lifelines include the following:

- Safety and Security.
- Food, Water, Shelter.
- Health and Medical.
- Energy.
- Communications.
- Transportation.
- Hazardous Material.

This section will discuss the Towns' participation in local, state, and federal programs, identify town facilities and assets, and outline the policies, codes, and regulations in place to mitigate the natural hazards of concern described in the Natural Hazards Section. Describing the current capabilities provides a rationale for which mitigation projects can be undertaken to address the vulnerabilities identified in the Risk Assessment. Gaps and limitations for in capabilities may be addressed as actions in the mitigation strategy.

5.2 Federal and State Capabilities

5.2.1 Massachusetts Municipal Vulnerability Preparedness (MVP) Program

All four communities in this multijurisdictional HMP – Abington, Easton, and Stoughton – have conducted a Community Resilience Building (CRB) workshop under the Massachusetts Municipal Vulnerability Preparedness (MVP) Planning Program to address the growing vulnerabilities associated with climate change. Participation in the MVP Program, supported by the Executive Office of Energy and Environmental

Affairs (EEA), provides an opportunity for grant funding from the state for climate resilience and natural hazard related projects. Details of each town's workshops are shown below in Table 5.1.

Table 5.1 MVP Program Community Resilience Building Workshops.

Town	Date of Community Resilience Building Workshop
Abington	May 2020
Easton	November – December 2018
Stoughton	January 2020

MVP workshops are memorialized in a Summary of Findings Document that outlines a prioritized set of actions for a community to take to increase climate resilience. All actions are in different stages of completion, and the actions, recommendations, and other findings in each CRB Summary of Findings should be discussed by each town in an annual meeting regarding MVP and HMP priorities. In addition, the MVP Planning Program requires participating municipalities to submit a two-page yearly progress report in order to retain eligibility to compete for project funding under the MVP Action Grant program[112] All towns in the Planning Area are currently MVP certified and should commit to maintaining certification by submitting the yearly progress report.

A number of priority MVP actions identified by each town's Summary of Findings Report have been incorporated into this HMP as mitigation actions.

5.2.2 Massachusetts State Fire and Building Code

Massachusetts State Fire Code requires residents to obtain permits from local authorities before conducting outdoor burns. The Towns of Abington, Easton, and Stoughton all fully enforce this requirement.

Each Town also enforces Massachusetts State Building Code through local Building Inspectors and other administrative enforcement mechanisms detailed in Town bylaws. These codes ensure safety and capacity compliance, as well as protection for earthquakes, wind loads, and flooding.

5.2.3 Comprehensive Emergency Management Plan

Massachusetts Emergency Management Agency (MEMA) maintains a Comprehensive Emergency Management Plan (CEMP) to address all hazards that may threaten Massachusetts. Most recently updated in 2019, the CEMP addresses mitigation, preparedness, response, and recovery from a variety of natural and manmade emergencies. It also assigns roles and responsibilities for coordinating the response to an emergency or disaster.[113]

[112] Executive Office of Energy and Environmental Affairs. 2023. "MVP Planning Grant." January 3, 2023. https://www.mass.gov/service-details/mvp-planning-grant

[113] Massachusetts Emergency Management Agency. 2019. "Comprehensive Emergency Management Plan." https://www.mass.gov/lists/comprehensive-emergency-management-plan.

5.2.4 National Flood Insurance Program (NFIP)

Table 5.2 Planning Area NFIP Participation Summary[114][115]

	Abington	Easton	Stoughton
Current Status	Participating	Participating	Participating
Current Flood Insurance Rate Map (FIRM) Effective Date	7/6/2021	7/7/2009	7/17/2012
Current Flood Insurance Study (FIS) and Effective Date	Plymouth County, 7/6/2021	Bristol County, 7/6/2021	Norfolk County, 7/6/2021
Year Entered into Program	1977	1982	1982
Policies in Force	16	64	54
Insurance in Force	$ 4,343,000.00	$ 19,860,300.00	$ 18,150,600.00
Number of Paid Losses (Since Program Entry)	13	25	36
Total Losses Paid	$ 30,729.82	$ 128,057.06	$ 81,919.50
Properties in FEMA-designated Floodplains: A Zones	2	23	11
Properties in FEMA-designated Floodplains: AE Zones	5	9	2
Properties in FEMA-designated Floodplains: X Zones	9	32	41
Repetitive Loss (RL) Properties	0	2 (Residential)	1 (Residential)

All jurisdictions participating in the NFIP must designate a Local Floodplain Administrator who is responsible for ensuring continued compliance with the federal regulations. Historically, Abington's Building Official fills the role, and Easton and Stoughton's Building Inspectors fill the role in their respective towns.

Abington, Easton, and Stoughton continue to actively participate in the NFIP by adopting updates to the FIRMs as federal studies are completed, participating in Community Assistance Visits with state and/or federal representatives, answering and advising on floodplain management inquiries from the public, and promoting sound floodplain management decisions.

Each Town implements the substantial improvement and substantial damage (SI/SD) provisions of their floodplain management regulations as required per the NFIP (CFR Title 44, Parts 59 through 65) and the Massachusetts State Building Code (780 CMR). Abington addresses SI/SD provisions in its Flood Plain and Wetlands Protection District, while Easton and Stoughton both discuss SI/SD provisions in their Floodplain Overlay District Regulations. When necessary, the Towns coordinate with State Flood Hazard

[114] Federal Emergency Management Agency. "HudEX Report." August 4, 2022.
[115] Federal Emergency Management Agency. "Policies in Force Report." August 4, 2022.

Management Program staff to ensure that protocol is followed after a flooding event and that a post-disaster plan will be in place to implement all SI/SD provisions.

5.3 Local Capabilities

5.3.1 Tree Maintenance

Falling trees and tree branches are a potential impact of hazards such as winter storms, hurricanes and tropical storms, and other severe storms. These impacts can be caused by high winds and snow or ice accumulation and can subsequently cause downed power lines and local or widespread power outages. By regularly assessing tree health and ability to withstand high winds and snow or ice accumulation and maintaining a regular program of tree maintenance, communities can proactively mitigate the impacts of storm hazards.

Often, local utilities are responsible for tree trimming near power lines. During the HMP planning process, Abington noted that maintaining a good relationship with local gas and electric utilities has been beneficial for the town's planning and responses to hazardous storms. Communicating directly with utility providers about lead and response times is an important capability that can lead to improved post-hazard outcomes for all communities in this HMP.

5.3.2 Street Sweeping and Catch Basin Maintenance

Street sweeping removes sediment from paved roadways that may otherwise be washed into storm sewer systems. This prevents accumulation of sediment inside catch basins and stormwater infrastructure, freeing the system's capacity to accept and transport stormwater during high rainfall events.

Nutrients such as phosphorus and nitrogen can also be carried into surface waters attached to sediment transported through stormwater conveyance systems. These nutrients contribute to poor surface water quality and algal blooms that make water unsafe for human and animal contact. Reducing the amount of sediment transported into streams, lakes, and rivers can reduce negative impacts on water quality and contribute to their long-term ecological health.

Communities can help mitigate flood hazards and improve water quality through a regular program of street sweeping; all four towns in the Planning Area adhere to a street sweeping program.

5.3.3 Emergency Power Generators

Emergency power generators support critical facilities when electric grids fail, and the power goes out. Some facilities can experience significant impacts without power. For example, a sewer pump station with no power source will cease to function, causing sewer backups and overflows upstream of its location in the sanitary sewer system. An emergency dispatch center with no power source would not be able to route first responders to community members seeking help during a hazardous situation.

Abington, Easton, and Stoughton all have emergency power generators sited at several of their critical facilities, including town halls; in the event of such hazards, mitigating the impact of power outages caused by hazards such as winter storms and other severe storms. Generators must be maintained and, when necessary, replaced to ensure the continued hazard mitigation provided by these important assets. Continuing to add new generators and maintain existing ones are incorporated into the actions from Abington and Stoughton's 2015 actions and will be carried forward to ensure all critical facilities contain a source of backup power. Abington specifically needs to upgrade generators at their Highway Department and Vehicle Maintenance building and Stoughton's goal included adding generators to assist any residents on life support.

5.3.4 Disaster Response Monitoring

In Abington, individual natural hazard events are tracked and maintained in a central database through the Fire Department's record management system. The system helps to identify patterns in location and damage for natural hazards that occur in town so that emergency response crews can increase their level of readiness to respond in case of a natural hazard event.

5.4 ABINGTON

Type of Existing Protection - Abington	Description	Area Covered	Effectiveness	Improvements Needed
Financial Capabilities				
Capital Improvement Plan (CIP)	Town maintains a five-year CIP that is updated and adopted by the Board of Selectmen annually. CIP includes items that contribute to natural hazard mitigation, including culvert replacement (Washington St) and regular replacement of a street sweeper.	Town-wide	Somewhat Effective	Lack of funding is a barrier to completing some of the larger hazard mitigation projects on the CIP, such as dam and culvert repairs. Town could incorporate recommendations from HMP into capital improvement planning.
Sewer Enterprise Fund	Town has implemented a sewer enterprise fund to adequately maintain wastewater services.	Town-wide	Effective	None
Conservation Special Revenue Fund	Town implemented 1.5% tax surcharge to fund open space acquisition in 2015, matched by State. Funding is available through the Community Preservation Act.	Town-wide	Effective	None
Hazard Mitigation Funding	Town is eligible for MA Municipal Vulnerability Preparedness (MVP) Action Grant funding due to participation in MVP program.	Town-wide	Somewhat Effective	Additional staff resources could be used to write grant applications and seek additional funding opportunities.
Water Special Revenue Fund	Town has implemented a water special revenue fund to adequately maintain drinking water services.	Town-wide	Effective	None
Planning and Regulatory Capabilities				
Flood Plain and Wetlands Protection District Bylaw (§175-35)	Establishes a Floodplain Overlay District to mitigate the impact of future development on flooding and flood response, eliminate costs associated with response, and reduce damage to public and private property from flooding. Addresses subdivision standards. Last updated 2021.	Floodplain Overlay District	Effective	Confirm with State NFIP Coordinator's office that Bylaw complies with minimum NFIP standards. Town could incorporate future climate change projections into Flood Plain and Wetlands Protection District.

Type of Existing Protection - Abington	Description	Area Covered	Effectiveness	Improvements Needed
Watershed Protection District (§175-24)	Protects public health by preventing contamination of ground and surface water resources that provide drinking water to the Town.	Watershed Protection District	Effective	None
Stormwater Bylaw (numeric incorporation pending)	Establishes the issuance of Town Stormwater Management Permits for construction, stormwater and erosion-related decision-making processes surrounding development, the authority of the Town to ensure compliance, and ensures alignment with all applicable state and federal mandates.	Town-wide	Effective	None
Environmental Performance Bylaws (§175-61 – 67.1)	Mandates safe disposal of sewage and lays out standards for drainage, vegetation removal, buffer strips, and outdoor lighting.	Town-wide	Effective	None
Wetlands Protection (§171)	Protects wetlands, water resources, and adjoining land areas.	Town-wide	Effective	None
Master Plan (2009)	Identifies floodplain and wetland protections in land uses and the criticality of open space for flood protection.	Town-wide	Somewhat Effective	Future plan update could identify strategies to encourage drought tolerant landscaping design in Town.
Abington Open Space and Recreation Plan (2015)	Identifies core habitat areas and endangered species, risks of development impacts, and possibility of forest-related fires.	Town-wide	Somewhat Effective	Future plan update could identify potential open spaces to be used as flood storage, opportunities for public education on watershed and flood protection.
Economic Development Supplement to Abington Master Plan (2019)	Sets goals to protect natural resources, discourage development within the watershed protection overlay district, and incorporates strategies to minimize impervious surfaces.	Town-wide	Effective	None
Hazard Mitigation Plan (HMP)	Updated and adopted every five years.	Town-wide	Effective	None

Type of Existing Protection - Abington	Description	Area Covered	Effectiveness	Improvements Needed
Administrative, Technical, and Operational Capabilities				
Disaster Warning System	Town has a CodeRed program to alert residents to emergency conditions.	Town-wide	Somewhat Effective	CodeRed website should be updated to reflect up-to-date information.
Zoning Enforcement	All Bylaws, Rules, and Regulations are enforced by the Planning Board and Building Inspector according to the mechanism laid out in §175-80 Enforcement.	Town-wide	Effective	None
Site Plan Review	Zoning bylaw §175-77 establishes a site plan review process by which the Planning Board and Building Inspector may review proposed development for consistency with existing bylaws.	Town-wide	Effective	Incorporate language to diminish heat island effect and encourage energy and water efficient technologies.
Drainage Swale & Pond Maintenance	DPW maintains drainage swales to capture sediment, encourage infiltration, and reduce the risk of flooding from stormwater runoff.	Town-wide	Effective	None
Tree Maintenance	When funding and staff time are available, street trees are trimmed or removed according to a list maintained by DPW. This is a preventive measure aimed at reducing the risk of power outages in severe storms.	Town-wide	Somewhat Effective	Hazard trees are proactively identified but could be proactively maintained as well.
Emergency Power Generators	The town maintains emergency power generators in several important public facilities/shelters to preserve essential services throughout power outages.	Town-wide	Effective	Generators need to be maintained and replaced as needed, especially in the Highway Department and Vehicle Maintenance building.
Regional & Local Emergency Planning Committees	The town regularly participates in local and regional emergency planning committees.	Town-wide	Effective	None
Catch Basin Maintenance	The town regularly cleans and maintains the catch basins throughout town, ensuring their capacity in the event of heavy rainfall.	Town-wide	Effective	None

Type of Existing Protection - Abington	Description	Area Covered	Effectiveness	Improvements Needed
Dam Inspection and Maintenance	Island Grove and Hunts Pond (which is co-owned with Brockton) are on a regular inspection and maintenance schedule.	Dams	Effective	The rest of the publicly-owned dams should be added to this regular list.
Street Sweeping	The town conducts street sweeping on an annual basis. This prevents nutrient-laden sediment from washing into local waterbodies and causing algal blooms and poor water quality; it also helps prevent the accumulation of sediment in catch basins and subsequent flooding.	Town-wide	Effective	None
Fire Department Review of New Development	The Fire Department participates in the review of all new development in town.	Town-wide	Effective	None
Cooling Centers	The town opens cooling centers as weather conditions warrant.	Town-wide	Effective	None
Animal Shelter	Town does not have this protection, which would allow residents with pets to safely evacuate when necessary.	N/A	N/A	Consider studying emergency animal shelter for pets to encourage evacuation when needed.
Planning Board	Prepares and adheres to Town's master plan; reviews Site Plan Applications and Special Permits.	Town-wide	Effective	None
Zoning Board of Appeals	Reviews applications for special permit, petitions for zoning variance, and appeal of decisions by Building Inspector/Selectmen.	Town-wide	Effective	None
Conservation Commission	Reviews development proposals near resource areas; manages and acquires protected land.	Town-wide	Effective	None
Inspectional Services Department	Responsible for ensuring that buildings are constructed and repaired safely, and buildings, structures and land are used properly. Issues building, electrical, gas and plumbing permits that allow the construction, reconstruction, repair, alteration and demolition of buildings and structures as	Town-wide	Effective	None

Type of Existing Protection - Abington	Description	Area Covered	Effectiveness	Improvements Needed
	well as the installation of equipment. Annually inspects restaurants, lodgings, and other places of assembly.			
Department of Public Works	Responsible for the care and maintenance of the town's parks, playing fields, public roads, sidewalks, sewer, and stormwater infrastructure, pumping stations, and town vehicles.	Town-wide	Effective	None
Mutual Aid Agreements	Town Sewer Department has municipal sewer agreements with Brockton and Rockland.	Regional	Effective	None
Education and Outreach Capabilities				
Public Information & Outreach	The town provides residents with information about potential natural hazards with leaflets and brochures in municipal buildings throughout the town, as well as the town website and social media accounts.	Municipal Buildings & Town Website	Effective	Information could be updated and/or replaced on a regular basis.
Evacuation Route Signage	Town does not have this protection, which directs residents and visitors to the nearest evacuation route in the event of an emergency.	N/A	N/A	Though flooding potential may be smaller in Abington, consider implementing evacuation route signage in areas of consistent flooding issues.
Town Staff Disaster Mitigation Training	Town does not have this protection.	N/A	N/A	Consider implementing disaster mitigation training for staff.
Public Disaster Mitigation Education	Town does not have this protection.	N/A	N/A	Consider implementing disaster mitigation education program for community members.
Business Community Disaster Mitigation Outreach	Town does not have this protection.	N/A	N/A	Consider implementing disaster mitigation outreach program for business community.
Programs				

Type of Existing Protection - Abington	Description	Area Covered	Effectiveness	Improvements Needed
Participation in the National Flood Insurance Program (NFIP)	Provides flood insurance for structures located within a floodplain.	Town-wide	Effective	None

5.5 EASTON

Type of Existing Protection - Easton	Description	Area Covered	Effectiveness	Improvements Needed
Financial Capabilities				
Capital Improvement Plan (CIP)	Town maintains a five-year CIP that is updated and adopted by the Board of Selectmen annually. CIP includes items that contribute to natural hazard mitigation, including small bridge/culvert construction.	Town-wide	Effective	None
Annual Budget	Town includes line items for natural hazard mitigation such as tree maintenance.	Town-wide	Effective	None
Sewer Enterprise Fund	Town has implemented a sewer enterprise fund to adequately maintain wastewater services.	Town-wide	Effective	None
Water Enterprise Fund	Town has implemented a sewer enterprise fund to adequately maintain drinking water services.	Town-wide	Effective	None
Solid Waste and Recycling Enterprise Fund	Town has implemented a sewer enterprise fund to adequately maintain solid waste and recycling services.	Town-wide	Effective	None
Hazard Mitigation Funding	Town is eligible for MA Municipal Vulnerability Preparedness (MVP) Action Grant funding due to participation in MVP program.	Town-wide	Somewhat Effective	Additional staff resources could be used to write grant applications and seek additional funding opportunities.

Type of Existing Protection - Easton	Description	Area Covered	Effectiveness	Improvements Needed
Review Fees	Town collects review fees for some development projects to offset the cost of complex technical review.	Town-wide	Effective	None
Planning and Regulatory Capabilities				
Flood Plain Overlay District (Ch 235-47)	Establishes a Flood Plain Overlay District to preserve and protect waterbodies, protect persons and property against the hazards of flooding, and to protect the community against detrimental uses and development of adjacent lands.	Flood Plain Overlay District	Somewhat Effective	Update to comply with minimum NFIP standards using Massachusetts 2020 Model Floodplain Bylaw.
Stormwater Management (Ch 501 Art VIII)	Establishes stormwater-related development requirements, requires incorporation of Low Impact Development (LID) strategies whenever possible, requires annual report detailing maintenance and observation of proper function from owner of stormwater management system.	Town-wide	Effective	None
Wetlands Protection (Ch 227)	Protects resource areas including wetlands, water resources, and adjoining land areas, establishes permitting processes to perform development activities within resource areas, and describes enforcement actions.	Town-wide	Effective	None
Wetlands Regulations (Ch 503)	Clarifies Ch 227 Wetland Protections by establishing definitions, uniform procedures, and performance standards by which Easton Conservation Commission carries out its responsibilities.	Town-wide	Effective	None
Subdivision Rules & Regulations (Ch 501)	Regulates the development of subdivisions to protect the safety, convenience, and welfare of the public. Requires the submission of an Environmental Impact Statement for the review of subdivision plan.	Town-wide	Effective	None
Reconstruction after catastrophe or demolition (Ch 235-25)	Establishes standards for the reconstruction of structures after a demolition or catastrophe.	Town-wide	Effective	Consider prohibiting reconstruction of structures in the Flood Plain Overlay District after catastrophe.
Aquifer Protection Overlay District (Ch 235-46)	This district protects existing and potential groundwater supplies and recharge areas, as groundwater is the sole source of drinking water in town. The bylaw is designed to protect groundwater supplies from detrimental development and land use practices,	Aquifer Protection District	Effective	None

Type of Existing Protection - Easton	Description	Area Covered	Effectiveness	Improvements Needed
	and to ensure the adequate quality and quantity of drinking water for distribution within town.			
Mobile Home Tie-down Regulations	The town requires and inspects that all mobile homes in town are tied down to protect against high winds and other hazards.	Mobile Home Parks	Effective	None
Envision Easton (2014)	Includes actions to: Evaluate the impact of climate change on water resources and establish appropriate mitigation plans and policies; Develop and implement a program to mitigate the impact of invasive species, development pressures and climate change. Several actions are included regarding mitigation of flood hazards and protecting watershed.	Town-wide	Effective	None
Illicit Discharge Detection and Elimination Plan (2019)	Developed to address the requirements of the 2018 Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit. Intended to systematically find and eliminate sources of non-stormwater discharges to storm sewer systems and implement procedures to prevent such discharges.	Town-wide	Effective	None
Stormwater Pollution Prevention Plan (2020)	Developed for DPW pursuant to Section 2.3.7.b of the 2018 MS4 Permit. Identifies pollution prevention measures and management practices for DPW yard.	Town-wide	Effective	None
Open Space and Recreation Plan (2017)	Identifies natural hazards and development impacts as disturbances to local habitats; discusses floodplain and risk of flood in areas of open space, mentions local history of Flyaway dam breach in 1968 (dam was not reconstructed).	Town-wide	Effective	None
Administrative, Technical, and Operational Capabilities				
Tree Maintenance Program	The town works with utility providers to trim trees that may impact utility lines. This is a preventive measure aimed at reducing the risk of power outages in severe storms.	Town-wide	Effective	None
Disaster Warning System	Town has a CodeRed program to alert residents to emergency conditions.	Town-wide	Effective	None

Type of Existing Protection - Easton	Description	Area Covered	Effectiveness	Improvements Needed
Emergency Power Generators	The town maintains emergency power generators in several important public facilities/shelters to preserve essential services throughout power outages.	Town-wide	Effective	Generators need to be maintained and replaced as needed
Regional & Local Emergency Planning Committees	The town regularly participates in local and regional emergency planning committees.	Town-wide	Effective	None
Catch Basin Maintenance	The town regularly cleans and maintains the catch basins throughout town, ensuring their capacity in the event of heavy rainfall.	Town-wide	Effective	None
Street Sweeping	The town conducts street sweeping on an annual basis. This prevents nutrient-laden sediment from washing into local waterbodies and causing algal blooms and poor water quality; it also helps prevent the accumulation of sediment in catch basins and subsequent flooding.	Town-wide	Effective	None
Dam Management Program	The Planning Department through the environmental planner maintains a database of the Town's dams that includes all critical dam information and has a schedule for completing necessary repairs and maintenance.	Town-wide	Effective	Adding privately-owned dams to this management program may help to improve it.
Mutual Aid Agreement	Town participates in Southeastern Massachusetts Regional 911 District with Norton, Mansfield, and Foxborough for regional dispatch.	Regional	Effective	None
Site Plan Review	Town code (Ch 235-57) establishes a site plan review and approval process by which the Planning and Zoning Boards, as well as the Zoning Board of Appeals, may review proposed development for consistency with existing codes.	Town-wide	Effective	None
Shelter Program	Community Based Respite Care Service Programs to protect vulnerable populations in the case of a natural hazard event	Town-wide	Effective	None
Education and Outreach Capabilities				
Public Information & Outreach	The town provides residents with information about potential natural hazards via the town's website, reverse 911 calls,	Municipal Buildings &	Effective	None

Type of Existing Protection - Easton	Description	Area Covered	Effectiveness	Improvements Needed
	brochures and flyers in Town Hall, the Town Crier, and social media networks.	Town Website		
Program Participation				
Green Community Designation	The town has been designated by the DOER as a Green Community. With that designation the community is working towards improving energy efficiency and reducing greenhouse gas emissions, both of which mitigate impacts associated with climate change.	Town-wide	Effective	None
Participation in the National Flood Insurance Program (NFIP)	Provides flood insurance for structures located within a floodplain.	FEMA Flood Zones	Effective	None

5.6 STOUGHTON

Type of Existing Protection - Stoughton	Description	Area Covered	Effectiveness	Improvements Needed
Financial Capabilities				
Capital Improvement Plan (CIP)	Town maintains a five-year CIP that is updated and adopted by the Board of Selectmen annually.	Town-wide	Effective	None
Hazard Mitigation Funding	Town is eligible for MA Municipal Vulnerability Preparedness (MVP) Action Grant funding due to participation in MVP program.	Town-wide	Somewhat Effective	Provide additional staff resources to write grant applications and seek additional funding opportunities.
Planning and Regulatory Capabilities				
Wetlands, Flood Hazard, and Watershed Districts (Zoning Bylaw §9.2)	Protects wetlands, other water resource areas, and adjoining land areas; protects community against hazards to life and property posed by flooding.	Wetlands, Flood Hazard, and	Somewhat Effective	Evaluate redundancies with Floodplain Overlay District.

Type of Existing Protection - Stoughton	Description	Area Covered	Effectiveness	Improvements Needed
		Watershed District		
Aquifer Protection Overlay District (Zoning Bylaw §9.1)	Protects aquifer and aquifer recharge areas to protect potential public water supply.	Aquifer Protection Overlay District	Effective	None
Floodplain Overlay District (Zoning Bylaw §9.7)	Establishes a Floodplain Overlay District to mitigate the impact of future development on flooding and flood response, eliminate costs associated with response, and reduce damage to public and private property from flooding.	Floodplain Overlay District	Somewhat Effective	Update to comply with minimum NFIP standards using Massachusetts 2020 Model Floodplain Bylaw. Could evaluate redundancies with Wetlands, Flood Hazard, and Watershed District.
Wetlands Protection (Ch 191)	Protects wetlands, water resources, flood-prone areas, and adjoining upland areas. Last updated 2010.	Town-wide	Effective	None
Stormwater Management (Ch 159)	Prevents pollutants from entering town municipal separate storm sewer system, describes policies for municipal agencies and regulations and best practices for residents.	Town-wide	Effective	None
Land Subdivision Rules and Regulations	Requires fire alarm boxes to be placed under Fire Department Supervision, prevents planting of invasive trees, establishes flood hazard avoidance standards for subdivision located in any part within Flood Hazard, Wetlands, and Watershed District including requiring drainage systems to be designed to one hundred (100) year flood elevations. Last updated 1999.	Town-wide	Effective	None
Reconstruction After Catastrophe or Demolition (§5.7)	Establishes standards for the reconstruction of structures after a demolition or catastrophe.	Town-wide	Effective	Consider prohibiting reconstruction of structures in the Flood Plain Overlay District after catastrophe.
Board of Health Well Regulations	Protects public health by regulating the construction and operation of private wells. Amended 2014.	Town-wide	Effective	None

Type of Existing Protection - Stoughton	Description	Area Covered	Effectiveness	Improvements Needed
Comprehensive Master Plan (2013)	Discusses potential risk of sewage leaking on natural resources and property, identifies urban core and discusses urban core development, mentions creation of a street tree master plan to mitigate hazard impacts on trees.	Town-wide	Somewhat Effective	Conduct an interim mid-plan cycle evaluation of goals and recommendations.
Stormwater Management Plan (2022)	Describes the activities and measures that will be implemented to meet the terms and conditions of the 2018 MS4 Permit.	Town-wide	Effective	None
Open Space and Recreation Plan (2018)	Goals include protection of town ground and surface water and protection and enhancement of natural areas for wildlife habitat, wetland preservation, conservation, and recreation.	Town-wide	Effective	None
Administrative, Technical, and Operational Capabilities				
Tree Maintenance Program	The town works with utility providers to trim trees that may impact utility lines. This is a preventive measure aimed at reducing the risk of power outages in severe storms.	Town-wide	Effective	None
ALERT Stoughton	Town has a disaster warning system to alert residents to emergency conditions.	Town-wide	Effective	None
Zoning Enforcement	All Zoning Bylaws are enforced according to the mechanism laid out in §10.2 Enforcement.	Town-wide	Effective	None
Site Plan Approval	Protects community by providing a comprehensive review of land and development plans to ensure compliance with existing bylaws.	Town-wide	Effective	None
Emergency Power Generators	The town maintains emergency power generators in several important public facilities/shelters to preserve essential services throughout power outages.	Town-wide	Effective	Generators need to be maintained and replaced as needed

Type of Existing Protection - Stoughton	Description	Area Covered	Effectiveness	Improvements Needed
Regional & Local Emergency Planning Committees	The town regularly participates in local and regional emergency planning committees.	Town-wide	Effective	None
Catch Basin Maintenance	The town regularly cleans and maintains the catch basins throughout town, ensuring their capacity in the event of heavy rainfall.	Town-wide	Effective	None
Street Sweeping	The town conducts street sweeping on an annual basis. This prevents nutrient-laden sediment from washing into local waterbodies and causing algal blooms and poor water quality; it also helps prevent the accumulation of sediment in catch basins and subsequent flooding.	Town-wide	Effective	None
Fire Department Review of New Developments	The Fire Department participates in the review of all new development in town.	Town-wide	Effective	None
Cooling Centers	The town opens cooling centers as weather conditions warrant.	Town-wide	Effective	None
Inflow and Infiltration (I&I) Program	Annual I&I Program in place to address high priority areas ($400k +/-/YR). Pump station evaluations and upgrades were performed in 2018.	Town-wide	Effective	None
Hydraulic & Hydrologic (H/H) Study	Town is conducting a Hydraulic & Hydrologic Study of flood prone areas in the Town through the MVP Action Grant Program. Areas of flooding will be analyzed with the H/H model. Any deficiencies will be identified and prioritized accordingly. The South Street culvert was replaced in 2019 to alleviate a known flooding issue.	Town-wide	Effective	None
Educational and Outreach Capabilities				

Type of Existing Protection - Stoughton	Description	Area Covered	Effectiveness	Improvements Needed
Community Emergency Response Team (CERT)	Town provides free, regular training and maintains a roster of CERT volunteers that professional responders can call on during a disaster situation.	Town-wide	Effective	None
Public Information & Outreach	The town provides residents with information about potential natural hazards with leaflets and brochures in municipal buildings throughout the town.	Municipal Buildings	Somewhat Effective	Information could be updated and/or replaced on a regular basis
Program Participation				
Participation in the National Flood Insurance Program (NFIP)	Provides flood insurance for structures located within a floodplain.	Town-wide	Effective	None
StormReady Certification	Recognizes town achievements in hazardous weather preparedness.	Town-wide	Effective	None
MS4 Program Compliance	Outfalls are being inspected through the MS4 Permit. Any outfalls in disrepair are identified and repaired as needed. Illicit discharges are investigated through the MS4 Permit IDDE program. Illicit discharges that are identified are resolved accordingly.	Town-wide	Effective	None

6.0 MITIGATION STRATEGY

Whereas the two preceding Chapters identify risks from natural hazards and programmatic capabilities, this chapter defines a broad mission for the Town in mitigating these risks and establishes a series of hazard mitigation goals and specific implementation actions.

6.1 GOALS

The HMPC reviewed the goals set forth by the 2015 Plan and updated them to reflect new climate change-oriented priorities. The priorities of each community remained the same in regard to the protection of vulnerable populations and areas from the impact of natural hazards. However, an increased focus on climate change helped to guide each community in developing a new set of relevant mitigation actions to align with the 2024 goals.

- **Planning Area Goal:** Reduce the loss of life, property, infrastructure, and environmental and cultural resources from natural disaster.
- **Goal 1**: Investigate, design, and implement structural projects that will reduce and minimize the risks and impacts from riverine and stormwater flooding; and reduce and minimize the risks and impacts from potential HHPD failure including the Morse Pond Dam.
- **Goal 2:** Investigate, design, and implement projects that will reduce and minimize the risks and impacts from non-flooding hazards, such as wildfires, earthquakes, tornadoes, etc.
- **Goal 3:** Improve pre-disaster planning, communication, and coordination between federal, state, county, community, private, (including utilities) and non-profit entities so that they can plan for and mitigate natural hazards in a clear and comprehensive manner.
- **Goal 4:** Increase the awareness of the public, public officials, volunteer board and committee members, and members of the business community to the risks presented by the multiple natural hazards that affect the region as well as to the mitigation activities and grant opportunities available to minimize the impacts of these hazards.
- **Goal 5**: Improve existing municipal policies and programs where appropriate to further reduce or eliminate the impacts of natural hazards.
- **Goal 6:** Pursue mitigation strategies that reduce local contributions to climate change and increase resilience to the impacts of climate change.

6.2 REVIEW OF LOCAL 2015 ACTIONS

The HMPC and project consultant reviewed the 2015 Mitigation Actions to determine which actions were completed, ongoing, or no longer relevant. Towns reviewed the actions that were specific to each town. The action review included questions regarding what was accomplished for this project during the reporting period; what obstacles, problems, or delays did the project encounter; and if uncompleted, is the project still relevant and should it be changed or revised?

Actions were then categorized as either completed, ongoing (initially addressed but requiring ongoing maintenance or attention and carried forward from the 2015 plan), or not started/partially addressed (revised from the 2015 plan or removed because were no longer relevant).

Many of the 2015 actions were incorporated into each Town's subsequent MVP process. The description of the status of each action identified in the 2015 plan and how or if it was incorporated into Town practices are noted in the final column in the tables below. Several of the 2015 actions were not incorporated into town planning mechanisms and will be carried through to the current plan or discontinued due to a change in town priorities.

6.2.1 ABINGTON

2015 Mitigation Action	Responsible Party	Progress	Status
1. Upgrade vintage generators located at the Highway Department and Vehicle Maintenance building.	Highway Department	In progress	Capital Plan items: This item is on the 2025 Capital plan. Because it is scheduled, this action is considered "in progress" and not carried forward into the 2024 new actions list.
2. Develop and implement a local flood mitigation dam management program, including inspecting, maintaining and upgrading the following dams for present functions and stormwater management potential: Atwoods Pond Dam, Cushing Pond Dam, Cleveland Pond, Island Grove Pond Dam and Hunt's Pond Dam.	Highway Department, Private Property Owners	In progress	Partially incorporated into MVP recommendations. Two dams are on an inspection schedule, these are Island Grove and Hunts Pond (which is co-owned with Brockton). Action continued and reworked into Action 8.
3. Enlarge the capacity of the undersized drainage culvert that crosses Central Street, just east of Route 58. The culvert is insufficient to handle flows during storm events and negatively effects nearby private properties.	Highway Department	No progress	No immediate plans due to lack of funding and manpower. Continued as Action 8.
4. Work with the state to enlarge several culverts on Route 18 in need of replacement and/or upgrades.	Highway Department, MassDOT	No progress	No immediate plans due to lack of funding and manpower. The culvert on Washington Street that connects to one of the Rt. 18 culverts is in the Capital Improvement Plan. Continued as Action 8.
5. Enlarge the capacity of an underground culvert on Wyman Road through to Summit Road that is often blocked with debris and subsequently floods nearby residential properties.	Highway Department	No progress	No immediate plans due to lack of funding and manpower. Continued as Action 8.

2015 Mitigation Action	Responsible Party	Progress	Status
6. Enlarge the capacity of the culvert that drains a holding pond behind the Frolio Middle School, which is often insufficient to handle additional flows during storm events. The Highway Department installed an overflow culvert to alleviate the situation, but at times continues to overflow.	Highway Department	No progress	No immediate plans due to lack of funding and manpower. Continued as Action 8.
7. Conduct regular maintenance of retention and detention ponds in town, as many are overgrown with weeds and grass.	Highway Department	No progress	No immediate plans to improve this process due to lack of funding and manpower. Continued as Action 8.
8. Improve community awareness during emergency events by having the ability to broadcast over the local cable access channel from the EOC. This is not currently possible as the cable access station is miles from the EOC. By installing the necessary equipment at the EOC, valuable information can be relayed to the residents in a fast, efficient manner.	Abington Emergency Management Agency	Alternative mitigation measures taken to meet this need.	Incorporated into MVP recommendations The Town is now using "Code Red" which residents can sign up for. The Town is also making more use of the Town's website and posting some of the twitter posts from Public Safety. The Town is also using the phone system for emergency messages to be communicated. Action revised and continued as Actions 1 through 3.

6.2.2 EASTON

2015 Mitigation Action	Responsible Party	Progress	Status
1. Develop and implement a local flood mitigation dam management program, including inspecting, maintaining and upgrading the following dams for present functions and stormwater management potential: Ames Long Pond Dam, Shovelshop Pond Dam, Langwater Pond Dam,	Department of Public Works, Private Property Owners	Ongoing	The Planning Department through the environmental planner maintains a database of the Town's dams that includes all critical dam information and has a schedule for completing necessary repairs and maintenance. Verify ownership, ensure owner understands

Morse Pond Dam, Old Pond Dam and New Pond Dam.			responsibility for good repair and observe regularly for upkeep. This action is complete and is now an Existing Capability.
2. Reduce the threat of flooding on Union Street at French's Pond and Dorchester Brook.	Department of Public Works	No longer applicable	No issues since 2010 floods. No work completed, and no further action needed.
3. Reduce the threat of flooding on Bay Road between Highland Street and Dean Street.	Department of Public Works	Complete	Drainage corrected to minimize threat of flooding.
4. Reduce the threat of flooding on Depot Street (Route 123) between Black Brook Road and Center Street.	Department of Public Works	Complete	Extensive roadway improvements made on Depot Street between 2020 and 2023, including modern drainage infrastructure.
5. Create and maintain a database of all responses due to natural disasters or storm events. This datum will be reviewed and analyzed periodically, and recommendations will be developed for remediation.	Department of Public Works, Police and Fire Departments	Complete	Individual events are tracked and maintained in a central database through the Fire Department's record management system.
6. Compile and maintain a list of all private small- and large-scale wastewater treatment plants in town.	Health Department	Incomplete	A formal list has not been developed. This action has been adapted into an action in the 2024 Mitigation Actions. Continued as Action 9.
7. Compile and maintain a list as well as map all private drinking water wells in town	Health Department	Incomplete	Requires staff time to consolidate source of information and map locations, has been adapted into an action in the 2024 Mitigation Actions. Continued as Action 9.

6.2.3 STOUGHTON

2015 Mitigation Action	Responsible Party	Progress	Status
1. Develop and implement a local flood mitigation dam management program, including inspecting, maintaining and upgrading the following dams for present functions and stormwater management	Department of Public Works, Private Property Owners	In progress	Dam Inspection performed by Town Engineering Staff for Wood Pond Dam and Town Pond Dam in 2016. This program is ongoing and will be carried forward in the

2015 Mitigation Action	Responsible Party	Progress	Status
potential: Pinewood Lake Dam, Town Pond Dam, and Wood Pond Dam.			Town's actions in the 2024 Mitigation Actions.
2. Enlarge the culvert on West Street at Ames Long Pond between Highland Street and Lake Drive to eliminate flooding.	Department of Public Works & Engineering	In progress	Town is conducting a Hydraulic & Hydrologic Study of the culvert and storm drain capacities in the Town through the MVP Action Grant Program. Any deficiencies will be identified and prioritized accordingly. Included within the Town's action in the 2024 Mitigation Actions. Included as Action 19.
3. Enlarge the culvert at the driveway of 1821 Washington Street to eliminate flooding concerns (This driveway provides access to two houses off of Washington Street).	Department of Public Works, Private Property Owner	Complete	Culvert was replaced by property owner.
4. Enlarge the storm drain behind the Police Station to eliminate flooding concerns.	Department of Public Works	In progress	Town is conducting a Hydraulic & Hydrologic Study of the culvert and storm drain capacities in the Town through the MVP Action Grant Program. This culvert will be analyzed with the H&H model. Any deficiencies will be identified and prioritized accordingly. Reworked as Action 12.
5. Develop a plan to protect critical documents and materials-store digitally or hard copies of public records in a hazard-free offsite location to protect important or irreplaceable documents.	Town Clerk	Complete	Digital copies are kept by Clerk.
6. Locate and map the location of all vulnerable populations (elderly, disabled, etc.) in town.	Stoughton Emergency Management Agency	Complete	Emergency medical dispatch (EMD) plan complete funded by Hazardous Materials Emergency Preparedness (HMEP) grant

2015 Mitigation Action	Responsible Party	Progress	Status
7. Develop and distribute educational materials for the public to generate awareness of hazards, mitigation steps, and disaster responses.	Stoughton Emergency Management Agency	No progress	0% complete due to budget and personnel constraints have restricted this action from moving forward No funding secured, will be carried forward as an action in 2024 Mitigation Actions. Included as Actions 1, 2, 8, and 18.
8. Work with the necessary state and federal agencies to develop and sign an evacuation route for the town in the event of a major natural hazard.	Stoughton Emergency Management Agency, MEMA, MassDOT	Complete	EMD plan complete, HMEP grant funded
9. Work with businesses and non-profit organizations in town to develop emergency action plans that can be utilized in the event of a natural hazard.	Stoughton Emergency Management Agency	No progress	0% complete due to budget and personnel constraints have restricted this action from moving forward No funding secured will be carried forward as an action in 2024 Mitigation Actions. Reworked as Action 18.
10. Install signs that direct people what to do in case of an emergency in all public buildings and facilities.	Stoughton Emergency Management Agency	No progress	0% complete due to budget and personnel constraints have restricted this action from moving forward No funding secured Discontinued – no longer considered a priority for natural hazard mitigation.
11. Assist residents on life support systems to obtain generators.	Stoughton Emergency Management	No progress	0% complete due to budget and personnel constraints have restricted this action from moving forward

2015 Mitigation Action	Responsible Party	Progress	Status
	Agency, Private Owners		No funding secured, carried forward and amended as Action 2.
12. Inspect, repair and maintain town-owned detention basins for the purpose of increasing their capacity.	Department of Public Works	In progress	DPW budget has been increased to improve maintenance frequency of stormwater basins. Included as Action 11 and 12.
13. Inspect and repair stormwater outfalls throughout town as needed.	Department of Public Works	Complete. Ongoing capability.	Outfalls are being inspected through the MS4 Permit. Any outfalls in disrepair are identified and repaired as needed.
14. Perform tests (smoke detection, etc.) to detect illicit sewer discharge in the drainage system.	Department of Public Works	Complete. Ongoing capability.	Illicit discharges are investigated through the MS4 Permit IDDE program. Illicit discharges that are identified are resolved accordingly.
15. Evaluate critical facilities that either have flooding issues or are in a flood zone and conduct studies to develop potential solutions.	Department of Public Works, Engineering Department	Complete. Ongoing capability.	Town is conducting a Hydraulic & Hydrologic Study of flood prone areas in the Town through the MVP Action Grant Program. Areas of flooding will be analyzed with the H&H model. Any deficiencies will be identified and prioritized accordingly. The South Street culvert was replaced in 2019 to alleviate a known flooding issue.
16. Evaluate and upgrade older sewer lines and pump stations throughout town.	Department of Public Works, Engineering Department	Complete. Ongoing capability.	Annual I&I Program in place to address high priority areas ($400k +/-/YR). Pump station evaluations and upgrades were performed in 2018.
17. Evaluate the entire stormwater system in town.	Department of Public Works, Engineering Department	Ongoing	Town is conducting a Hydraulic & Hydrologic Study of the culvert and storm drain capacities in the Town through the MVP Action Grant Program. This culvert will be analyzed with the H&H model. Any

2015 Mitigation Action	Responsible Party	Progress	Status
			deficiencies will be identified and prioritized accordingly. Reworked as Action 12.
18. Upgrade the dam at Pratt's Court (Town Pond Dam).	Department of Public Works	Ongoing	Dam inspection report recommended minor repairs of dam, abutments and embankment. Funding source not yet secured. Continued in Action 19.
19. Construct improvements to Red Wing Brook to reduce the threat of flooding.	Department of Public Works	In Progress	Preliminary mitigation plans developed. Funding source needed. Included in Action 12.
20. Reconstruct the sewer where the road has settled near the intersection of Turnpike Street and Pleasant Street.	Department of Public Works	In progress	Roadway reconstruction in design phase with MassDOT. Because it is scheduled and currently underway, this action is not included in the 2024 action list.
21. Upgrade numerous catch basins as needed throughout town.	Department of Public Works	Complete	Catch Basins replaced or repaired as needed.

6.3 2024 MITIGATION STRATEGY

Removing and precluding development from hazardous areas is the best method of mitigation. However, for areas where development has already occurred, or for vulnerabilities that are less geographically specific, additional mitigation measures must be pursued. After reviewing the Town's identified risks and vulnerabilities to natural hazards, the input and feedback from the public workshop and survey, recommendations from the Town, and the local Capability Assessment, the HMPC selected mitigation actions to incorporate into the 2024 Update. The Committee has identified a comprehensive range of actions that would reduce the Planning Area's vulnerability to the identified hazards. The 2024 actions align with one or more of the following mitigation categories:

- Public Education and Awareness
- Property Protection
- Natural Resource Protection
- Structural Projects
- Emergency Services
- Planning and Prevention

The HMPC reviewed and re-prioritized the 2011 Risk Assessment Table and the associated actions based on historical damage, safety of the population, property protection and consistency with town-wide goals and objectives. The HMPC has worked to develop actions that are bounded by a time frame and are compatible and consistent with state hazard mitigation goals outlined in the 2018 MA State Hazard Mitigation and Climate Adaptation Plan.

Table 6.1 below outlines the 2024 Hazard Mitigation Strategies for each town. The strategy consists of a series of pre-disaster mitigation actions. Each action presented below includes a summary of the specific problem and proposed possible solution, details of the primary tasks to be undertaken, an appropriate lead for action implementation, and anticipated costs and financing options. Each of the prospective project leads identified in the following mitigation action descriptions were given an opportunity to review and provide input on the draft plan. Other relevant departments or agencies that can offer support to the project are also listed.

The cost ranges used for this strategy are as follows:

Staff Time – municipal personnel time
Minimal – less than $5,000
Moderate – more than $5,000, but less than $25,000
Significant – over $25,000

The time frames used for this strategy are as follows:

Short Term: within 1-3 years
Medium Term: within 3-5 years
Long Term: greater than 5 years

HMPC members were asked to rank the priority and feasibility of each of the 2024 Mitigation Strategy actions in categories to guide the focus of the Planning Area's resources towards actions with the greatest potential benefit. At this stage in the process, the HMPC has limited access to detailed analyses of the cost and benefits of any given mitigation measure, so prioritization is based on the members' understanding of existing and potential hazard impacts and an approximate sense of the costs associated with pursuing any given mitigation measure.

The HMPC employed a mitigation strategy prioritization process that considers potential benefits and estimated project costs, as well as other factors in FEMA's STAPLEE (Social, Technical, Administrative, Legal, Economic, and Environmental) analysis. The method used for this HMP focuses on four key themes as follows:

Benefits: Determine whether the proposed mitigation measure will improve property protection, natural resource protection, technical capacity, public awareness, or post-hazard emergency response;

Feasibility: Determine whether the proposed mitigation measure is feasible in terms of Town staffing, public and Town support, and whether it is technically feasible;

Economic: Evaluate each mitigation measure in terms of estimated cost and potential funding sources; and

Regulatory: Evaluate each mitigation measure for consistency with local, state, and federal permitting/ regulatory requirements and goals.

Each proposed mitigation action presented in this section was given a score based on 13 subcategories within these four larger categories documented above (i.e., Benefits, Feasibility, Economic, Regulatory). For each of these subcategories, the proposed action was given a score of 3 if the action was thought to be the "best" fit with a particular category (likely to provide the benefit under consideration, required little additional training or funding, feasible, most true or beneficial, etc.), 2 if it was "average" and "somewhat true," or 1 if it was "poor" (did not provide the benefit under consideration, difficult to permit, costly, not true, etc.). The comprehensive result of this priority ranking is showcased in Appendix E: Mitigation Action Prioritization Tables, and the final total scoring for each action is also included in each Town's mitigation action table.

The total results of each final ranking were close in range, and final ranking was decided between Low, Medium, and High. Low being less than or equal to 27, Medium being between greater than 27 and less than or equal to 29, and High being greater than 29. These results are showcased visually in Appendix E: Mitigation Action Prioritization Tables.

6.3.1 ABINGTON

#	New Proposed Action	Action Type	Hazard (H) and/or Vulnerability (V) Addressed	Responsible Agency	Support	Cost and Potential Sources	Time Frame	Priority (High Med, Low)
1	**Creation of lists for Fire Departments/Emergency Services to have on-hand to know to check in on specific seniors or people with mental or physical disabilities in an emergency scenario**	Planning and Prevention	H: Flooding, Dam Failure, Hurricanes & Tropical Storms, Severe Storms, Tornadoes, Winter Storms, Wildfires, Earthquakes, Extreme Temperatures, Drought	Fire Department, Emergency Management	School Dept	Staff Time (Fire Department Budget)	Medium Term	L
2	**Develop and incentivize neighbor-to-neighbor support systems for residents, businesses, and organizations.**	Public Education and Awareness	H: Flooding, Hurricanes & Tropical Storms, Severe Storms, Tornadoes, Winter Storms, Wildfires, Earthquakes, Extreme Temperatures, Drought	Emergency Management		Staff Time (Fire and Police Departments Budgets)	Long Term	L
3	**Develop a Community Emergency Response Team (CERT) that helps to**	Emergency Services	H: Flooding, Winter Storms, Severe Storms,	Emergency Management		Staff Time (Fire and Police Departments),	Medium Term	L

#	New Proposed Action	Action Type	Hazard (H) and/or Vulnerability (V) Addressed	Responsible Agency	Support	Cost and Potential Sources	Time Frame	Priority (High Med, Low)
	update public emergency response information		wind, Wildfire, and Earthquake			9-1-1 Training Grant		
4	**Conduct a study to determine climate-related risks to the Town's water supply and alternatives to improve water supply resiliency to climate change. (MVP)**	Natural Resource Protection	H: Drought V: Water availability during emergency response	Abington Rockland Joint water works	Hope to incorporate some of this in an updated MVP plan	Update plan via grant from MVP Minimal	Short Term	H
The Town's water supply is supplied by Rockland Water Works and is currently brought into Abington from Great Sandy Bottom Pond in Pembroke through a single pipe that crosses through several adjacent towns. The study should focus on risks from drought, to infrastructure, and to water quality and associated treatment processes to ensure a safe water supply.								
5	**Stormwater Bylaw has been adopted, education and enforcement if necessary. Incorporate future climate projections into Floodplain and Wetland Protection Districts.**	Public Education and Awareness	H: Flooding	Planning & Building services		Minimal, Staff Time (Planning Department Budget)	Medium term	H
6	**Expand water resources with expansion of wells**	Planning prevention	H: Drought	Abington/Rockland Joint waterworks		Significant (Potential grants include Drinking Water Supply Protection	Short and Long term	H

#	New Proposed Action	Action Type	Hazard (H) and/or Vulnerability (V) Addressed	Responsible Agency	Support	Cost and Potential Sources	Time Frame	Priority (High Med, Low)
						Grant Program or BRIC)		
7	**Develop a Tree Trimming program**	Planning & Prevention & Property Protection	H: Winter Storms, Severe Storms, Wildfire, Tornadoes, Hurricanes and Tropical Storms	DPW		Staff Time (DPW Budget)	Long term	L
8	**Establish detention basin, dam, and culvert cleaning and maintenance program and determine opportunities for open space to be used as future flood storage.**	Planning & Prevention, Property Protection, natural resource protection	H: Flooding, Dam Failure	DPW	Planning	Staff Time (DPW Budget)	Long term	M
Drainage culverts such as the culvert that crosses Central Street, just east of Route 58, several culverts on Route 18, the culvert on Wyman Road through to Summit Road, the culvert behind the Frolio Middle School need attention for maintenance and cleaning in order to solve issues that have occurred at each location. Publicly owned dams including Atwoods Pond Dam, Cushing Pond Dam, Cleveland Pond need to be added to a more regular inspection schedule. Establishing a comprehensive stormwater system and dam cleaning and maintenance program may help to alleviate these issues.								
9	**Installation of refillable water stations**	Emergency services	H: Extreme Temperatures, Drought	Health Dept	DPW	Staff Time (Health Department and DPW Budgets)	Short term	H

#	New Proposed Action	Action Type	Hazard (H) and/or Vulnerability (V) Addressed	Responsible Agency	Support	Cost and Potential Sources	Time Frame	Priority (High Med, Low)
10	**Preservation of trees and or replacement of more mature trees during development**	Planning & Prevention, Public Education and awareness	V: Natural Resource Protection, H: Wildfires, Severe Storms	Planning via a bylaw		Staff Time (Planning Department, DPW Budgets)	Short Term	H
11	**Educate Town Staff with training for climate resilience, safety, and hazard mitigation grant writing**	Education and Awareness	H: Flooding, Dam Failure, Hurricanes & Tropical Storms, Severe Storms, Winter Storms, Wildfires, Earthquakes, Extreme Temperatures, Drought, Invasive Species	Public Health Nurse and Planning & Building Department		Staff Time (Public Health Nurse Budget)	Medium Term	M

6.3.2 EASTON

#	New Proposed Action	Action Type	Hazard (H) and/or Vulnerability (V) Addressed	Responsible Agency	Support	Cost and Potential Sources	Time Frame	Priority (High Med, Low)
1	**Create an Invasive Species Control plan**	Planning and Prevention Natural Resource Protection	H: Invasive Species	DPW	Conservation commission	Staff Moderate (DPW Budget)	Short Term	L
2	**Develop and incentivize neighbor-to-neighbor support systems.**	Public Education and Awareness	V: Personal injury, H: Flooding, Hurricanes & Tropical Storms, Severe Storms, Tornadoes, Winter Storms, Wildfires, Earthquakes, Extreme Temperatures	Community Engagement & Programming	Community Emergency Response Team (CERT) Health & Community Services	Staff Moderate (CERT, Emergency Management), 9-1-1 Training Grant	Long Term	L
3	**Look for regional opportunities for forest management grants (MVP)**	Planning and Prevention Natural Resource Protection	V: Air quality, flood storage H: Wildfire	Conservation Commission		Staff/minimal (Conservation Commission Budget)	Medium Term	L
4	**Safeguard electrical systems during storm events through tree protection and management**	Property Protection	H: Severe Storms V: Power outages, personal injury, lost business costs	Local community, National grid	DPW Environmental Planning	Significant Staff (DPW Budget) National Grid	Medium	H

#	New Proposed Action	Action Type	Hazard (H) and/or Vulnerability (V) Addressed	Responsible Agency	Support	Cost and Potential Sources	Time Frame	Priority (High Med, Low)
5	**Update FIRM with elevations**	Property Protection, Natural Resource Protection	H: Flooding V: property damage	Local community, FEMA	Planning Department	Staff (Planning Department Budget) Moderate	Long Term	L
6	**Update the Floodplain protection bylaw**	Property Protection, Natural Resource Protection	H: Flooding V: property damage	Planning, conservation, DCR		Staff (Planning Department Budget) Minimal	Short Term	M
7	**Improve floodplain protection, evaluate revisions to wetland bylaw and floodplain protection district**	Property Protection, Natural Resource Protection	H: Flooding V: property damage	Conservation, Planning	DEP	Staff (Planning Department Budget) Minimal	Medium Term	L
8	**Provide additional flood storage, at Sam Wright Field, 445 Bay Road and provide additional flood storage, upgrade Highland Street culvert and Sam Wright Field culvert at Mulberry Meadow Brook**	Structural Projects, Natural Resource Protection, Planning & Protection	H: Flooding V: property damage	Conservation	DPW	Staff (Planning Department and DPW Budgets) Minimal, Flood Mitigation Assistance Grant, Significant	Short Term	M

#	New Proposed Action	Action Type	Hazard (H) and/or Vulnerability (V) Addressed	Responsible Agency	Support	Cost and Potential Sources	Time Frame	Priority (High Med, Low)
9	**Compile and maintain a list of all private small- and large-scale wastewater treatment plants and private drinking water wells in town.**	Structural Projects, Natural Resource Protection	H: Flooding V: property damage	Conservation, DPW		Staff (Planning Department Budget) moderate Flood Mitigation Assistance Grant, significant	Medium Term	L
10	**Coordinate with Office of Dam Safety (ODS) and DPW for annual inspection and maintenance of dams Coordinate maintenance and repair and add funding to departmental operation budgets.**	Structural Projects, Property Protection, Natural Resource Protection	H: Flooding, Dam Failure, Earthquake V: property damage	Planning, conservation, DPW		Staff (Planning Department and DPW Budgets) moderate Rehabilitation of High Hazard Potential Dam Program, Moderate to Significant	Short to Medium Term	M
11	**Coordinate with the owners of Morse Pond Dam to find funding to update inspections and the EAP. Cooperate with ODS and the owner to find funding to repair or breach the dam after the**	Structural Projects, Property Protection, Natural Resource Protection	H: Flooding, Dam Failure, Earthquake, V: property damage	Planning, Conservation, DPW		Staff (Planning Department and DPW Budgets) moderate, Rehabilitation of High Hazard Potential Dam Program	Short to Medium Term	H

#	New Proposed Action	Action Type	Hazard (H) and/or Vulnerability (V) Addressed	Responsible Agency	Support	Cost and Potential Sources	Time Frame	Priority (High Med, Low)
	completion of an updated inspection.[116]							
Morse Pond Dam is the only HHPD in the Planning Area, and therefore special attention needs to be made to coordinate with ODS and the Town, and the dam owner to properly account for the location and size of the population at risk, as well as potential impacts to institutions and critical infrastructure/facilities/lifelines. The dam needs to be re-inspected to update the current conditions for the EAP. Based on a new inspection, the Town must then work with the dam owner to find funding that will ensure rehabilitation and protection or breaching of the existing structure.								

6.3.3 STOUGHTON

#	New Proposed Action	Action Type	Hazard (H) and/or Vulnerability (V) Addressed	Responsible Agency	Support	Cost and Potential Sources	Time Frame	Priority (High Med, Low)
1	**All emergency calls, website posts, Facebook posts, texts, etc. need to be translated. Train/educate Town staff on resources available for communication with various populations**	Emergency Services, Public Education and Awareness	H: Flooding, Dam Failure, Hurricanes & Tropical Storms, Severe Storms, Tornadoes, Winter Storms, Wildfires, Extreme Temperatures, Drought	Emergency Management	Town Administration	Minimal, Town meeting (Emergency Management Budget), 9-1-1 Support & Incentive Grant	Medium Term	H

[116] Actions 10 and 11 address Goal 1 to reduce and minimize the risks and impacts from potential HHPD failure including the Morse Pond Dam.

#	New Proposed Action	Action Type	Hazard (H) and/or Vulnerability (V) Addressed	Responsible Agency	Support	Cost and Potential Sources	Time Frame	Priority (High Med, Low)
2	**Create a generator safety education program and share educational resources to assist vulnerable residents to obtain generators.**	Public Education and Awareness	H: Severe Storms, Winter Storms V: Power Outages	Emergency Management	Town Administration	Minimal, MEMA, FEMA Massachusetts Gap Energy Grant Program	Medium Term	H
3	**Local Emergency Planning Committee (LEPC) - Tabletop and live training and incorporation of Hazard Mitigation grant writing training**	Public Education and Awareness	H: Flooding, Dam Failure, Hurricanes & Tropical Storms, Severe Storms, Tornadoes, Winter Storms, Wildfires, Earthquakes, Extreme Temperatures, Drought, Invasive Species	EMD	LEPC	Minimal, MEMA, FEMA, Hazard Mitigation Assistance Program	Short term	H
4	**Incident Command System (ICS) Training for LEPC**	Public Education and Awareness	H: Flooding, Dam Failure, Hurricanes & Tropical Storms, Severe Storms, Tornadoes, Winter Storms, Wildfires,	EMD	MEMA	Minimal, MEMA, FEMA, 9-1-1 Training Grant	Short term	H

#	New Proposed Action	Action Type	Hazard (H) and/or Vulnerability (V) Addressed	Responsible Agency	Support	Cost and Potential Sources	Time Frame	Priority (High Med, Low)
			Earthquakes, Extreme Temperatures					
5	**Support Equipment for Emergency Response purposes due to Large Scale events**	Emergency Services, Structural Projects	H: Flooding, Dam Failure, Hurricanes & Tropical Storms, Severe Storms, Tornadoes, Winter Storms, Wildfires, Earthquakes	Town of Stoughton, Fire Department	MEMA	Significant, MEMA, FEMA, Emergency Management Performance Grant	Short term	H
6	**Develop a Town Wide Community Resilience program**	Public Education and Awareness	H: Flooding, Hurricanes & Tropical Storms, Severe Storms, Tornadoes, Winter Storms, Wildfires, Earthquakes, Extreme Temperatures	Fire/EMD	Local, Regional & State resources	Minimal, On-going Grants, Hazard Mitigation Assistance Program	Short term	H
7	**Communications redundancy for Radio Towers**	Planning and Prevention, Structural Projects	H: Flooding, Dam Failure, Hurricanes & Tropical Storms, Severe Storms, Tornadoes,	Fire/Police/DPW	Local, Regional & State resources	Significant, Grants, 9-1-1 Development Grant	Short Term	H

#	New Proposed Action	Action Type	Hazard (H) and/or Vulnerability (V) Addressed	Responsible Agency	Support	Cost and Potential Sources	Time Frame	Priority (High Med, Low)
			Winter Storms, Wildfires, Earthquakes, Extreme Temperatures					
8	**Construct Emergency Operations Center and Public Health facility with Heating and Cooling capabilities, charging**	Structural Projects, Emergency Services	H: Flooding, Hurricanes & Tropical Storms, Severe Storms, Tornadoes, Winter Storms, Wildfires, Earthquakes, Extreme Temperatures	Fire/EMD/ IT	MEMA, Town Administration	Significant, Hazard Mitigation Grant Program, Town meeting	Medium Term	H
9	**Increase of emergency staffing**	Planning and Prevention	H: Flooding, Dam Failure, Hurricanes & Tropical Storms, Severe Storms, Tornadoes, Winter Storms, Wildfires, Earthquakes, Extreme Temperatures	Emergency Management	LEPC, MEMA	Significant, (Emergency Management Budget), AFG Grants	Medium Term	H

#	New Proposed Action	Action Type	Hazard (H) and/or Vulnerability (V) Addressed	Responsible Agency	Support	Cost and Potential Sources	Time Frame	Priority (High Med, Low)
10	**Lake management program for all Town Ponds (Invasive species control, hydro-raking)**	Natural Resource Protection	H: Invasive Species	Conservation Commission, Engineering Dept	Town Meeting, Conservation Commission	Significant, Town meeting (DPW Budget)	Short Term	H
11	**Conduct a Hydrological and Hydraulic Analysis of all culverts and stormwater drainage infrastructure, especially at West Street at Ames Long Pond between Highland Street and Lake Drive. Create Stormwater Master Plan.**	Planning and Prevention	H: Flooding, Dam Failure, Severe Storms	Engineering Dept, Conservation Commission, Fire, DPW	Consultants, Engineering Dept.	Town Staff (DPW Budget), National Culvert Removal, Replacement, & Restoration Grant Meeting	Medium Term	H

#	New Proposed Action	Action Type	Hazard (H) and/or Vulnerability (V) Addressed	Responsible Agency	Support	Cost and Potential Sources	Time Frame	Priority (High Med, Low)
12	**Implements repairs/upgrades recommended from the H/H Analysis and Stormwater Master Plan. (Culvert on West Street at Ames Long Pond between Highland Street and Lake Drive, Culvert behind Police Station, Dam at Pratt's Court, Red Wing Brook flooding, CB upgrades)**	Planning and Prevention, Structural Projects	H: Flooding, Severe Storms	Engineering Department, Public Works	Town Meeting, Select Board	Significant Town Staff (DPW Budget), National Culvert Removal, Replacement, & Restoration Grant, Town Meeting	Long Term	H
13	**Acquire Open Space to protect natural resources, habitat, and Town wells or planned well areas in Town (Cedar Swamp, Bird Street, Glen Echo, all wellhead areas)**	Property Protection, Natural Resource Protection	H: Flooding, Drought	Conservation Commission, Water Department	Town Meeting, Select Board, Conservation Commission	Significant MA Land & Water Conservation Fund Grant Program, Town Meeting	Medium Term	H

#	New Proposed Action	Action Type	Hazard (H) and/or Vulnerability (V) Addressed	Responsible Agency	Support	Cost and Potential Sources	Time Frame	Priority (High Med, Low)
14	**Expand Sewer to eliminate septic systems in High Groundwater areas (Phase 1 of Park Street Sewer under construction, Phase 2 in Planning stages)**	Planning and Prevention, Structural Projects	H: Flooding V: natural resource protection	Engineering Department, Public Works	Town Meeting, Select Board	Significant, Town Meeting (Planning Department and DPW Budget), Statewide Water Management Act Grant	Long Term	H
15	**Create Tree and Debris Management Program for all primary electrical distribution lines in Town**	Planning and Prevention	H: Hurricanes & Tropical Storms, Tornadoes, Severe Storms	Fire Department, Public Works	Town Meeting, Select Board	Significant, Town Staff (DPW Budget), Power Companies	Medium Term	H
16	**Maintain Sewer Lines in accordance with I/I program (Annual program $400K +/-)**	Planning and Prevention, Structural Projects	H: Flooding, Severe Storms	Public Works Sewer Department	Town Meeting, Select Board	Significant, Town Staff (DPW Budget), Sewer Utility Grants	Short Term	H
17	**Implement LID Stormwater features on Town Owned properties (Cedar Hill, DPW, Town Hall, Rec Center, Schools)**	Planning and Prevention, Structural Projects	H: Flooding, Severe Storms	Engineering, Public Works	Town meeting, Selectboard	Significant, Town Staff (DPW Budget), Priority Project Program	Long Term	H

#	New Proposed Action	Action Type	Hazard (H) and/or Vulnerability (V) Addressed	Responsible Agency	Support	Cost and Potential Sources	Time Frame	Priority (High Med, Low)
18	**Develop and distribute educational materials and prepare signs for the public to generate awareness of hazards, mitigation steps, and disaster responses. Work with local business and organizations to educate regarding emergency response and action plans.**	Planning and Prevention	H: Flooding, Dam Failure, Hurricanes & Tropical Storms, Severe Storms, Tornadoes, Winter Storms, Wildfires, Earthquakes, Extreme Temperatures, Drought, Invasive Species	Fire, EMD	Town Administration	Staff (Emergency Management and Planning Department Budgets), 9-1-1 Training Grant, MEMA, FEMA	Medium Term	H
19	**Inspect, repair and maintain town-owned detention basins and dams (including dam management for Pinewood Lake Dam, Town Pond Dam, and Wood Pond Dam) for the purpose of increasing their capacity.**	Planning and Prevention	H: Flooding, Dam Failure, Severe Storms	DPW, Engineering	Town Administration	Significant, Town Staff (DPW Budget), National Dam Safety Program	Medium Term	H

7.0 Plan Evaluation and Maintenance

FEMA requires HMPs to outline a maintenance process to ensure the Plan remains active and relevant to the current and future conditions of the Town. The process must identify the following items:

- Plan Monitoring, Evaluation and Updates – Method and schedule for monitoring, evaluating and updating the plan once every five years;
- Incorporation of Mitigation Strategies – Explanation of how local governments will incorporate mitigation strategies into existing mechanisms; and
- Continued Public Involvement – Requirements that public participation continue throughout the plan maintenance process.

This section details how each town within the Planning Area will meet these Plan maintenance requirements.

7.1 Plan Monitoring, Evaluation, and Updates

As required by FEMA, the written plan will be evaluated and updated at least once every five years; evaluation will be coordinated by the Town Planner of Abington as the lead town on the planning grant for this iteration of the HMP, with the support of the Emergency Management Directors from each town and involve all relevant authorities having jurisdiction. In the interim, the Town Planner and Emergency Management Director will conduct annual reviews of the progress of mitigation actions and update as necessary. If a major natural disaster occurs before the next 5-year HMP update, the towns may wish to reconvene the HMPC to discuss how effective the proposed mitigation actions were in mitigating the impact of the event, and the HMPC may choose to update the Plan if it is determined that imminent changes are required to address new conditions and better mitigate future events. As necessary, HMPC members and/or departments may be added or removed from the committee to obtain the most accurate and applicable information possible.

During the 5-year period that the HMP is active, each of the members of the Core Committee may choose to reconvene the HMPC within two months after a natural hazard event. Upon convening, the committee would review all mitigation actions that address the specific hazard in question and evaluate the status of implementation for each relevant action. The committee will evaluate each action based on a series of questions developed to help rate the effectiveness of relevant mitigation action:

1. If an action was completed, did it impact the result of the event for the community? How?
2. What was the main result of an implemented action; was it a lower damage cost? Was it protection of lives and property? Etc.
3. If the action was completed and the result was not in the favor of the Town, how can that action be changed to better suit the town's needs?
4. If an action was not yet implemented or is in process, would the completed action have potentially decreased the risk of damage from the natural hazard?
5. Are there any actions missing from the HMP that should be added in the wake of this hazard event?

Depending on the Committee's evaluation, actions may be amended, removed, or added in a timely matter with a presentation to the public to record public comment and incorporate more effective mitigation actions for the extent of the HMP's effectiveness.

Evaluations and updates at the end of the 5-year cycle will take place in much the same way this updated plan was developed. The process will include meetings of the HMPC, review of goals and objectives,

updating the community profile, review and modification of potential hazards and hazard related data, review of existing hazard-prone areas and the addition of any new areas, updating existing and planned hazard mitigation measures, and an evaluation as to the effectiveness of the plan to date. The next update will begin in year 4 of this plan, to ensure that the subsequent update is ready within the required 5-year window.

7.2 Incorporation of Mitigation Strategies

Mitigation strategies outlined in this Plan will be incorporated into existing municipal plans, bylaws and regulations as feasible. During future HMP updates, existing and proposed mitigation actions will be evaluated for effectiveness, level of completion, and continued appropriateness. Upon approval of this HMP, the HMPC will provide all interested parties and implementing departments with a copy of the plan and will initiate a discussion regarding how the plan can be integrated into that department's ongoing work. At a minimum, the plan will be reviewed and discussed with the following town staff and departments in each community, many of whom were part of the HMPC:

- Fire / Emergency Management
- Police
- Public Works / Highway
- Engineering
- Planning and Community Development
- Conservation
- Department of Human Services
- Health
- Building

Other groups that will be coordinated with include large institutions, Chambers of Commerce, land conservation organizations and watershed groups.

After this plan has been approved by both FEMA and the Select Boards of each town in the Planning Area, links to the final plan will be emailed to all Town staff, boards, and committees, with a reminder to review the plan periodically and work to incorporate its contents, especially the proposed mitigation actions presented in the 2024 Mitigation Strategy, into other planning processes, documents, and plans including Capital Improvement Plans. In addition, during annual review meetings for the HMP implementation process, the HMPC will review whether any other relevant municipal plans are in the process of being updated. If so, the committee will remind staff working on these plans, policies, etc., of the HMP, and urge them to incorporate the HMP data, findings, and actions into their respective efforts.

7.3 Continued Public Involvement

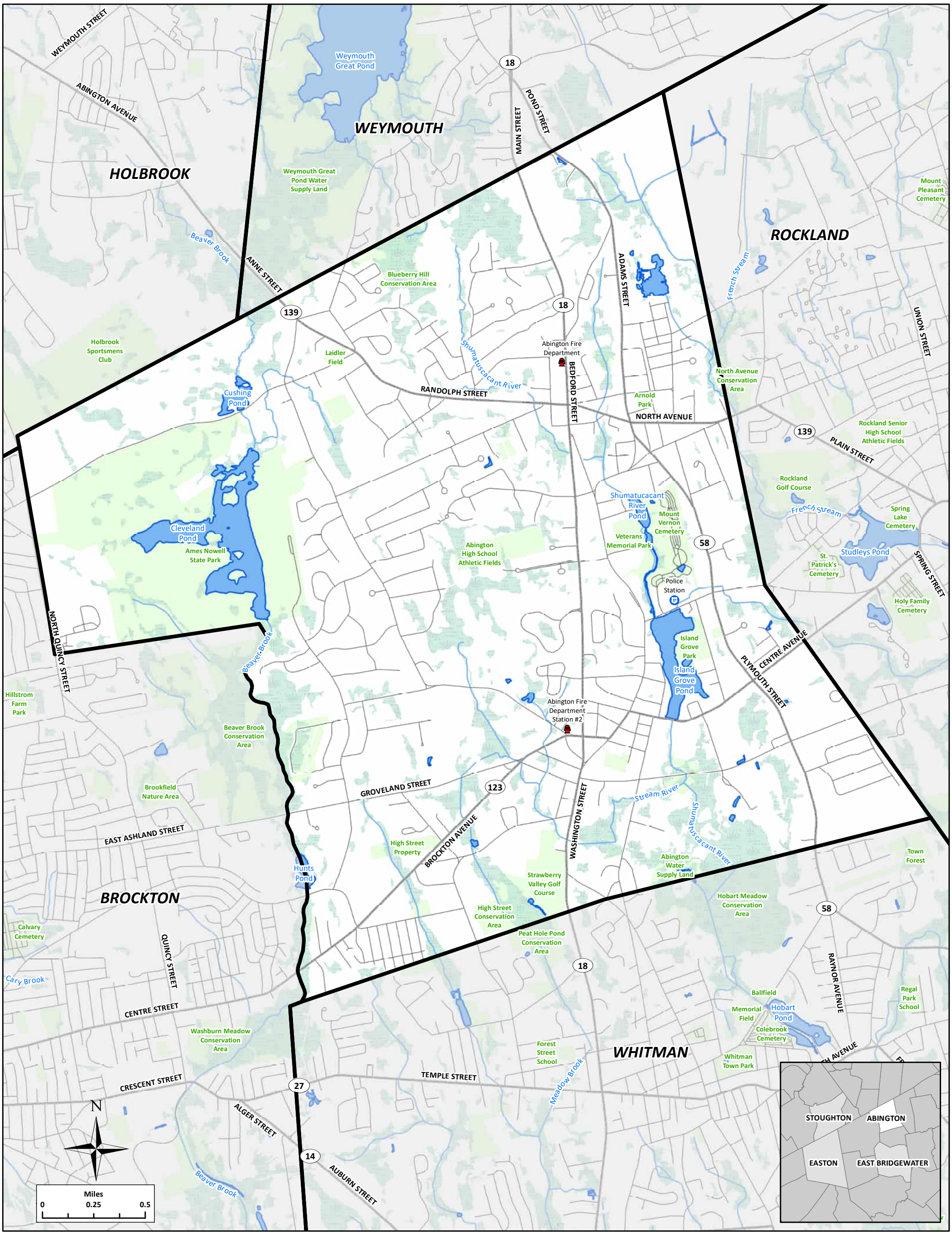
During the periodic five-year update process, the HMPC will hold at least one public workshop or similar meeting to solicit feedback from the public on the progress made to date. Concerned citizens will also be invited to review the revised Plan and submit any additional comments or recommendations for improving the Plan. All events will be publicly advertised in local newspapers and town websites, at a minimum. Copies of the Plan will be provided in public places such as each Town Hall (Clerk's office) and all public libraries. The Plan will also be made available to the public via each Town's website.

7.4 Plan Adoption

At the conclusion of planning efforts conducted by the HMPC, the draft of the Abington, Easton, and Stoughton HMP was reviewed by the HMPC, stakeholders and the public, and informally approved by all applicable Town departments, boards, and other agencies identified as members of the HMPC. The plan

was then submitted to the Massachusetts Emergency Management Agency (MEMA) and the Federal Emergency Management Agency (FEMA) for review and approval. If approved by MEMA and FEMA, the plan will be brought before each town's Select Board for adoption, and the Plan will enter the five year "maintenance" phase. An example certificate of adoption is provided in Appendix F: Sample Certificate of Adoption.

APPENDIX A: MAPS



Multi-Jurisdictional Hazard Mitigation Plan

ABINGTON, MA

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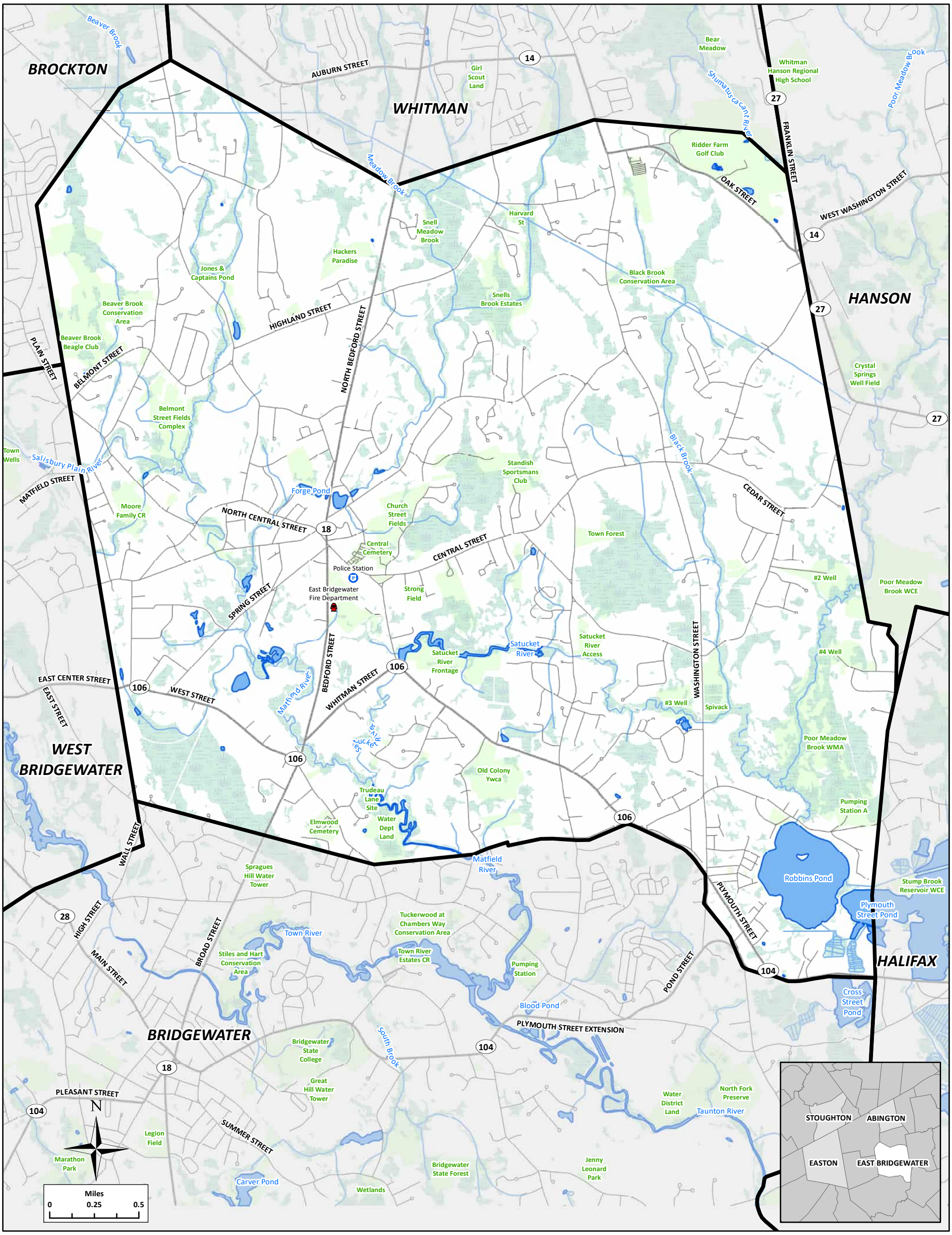
Map 1: Overview

Source:
MassDOT Roads, 2022.
MassGIS, Building Structures, 2022.
MassGIS, Prot. and Rec. Open Space, 2022.
MassDEP, Hydrography, 2019.
MassDEP, Wetlands, 2017.

This map is intended for planning purposes only
Date: 3/6/2023

Legend

- Fire Station
- Police Station
- State Road
- Local Street
- Waterbody
- Stream
- Wetland
- Open Space



Multi-Jurisdictional Hazard Mitigation Plan

EAST BRIDGEWATER, MA

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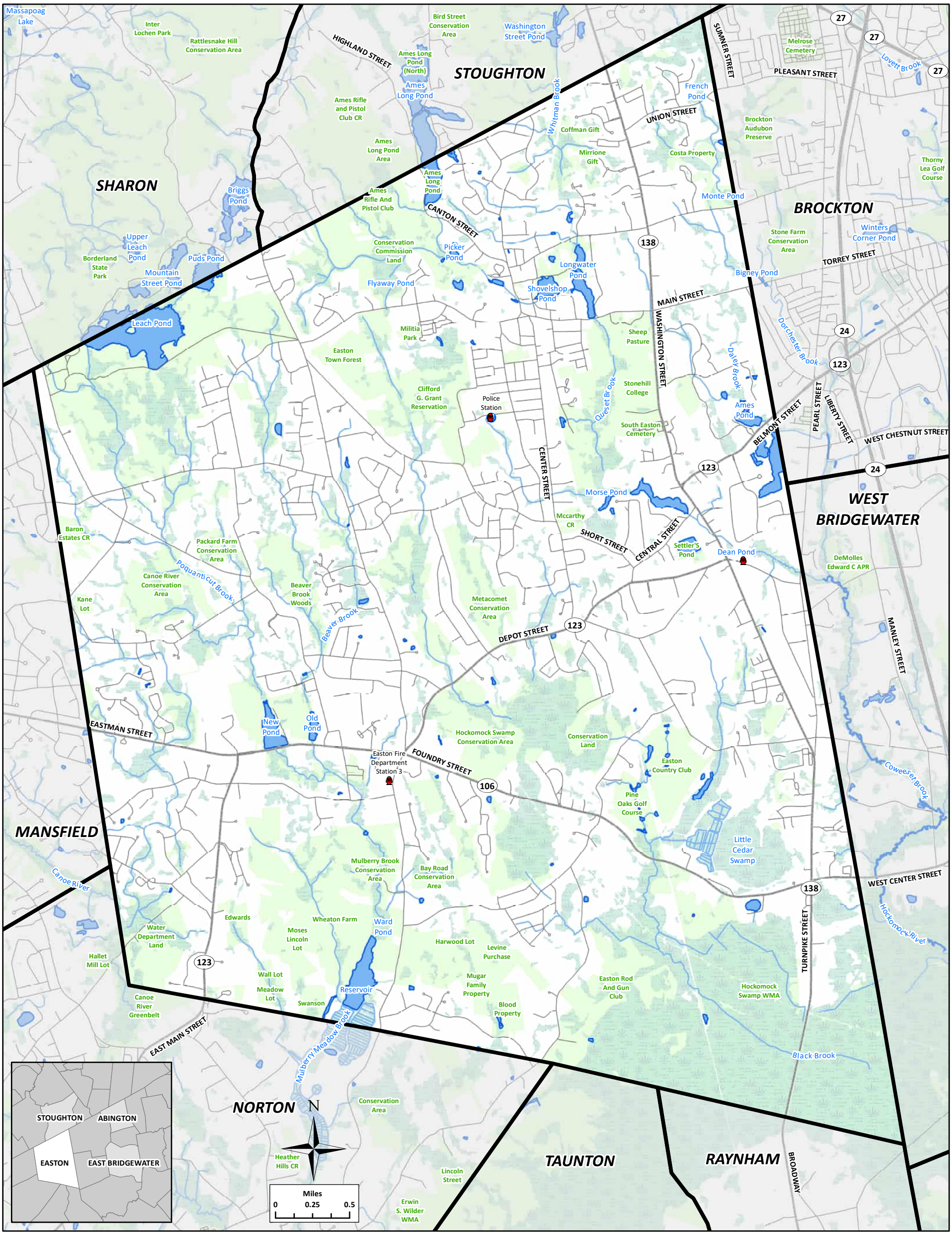
BETA
IMPROVING COMMUNITIES TOGETHER

This map is intended for planning purposes only
Date: 3/7/2023

Legend

- Fire Station
- Police Station
- State Road
- Local Street
- Waterbody
- Stream
- Wetland
- Open Space



Multi-Jurisdictional Hazard Mitigation Plan

EASTON, MA

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- Stream
- Wetland
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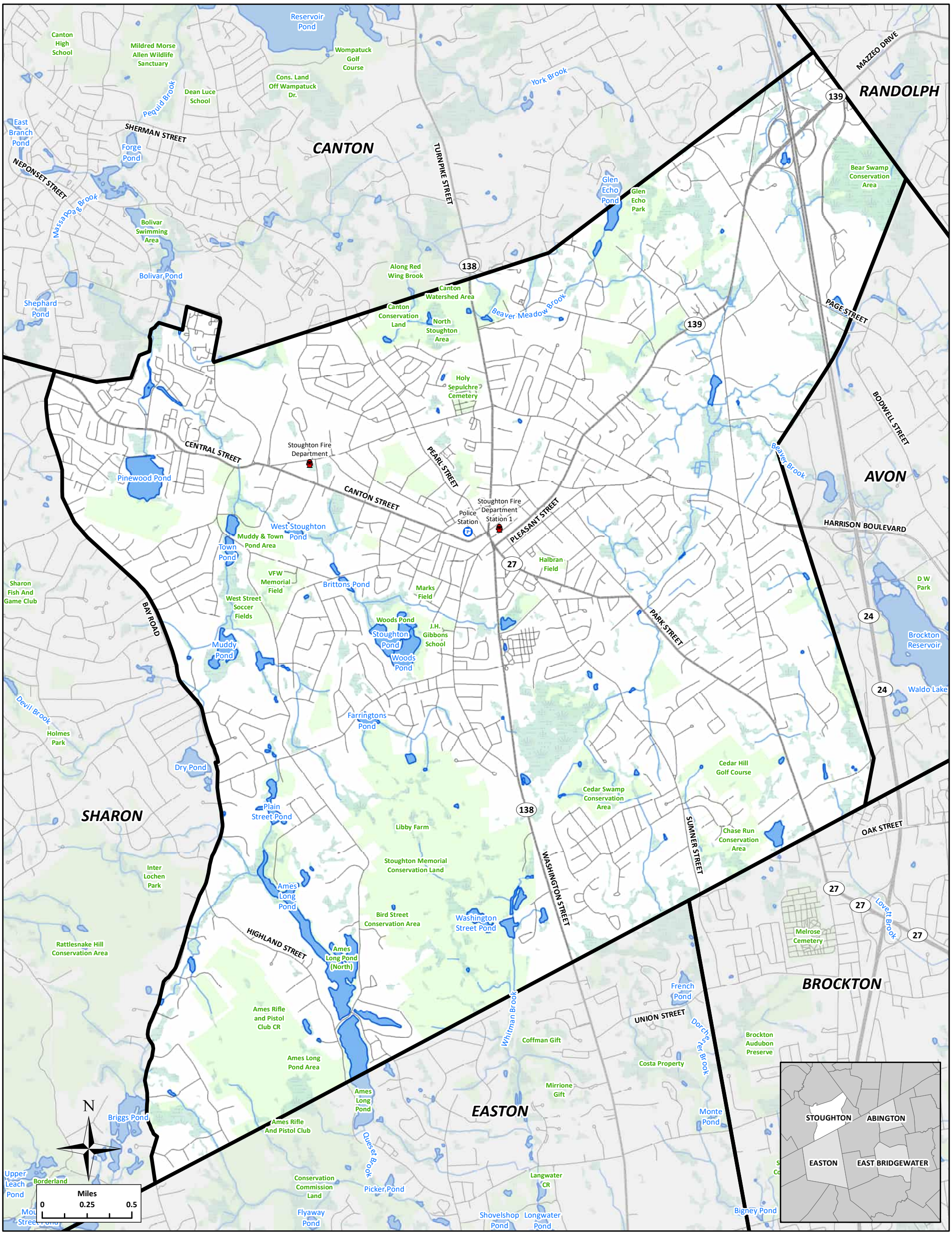

Multi-Jurisdictional Hazard Mitigation Plan

STOUGHTON, MA

Map 1: Overview

Source:
MassDOT Roads, 2022.
MassGIS, Building Structures, 2022.
MassGIS, Prot. and Rec. Open Space, 2022.
MassDEP, Hydrography, 2019.
MassDEP, Wetlands, 2017.

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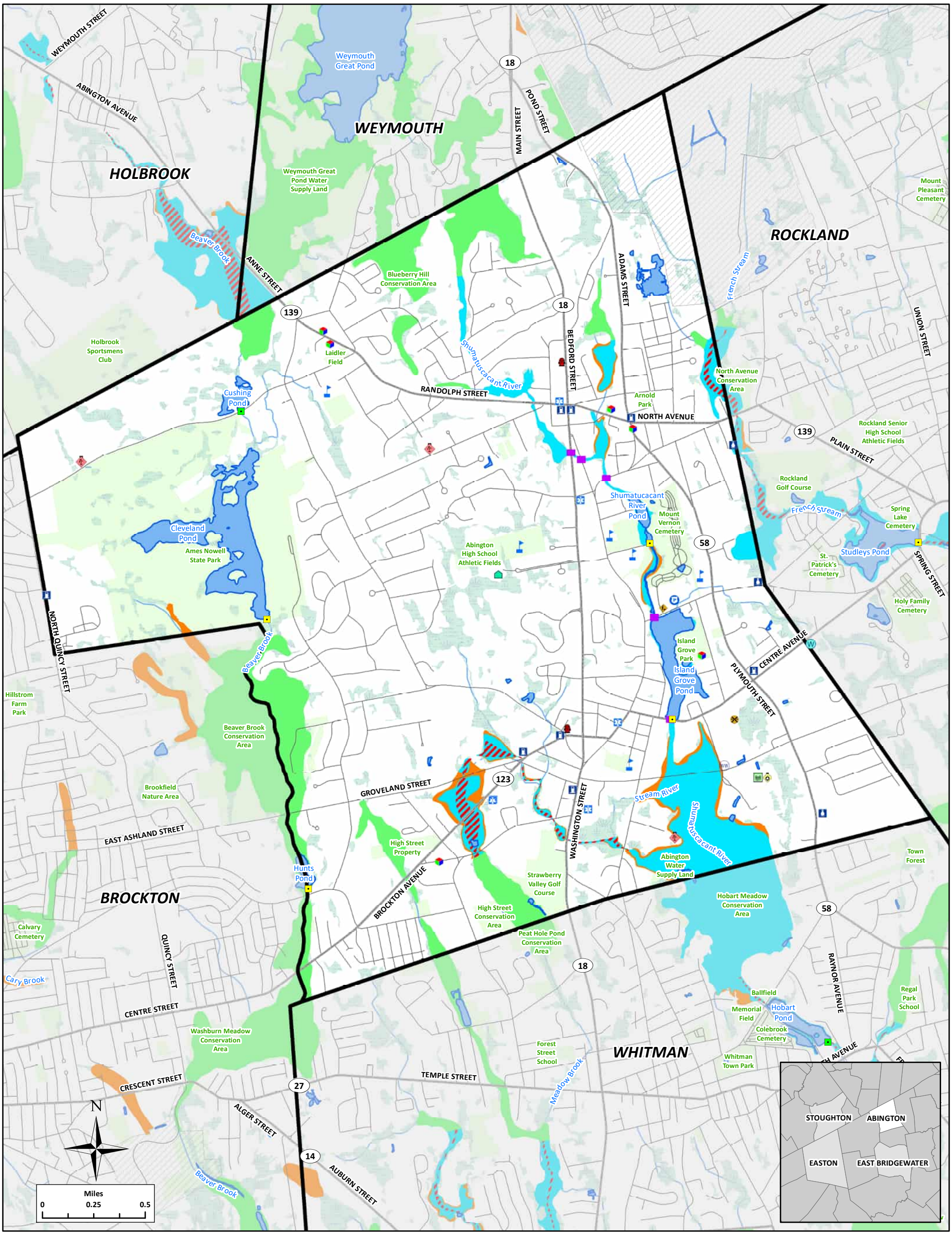
Date: 3/7/2023

Legend

- Fire Station
- Police Station
- State Road
- Local Street
- Waterbody
- Stream
- Wetland
- Open Space



Multi-Jurisdictional Hazard Mitigation Plan

ABINGTON, MA

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Map 2: Critical Facilities w/ Flood Hazard Areas

Source:
MassDOT Roads, 2022.
MassGIS, Building Structures, 2022.
MassGIS, Prot. and Rec. Open Space, 2022.
MassDEP, Hydrography, 2019.
MassDEP, Wetlands, 2017.
OCPC, Critical Facilities, 2022.
FEMA, National Flood Hazard Layer, 2017.

BETA 45 Years IMPROVING COMMUNITIES TOGETHER

This map is intended for planning purposes only
Date: 3/6/2023

Legend

- Bridge
- Childcare
- Fire Station
- Fuel Station
- Health & Medical Facility
- Police Station
- Public Works
- Railroad
- School
- Senior Center
- Shelter
- Substation
- Town Offices
- Wastewater Facilities
- Water Department
- Water Infrastructure

Dam Hazard Code
- Low Hazard
- Significant Hazard

- State Road
- Local Street
- Waterbody
- Stream
- Wetland
- Open Space

Flood Zone Designation
- A: 1% Annual Chance, no BFE
- AE: 1% Annual Chance, with BFE
- AE: Regulatory Floodway
- AH: 1% Annual Chance of 1-3ft Ponding, with BFE
- X: 0.2% Annual Chance
- Area Not Included

BROCKTON
WHITMAN
HANSON
WEST BRIDGEWATER
BRIDGEWATER
HALIFAX
Beaver Brook
AUBURN STREET
14
Girl Scout Land
Bear Meadow
Whitman Hanson Regional High School
Shumatuscacant River
Poor Meadow Brook
27
FRANKLIN STREET
Ridder Farm Golf Club
OAK STREET
WEST WASHINGTON STREET
Meadow Brook
Snell Meadow Brook
Harvard St
Hackers Paradise
Jones & Captains Pond
Black Brook Conservation Area
Snells Brook Estates
Beaver Brook Conservation Area
HIGHLAND STREET
NORTH BEDFORD STREET
Beaver Brook Beagle Club
PLAIN STREET
BELMONT STREET
Crystal Springs Well Field
Belmont Street Fields Complex
Town Wells
Salisbury Plain River
Black Brook
Standish Sportsmans Club
MATFIELD STREET
Forge Pond
Moore Family CR
NORTH CENTRAL STREET
18
Church Street Fields
CEDAR STREET
Central Cemetery
CENTRAL STREET
Town Forest
#2 Well
Poor Meadow Brook WCE
Strong Field
SPRING STREET
BEDFORD STREET
Satucket River
Satucket River Access
WASHINGTON STREET
#4 Well
EAST CENTER STREET
106
WEST STREET
Marfield River
WHITMAN STREET
Satucket River
#3 Well
Spivack
EAST STREET
Poor Meadow Brook WMA
Old Colony Ywca
Pumping Station A
Trudeau Lane Site
Water Dept Land
Elmwood Cemetery
WALL STREET
Matfield River
Robbins Pond
Stump Brook Reservoir WCE
Spragues Hill Water Tower
Plymouth Street Pond
28
HIGH STREET
BROAD STREET
Tuckerwood at Chambers Way Conservation Area
Town River
Stiles and Hart Conservation Area
Town River Estates CR
Pumping Station
POND STREET
PLYMOUTH STREET
104
MAIN STREET
Blood Pond
PLYMOUTH STREET EXTENSION
Cross Street Pond
Bridgewater State College
South Brook
Great Hill Water Tower
PLEASANT STREET
Water District Land
North Fork Preserve
Taunton River
Legion Field
SUMMER STREET
Marathon Park
Carver Pond
Wetlands
Bridgewater State Forest
Jenny Leonard Park
N
Miles
0
0.25
0.5
STOUGHTON
ABINGTON
EASTON
EAST BRIDGEWATER

Multi-Jurisdictional Hazard Mitigation Plan

EAST BRIDGEWATER, MA

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Map 2: Critical Facilities w/ Flood Hazard Areas

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BETA
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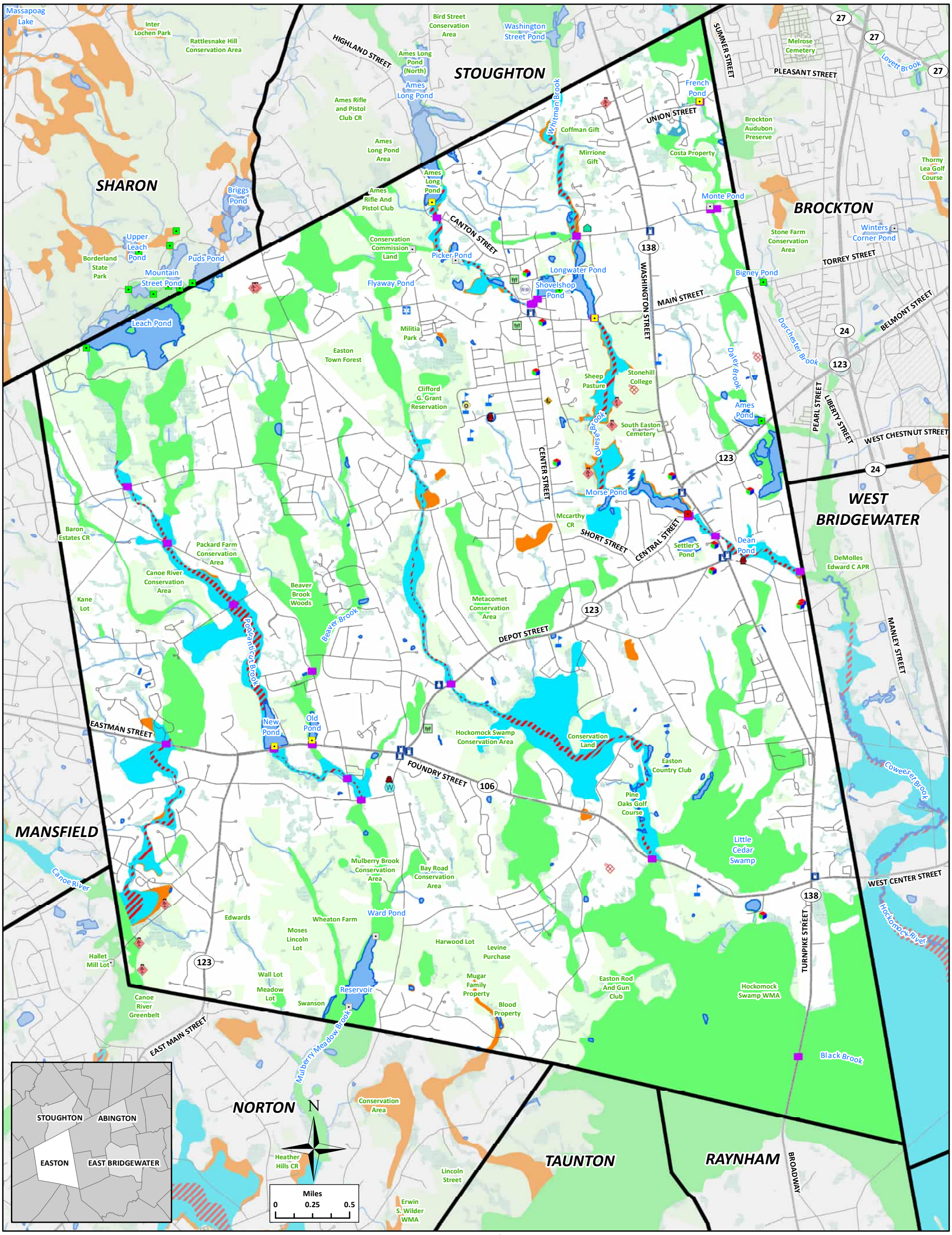
Legend

- Bridge
- Childcare
- Elder Services
- Fire Station
- Fuel Station
- Health & Medical Facility
- Police Station
- Public Works
- School
- Shelter
- Solar Field
- Substation
- Town Offices
- Waste Disposal
- Wastewater Facilities
- Water Infrastructure

Dam Hazard Code
- Significant Hazard
- Low Hazard
- N/A

- State Road
- Local Street
- Waterbody
- Stream
- Wetland
- Open Space

Flood Zone Designation
- A: 1% Annual Chance, no BFE
- AE: 1% Annual Chance, with BFE
- AE: Regulatory Floodway
- X: 0.2% Annual Chance
- Area Not Included



Multi-Jurisdictional Hazard Mitigation Plan

EASTON, MA

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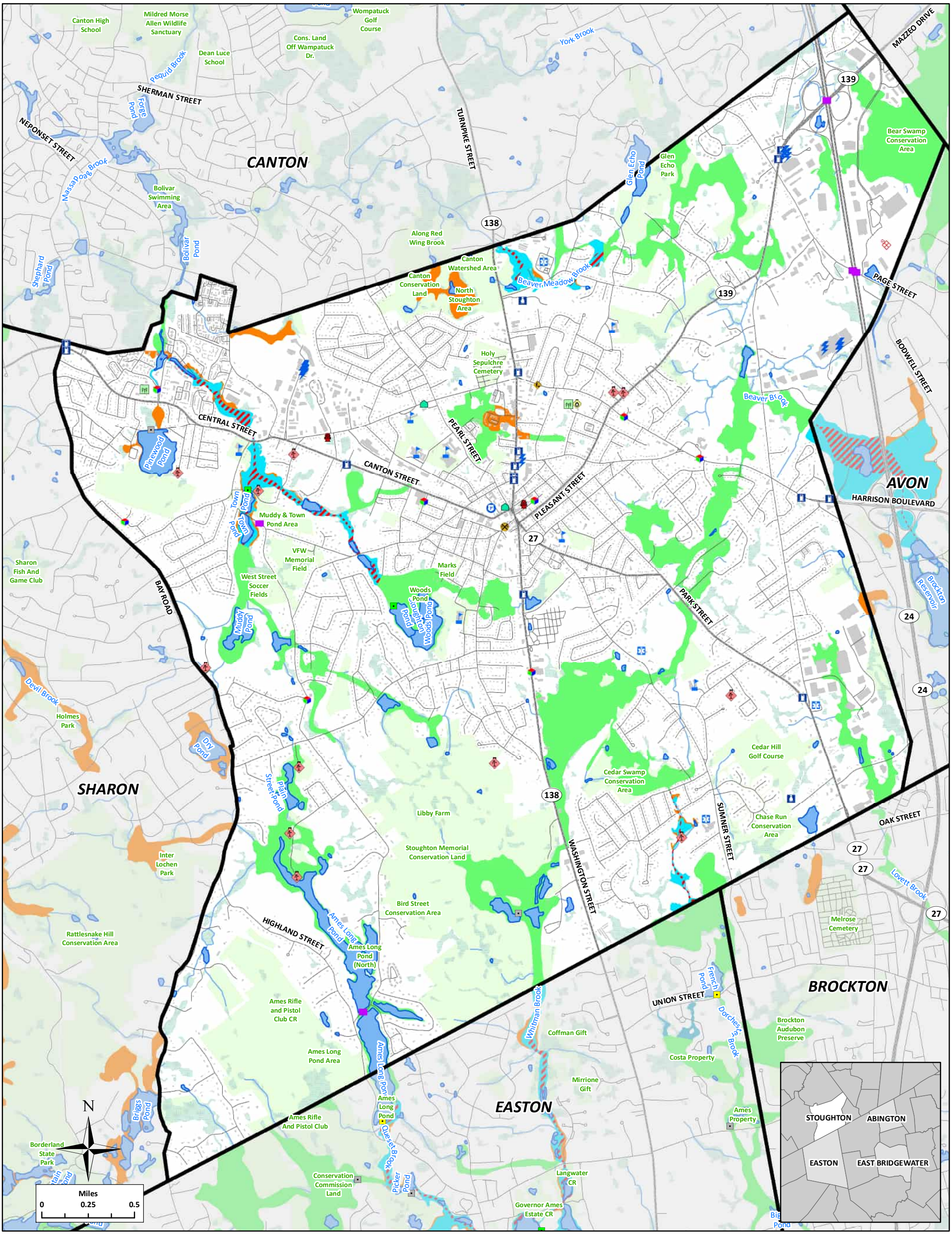
Legend

- Bridge
- Childcare
- Elder Services
- EV Charging Station
- Fire Station
- Fuel Station
- Health & Medical Facility
- Police Station
- Public Works
- School
- Shelter
- Solar Field
- Substation
- Town Offices
- Wastewater Facilities
- Water Department
- Water Infrastructure

Dam Hazard Code
- High Hazard
- Significant Hazard
- Low Hazard
- N/A

- State Road
- Local Street
- Waterbody
- Stream
- Wetland
- Open Space

Flood Zone Designation
- A: 1% Annual Chance, no BFE
- AE: 1% Annual Chance, with BFE
- AE: Regulatory Floodway
- AH: 1% Annual Chance of 1-3ft Ponding, with BFE
- X: 0.2% Annual Chance
- Area Not Included



Multi-Jurisdictional Hazard Mitigation Plan

STOUGHTON, MA

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Map 2: Critical Facilities w/ Flood Hazard Areas

Source:
MassDOT Roads, 2022.
MassGIS, Building Structures, 2022.
MassGIS, Prot. and Rec. Open Space, 2022.
MassDEP, Hydrography, 2019.
MassDEP, Wetlands, 2017.
OCPC, Critical Facilities, 2022.
FEMA, National Flood Hazard Layer, 2017.

BETA IMPROVING COMMUNITIES TOGETHER

This map is intended for planning purposes only
Date: 3/7/2023

Legend

- Bridge
- Childcare
- Elder Services
- EV Charging Station
- Fire Station
- Fuel Station
- Health & Medical Facility
- Police Station
- Public Works
- Railroad
- School
- Shelter
- Solar Field
- Substation
- Town Offices
- Water Infrastructure

Dam Hazard Code
- Significant Hazard
- Low Hazard
- N/A

- State Road
- Local Street
- Waterbody
- Stream
- Wetland
- Open Space

Flood Zone Designation
- A: 1% Annual Chance, no BFE
- AE: 1% Annual Chance, with BFE
- AE: Regulatory Floodway
- AH: 1% Annual Chance of 1-3ft Ponding, with BFE
- X: 0.2% Annual Chance
- Area Not Included

Multi-Jurisdictional Hazard Mitigation Plan

ABINGTON, MA

Map 3: Environmental Justice Populations

Source:
MassDOT Roads, 2022.
MassGIS, Building Structures, 2022.
MassEEA, Environmental Justice Populations, 2022.
MassDEP, Hydrography, 2019.
MassDEP, Wetlands, 2017.

This map is intended for planning purposes only
Date: 3/6/2023

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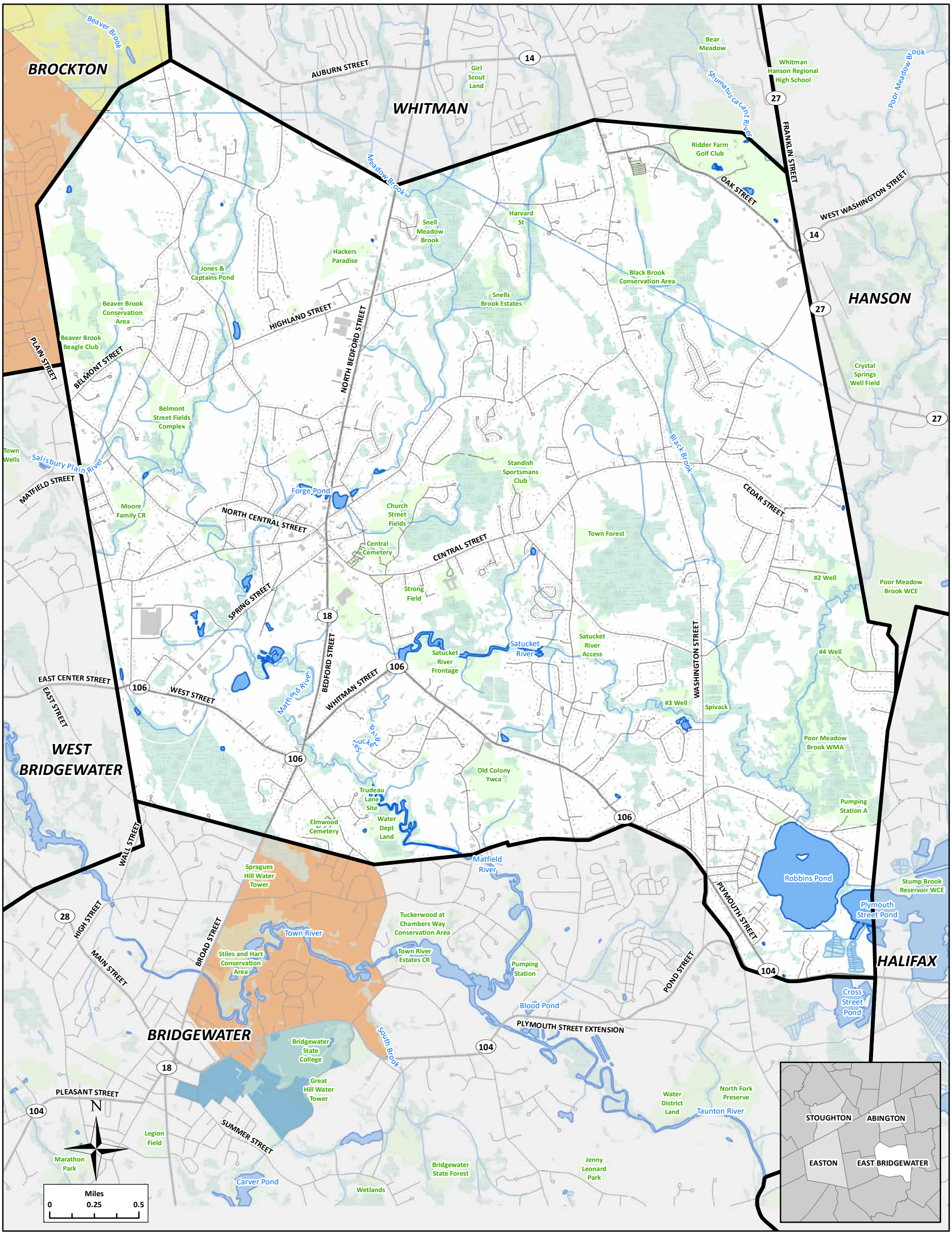
Legend

- Income
- Minority
- Minority and English Isolation
- Minority and Income
- Minority, Income and English Isolation

- State Road
- Local Street
- Waterbody
- Stream
- Wetland
- Open Space



Multi-Jurisdictional Hazard Mitigation Plan

EAST BRIDGEWATER, MA

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Map 3: Environmental Justice Populations

Source:
MassDOT Roads, 2022.
MassGIS, Building Structures, 2022.
MassEEA, Environmental Justice Populations, 2022.
MassDEP, Hydrography, 2019.
MassDEP, Wetlands, 2017.

This map is intended for planning purposes only
Date: 3/7/2023

Legend

- Minority
- Minority and Income
- Minority, Income and English Isolation
- State Road
- Local Street
- Waterbody
- Stream
- Wetland
- Open Space

Multi-Jurisdictional Hazard Mitigation Plan

EASTON, MA

Map 3: Environmental Justice Populations

Source:
MassDOT Roads, 2022.
MassGIS, Building Structures, 2022.
MassEEA, Environmental Justice Populations, 2022.
MassDEP, Hydrography, 2019.
MassDEP, Wetlands, 2017.

This map is intended for planning purposes only
Date: 3/7/2023

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Legend

- Minority
- Minority and English Isolation
- Minority and Income
- Minority, Income and English Isolation

- State Road
- Local Street
- Waterbody
- Stream
- Wetland
- Open Space

STOUGHTON, ABINGTON, EASTON, EAST BRIDGEWATER

Miles 0 0.25 0.5

Multi-Jurisdictional Hazard Mitigation Plan

STOUGHTON, MA

Map 3: Environmental Justice Populations

Source:
MassDOT Roads, 2022.
MassGIS, Building Structures, 2022.
MassEEA, Environmental Justice Populations, 2022.
MassDEP, Hydrography, 2019.
MassDEP, Wetlands, 2017.

This map is intended for planning purposes only
Date: 3/7/2023

Legend

- Minority
- Minority and Income
- State Road
- Local Street
- Waterbody
- Stream
- Wetland
- Open Space

Multi-Jurisdictional Hazard Mitigation Plan

ABINGTON, MA

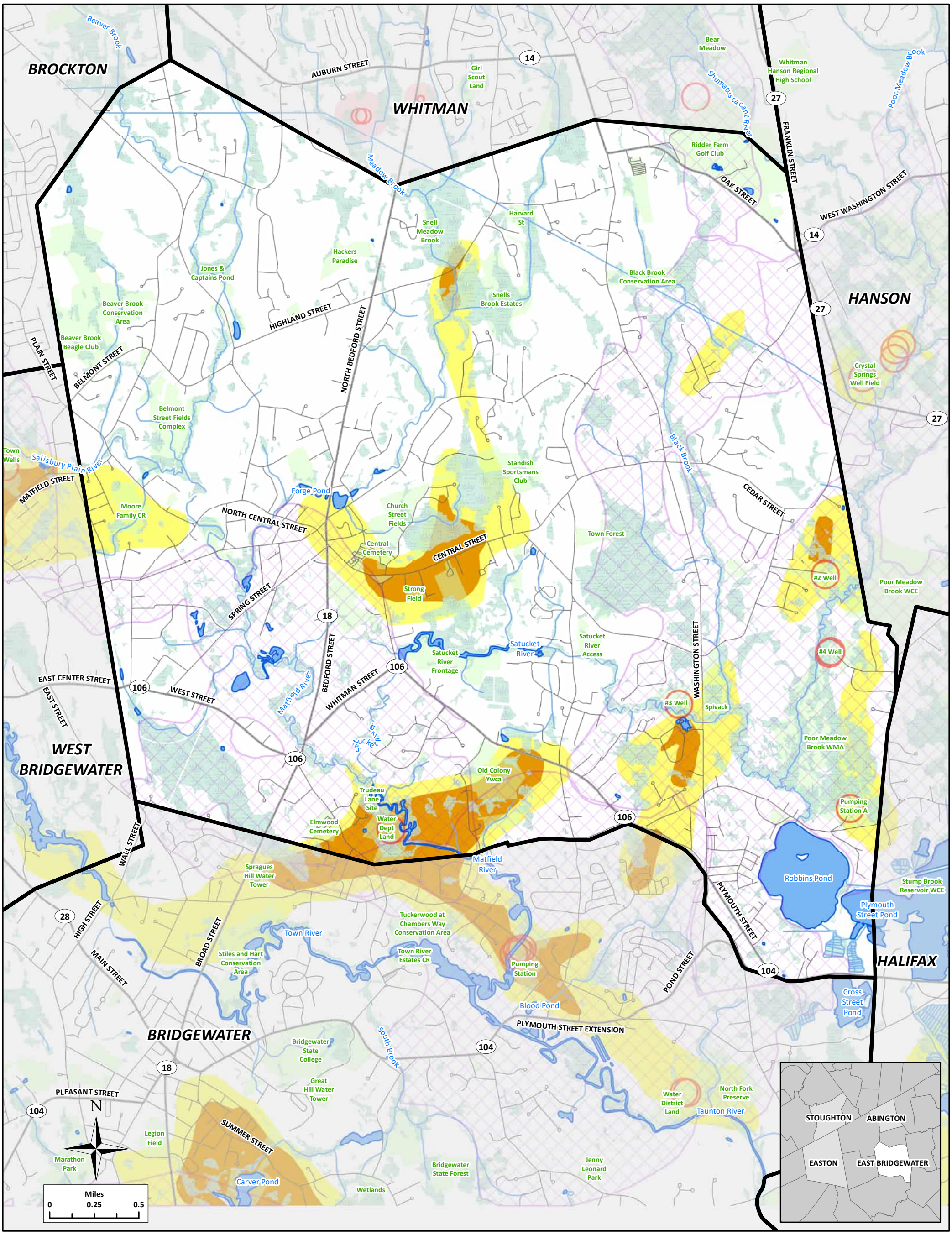
Map 4: Water Resources

Source:
MassDOT Roads, 2022.
MassGIS, Building Structures, 2022.
MassDEP, Aquifers, 2007.
MassDEP, Wellhead Protection Areas, 2022.
MassDEP, Hydrography, 2019.
MassDEP, Wetlands, 2017.

Legend

- Approved Wellhead Protection Area (Zone I)
- Approved Wellhead Protection Area (Zone II)
- Aquifer - High Yield
- Aquifer - Medium Yield
- State Road
- Local Street
- Waterbody
- Stream
- Wetland
- Open Space

This map is intended for planning purposes only
Date: 3/7/2023



Multi-Jurisdictional Hazard Mitigation Plan

EAST BRIDGEWATER, MA

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Map 4: Water Resources

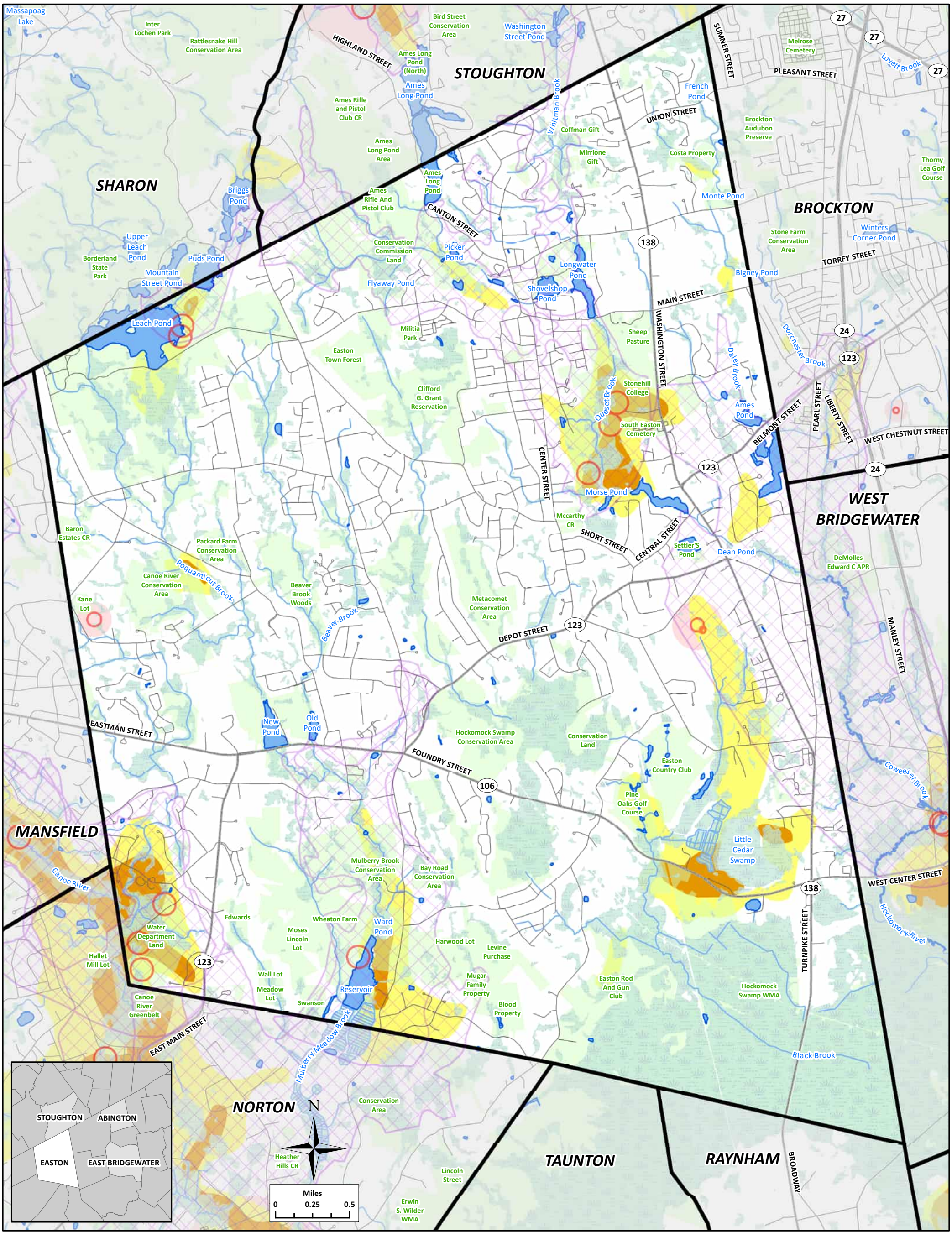
Source:
MassDOT Roads, 2022.
MassGIS, Building Structures, 2022.
MassDEP, Aquifers, 2007.
MassDEP, Wellhead Protection Areas, 2022.
MassDEP, Hydrography, 2019.
MassDEP, Wetlands, 2017.

BETA 45 Years IMPROVING COMMUNITIES TOGETHER

This map is intended for planning purposes only
Date: 3/7/2023

Legend

- Approved Wellhead Protection Area (Zone I)
- Approved Wellhead Protection Area (Zone II)
- Interim Wellhead Protection Areas (IWPA)
- Aquifer - High Yield
- Aquifer - Medium Yield
- State Road
- Local Street
- Waterbody
- Stream
- Wetland
- Open Space



Multi-Jurisdictional Hazard Mitigation Plan

EASTON, MA

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Map 4: Water Resources

Source:
MassDOT Roads, 2022.
MassGIS, Building Structures, 2022.
MassDEP, Aquifers, 2007.
MassDEP, Wellhead Protection Areas, 2022.
MassDEP, Hydrography, 2019.
MassDEP, Wetlands, 2017.

This map is intended for planning purposes only
Date: 3/7/2023

Legend

- Approved Wellhead Protection Area (Zone I)
- Approved Wellhead Protection Area (Zone II)
- Interim Wellhead Protection Areas (IWPA)
- Aquifer - High Yield
- Aquifer - Medium Yield
- State Road
- Local Street
- Waterbody
- Stream
- Wetland
- Open Space

Multi-Jurisdictional Hazard Mitigation Plan

STOUGHTON, MA

Map 4: Water Resources

Source:
MassDOT Roads, 2022.
MassGIS, Building Structures, 2022.
MassDEP, Aquifers, 2007.
MassDEP, Wellhead Protection Areas, 2022.
MassDEP, Hydrography, 2019.
MassDEP, Wetlands, 2017.

Legend

- Approved Wellhead Protection Area (Zone I)
- Approved Wellhead Protection Area (Zone II)
- Interim Wellhead Protection Areas (IWPA)
- Aquifer - High Yield
- Aquifer - Medium Yield
- State Road
- Local Street
- Waterbody
- Stream
- Wetland
- Open Space

This map is intended for planning purposes only
Date: 3/7/2023

APPENDIX B: PUBLIC ENGAGEMENT

HMPC Meeting 1 Record of Meeting

Date: October 27, 2022

Subject: **Abington, East Bridgewater, Easton, and Stoughton Multijurisdictional Hazard Mitigation Plan Committee Meeting 1**

Location: Zoom

Attendance:

Abington
Liz Shea, Assistant Town Planner, Planning Board
Jeanne White, Administrative Assistant, DPW
Kelly Johnson, Recreation Director, Park and Recreation Dept.
Chief John Nuttall, Fire Chief, Fire Department
Chief David DelPapa, Police Chief, Police Department; Emergency Management Director

East Bridgewater
Charlie Seelig, Town Administrator, Town Administration
Chief Timothy Harhen, Fire Chief, Fire Department; Emergency Management Director
Patrick Franey, Building Commissioner, Building Department
John Haines,Director of Public Works, DPW

Easton
Stephanie Danielson, Director of Planning & Economic Development, Planning & Economic Development Department
Albert Benson, Conservation Commission Member, Conservation Commission
Dottie Fulginiti, Select Board Chair, Select Board
Greg Swan, Assistant Town Engineer, DPW
Jennifer Carlino, Land Use/Environmental Planner, Environmental Protection
Jonathan Carroll, Firefighter, Fire Department
Chief Keith Boone, Police Chief, Police Department
Rich Tierney, Operations Manager, Water Division
Kevin Greiner, Inspector of Buildings, Inspectional Services (Building)

BETA
Emily Slotnick, Project Manager
Emily Farmer, Staff Scientist

RECORD:

1. Introductions – BETA introductions and Core Planning Team Members introduce their committee members present
2. Overview of Hazard Mitigation Planning Process (See attached Slides for presentation)
    a. Planning Process—Outreach and Stakeholder Coordination
    b. Risk Assessment—Identifying Hazards and Estimating Losses
    c. Mitigation Strategy— Identifying Mitigation Actions and Implementation Strategies
    d. Plan Maintenance—Implementation, Evaluation and Revision/Update

Stephanie Danielson and BETA clarified that information from each town's MVP process will be used throughout the development of the HMP.

3. Scheduled for four remaining committee meetings and one public outreach meeting:
    a. Committee Meeting 2 – December 8, 2022, 1 PM Zoom
    b. Public Meeting – December 19, 2022, 6-8 PM Zoom
    c. Committee Meeting 3 – January 19, 2023, 1 PM Zoom
    d. Committee Meeting 4 – February 19, 2023, 1 PM Zoom
    e. Committee Meeting 5 – March 19, 2023, 1 PM Zoom
4. BETA led a review of hazards of concern and the committee brainstormed about locally identified hazard areas, issues, and recent work (ask about flood areas, issues with dams, drought, etc.) See Table 1 for the results of the brainstorm.
5. Public outreach – BETA reminded all committee members to encourage neighbors and constituents to respond to the HMP public survey and engage in the public outreach meeting
6. Future timeline and role of the committees
    a. Liz Shea reminded committee members to provide payroll sheets and keep track of work time on this project, FEMA wants to see the work done in the week that it was done.

7. Next Steps/To do:

a. Committee Members and Core Planning Team Members:
    i. Fill out worksheets when they are provided to you (Existing Capabilities and updates on past mitigation actions)
    ii. Share the news of the public survey (and make sure to document when you share anything with the public)!

b. BETA:
    i. Prepare worksheets and work on the risk assessment portion of the plan with information gathered from committee members
    ii. Prepare the survey for the public

c. Next meeting 12/08/2022.

Table 1 Local Areas of Concern Working Sheet

Hazard	Examples of Identified Areas or Issues from Past Plans	Meeting Additions
Flooding	• Potential flooding at Route 123 and Route 139 in Abington • Central St Bridge repairs to mitigate flooding (Abington) • Flooding Meadow Brook and Matfield River at Union Street, Spring	• EB, these are still a concern except for Route 18, Route 106 – MassDOT worked on that this summer, yet to be seen if it will mitigate flood problem. • MassDOT redid Route 18 from 2 lanes to 4 lanes from Route 139 to Weymouth. Just completed. This was a long time coming, most complete in 1999. Also added sidewalks. Increase impervious surface in

	Street, Route 18, route 106 (East Bridgewater) • Red Wing Brook area (Stoughton) • Sawmill Pond Rd at Bay Rd around #486 (Easton) • Prospect Road around #80 and #33 (Easton) • Culvert under Route 138 near the mobile home park (Easton) • Bay Rd near #224 has a confluence of three culverts (Easton) • Purchase Street at the "Dog Leg" near Easton Country Club (Easton)	entire corridor. But no noticeable impacts to stormwater flooding. • Abington – developers doing Form A lots, putting in 3 or 4 lots without the need to do stormwater plan, before our stormwater regs, so there is flooding now in adjacent neighborhoods. Lynwood St. Also, John L Sullivan Way and on Center Ave impacting Park St. properties – people filling in drainage/detention basins. Also, on Buckboard Lane. John L Sullivan way issue has been restored (we think). • A core planning team member asked: Do we add planning/regulatory items here too? Easton's FEMA FIRMs have a lot of A zones and no elevations. It would be helpful to have more AE zones with the BFE identified.
Drought	• 2022 drought – any specific impacts that differed from 2016? • 2016 drought • Concern over wells and surface water sources in East Bridgewater	• Charlie Seelig noted that there are still concerns for drought in EB. We had water use restrictions again. • Extreme heat, more days of 90+ leading to more heat wave events. Can lead to more outages, also more energy use. Not everyone has sufficient cooling capacity in their homes. Need a system of check-ins for elderly through council on aging or another group • Abington had water restrictions starting last march. Water in town comes from Abington Rockland joint water works, mostly coming from Great Sandy Pond, Pembroke. No water to new developments. New restrictions and policies in place. We have money to expand a well, but that is a long-term project. • East Bridgewater - at least twenty-five private wells for drinking water. Wells constructed before 2014 aren't specifically labeled "drinking" v. "irrigation". There might be enough 50 wells for drinking. That's out of about 4,000 households. • Private wells, a few in Easton, a few in Abington. Manny wells are primarily used for irrigation to water lawns.

Dam Failure	• Island Grove Dam – Abington • Woods Pond Dam – Stoughton • Forge Pond Dam – East Bridgewater	• Abington – dam near Brockton line, Hunt's Pond dam needs to be fixed. Center Street Dam is funded to be repaired. • EB – was Forge Pond Dam upgraded? Recent EAP published. East Bridgewater - Forge Pond Dam - No work since 2015. In 2014/2015 the Forge Pond Dam was repaired per an order from the Department of Dam Safety. Repairs included a new operating sluice gate to control the level of the pond behind the impoundment and major repairs to the fish ladder in hopes of increasing migratory fish flow. In total I believe costs were about $200K. • Phase 1 inspection for Old, New, and Long Pond Dams underway.
Other Severe Storm Events	• Aging and diseased tree issues – all four towns	• Easton – Windstorms knocking down power lines, trees blocking roadways. Downed power lines have resulted in at least one and sometimes many days of outages in many areas of town. In EB, storms in 2021-22 resulted in outages for days. Challenge of length of outages is a problem. Not as much redundancy as we'd like in the system. For longer term outages, we may need warming and cooling centers. • EB and other towns discussion on how to promote shelters as accessible and helpful places during storm events. How can we increase use of shelters?
Invasive Species?	• Beetles and Gypsy Moths noted in Stoughton	• Winter Moth, Easton. Asiatic bittersweet? Pulling down the trees, impacting tree health. Purple loosestrife and phragmites taking over wetlands areas that otherwise provide flood storage. Generally, no known instances at this time.

HMPC Meeting 2 Record of Meeting

Date: December 8, 2022

Subject: **Abington Multijurisdictional Hazard Mitigation Plan Committee Meeting 2**

Location: Zoom

Attendance:

Abington
Paul Bunker, chairman, Conservation Commission
Kelly Johnson, Recreation Director, Park and Recreation Dept.
Chief John Nuttall, Fire Chief, Fire Department
Liz Shea, Assistant Town Planner, Planning Board
Jeanne White, Administrative Assistant, DPW
Lindsay Wright, Public Health Nurse, Health Department

East Bridgewater
Charlie Seelig, Town Administrator, Town Administration

Easton
Albert Benson, Conservation Commission Member, Conservation Commission
Jennifer Carlino, Land Use/Environmental Planner, Environmental Protection
Jonathan Carroll, Firefighter, Fire Department
Stephanie Danielson, Director Planning & Economic Development Department
Kevin Greiner, Inspector of Buildings, Inspectional Services (Building)
Kristen Kennedy, Director, Health and Community Services
Greg Swan, Assistant Town Engineer, DPW
Rich Tierney, Operations Manager, Water Division

Stoughton
Paul Giffune, Stoughton DPW Superintendent
Chief Michael Carroll, Fire Department

BETA
Emily Slotnick, Project Manager
Emily Farmer, Staff Scientist

AGENDA:

1. BETA updated the committee on project progress:
    a. Risk Assessment and Existing Capabilities chapters done to the best of BETA's ability with the information provided by committee members thus far.
    b. Overview of survey results – 233 responses as of 12/9 (69 Abington, 90 East Bridgewater, 71 Easton, and 2 Stoughton), and discussion of recurring themes:
        i. Hazard of main concern – High Winds followed by Winter Storm events
        ii. Worried about infrastructure, especially energy assets including electric outages, delivery of heating oil, etc.

iii. Concern for senior citizens and those with health problems
iv. Areas of concern: open space and wildlife, power loss, wetlands and drainage, water supply
v. Suggested tasks for a decrease in damage: tree trimming/maintenance, education on emergencies and on CERT, better use of town social media, developing neighborhood CERT teams

2. BETA gave an overview of the process for incorporating worksheets into the plan (see attached slides).
    a. Worksheets are a group effort – no one person will know all the answers to the questions asked.
    b. Information from the worksheets will be used to describe existing capabilities of each town and be incorporated into the development of new mitigation actions.
3. Committee Working Groups – Review town Critical Facilities Maps and lists
    a. BETA provided an explanation of Critical Facilities and their importance to the planning process
    b. The committees broke out into teams to confirm information on the draft maps and lists and note any needed changes or additions.
4. Discussion about the agenda and logistics for Public Workshop (**January 17, 2023**)
    a. Each town is responsible for coordinating outreach – outreach will be all hands-on deck! Each committee member can help disseminate information into to their own networks.
    b. The plan for the agenda is to go over the HMP process, discuss the chosen hazards of concern, ask how these hazards have impacted members of the public, and brainstorm strategies and ideas on how to mitigate future damages followed by a Q&A
5. Next Steps/To do:

Next meeting dates:

- Public Meeting – January 17, 2022, 6-8 PM Zoom
- Committee Meeting 3 – Feb 16, 2023, 1 PM Zoom
- Committee Meeting 4 – March 23, 2023, 1 PM Zoom
- Committee Meeting 5 – April 27, 2023, 1 PM Zoom

Committee members:

- Please provide responses to BETA's worksheets by the end of December:
    - Worksheet 1: Events and Losses (BETA sent 9/13)
    - Worksheet 2: Capabilities Assessment (BETA sent 10/28)
    - Worksheet 4: Mitigation Action Review (BETA sent 10/28)
    - Worksheet 6: New Developments (BETA sent 9/13)
- Continue to share the survey with your communities (it closes 12/31).
- Provide the Critical Facilities notes from the breakout sections from this meeting.
- Attendance at the public meeting on 1/17.

BETA:

- Update maps and chapters with information provided in worksheets and by the committee.
- Provide worksheet regarding mitigation action brainstorming.
- Prepare for the public meeting.

HMPC Meeting 3 Notes

Date: February 23, 2023

Subject: **Abington, East Bridgewater, Easton, and Stoughton Hazard Mitigation Plan Committee Meeting 3**

Location: Microsoft Teams

RECORD OF MEETING:

1. Update on where we are in planning process
    a. Reflections from Public Meeting
        i. Committee Members will double down on public outreach in advance of the final draft plan public review period to ensure greater awareness and public participation in the review process.
    b. Discussed risk assessment ratings through the lens of a review of dam failure hazard
        i. East Bridgewater will discuss naming of Stump Pond Dam/Plymouth St. Dam and report to BETA how the impoundment should be labelled and referred to in the HMP.
2. Committees broke up by municipality into Break-Out Rooms to review recommended mitigation measures from 2015 plan and brainstorm on new actions. Each committee took notes on the discussion, and will share notes with BETA for incorporation into plan documents.
3. Reviewed HMP Goals, updated as follows:
    - Regional Goal: Reduce the loss of life, property, infrastructure, and environmental and cultural resources from natural disaster.
    - Goal 1: Investigate, design, and implement structural projects that will reduce and minimize the risks and impacts from riverine and stormwater coastal flooding.
    - Goal 2: Investigate, design, and implement projects that will reduce and minimize the risks and impacts from non-flooding hazards, such as wildfires, earthquakes, tornadoes, etc.
    - Goal 3: Improve pre-disaster planning, communication, and coordination between federal, state, county, community, private, (including utilities) and non-profit entities so that they can plan for and mitigate natural hazards in a clear and comprehensive manner.
    - Goal 4: Increase the awareness of the public, public officials, volunteer board and committee members, and members of the business community to the risks presented by the multiple natural hazards that affect the region as well as to the mitigation activities and grant opportunities available to minimize the impacts of these hazards.
    - Goal 5: Improve existing municipal policies and programs where appropriate to further reduce or eliminate the impacts of natural hazards.
    - Goal 6: Pursue mitigation strategies that reduce local contributions to climate change and increase resilience to the impacts of climate change.
4. BETA reconvened all participants into the large group, discussed Next Steps, and reminded participants of upcoming deliverables and data requests.

IMPORTANT DATES:

- Review of Draft – due March 7, 2023
- Committee Meeting 4 – March 23, 2023, 1 PM Zoom
- Committee Meeting 5 – April 27, 2023, 1 PM Zoom

TO DO/PROVIDE AND NEXT STEPS:

- Committee to provide any remaining worksheets (detailed in accompanying email)
- Committee to provide Mitigation Action review and brainstorm from this meeting
- Committee to review Draft Plan for BETA to incorporate edits and comments
- BETA to incorporate mitigation action s2uggestions and goals into plan

HMPC 4 Record of Meeting

Date:	April 6, 2023
Subject:	**Abington, East Bridgewater, Easton, and Stoughton Hazard Mitigation Plan Committee Meeting 4**
Location:	Microsoft Teams

RECORD OF MEETING:

1. Update on where we are in planning process
    a. Review updates made to plan since last meeting
        i. BETA has completed parts of the plan able to be completed without Towns' mitigation action lists and will need Town information to complete the plan. Chapters completed include Regional Profile, Planning Process, Natural Hazard Profiles and Risk Assessment, and Existing Capabilities and Mitigation Measures.
    b. Follow-up on any unfinished business
        i. Reminders about unfinished worksheets and setting due dates for work completed during meeting – two weeks from today on **April 20th**, with the goal to receive all materials by the end of the month.

Abington:

- Updated Mitigation Actions
- Mitigation Action Prioritization sheet

East Bridgewater:

- Mitigation Actions
- Mitigation Action Prioritization sheet
- Worksheet 1: Events and Losses
- Worksheet 2: Capabilities Assessment
- Worksheet 4: Mitigation Action Review
- Worksheet 6: New Developments
- Updated Critical Facilities List from the 12/8 committee meeting

Easton:

- Mitigation Actions
- Any updates to Worksheet 4: Mitigation Action Review
- Mitigation Action Prioritization sheet
- Notes from the 3rd HMP Committee Meeting

Stoughton:

- Mitigation Actions
- Any updates to Worksheet 4: Mitigation Action Review
- Mitigation Action Prioritization sheet
- Any additional comments on the worksheets returned to BETA 2/16
- Updated Critical Facilities List from the 12/8 committee meeting

2. Committees broke up by municipality into Break-Out Rooms to review recommended mitigation measures from 2015 plan, brainstorm on new actions, and use the prioritization worksheet to prioritize completed actions. Each committee took notes on the discussion and filled out worksheets and will share notes with BETA for incorporation into plan documents.
3. Review Plan Implementation Process
    a. BETA to provide details on a potential implementation process and have Committees comment and provide feedback.
4. Discuss process for adoption
    a. Period of public comment in mid-May, official town Board presentations and adoptions

NEXT STEPS & IMPORTANT DATES:

- Committee to finish mitigation action development by **April 20th**
- Committee to complete mitigation action prioritization worksheet by **April 20th**
- Committee to complete ALL materials complete by **April 30th**
- Committee Meeting 5 – to be determined after the full plan is posted for public comment in mid-May
- BETA to prepare full draft of plan for internal review and public comment
- BETA to provide draft adoption language

Photo 1

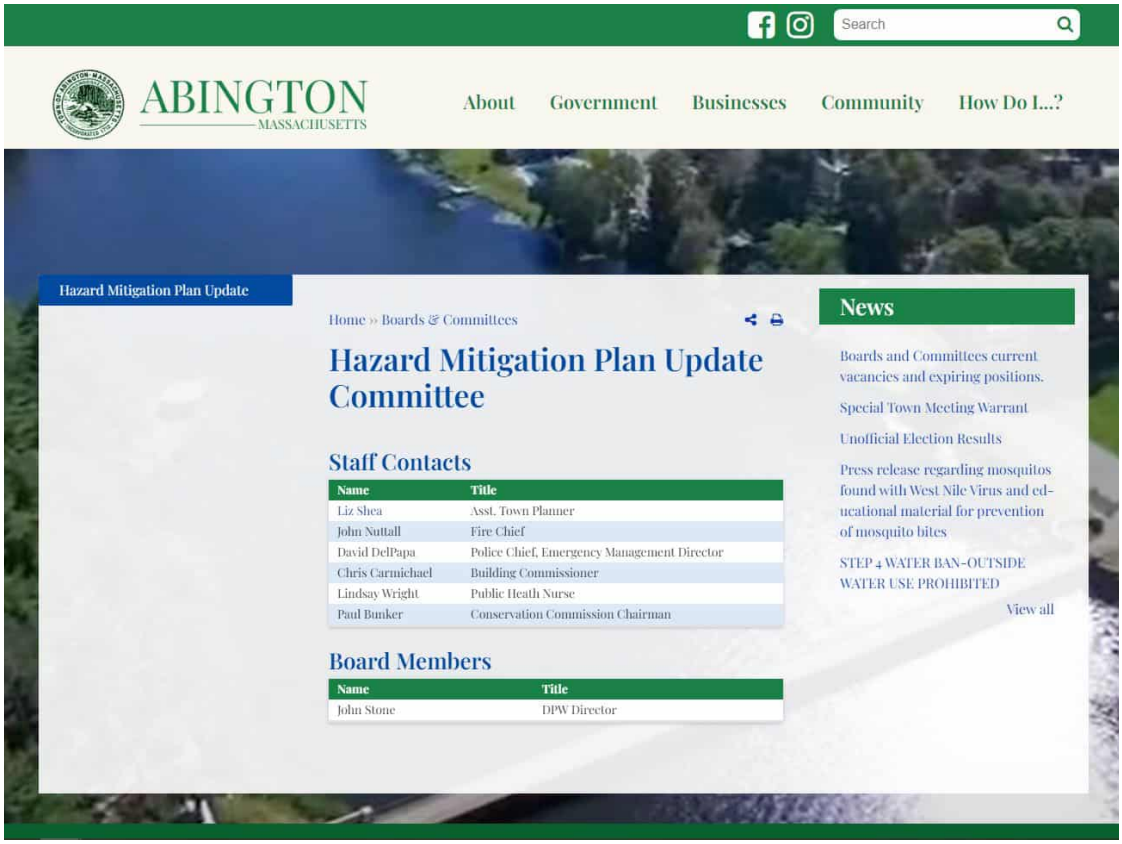


Photo 2

press release 9 19 22.pdf
53 KB

Be GREEN, keep it on the SCREEN

From: Liz Shea <LShea@abingtonma.gov>
Sent: Monday, September 19, 2022 12:15 PM
To: Emily Slotnick <ESlotnick@BETA-Inc.com>
Subject: public out reach Town of Abington

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe. Hover over any links before clicking them and forward questionable emails to IT if you are unsure. Forward spam to spam@appriver.com

Good afternoon Emily,

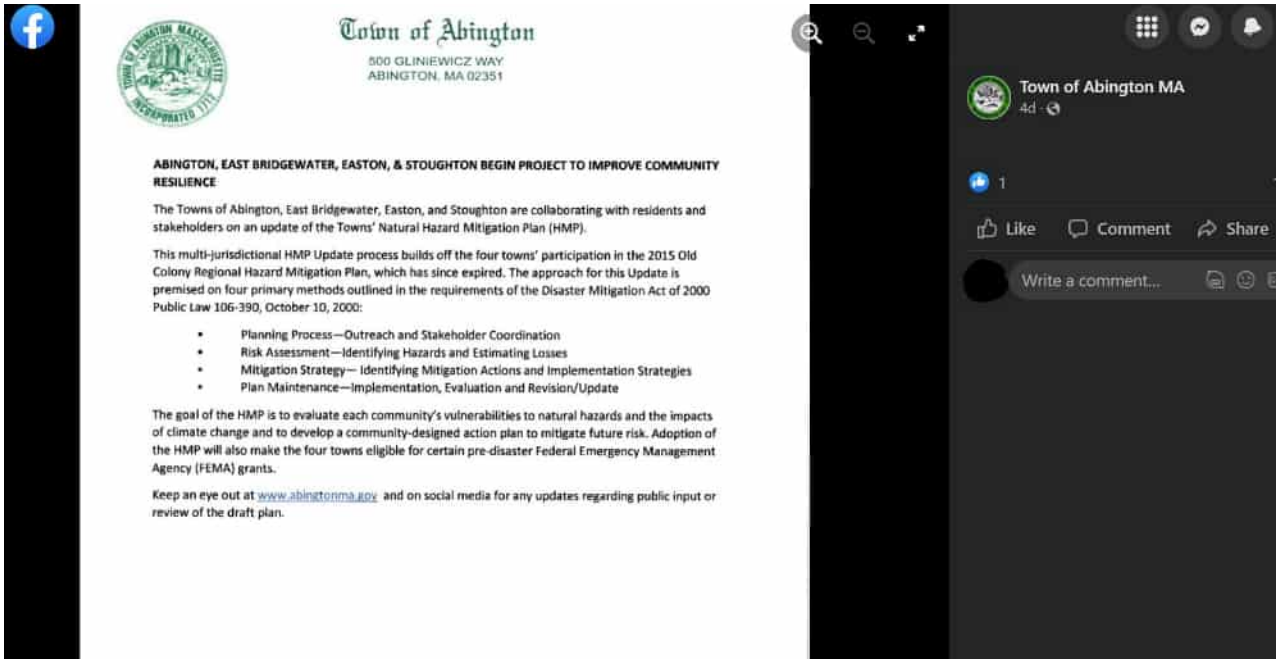
We are working on our Hazard Mitigation plan page. I did ask our social media coordinator to put out the attached press release on the Town's website, Facebook and Instagram pages. I also sent the press release to our local online reporter and to Chris Helm at the Brockton Enterprise.

Thanks

Liz Shea
Assistant Town Planner
500 Gliniewicz Way
Abington, MA 02351
781-982-0069
lshea@abingtonma.gov

Documentation of Publicity for Hazard Mitigation Plan
Abington, Massachusetts

Photo 3



Town of Abington
500 GLINIEWICZ WAY
ABINGTON, MA 02351

ABINGTON, EAST BRIDGEWATER, EASTON, & STOUGHTON BEGIN PROJECT TO IMPROVE COMMUNITY RESILIENCE

The Towns of Abington, East Bridgewater, Easton, and Stoughton are collaborating with residents and stakeholders on an update of the Towns' Natural Hazard Mitigation Plan (HMP).

This multi-jurisdictional HMP Update process builds off the four towns' participation in the 2015 Old Colony Regional Hazard Mitigation Plan, which has since expired. The approach for this Update is premised on four primary methods outlined in the requirements of the Disaster Mitigation Act of 2000 Public Law 106-390, October 10, 2000:

- Planning Process—Outreach and Stakeholder Coordination
- Risk Assessment—Identifying Hazards and Estimating Losses
- Mitigation Strategy— Identifying Mitigation Actions and Implementation Strategies
- Plan Maintenance—Implementation, Evaluation and Revision/Update

The goal of the HMP is to evaluate each community's vulnerabilities to natural hazards and the impacts of climate change and to develop a community-designed action plan to mitigate future risk. Adoption of the HMP will also make the four towns eligible for certain pre-disaster Federal Emergency Management Agency (FEMA) grants.

Keep an eye out at www.abingtonma.gov and on social media for any updates regarding public input or review of the draft plan.

Photo 4

Abington Police Dept
4h

If you're an Abington resident or property owner, please take a moment to complete this survey. Thank you in advance for your help!

CALLING ALL ABINGTON RESIDENTS AND PROPERTY OWNERS

We need YOUR input for the Hazard Mitigation Plan (HMP)!

A **hazard mitigation plan** is a living document that must grow and adapt, keeping pace with the community to protect and mitigate against natural hazards. The towns of Abington, East Bridgewater, Easton and Stoughton are updating their 2015 regional HMP to maintain eligibility for FEMA grants and to increase awareness and involvement in hazard mitigation as part of daily activities. A successful HMP update relies on public input, and the HMP Committee needs your help! Please complete the HMP survey at the link below to make sure your voice is heard!

PLEASE PARTICIPATE IN OUR PUBLIC SURVEY!
https://www.surveymonkey.com/r/AEBESHMP

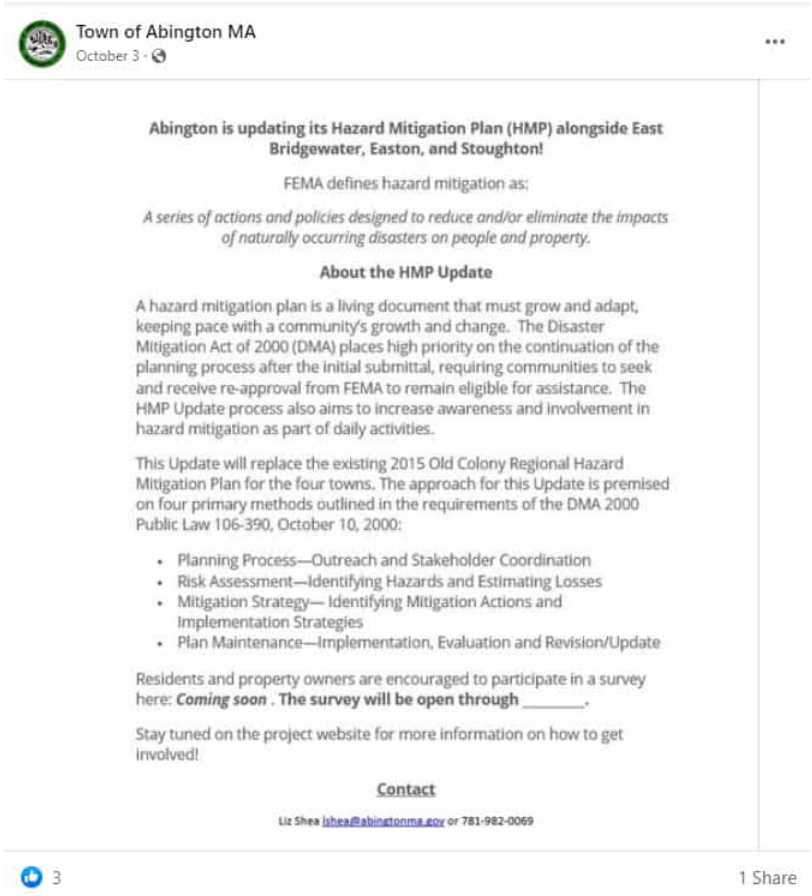
Stay tuned on your town's project website for more information on how to get involved!

Contact

Liz Shea, Abington Assistant Town Planner, LShea@abingtonma.gov
Charlie Seelig, East Bridgewater Town Administrator, cseelig@eastbridgewaterma.gov
Stephanie Danielson, Easton Planning and Economic Development Director, sdanielson@easton.ma.us
Chief Michael Carroll, Stoughton Fire Department, mcarroll@stoughton-ma.gov

Documentation of Publicity for Hazard Mitigation Plan
Abington, Massachusetts

Photo 5



Town of Abington MA
October 3 ·

Abington is updating its Hazard Mitigation Plan (HMP) alongside East Bridgewater, Easton, and Stoughton!

FEMA defines hazard mitigation as:

A series of actions and policies designed to reduce and/or eliminate the impacts of naturally occurring disasters on people and property.

About the HMP Update

A hazard mitigation plan is a living document that must grow and adapt, keeping pace with a community's growth and change. The Disaster Mitigation Act of 2000 (DMA) places high priority on the continuation of the planning process after the initial submittal, requiring communities to seek and receive re-approval from FEMA to remain eligible for assistance. The HMP Update process also aims to increase awareness and involvement in hazard mitigation as part of daily activities.

This Update will replace the existing 2015 Old Colony Regional Hazard Mitigation Plan for the four towns. The approach for this Update is premised on four primary methods outlined in the requirements of the DMA 2000 Public Law 106-390, October 10, 2000:

- Planning Process—Outreach and Stakeholder Coordination
- Risk Assessment—Identifying Hazards and Estimating Losses
- Mitigation Strategy— Identifying Mitigation Actions and Implementation Strategies
- Plan Maintenance—Implementation, Evaluation and Revision/Update

Residents and property owners are encouraged to participate in a survey here: ***Coming soon*** . **The survey will be open through _____.**

Stay tuned on the project website for more information on how to get involved!

Contact

Liz Shea lshea@abingtonma.gov or 781-982-0069

3 1 Share

Photo 6

ABINGTON
MASSACHUSETTS

About Government Businesses Community How Do I...?

Home

Press Release for Hazard Mitigation Plan Update

POSTED ON: SEPTEMBER 22, 2022 - 1:41PM

For more information click here

Town of Abington

ABINGTON, EAST BRIDGEWATER, EASTON, & STOUGHTON BEGIN PROJECT TO IMPROVE COMMUNITY RESILIENCE

Attachment	Size
press_release_9_19_22.pdf	53.15 KB

Documentation of Publicity for Hazard Mitigation Plan
Abington, Massachusetts

Photo 7

Photo 8

Home

Hazard Mitigation Plan Public Meeting via zoom

POSTED ON: DECEMBER 20, 2022 - 4:10PM

SAVE THE DATE

January 17, 2023

6:00 to 8:00 P.M.

Via zoom

Please attend the Hazard Mitigation Plan Public Meeting via zoom

Have you or your property been impacted by SNOW, WIND, FLOODING, POWER OUTAGES or other natural hazards? Please come and talk to us about it!! BETA group will be hosting a public meeting to update our Hazard Mitigation Plan. We need to know how you have been impacted, help us develop strategies on how to deal with natural hazards. How will we mitigate these issues in the future?

YOUR INPUT IS CRITICAL

This meeting will be via zoom and the link will be posted on the website www.abingtonma.gov and will be posted on the Town's social media as well.

For questions contact Liz Shea at lshea @abingtonma.gov or 781-982-0069.

Documentation of Publicity for Hazard Mitigation Plan
Abington, Massachusetts

Photo 9

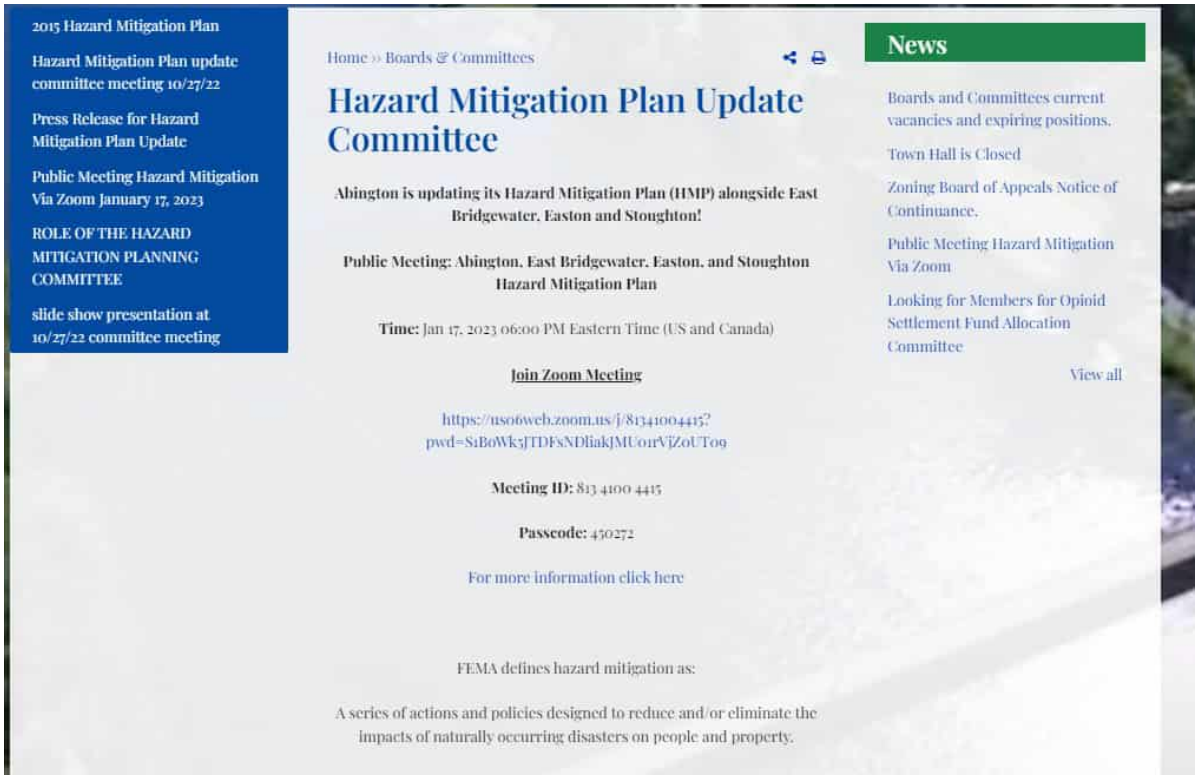
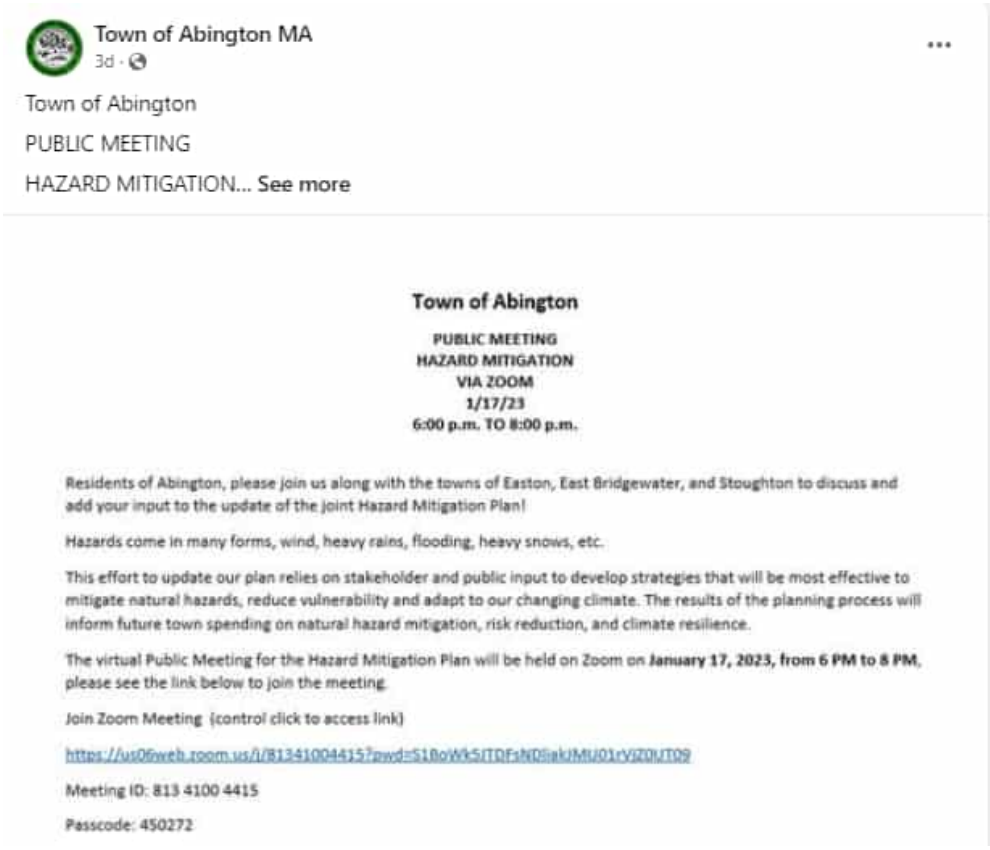


Photo 10



Documentation of Publicity for Hazard Mitigation Plan
Abington, Massachusetts

Photo 11

Documentation of Publicity for Hazard Mitigation Plan
Abington, Massachusetts

Photo 12

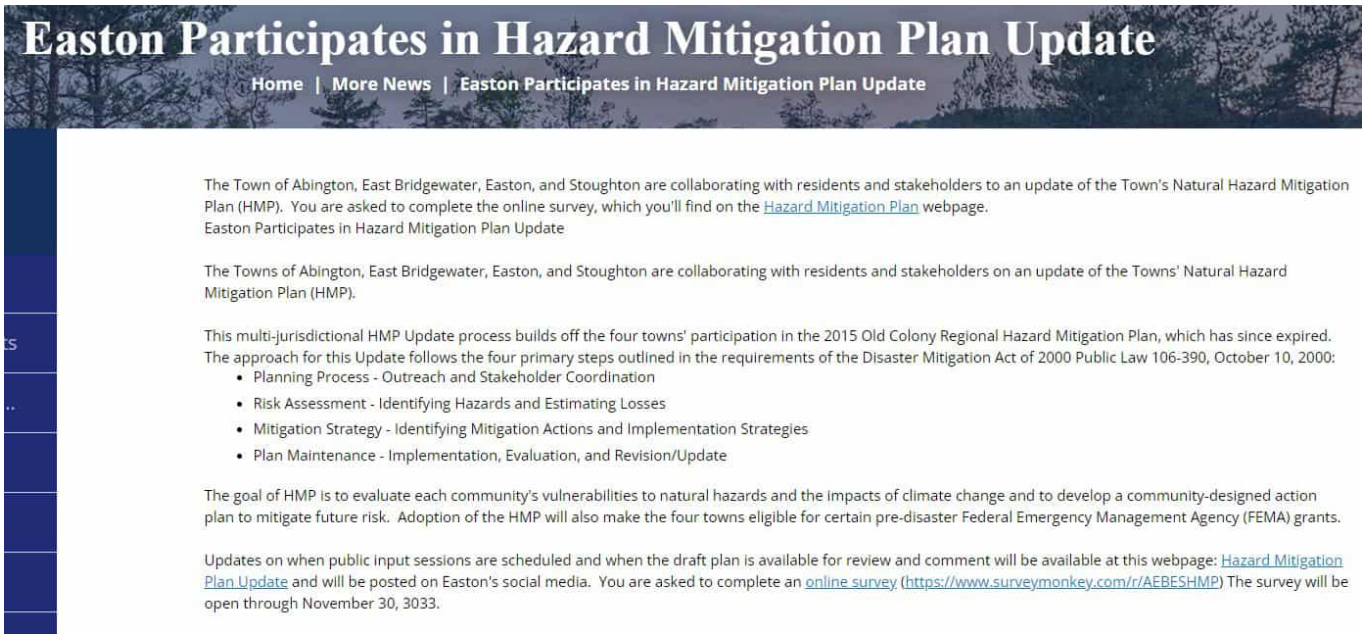
Town of Easton, MA
November 2 at 1:01 PM

ABINGTON, EAST BRIDGEWATER, EASTON, & STOUGHTON RELEASE DRAFT OF HAZARD MITIGATION PLAN FOR PUBLIC COMMENT

The Towns of Abington, East Bridgewater, Easton, and Stoughton have released their draft 2022 Multi-Jurisdictional Hazard Mitigation Plan update to residents, stakeholders, neighboring communities and partnering organizations. To learn more visit our webpage at https://tinyurl.com/Easton-HMP-Update and to participate in the online survey, click here: https://www.surveymonkey.com/r/AEBESHMP

3 1 Share

Photo 13



Easton Participates in Hazard Mitigation Plan Update

Home | More News | Easton Participates in Hazard Mitigation Plan Update

The Town of Abington, East Bridgewater, Easton, and Stoughton are collaborating with residents and stakeholders to an update of the Town's Natural Hazard Mitigation Plan (HMP). You are asked to complete the online survey, which you'll find on the Hazard Mitigation Plan webpage.
Easton Participates in Hazard Mitigation Plan Update

The Towns of Abington, East Bridgewater, Easton, and Stoughton are collaborating with residents and stakeholders on an update of the Towns' Natural Hazard Mitigation Plan (HMP).

This multi-jurisdictional HMP Update process builds off the four towns' participation in the 2015 Old Colony Regional Hazard Mitigation Plan, which has since expired. The approach for this Update follows the four primary steps outlined in the requirements of the Disaster Mitigation Act of 2000 Public Law 106-390, October 10, 2000:

- Planning Process - Outreach and Stakeholder Coordination
- Risk Assessment - Identifying Hazards and Estimating Losses
- Mitigation Strategy - Identifying Mitigation Actions and Implementation Strategies
- Plan Maintenance - Implementation, Evaluation, and Revision/Update

The goal of HMP is to evaluate each community's vulnerabilities to natural hazards and the impacts of climate change and to develop a community-designed action plan to mitigate future risk. Adoption of the HMP will also make the four towns eligible for certain pre-disaster Federal Emergency Management Agency (FEMA) grants.

Updates on when public input sessions are scheduled and when the draft plan is available for review and comment will be available at this webpage: Hazard Mitigation Plan Update and will be posted on Easton's social media. You are asked to complete an online survey (https://www.surveymonkey.com/r/AEBESHMP) The survey will be open through November 30, 3033.

Documentation of Publicity for Hazard Mitigation Plan
Easton, Massachusetts

Photo 14

Update to Easton's Hazard Mitigation Plan – Your Input is Needed!

Home | More News | Update to Easton's Hazard Mitigation Plan – Your Input is Needed!

Update to Easton's Hazard Mitigation Plan – Your Input is Needed!

Obtaining public input is the next step in ensuring Easton's Hazard Mitigation Plan (HMP) strategies are effective in mitigating impacts and reducing vulnerability to potential human and infrastructure impacts resulting from natural hazards.

Your input is essential. Join us on Tuesday, January 17, 2023 from 6:00 – 8:00pm to share your concerns, thoughts and experiences with the effects of natural hazards such as major storm events, flooding, extreme temperatures and droughts.

The meeting is being held via Zoom and can be accessed through this link: https://us06web.zoom.us/j/81341004415?pwd=S1BoWk5JTDEsNDIiakJMU01rVjZDUT09 or by calling 1 646 931 3860 or 1 646 876 9923. You are also asked to participate in the online survey.

For more information regarding the HMP update go to: https://tinyurl.com/Easton-HMP-Update.

Photo 15

Town of Easton, MA
January 13 at 9:11 AM ·

Update to Easton's Hazard Mitigation Plan – Your Input is Needed!

Obtaining public input is the next step in ensuring Easton's Hazard Mitigation Plan (HMP) strategies are effective in mitigating impacts and reducing vulnerability to potential human and infrastructure impacts resulting from natural hazards.

Your input is essential. Join us on Tuesday, January 17, 2023 from 6:00 – 8:00pm to share your concerns, thoughts and experiences with the effects of natural hazards such... See more

1

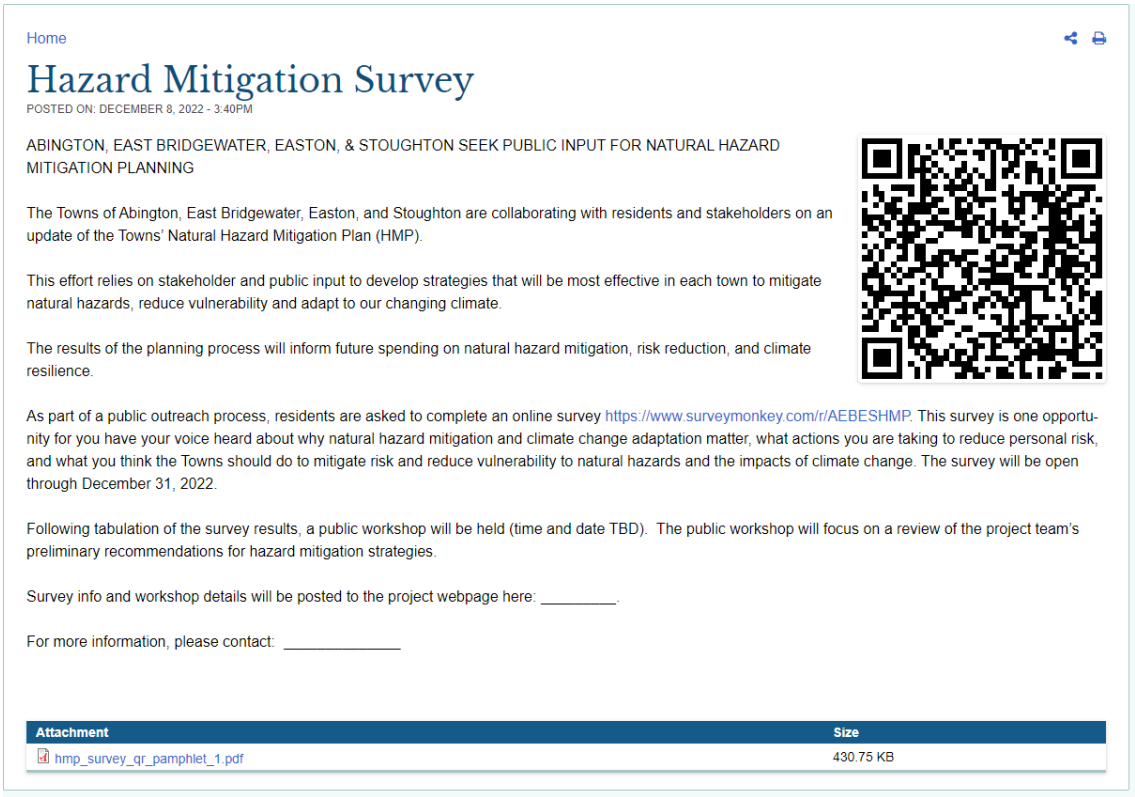
Like Comment Share

Write a comment...

Documentation of Publicity for Hazard Mitigation Plan
Easton, Massachusetts

Photo 16

Photo 17



Home

Hazard Mitigation Survey

POSTED ON: DECEMBER 8, 2022 - 3:40PM

ABINGTON, EAST BRIDGEWATER, EASTON, & STOUGHTON SEEK PUBLIC INPUT FOR NATURAL HAZARD MITIGATION PLANNING

The Towns of Abington, East Bridgewater, Easton, and Stoughton are collaborating with residents and stakeholders on an update of the Towns' Natural Hazard Mitigation Plan (HMP).

This effort relies on stakeholder and public input to develop strategies that will be most effective in each town to mitigate natural hazards, reduce vulnerability and adapt to our changing climate.

The results of the planning process will inform future spending on natural hazard mitigation, risk reduction, and climate resilience.

As part of a public outreach process, residents are asked to complete an online survey https://www.surveymonkey.com/r/AEBESHMP. This survey is one opportunity for you have your voice heard about why natural hazard mitigation and climate change adaptation matter, what actions you are taking to reduce personal risk, and what you think the Towns should do to mitigate risk and reduce vulnerability to natural hazards and the impacts of climate change. The survey will be open through December 31, 2022.

Following tabulation of the survey results, a public workshop will be held (time and date TBD). The public workshop will focus on a review of the project team's preliminary recommendations for hazard mitigation strategies.

Survey info and workshop details will be posted to the project webpage here: _____.

For more information, please contact: _____

Attachment	Size
hmp_survey_qr_pamphlet_1.pdf	430.75 KB

Documentation of Publicity for Hazard Mitigation Plan
Easton and Stoughton, Massachusetts

Photo 18

CALLING ALL _____ RESIDENTS AND PROPERTY OWNERS

We need YOUR input for the Hazard Mitigation Plan (HMP)!

A **hazard mitigation plan** is a living document that must grow and adapt, keeping pace with the community to protect and mitigate against natural hazards. The towns of Abington, East Bridgewater, Easton and Stoughton are updating their 2015 regional HMP to maintain eligibility for FEMA grants and to increase awareness and involvement in hazard mitigation as part of daily activities. A successful HMP update relies on public input, and the HMP Committee needs your help! Please complete the HMP survey at the link below to make sure your voice is heard!

PLEASE PARTICIPATE IN OUR PUBLIC SURVEY!

https://www.surveymonkey.com/r/AEBESHMP

Stay tuned on your town's project website for more information on how to get involved!

Contact

Liz Shea, Abington Assistant Town Planner, LShea@abingtonma.gov
Charlie Seelig, East Bridgewater Town Administrator, cseelig@eastbridgewaterma.gov
Stephanie Danielson, Easton Planning and Economic Development Director, sdanielson@easton.ma.us
Chief Michael Carroll, Stoughton Fire Department, mcarroll@stoughton-ma.gov

Photo 19

STOUGHTON
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Search

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Hazard Mitigation Plan - Public Meeting

POSTED ON: JANUARY 12, 2023 - 4:29PM

Join the towns of Abington, Easton, East Bridgewater, and Stoughton to discuss and add your input to the update of the joint Hazard Mitigation Plan!

This effort relies on stakeholder and public input to develop strategies that will be most effective to mitigate natural hazards, reduce vulnerability and adapt to our changing climate. The results of the planning process will inform future town spending on natural hazard mitigation, risk reduction, and climate resilience.

The virtual Public Meeting for the Hazard Mitigation Plan will be held on Zoom on January 17, 2023, from 6 PM to 8 PM, please see the link below to join the meeting.

Topic: Public Meeting: Abington, East Bridgewater, Easton, and Stoughton Hazard Mitigation Plan

Time: Jan 17, 2023 06:00 PM Eastern Time (US and Canada)

Join Zoom Meeting

https://us06web.zoom.us/j/81341004415?pwd=S1BoWk5JTDFsNDliakJMU01rVjZ0UT09

Documentation of Publicity for Hazard Mitigation Plan
Stoughton, Massachusetts

Photo 20

Photo 19

Documentation of Publicity for Hazard Mitigation Plan
Stoughton, Massachusetts

Photo 22

Photo 23

Multi jurisdictional Hazard Mitigation Plan

LS Liz Shea <LShea@abingtonma.gov>

Reply | Reply All | Forward

To planningboard@rockland-ma.gov; dkelly@whitman-ma.gov; planning@whitman-ma.gov; mmaroney@whitman-ma.gov; cclifford@avon-ma.gov; lmckenney@avon-ma.gov; 'Mary Waldron'; Laurie Muncy (lmuncy@ocpcrpa.org); 'Zygmunt, Joanne'; sobrien@bridgewaterma.org; planning@cobma.us; pboard@townofsharon.org; taltrih@wbridgewater.com; sraposa@mansfield.com

Thu 9/21/2023 11:05 AM

Cc Emily Farmer

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe. Hover over any links before clicking them and forward questionable emails to IT if you are unsure. Forward spam to spam@appriver.com

Good morning,

The Towns of Abington, East Bridgewater, Easton and Stoughton, partnered with BETA Group Inc. in 2023 to update our Multi -jurisdictional Hazard Mitigation Plan in accordance with FEMA guidelines.

This planning effort was undertaken to help the towns assess the risks faced from natural hazards, identify action steps that can be taken to prevent damage to property and loss of life, and prioritize funding for mitigation efforts for the next five years.

Part of the wrap up of the planning process includes sharing the attached draft as an opportunity for neighboring communities to be involved in the local hazard mitigation process, as neighbors to Abington, East Bridgewater, Easton and/or Stoughton, many of you experience similar natural hazard events, and we value your feedback on this plan. Please share this with anyone in your community that you feel would be interested.

The link to the draft is below.

If you have any questions or comments, feel free to reach out to me, Liz Shea at lshea@abingtonma.gov .

https://link.edgepilot.com/s/c62b99e6/fTNa9T78w0KrYu5ZUdVGvA?u=http://www.abingtonma.gov/sites/g/files/vyhlif236/f/pages/hmp_draft_full.pdf

Regards,

Liz Shea
Assistant Town Planner
781-982-0069
500 Gliniewicz Way
Abington, MA 02851

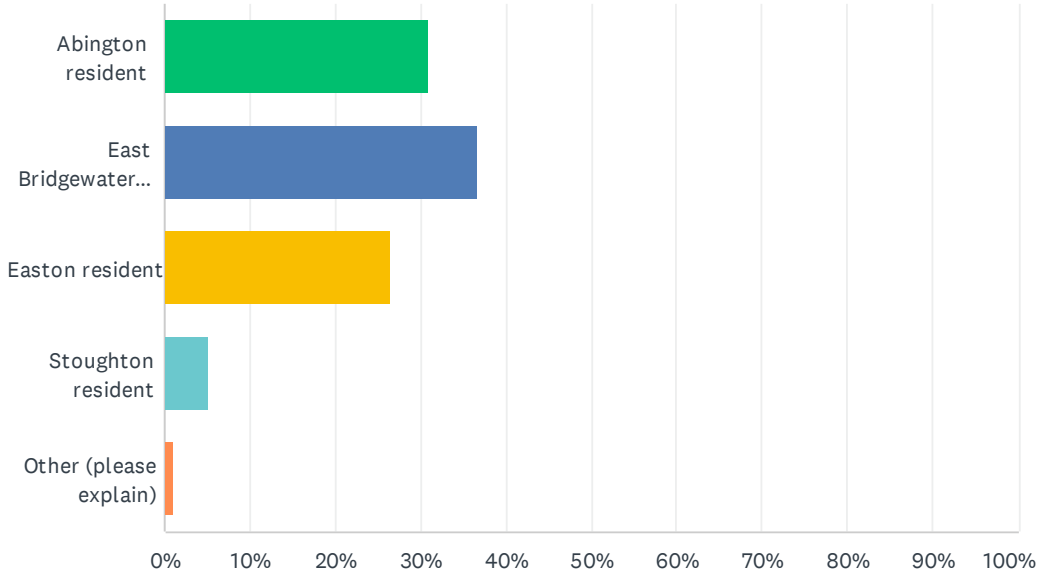
Email sent to neighboring communities and organizations.

Documentation of Publicity for Hazard Mitigation Plan
Stoughton, Massachusetts

APPENDIX C: PUBLIC SURVEY

Q1 Tell us about yourself. You are a (choose one):

Answered: 295 Skipped: 1

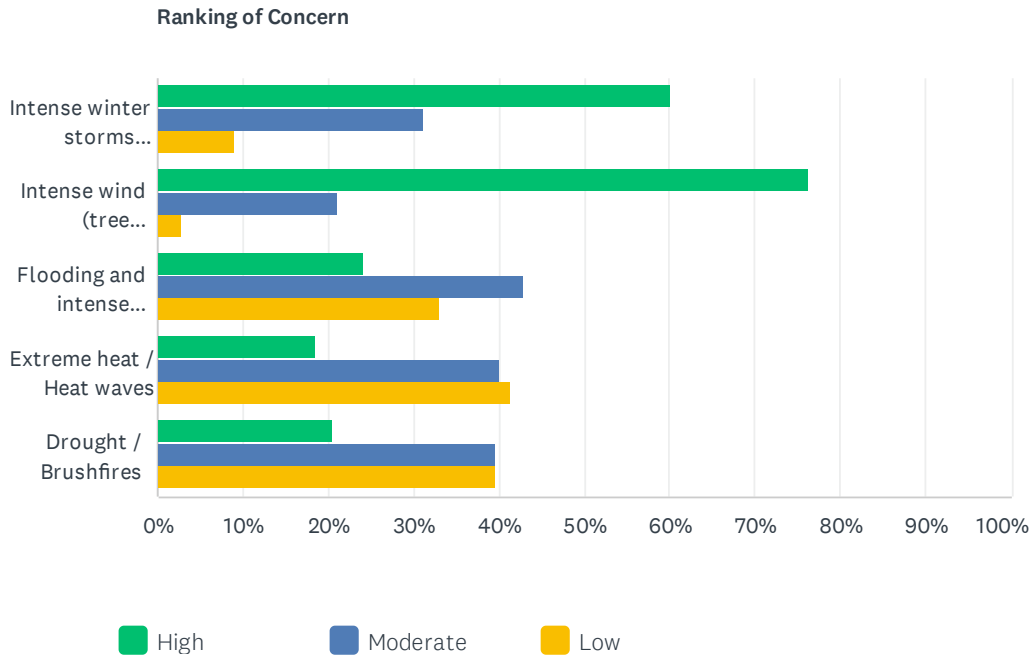


ANSWER CHOICES	RESPONSES	
Abington resident	30.85%	91
East Bridgewater resident	36.61%	108
Easton resident	26.44%	78
Stoughton resident	5.08%	15
Other (please explain)	1.02%	3
TOTAL		295

#	OTHER (PLEASE EXPLAIN)	DATE
1	Easton Planning Staff	1/17/2023 6:40 PM
2	whitman resident	12/27/2022 2:34 PM
3	town employee	12/27/2022 1:31 PM

Q2 Many natural hazards may affect these towns, as listed below. How concerning are each of these natural hazards to you? Rank your concern about these hazards as High, Moderate, or Low.

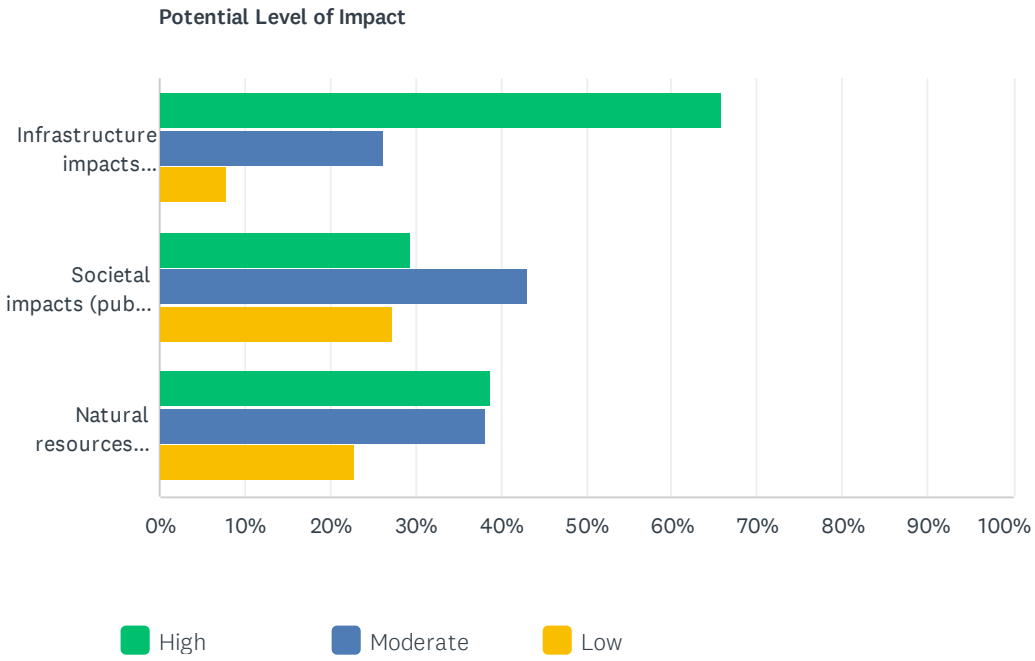
Answered: 296 Skipped: 0



Ranking of Concern				
	HIGH	MODERATE	LOW	TOTAL
Intense winter storms (blizzards/ice storms)	60.07% 176	31.06% 91	8.87% 26	293
Intense wind (tree damage/power outages)	76.27% 225	21.02% 62	2.71% 8	295
Flooding and intense rainstorms	24.05% 70	42.96% 125	32.99% 96	291
Extreme heat / Heat waves	18.62% 54	40.00% 116	41.38% 120	290
Drought / Brushfires	20.56% 59	39.72% 114	39.72% 114	287

Q3 Natural hazards can negatively impact the town's infrastructure, its people, and its natural resources. Rank the potential impact of a natural hazard on each of these three categories as High, Moderate, or Low impact.

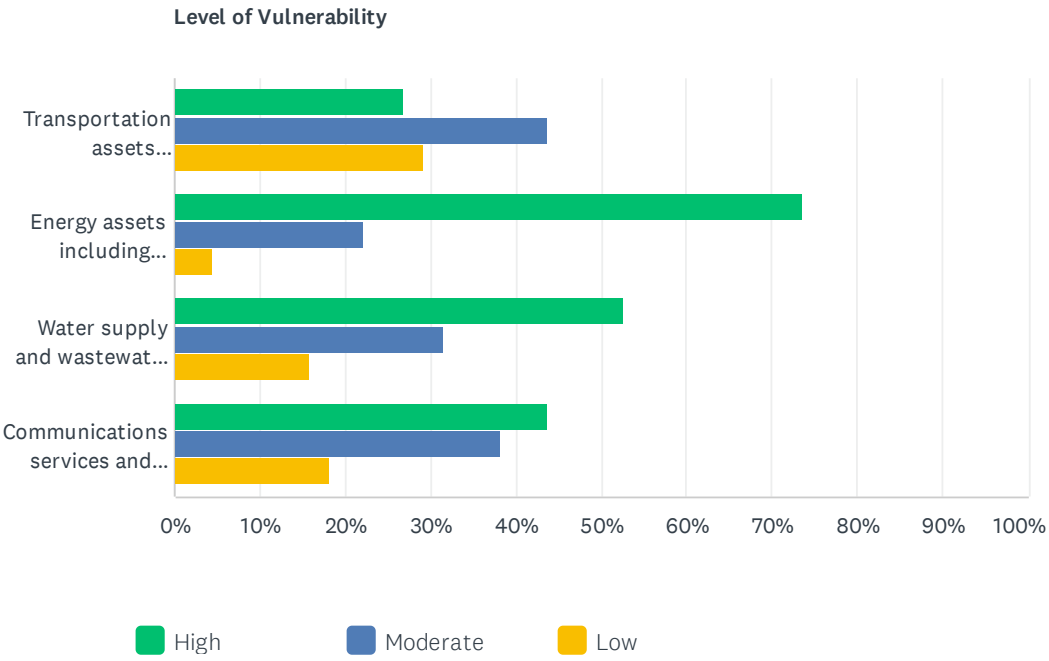
Answered: 294 Skipped: 2



Potential Level of Impact				
	HIGH	MODERATE	LOW	TOTAL
Infrastructure impacts (transportation, energy, communications, water)	65.87% 193	26.28% 77	7.85% 23	293
Societal impacts (public health, vulnerable populations, social resilience)	29.45% 86	43.15% 126	27.40% 80	292
Natural resources impacts (wetlands, rivers, streams, urban trees, wildlife)	38.91% 114	38.23% 112	22.87% 67	293

Q4 Which of the following infrastructural assets and services in your town are most vulnerable to natural hazards? Please choose High, Moderate, or Low vulnerability for each.

Answered: 294 Skipped: 2

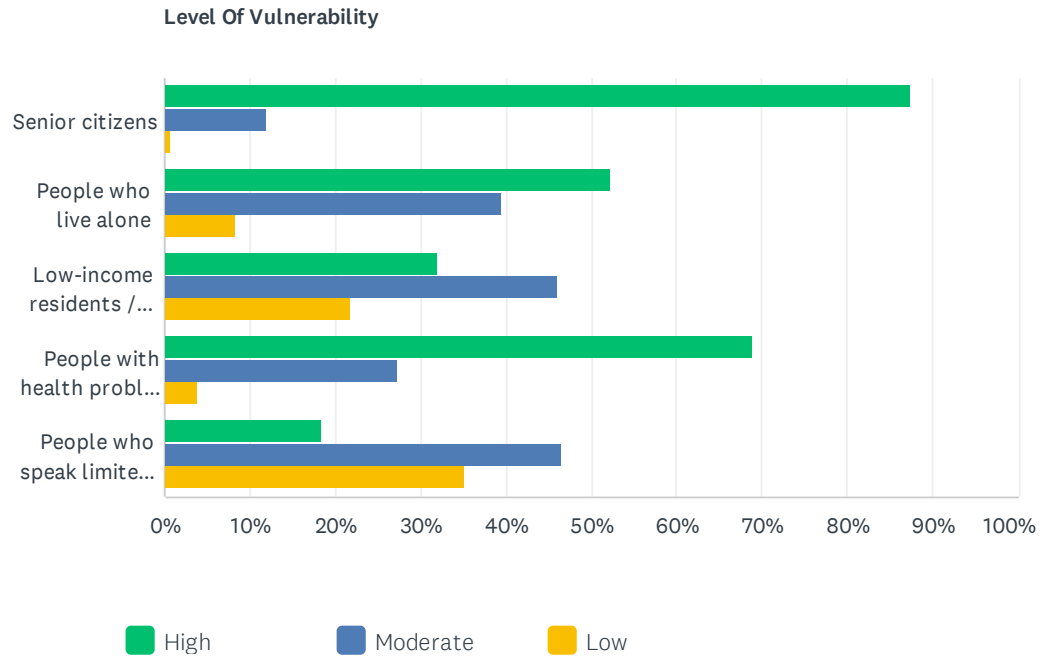


Level of Vulnerability				
	HIGH	MODERATE	LOW	TOTAL
Transportation assets including roads, transit system, sidewalk, pedestrian, bicycle facilities	26.90% 78	43.79% 127	29.31% 85	290
Energy assets including electric power outages, delivery of heating oil, natural gas distribution	73.47% 216	22.11% 65	4.42% 13	294
Water supply and wastewater services including water shortages, pollution, sewer overflows	52.58% 153	31.62% 92	15.81% 46	291
Communications services and facilities including cell phone service, internet connection, cable, telephone	43.64% 127	38.14% 111	18.21% 53	291

#	OTHER (PLEASE SPECIFY)	DATE
1	we have no control over natural hazards.	11/16/2022 4:54 PM
2	Please have a campaign to plant more native trees	11/18/2022 9:47 AM
3	Schools	11/20/2022 12:46 PM
4	Nursing homes and assisted living facilities	11/23/2022 10:08 AM
5	Extended power outages may lead to loss of water supplies	11/29/2022 11:56 AM
6	Q4 is difficult to assess as a layperson/resident. I responded based on what my perception is, not using facts/data.	1/17/2023 8:51 PM
7	Forests fires and destruction of homes by fire	5/11/2023 6:40 PM

Q5 Which of the following groups of people in your town are most vulnerable to natural hazards? Please choose High, Moderate, or Low vulnerability for each.

Answered: 295 Skipped: 1

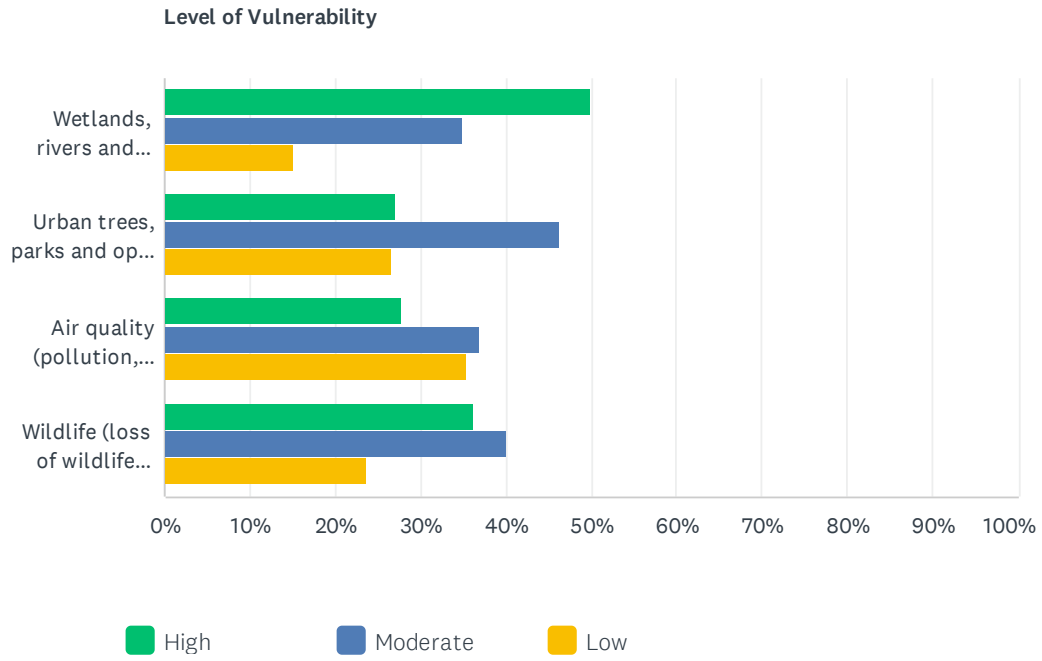


Level Of Vulnerability	HIGH	MODERATE	LOW	TOTAL
Senior citizens	87.33% 255	11.99% 35	0.68% 2	292
People who live alone	52.26% 150	39.37% 113	8.36% 24	287
Low-income residents / public housing residents	32.08% 94	46.08% 135	21.84% 64	293
People with health problems (asthma, reliance on medical devices)	68.84% 201	27.40% 80	3.77% 11	292
People who speak limited English	18.28% 53	46.55% 135	35.17% 102	290

#	OTHER (PLEASE SPECIFY)	DATE
1	All citizens	11/2/2022 1:26 PM
2	no control over natural hazards	11/16/2022 4:54 PM
3	People with disabilities	11/23/2022 10:08 AM
4	Very young children (infants and toddlers) have moderate to high vulnerability, similar to senior citizens. Also, people with physical, cognitive and mental health disabilities may also be more vulnerable, similar to perople with health problems.	1/17/2023 8:51 PM

Q6 Which of the following natural resources in your town are most vulnerable to natural hazards? Please choose High, Moderate, or Low vulnerability for each.

Answered: 292 Skipped: 4

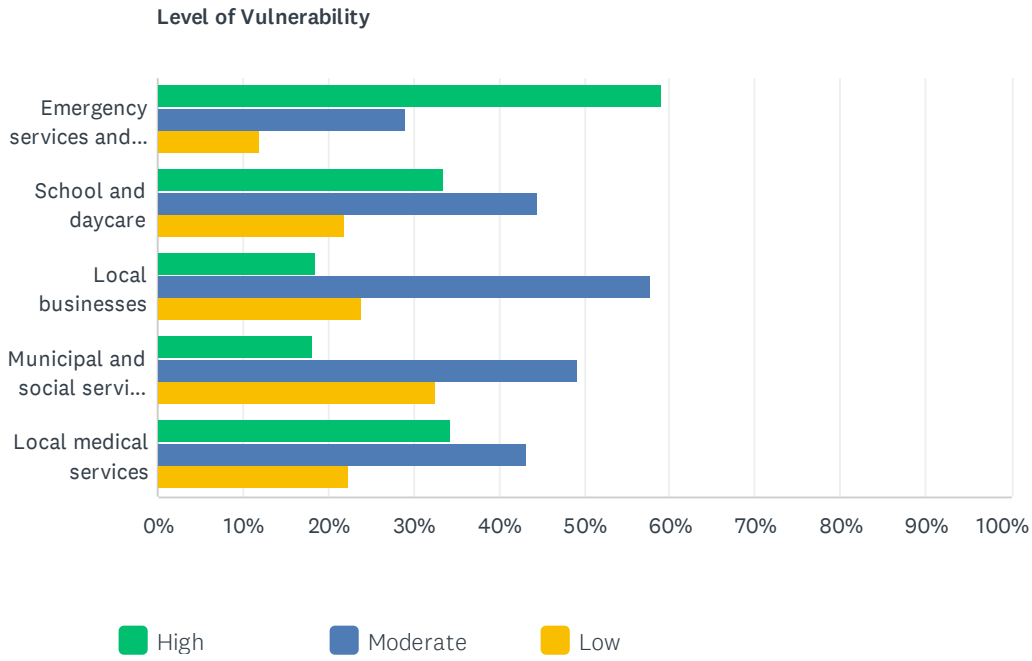


Level of Vulnerability	HIGH	MODERATE	LOW	TOTAL
Wetlands, rivers and streams (floods, droughts, pollution, recreation areas)	49.83% 145	35.05% 102	15.12% 44	291
Urban trees, parks and open space (tree diseases, pests, invasive species)	27.08% 78	46.18% 133	26.74% 77	288
Air quality (pollution, unhealthy air quality, asthma)	27.66% 78	36.88% 104	35.46% 100	282
Wildlife (loss of wildlife habitat, reduced wildlife diversity and populations)	36.24% 104	40.07% 115	23.69% 68	287

#	OTHER (PLEASE SPECIFY)	DATE
1	The town is constantly building Hugh density apartments and now building on 1/2 acre to add more housing	11/3/2022 4:48 PM
2	My town Abington has allowed building on wetlands, so several thousand residents are vulnerable to flooding.	11/16/2022 5:12 PM
3	Again we should plant more trees/ adopt a vegan day or month to try more vegan diets	11/18/2022 9:47 AM
4	Farm animals and pets	11/23/2022 10:08 AM
5	Climate change may cause droughts and species loss	11/29/2022 11:56 AM
6	Over building reduce wildlife habatate. Reduces Agriculture	12/15/2022 9:41 AM

Q7 Which of the following services, businesses, and municipal operations in your town are most vulnerable to natural hazards? Please choose High, Moderate, or Low vulnerability for each.

Answered: 294 Skipped: 2



Level of Vulnerability	HIGH	MODERATE	LOW	TOTAL
Emergency services and first responders	59.04% 173	29.01% 85	11.95% 35	293
School and daycare	33.56% 98	44.52% 130	21.92% 64	292
Local businesses	18.53% 53	57.69% 165	23.78% 68	286
Municipal and social services (Town government and offices)	18.15% 53	49.32% 144	32.53% 95	292
Local medical services	34.36% 100	43.30% 126	22.34% 65	291

#	OTHER (PLEASE SPECIFY)	DATE
1	Communications (cell, cable, internet)	11/20/2022 12:46 PM
2	Q7 is another question difficult for the layperson/resident to answer without data. If I consider which are the most valuable to respond during natural hazards, I would select a different priority. I am responding based on which are most likely to be harmed, most vulnerable. Hope that is correct.	1/17/2023 8:51 PM

Q8 Are there any specific locations, facilities, or resources in your town that you are most concerned about being impacted by natural hazards? Please type your answer in the space below.

Answered: 94 Skipped: 202

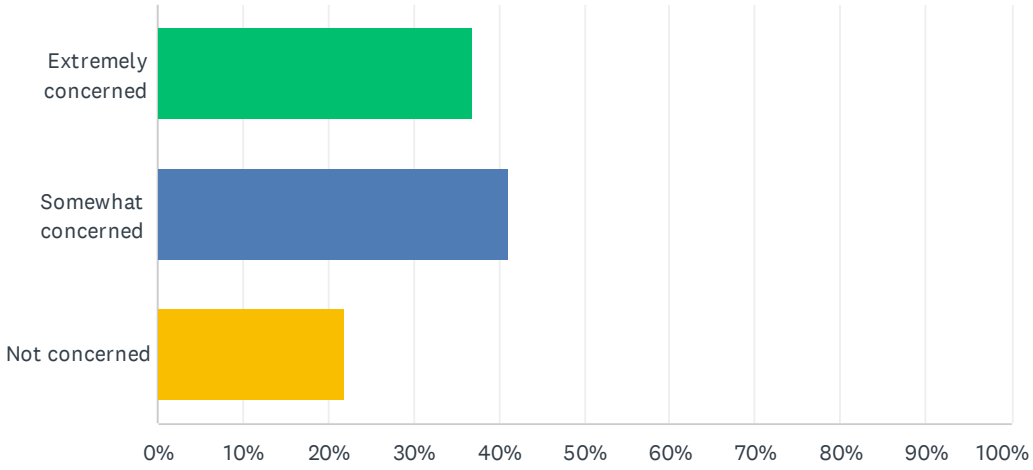
#	RESPONSES	DATE
1	Forest fires in weigh wind conditions	5/11/2023 6:40 PM
2	fire station/flooding impacts; drinking water	5/3/2023 3:23 PM
3	Town water supply system, to sustain drinkable water during natural hazard events. Also Town sewerage system to maintain health standards.	1/17/2023 8:51 PM
4	mobile home community on 138; Easton Housing Authority residences, internet	1/17/2023 6:40 PM
5	any of the facilities important for infrastructure	1/13/2023 10:17 AM
6	Trees along roadways	1/13/2023 9:42 AM
7	Summer Heights loses power all the time in extreme weather events. We've lost power for as long as a week at a time.	1/12/2023 9:51 PM
8	none	1/9/2023 7:27 AM
9	Why are we keeping the Stoughton train station building empty?	12/29/2022 6:31 PM
10	wherever gets hit on the town line of Abington and Rockland- that results in power ALWAYS getting knocked out.	12/27/2022 4:00 PM
11	Gliniewicz Way	12/27/2022 1:30 PM
12	Recycling center and former dump. I get concerned with flooding/runoff as well as the impact of other extreme weather can have on the homes in the immediate area.	12/23/2022 7:57 AM
13	All the areas surrounding new development built on or near wetlands with improper drainage	12/20/2022 7:49 PM
14	Reservoir	12/20/2022 7:43 PM
15	trees falling and power outages	12/20/2022 4:26 PM
16	Areas near or in flood zones	12/18/2022 12:20 PM
17	Police and Fire Departments both have aging facilities which should be upgraded. Municipal water supply upgrades and maintenance should also be a priority.	12/14/2022 7:34 AM
18	Water flow on Linden Street. Specifically town drainage that is behind 18 Linden St that empties onto the 18 Linden property, but the pipe is 75 feet short of the stream that flows through the property. Why this wasn't finished or acknowledged to be corrected is beyond me. I've asked, but have been given the excuse that the town cannot come on my property. This is ridiculous as how did the pipes that get onto my property get there. Also, the 3 drains in front of Linden Street join together and go down a right of way to this same stream. In the past the town has cleaned out a basin that is 1/2 way to stream. I've been told that this is not true and again they cannot come onto my property. Silly, since I've lived here for 22+ years.	12/9/2022 8:50 AM
19	Primary road closures due to dam break (rot 106/123 at New or Old Pond.	12/7/2022 6:29 PM
20	None specifically that I can think of	11/30/2022 2:02 PM
21	none	11/30/2022 10:15 AM
22	Power lines	11/30/2022 10:08 AM
23	open space loss of habitat	11/29/2022 11:56 AM

24	No	11/28/2022 10:29 PM
25	wildlife and conservation land:invasives, climate impact, overdevelopment	11/28/2022 5:29 AM
26	Loss of power	11/25/2022 10:09 AM
27	Water Supply	11/23/2022 8:48 PM
28	No	11/23/2022 3:56 PM
29	Affect of draught on large trees, mosquito and tick born diseases	11/23/2022 2:17 PM
30	No	11/23/2022 2:11 PM
31	none	11/23/2022 1:28 PM
32	Downtown area, apartments, condos	11/23/2022 1:10 PM
33	Town wells, wetlands	11/23/2022 12:39 PM
34	water supply	11/23/2022 12:12 PM
35	Any B emergency shelter or facility	11/23/2022 11:52 AM
36	There are known areas in neighborhoods that regularly experience flooding	11/23/2022 10:08 AM
37	Bay Road	11/23/2022 9:57 AM
38	Electric grid is very vulnerable due to overgrowth of trees.	11/23/2022 9:52 AM
39	Eliot Circle, nursing homes, schools, unpaved roads	11/23/2022 9:48 AM
40	Electric	11/22/2022 12:38 PM
41	Water contamination	11/22/2022 12:38 PM
42	Above ground wires to town facilities	11/20/2022 12:46 PM
43	Water supply	11/19/2022 10:14 PM
44	Wetlands	11/19/2022 8:47 PM
45	No	11/19/2022 8:46 PM
46	Wetlands off Bridge Street and bordering Rivers Edge Community.	11/18/2022 10:34 AM
47	Side streets where trees might fall	11/18/2022 9:47 AM
48	Water, Sewer, Electric, Roads	11/17/2022 8:39 AM
49	Power stations	11/16/2022 10:50 PM
50	Na	11/16/2022 10:27 PM
51	Stormwater basins / detention ponds	11/16/2022 9:45 PM
52	N/A	11/16/2022 8:56 PM
53	Water	11/16/2022 8:38 PM
54	POWER OUTAGES ARE FREQUENT ACROSS TOWN	11/16/2022 8:24 PM
55	Power	11/16/2022 8:17 PM
56	Too new to know	11/16/2022 7:59 PM
57	Water supply	11/16/2022 7:53 PM
58	Abington Schools	11/16/2022 6:44 PM
59	Open spaces	11/16/2022 6:01 PM
60	Public buildings	11/16/2022 5:15 PM
61	In areas and abutting areas where town has allowed building on wetlands.	11/16/2022 5:12 PM

62	water, electrical, natural gas supply supply services	11/15/2022 12:33 PM
63	emergency services mainly due to all above "high" responses	11/14/2022 4:24 PM
64	No	11/14/2022 11:33 AM
65	Power lines are too vulnerable for falling trees/branches as a whole in town.	11/14/2022 10:10 AM
66	Harvard Street bridge and the flooded area that has killed trees	11/14/2022 10:09 AM
67	n/a	11/14/2022 9:28 AM
68	No	11/14/2022 6:36 AM
69	Youth athletic complex, Church st	11/14/2022 6:30 AM
70	Trees overhanging roadways. Lack of solar investment.	11/14/2022 3:27 AM
71	Electricity	11/13/2022 8:33 PM
72	Dead trees everywhere that cause power outages and the neglect of ecosystems at Robins pond near the former Casa Loma location. Ie the removal of natural habit vegetation and erecting metal fencing into the water	11/13/2022 7:51 PM
73	Maybe schools, community center, churches	11/13/2022 6:03 PM
74	WATER SUPPLY, TOWN SEWAGE,	11/13/2022 5:21 PM
75	Power outages	11/13/2022 4:45 PM
76	COA, schools-used as shelters, individual homes	11/13/2022 4:38 PM
77	Rte 106 at Whitman St, Spring st at the bridge, general flooding in the usual places	11/13/2022 4:32 PM
78	Roads	11/13/2022 3:26 PM
79	No	11/13/2022 3:20 PM
80	Senior center, police station and fire station.	11/13/2022 3:19 PM
81	Natural gas	11/11/2022 12:46 AM
82	Water pumping stations	11/8/2022 2:15 PM
83	no	11/6/2022 11:47 AM
84	North Easton - Electricity, handicap services	11/5/2022 6:34 PM
85	Grocery Stores/Supermarkets	11/4/2022 2:47 PM
86	Electric transformer station	11/3/2022 9:17 AM
87	Water/electric	11/3/2022 4:00 AM
88	Trees on town land!	11/2/2022 1:28 PM
89	Town wetlands	11/2/2022 1:26 PM
90	Schools as they are all located in the same area	11/2/2022 1:22 PM
91	Many of the older trees in Easton are vulnerable to falling over during high wind, rain and snow storms which also impact electric wires and poles. Areas in the town have been without power up to 5 days because of this which is unnecessary.	11/2/2022 1:21 PM
92	Power lines encroached by trees along all streets in town.	11/2/2022 1:18 PM
93	roads and communication/utilities	11/2/2022 1:15 PM
94	Private roads the town of Easton won’t assist with snow removal	11/2/2022 1:11 PM

Q9 How concerned are you about the impacts of climate change for your town as a whole? Please choose one.

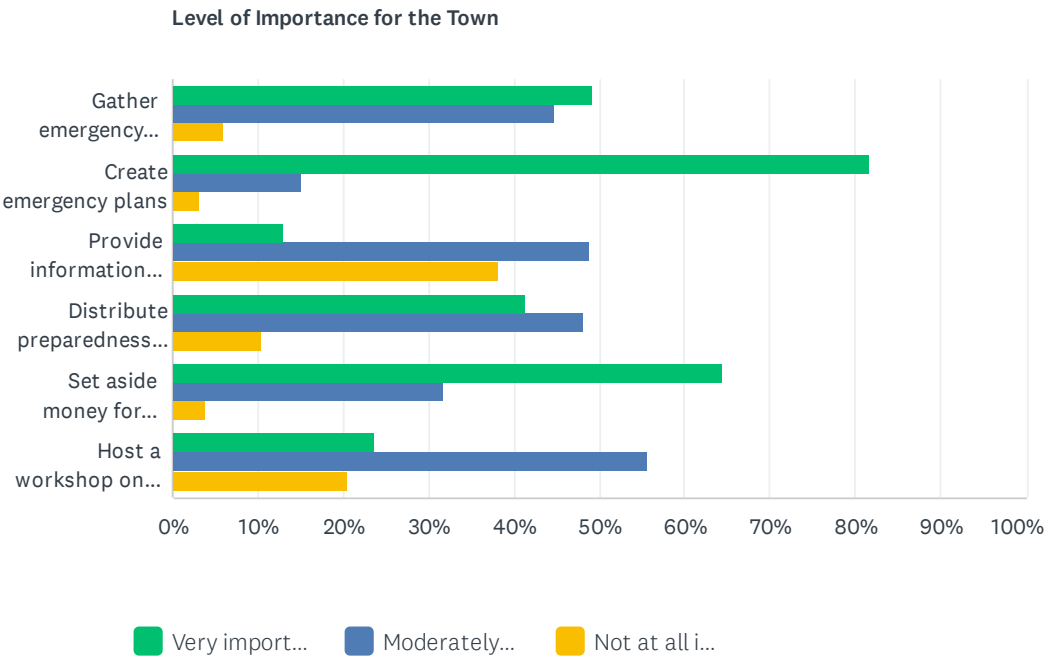
Answered: 296 Skipped: 0



ANSWER CHOICES	RESPONSES	
Extremely concerned	36.82%	109
Somewhat concerned	41.22%	122
Not concerned	21.96%	65
TOTAL		296

Q10 What do you think the most important thing your Town should do to help residents and businesses prepare for and reduce vulnerabilities to natural hazards and the impacts of climate change? Under “Level of Importance,” please choose Very important, Moderately important, or Not at all important.

Answered: 290 Skipped: 6



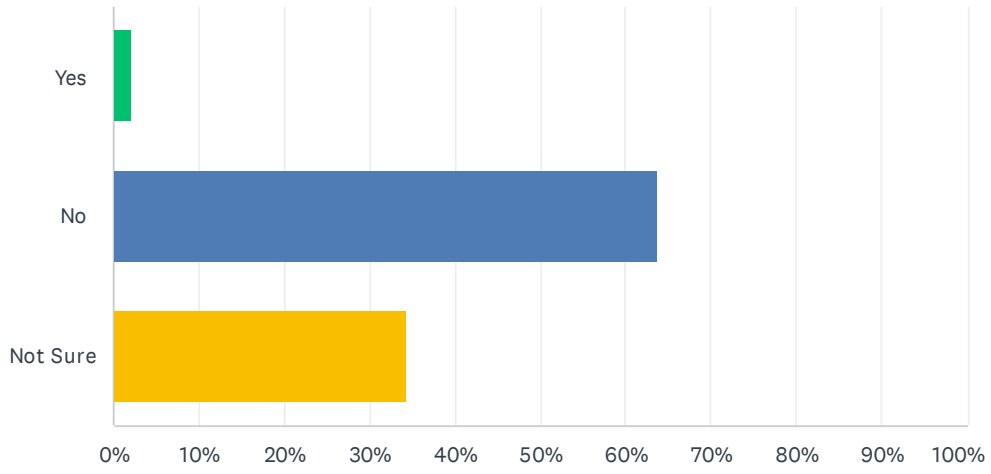
Level of Importance for the Town	VERY IMPORTANT	MODERATELY IMPORTANT	NOT AT ALL IMPORTANT	TOTAL
Gather emergency supplies	49.30% 141	44.76% 128	5.94% 17	286
Create emergency plans	81.66% 236	15.22% 44	3.11% 9	289
Provide information about flood insurance	13.07% 37	48.76% 138	38.16% 108	283
Distribute preparedness information	41.46% 119	48.08% 138	10.45% 30	287
Set aside money for emergencies	64.34% 184	31.82% 91	3.85% 11	286
Host a workshop on emergency preparedness and personal resilience	23.76% 67	55.67% 157	20.57% 58	282

#	OTHER (PLEASE EXPLAIN)	DATE
1	Make the electric companies cut back the trees that encroach upon the power lines.	11/2/2022 1:18 PM
2	Communication on social media when disasters happen	11/2/2022 1:26 PM

3	Underground utilities	11/2/2022 3:44 PM
4	Warning other than digital for emergencies	11/13/2022 3:26 PM
5	Create a plan for higher temperatures, secure funds for town residence to prepare - for excessive heat and loss of power- generators	11/13/2022 5:21 PM
6	Climate change is a hoax.	11/14/2022 6:36 AM
7	Compost services	11/18/2022 9:47 AM
8	Complete new fire and Dow facilities	11/20/2022 12:46 PM
9	Transparency on steps being taken.	11/21/2022 9:54 PM
10	would love to discuss workshop ideas	11/23/2022 9:48 AM
11	Continue to partner with organizations that can get the word out - CERT, Library, COA, houses of worship, parent groups, and other community influencders	11/23/2022 10:08 AM
12	Plan to eliminate vulnerable spots. For example bury power lines when possible, build retaining ponds for flooding, plant trees for additional shade, plant fruit trees for more local food source, encourage electric vehicles, charging stations, improve public transportation, "green" public buildings	11/25/2022 10:09 AM
13	Very concerned invasion of illegals	11/28/2022 10:29 PM
14	Emergency water purification equipment should be available	11/29/2022 11:56 AM
15	Offer webinar and video links providing information	12/27/2022 5:47 AM
16	Take measures to mitigate our impacts on climate change!!	12/29/2022 4:48 PM
17	Develop plans with vulnerable populations to address specific needs, perhaps in concert with nearby Fire Department or by neighborhood groups.	1/17/2023 8:51 PM

Q11 Is your property located in a FEMA designated floodplain?

Answered: 295 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes	2.03%	6
No	63.73%	188
Not Sure	34.24%	101
TOTAL		295

Q12 Are there any areas on your Town where you've noticed repeated flooding events? Please type your answer in the space below.

Answered: 94 Skipped: 202

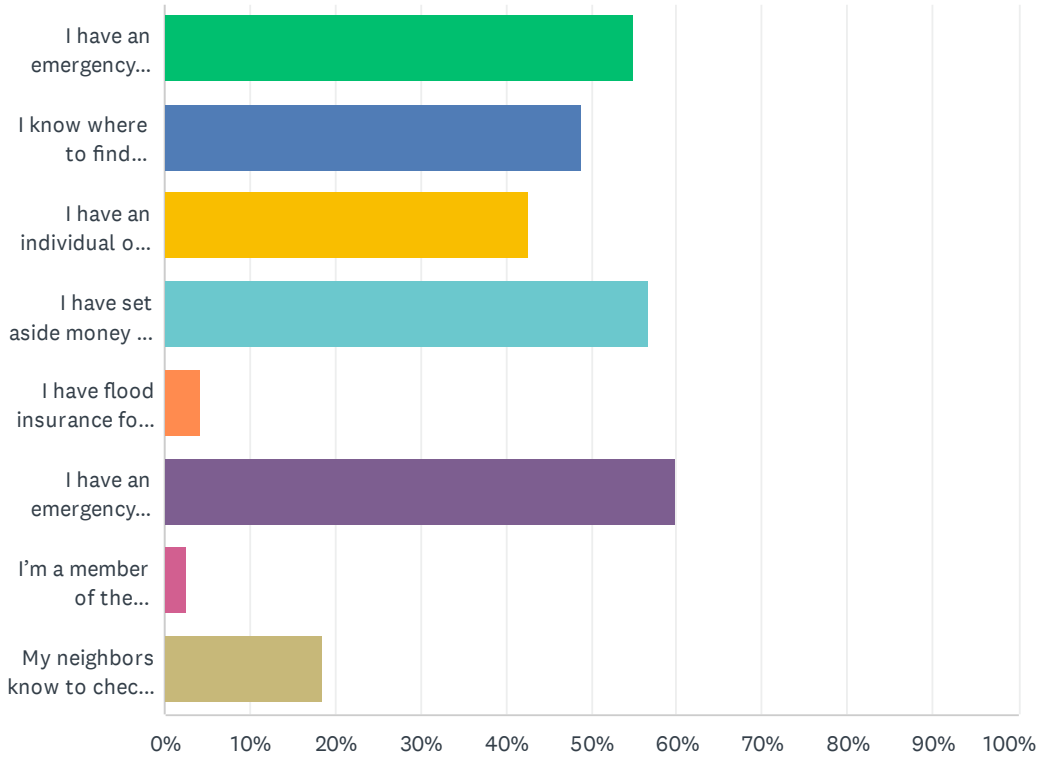
#	RESPONSES	DATE
1	None that are even moderately dangerous	5/11/2023 6:40 PM
2	no	5/8/2023 11:31 AM
3	The Armory, Rt. 139 in that area	5/3/2023 3:23 PM
4	Wetlands	5/1/2023 6:10 PM
5	No.	1/17/2023 8:51 PM
6	Elm Street between 96-108 Elm Street	1/17/2023 6:40 PM
7	Bedford and Whitman Streets	1/15/2023 3:29 PM
8	Elm Street	1/13/2023 11:14 AM
9	Lincoln St near Holy Trinity Church. Randall St near Alderwood Dr.	1/12/2023 9:51 PM
10	no	1/9/2023 7:27 AM
11	linwood st	1/3/2023 11:26 AM
12	Yes. Near rivers and wetllands	12/27/2022 5:45 PM
13	The junction of Franklin St and Central St creating a road hazard	12/23/2022 3:52 PM
14	During intense rainstorms or snow storms, the end of Dee Jay Road floods for a few days.	12/23/2022 7:57 AM
15	My basement when the sump pump doesn't work and it's raining cats and dogs!	12/22/2022 12:39 PM
16	Yes where town has allowed development without proper drainage. Carriage Hill Drive, Dorsey St to name 2 areas, but there are others.	12/20/2022 7:49 PM
17	Winter street	12/18/2022 12:20 PM
18	At the intersection of Route 18 and Rte 106. In the 15+ years I've lived in East Bridgewater this intersection has been the site of numerous attempts to control flooding yet still floods. It is a major intersection with high impact during flooding.	12/14/2022 7:34 AM
19	Lack of a desire to help prior to events on Linden St	12/9/2022 8:50 AM
20	Concerned about the beaver population increasing adding to additional flooding in unexpected places.	12/5/2022 2:02 PM
21	As a resident who has two sump pumps to keep his basement dry, and who has a stream and wetland on his property, any time there's a power outage i have a flooding event.	12/1/2022 12:00 PM
22	The area behind my house as a high water table. When it rains a great deal, the water pools in the woods behind my house which makes the trees vulnerable to falling.	11/30/2022 2:02 PM
23	no	11/30/2022 10:15 AM
24	Green Street Park, unable to drain properly. It becomes a swamp when it rains.	11/30/2022 10:08 AM
25	The High School	11/28/2022 10:29 PM
26	Purchase Street just east of golf course	11/28/2022 5:29 AM
27	The drain system on Eleonore Strasse, placed in 1991, is prone to flooding. Measures were taken (approx. 1994), but in an environmental event the system may not handle the amount of water.	11/27/2022 9:50 AM

28	no	11/26/2022 9:15 PM
29	Chester Avenue	11/25/2022 7:27 PM
30	no	11/23/2022 8:48 PM
31	In prolonged heavy rain events the dip and curve in the road of Purchase Street between #275 and 301 (marsh area).	11/23/2022 3:59 PM
32	Easton,Stoughton,Sharon intersection	11/23/2022 3:56 PM
33	Bridge at sheep pasture	11/23/2022 2:17 PM
34	Blackbrook road	11/23/2022 2:11 PM
35	none	11/23/2022 1:28 PM
36	Excessive rain on areas downgradiant to housing.	11/23/2022 1:10 PM
37	Just wetlands, some homes	11/23/2022 12:39 PM
38	No	11/23/2022 12:35 PM
39	No	11/23/2022 12:13 PM
40	Main B street by the bridge near the post office.	11/23/2022 11:52 AM
41	yes	11/23/2022 10:08 AM
42	No	11/22/2022 3:27 PM
43	Abington: Crabtree Lane and Colonial Rd seems to flood every winter and a huge sheet of ice freezes in the street, making it extremely dangerous.	11/22/2022 1:20 PM
44	No	11/20/2022 12:46 PM
45	No	11/19/2022 8:46 PM
46	Wetlands behind Crystal Water Drive.	11/18/2022 10:34 AM
47	My street	11/18/2022 9:47 AM
48	None	11/17/2022 6:20 PM
49	No.	11/17/2022 9:19 AM
50	Yes. Whitman Street at Route 18	11/17/2022 6:15 AM
51	Linwood street towards mill street (in front of new homes)	11/16/2022 10:54 PM
52	There are areas where big puddles form	11/16/2022 10:27 PM
53	No	11/16/2022 8:56 PM
54	?	11/16/2022 8:38 PM
55	No	11/16/2022 8:33 PM
56	None i can think of	11/16/2022 8:17 PM
57	Not due to this year's drought, but the wet meadow on Platt Street that borders French Stream floods during heavy rain and rains of 3+ inches. Friends on West Chapel St post photos of property flooding ever since new construction was allowed at the top of the hill. Flooding on former Sun-Ray-Lea Farm property on Linwood St.	11/16/2022 7:33 PM
58	Homes on Lincoln st- their back yards and basements flood	11/16/2022 6:48 PM
59	No	11/16/2022 6:01 PM
60	Yes Hancock Street	11/16/2022 5:15 PM
61	Yes, areas abutting new developments that was build on or near wetlands. Town let’s builders drain water toward older developments.	11/16/2022 5:12 PM
62	No	11/15/2022 5:13 PM

63	In East Bridgewater: intersection of Rt. 18 and Rt.106.	11/15/2022 12:33 PM
64	lower lying roads near rivers and ponds	11/14/2022 4:24 PM
65	No	11/14/2022 11:33 AM
66	West Union and Spring Street	11/14/2022 11:09 AM
67	Rt 106 and rt 18 , drain not that effective	11/14/2022 10:56 AM
68	The intersection of 106 and Rte 18 in Elmwood	11/14/2022 10:17 AM
69	Yes. Harvard Street bridge. Beavers supposedly built dams and flooded the area and trees have died. The water has flooded a great amount of land. Risk for washing over into road. Dams need to be taken down as mentioned has killed trees and I am sure other issues as well.	11/14/2022 10:09 AM
70	no	11/14/2022 9:28 AM
71	Intersection of Whitman and Bedford flooding	11/14/2022 7:10 AM
72	No	11/14/2022 6:36 AM
73	RT. 18 at Whitman st., Spring St at the bridge, Winter St near Summer St., Pleasant St near Summer St., Willow Ave, West Union St near Oregon St	11/14/2022 6:30 AM
74	No, but potential near 106/Plymouth Street and Satucket River.	11/14/2022 3:27 AM
75	Unsure	11/13/2022 8:33 PM
76	No	11/13/2022 7:51 PM
77	rt. 18	11/13/2022 6:15 PM
78	Route 18 and Whitman St lights	11/13/2022 6:03 PM
79	Route 106 at Whitman Street, Spring Street at bridge,	11/13/2022 4:32 PM
80	Corner of Washington street and crescent street. Beaver issues	11/13/2022 3:46 PM
81	No	11/13/2022 3:45 PM
82	yes , But it has always been that way. They bought in to it.	11/13/2022 3:32 PM
83	No	11/13/2022 3:26 PM
84	Yes	11/13/2022 3:20 PM
85	No	11/13/2022 3:19 PM
86	No	11/11/2022 12:46 AM
87	No	11/6/2022 11:47 AM
88	no	11/5/2022 6:34 PM
89	roadway flooding during heavy periods of rain, e.g. Prospect Street	11/4/2022 2:47 PM
90	No	11/3/2022 4:00 AM
91	Low area of Lincoln st.	11/2/2022 3:44 PM
92	Town forest/ land behind 84 bridge st.	11/2/2022 1:26 PM
93	Easton is a high water table so we've seen streets flooding many times and homes flooding as well.	11/2/2022 1:21 PM
94	Yes- Sweetmeadow drive	11/2/2022 1:11 PM

Q13 Which of the following natural hazard preparedness measures have you taken for your home or business? Please check any that apply.

Answered: 275 Skipped: 21



ANSWER CHOICES	RESPONSES	
I have an emergency supply kit	54.91%	151
I know where to find preparedness information	48.73%	134
I have an individual or family emergency plan	42.55%	117
I have set aside money for emergencies	56.73%	156
I have flood insurance for my home or business	4.36%	12
I have an emergency generator for my home or business	60.00%	165
I'm a member of the Community Emergency Response Team (CERT)	2.55%	7
My neighbors know to check on me	18.55%	51
Total Respondents: 275		

Q14 What do you think the most important thing your Town should do to reduce future damages from natural hazards? Please type your answer in the space below.

Answered: 143 Skipped: 153

#	RESPONSES	DATE
1	Have access to forest so fire equipment can be used.	5/11/2023 6:40 PM
2	Be aware of hazardous areas and improve them, if possible	5/3/2023 3:23 PM
3	prepare and educate	5/2/2023 9:44 PM
4	Stop building in the wetlands	5/1/2023 6:10 PM
5	Call on residents to assist (volunteer) in our neighborhoods with simple, low liability, activities that reduce risk (clear leaves from storm drains, shovel out fire hydrants, assist neighbors with specific vulnerabilities when natural disasters emerge.) Residents who are willing and able could help the Town extend it's capacity to respond.	1/17/2023 8:51 PM
6	regular review of the HMP and assessment of progress on completing action items; presentation of plans to various municipal boards; regular reminder where people can find emergency preparedness and response plan	1/17/2023 6:40 PM
7	I believe that the climate is changing rapidly and that the Town needs to build-in resilience and response plans.	1/13/2023 11:14 AM
8	I'm not sure it's possible, but putting the wires underground would help with power outages	1/13/2023 10:17 AM
9	Remove trees that will take power lines down	1/13/2023 9:42 AM
10	Move all power lines underground, especially areas that lose power regularly in weather events.	1/12/2023 9:51 PM
11	nothing	1/9/2023 7:27 AM
12	Underground utilities	1/7/2023 9:54 AM
13	tree removal close to roads & utility wires	1/4/2023 11:08 AM
14	have a solid plan in place that can be acted upon quickly and efficiently for each part of town be better organized and get the information out to the people text messages phone calls dont just rely on one source of communication	1/3/2023 11:26 AM
15	Ask locals to keep the storm drains clean of debris summer and fall	12/29/2022 6:31 PM
16	Abington is a Green Community. Abington should use this more. Take advantage of the help and grants offered to lower the town's energy use and energy bills. Abington is missing out on money and opportunities. For natural hazards, tree maintenance (so trees don't fall in the roads) and being prepared to keep roads open and safe is important.	12/29/2022 4:48 PM
17	Trim trees and clean out rain drains and ditches for ran run off	12/29/2022 11:08 AM
18	Spend the time and money now, before a huge emergency, not after.	12/29/2022 10:50 AM
19	Provide residents with a well thought out plan and ensure all residents know what to do, how they /their home/neighborhood would be impacted and provide resources.	12/28/2022 3:28 PM
20	Survey and determine town needs. Particularly look at infrastructure vulnerabilities	12/27/2022 5:45 PM
21	better tree timming around power lines	12/26/2022 3:57 PM
22	Tree maintenance near critical power infrastructure and roadside delivery lines	12/23/2022 3:52 PM
23	DON'T ALLOW CONSTRUCTION THAT CREATES HAZARDS	12/23/2022 11:21 AM

24	Ensure all new buildings are equipped with the necessary equipment to withstand flooding, extreme heat and cold, snowstorms, etc.	12/23/2022 7:57 AM
25	Maintain and support natural resources as a barrier to hazards. Support Conservation Commission efforts and use of the Community Preservation Funds to thwart potential damages.	12/22/2022 6:15 PM
26	Fix drainage and make sure there is proper drainage with any new development.	12/20/2022 7:49 PM
27	Preventative maintenance of systems, services, and public ways.	12/20/2022 7:43 PM
28	tree trimming	12/20/2022 4:26 PM
29	Clear away limbs and trees to prevent power losses.	12/18/2022 12:20 PM
30	Keep the power on	12/16/2022 7:32 AM
31	Be informed bee prepared. As much as possible. The public is not informed or says it wont happen. CERT should be doing presentations on preparedness. FEMA 2022 National Household Survey on Disaster Preparedness averages 45-50% are unprepared.	12/15/2022 9:41 AM
32	Have an active and complete plan of the types of natural hazards, plan to respond when a hazard occurs, and a forward-thinking plan to mitigate future events.	12/14/2022 7:34 AM
33	Maintain infrastructure, equip local first responders	12/9/2022 12:47 PM
34	Constant work to make sure existing waterways flow appropriately. You can check almost any water flow in North Easton and there is little upkeep	12/9/2022 8:50 AM
35	Consider running utilities underground to avoid disruption of services.	12/5/2022 2:02 PM
36	Proactive tree removal. There's two dead trees on the property across the street from me that if they blow the right way, my street will lose power for days.	12/1/2022 12:00 PM
37	Based on my experience, attention should be given to removing or pruning trees that are close to overhead wires.	11/30/2022 2:02 PM
38	Better communication with National Grid. The Green Street residents went 4 days without power because there was poor communications between the 2 parties during a recent storm. National told residents we had power when we did not and the town did not seem to contact them that we did not have any power. Then National Grid was waiting for the town to remove the tree off the wire and the Town was waiting for National Grid to turn the power off to remove it. Again, better communication between the 2 parties would have resolved it much sooner.	11/30/2022 10:08 AM
39	Stop building	11/28/2022 10:29 PM
40	Work with utility companies to trim trees overhanging power lines. and roads. Secure water supply.	11/28/2022 3:35 PM
41	Consider more focus on resilient landscapes, "development" of wildlife survival plans. More visibility for our CERT team through mailings. Continue work to prevent flooding from storm water and poor drainage	11/28/2022 5:29 AM
42	Powerline maintenance! Keep branches away from power lines.	11/27/2022 9:50 AM
43	DPW improvements	11/26/2022 9:15 PM
44	Be more aggressive about trimming limbs and trees overhanging power lines.	11/26/2022 11:15 AM
45	Hold meetings to educate people.	11/25/2022 7:27 PM
46	Plan to eliminate vulnerable spots. For example bury power lines when possible, build retaining ponds for flooding, plant trees for additional shade, plant fruit trees for more local food source, encourage electric vehicles, charging stations, improve public transportation, "green" public buildings	11/25/2022 10:09 AM
47	Get everybody prepared.	11/24/2022 10:06 AM
48	Cut down dead trees bordering roads	11/24/2022 6:41 AM
49	Food and water are crucial. Medicines and first aid supplies.	11/23/2022 8:48 PM

50	Work on expanding town sewer availability, work with National Grid on vegetation management to help minimize outages due to falling limbs in wind storms.	11/23/2022 6:00 PM
51	Education	11/23/2022 3:59 PM
52	Educate the residents. And continue with pro-active preparedness plans.	11/23/2022 3:59 PM
53	Improve power outage occurances	11/23/2022 3:56 PM
54	Protect open space and flood plain areas, be prepared to offer emergency shelter in case of prolonged power outages	11/23/2022 2:17 PM
55	Set aside money	11/23/2022 2:11 PM
56	nothing	11/23/2022 1:28 PM
57	Be prepared for the unexpected.	11/23/2022 1:28 PM
58	Keep the tree limbs trimmed around the street wires to prevent outages, and keep storm drains cleared especially in downgradiant to Center Street and thickly settled areas	11/23/2022 1:10 PM
59	Tree maintenance -keep healthy trees near roads and public structures trimmed of dangerous limbs. Take down dead trees. Educate homeowners about dangers of dead/diseased trees.	11/23/2022 12:39 PM
60	Clear more trees away from roads and power lines.	11/23/2022 12:35 PM
61	Clear trees from power lines.	11/23/2022 12:13 PM
62	Stop growth: no further population increase, and mitigate the damage of overbuilding atop wetlands (bad drainage, destroying woodland, overpaving, lawn irrigation)	11/23/2022 12:12 PM
63	Infrastructure and natural resources like solar charging pads etc. a deal with Simpson a spring for water	11/23/2022 11:52 AM
64	Create and actively use a Hazard Mitigation plan, prioritize hazards and seek grant funding to mitigate those hazards.	11/23/2022 10:08 AM
65	Honestly, I think the TOwn does a good job, so far, responding to these kinds of emergencies. What really concerns me more is the length of time it is taking for the PFAS in our water supply to be fully mitigated. Drinking water supply safety should be a #1 priority.	11/23/2022 9:57 AM
66	tree pruning, road maintenance	11/23/2022 9:48 AM
67	Stop overdevelopment of wetlands.	11/22/2022 6:18 PM
68	Communicate via social media channels. It is so hard to find out what is happening in Abington and social media accounts are rarely updated.	11/22/2022 1:20 PM
69	Clear roads and sidewalks, check power lines	11/22/2022 12:38 PM
70	Provide assistance with tree removal to prevent falls during storms	11/22/2022 12:25 PM
71	Prepare accordingly	11/21/2022 9:54 PM
72	Build new fire hq, and move key power lines underground	11/20/2022 12:46 PM
73	Repair issues quickly and take progressive action.	11/20/2022 12:33 PM
74	Create emergency plans for any and all potential sceneries, including another pandemic so that we aren’t scrambling after an emergency hits.	11/19/2022 10:14 PM
75	Have a REAL Emergency Manager	11/19/2022 8:47 PM
76	Strengthen electrical grid	11/19/2022 8:46 PM
77	Communication is vital via all channels available	11/19/2022 7:56 PM
78	Improve and maintain drainage especially near wetlands.	11/18/2022 10:34 AM
79	Cut tree branches Compost Have more street lights that are solar	11/18/2022 9:47 AM
80	Infrastructure, such as underground electricity	11/17/2022 6:20 PM
81	Disregard “woke” nonsense	11/16/2022 10:50 PM

82	The power outages in prior years were very disheartening and effected our lives negatively	11/16/2022 10:27 PM
83	Cut back all trees near wires. Mandate that all trees be more than 30 feet from any electrical or data lines. Regularly clear storm drains. Bury as many utilities as possible. Provide tax incentives to critical businesses that have and maintain generators. Prioritize permitting for residential solar, battery farms, and generators. Store, maintain, rotate a weeks worth of bottled water for all residents. Promote CERT participation. Relate, maintain, and use in real time robust town based twister or other social media page with real time information	11/16/2022 9:23 PM
84	Infrastructure to shorten power outages	11/16/2022 8:56 PM
85	REMOVE DEAD TREE LIMBS FROM PUBLIC ROADS; URGE NATIONAL GRID TO REINFORCE THE POWER GRID	11/16/2022 8:24 PM
86	Road repair and protecting power grids	11/16/2022 8:17 PM
87	Move electric and telephone wires underground to preserve electricity in wind/ice/snow storms.	11/16/2022 7:55 PM
88	Trimming trees and checking telephone poles	11/16/2022 7:42 PM
89	Stop allowing builders to alter known wetlands thus pushing and exasperating the flooding to other properties. West Chapel St properties for example and Charles St area. Wetlands and the like should be 100% off limits to development of any kind.	11/16/2022 7:33 PM
90	I'm not paid to do that they should know	11/16/2022 7:15 PM
91	Education of the people who live in Abington	11/16/2022 6:44 PM
92	Allocate emergency funds for situations like that and educate the community on preparedness	11/16/2022 6:43 PM
93	Fix our water system and supply	11/16/2022 6:01 PM
94	Remove old trees near roadways and power lines. Clean up around storm drainage areas.	11/16/2022 5:53 PM
95	Stop building on wetlands and address the drainage issues new developments on or near wetlands have caused.	11/16/2022 5:12 PM
96	Always have an emergency shelter	11/16/2022 4:39 PM
97	Trim/cut dead and or weak trees	11/16/2022 4:16 PM
98	Find another water source for the town so we have enough in the summer. Make sure dead limbs and trees are removed near wires.	11/16/2022 3:14 PM
99	Develop and enforce working stormwater regulations for new construction	11/16/2022 2:53 PM
100	Preemptively trim trees near utility lines. Clean out storm drains.	11/15/2022 5:13 PM
101	Use the "Code Red" communication system to alert townspeople about any "moderate" or "high" risk situation. The town should not be afraid to send out information using the "Code Red" system.	11/15/2022 12:33 PM
102	major tree trimming/removal near critical main power feed lines	11/14/2022 4:24 PM
103	make detailed plans	11/14/2022 1:26 PM
104	Limit the number of large trucks traversing Central Street	11/14/2022 11:33 AM
105	Sustainable infrastructure investment	11/14/2022 11:09 AM
106	More Triming of trees along power lines	11/14/2022 10:56 AM
107	While extremely expensive, moving electrical wires underground in certain high-population-density areas as well as town center areas could be explored to protect against wind and ice storms.	11/14/2022 10:34 AM
108	Aggressively cut back/remove trees around power lines. We are too accepting of muti-day power outages.	11/14/2022 10:10 AM
109	Keep up with mowing town own fields and open areas on town streets and maintaining tree trimming. Cleaning and keeping clear street drains. My street has weeds growing out of the drains.	11/14/2022 10:09 AM

110	Maintain an appropriate emergency fund	11/14/2022 7:10 AM
111	Stop wasting time and money on climate change hoax.	11/14/2022 6:36 AM
112	increase culvert capacity	11/14/2022 6:30 AM
113	Proactively clear tree limbs from roads/overhanging power lines. Better plans for drought mitigation - turf instead of grass on sports fields.	11/14/2022 3:27 AM
114	Place power lines underground. Get rid of dead trees	11/13/2022 7:51 PM
115	cross fingers	11/13/2022 6:15 PM
116	Trees along power lines and roads, assist homeowners in cutting of trees to power lines that go from street to house. Help find low interest loans to assist homeowners to get cooling sytems installed.	11/13/2022 5:21 PM
117	Trim the tree limbs hanging over power or cable lines and cut down dead trees	11/13/2022 4:45 PM
118	Have trees trimmed near electrical lines	11/13/2022 4:38 PM
119	Clear culverts and drains for floodwater runoff.	11/13/2022 4:33 PM
120	Be sure dead trees on public property are cleared	11/13/2022 4:32 PM
121	Be transparent clear and communicative about preparedness	11/13/2022 4:32 PM
122	Proactively maintain town owned woods to reduce risk of trees falling during storms	11/13/2022 4:25 PM
123	Trim the trees along power lines and transformers and keep storm drains clear	11/13/2022 4:19 PM
124	Maintenance of hazardous trees. Identify hazardous areas and make changes/modifications to make it more resilient to storms of any kind	11/13/2022 3:47 PM
125	Stop building and filling in wetlands, clean out existing rivers and brooks so water can drain	11/13/2022 3:46 PM
126	Keep roads clear, trim overhanging tree branches etc.	11/13/2022 3:45 PM
127	Have a plan for road clearing and emergency services.	11/13/2022 3:26 PM
128	Plan for a crisis	11/13/2022 3:20 PM
129	Have a complex, complete plan tailored to the town actual needs and not a boilerplate design.this plan should fit the needs the tow of East Bridgewater faces regarding each type of Natural hazard.	11/13/2022 3:19 PM
130	Tree trimming, road maintenance	11/11/2022 12:46 AM
131	Bury utility wires?	11/6/2022 11:47 AM
132	Make a plan and prioritize which groups will be helped and in what order.	11/5/2022 6:34 PM
133	Keep trees trimmed near power lines.	11/5/2022 1:48 PM
134	Do a better job of trimming trees around power lines.	11/4/2022 2:47 PM
135	Proactively cutting trees and limbs over power lines. There’s no reason why that shouldn’t be done. Easton loses power almost every storm	11/3/2022 9:17 AM
136	Preparation planning- as is already in process- thank you for being proactive!	11/3/2022 4:00 AM
137	Tree trimming	11/2/2022 3:44 PM
138	Trim/remove trees citizens are worried about even if they are not “town property”. Increase town water supply and maintenance. Protect water sources instead of letting people build subdivisions on land or close by.	11/2/2022 1:26 PM
139	Not sure	11/2/2022 1:22 PM
140	Remove more trees and work with electric companies to minimize electricity outages.	11/2/2022 1:21 PM
141	Cut back the trees that encroach the power lines along every street in town.	11/2/2022 1:18 PM
142	Keep trimming dead trees along roads	11/2/2022 1:15 PM

143	Trim trees	11/2/2022 1:11 PM

Q15 Are there any other issues regarding the reduction of risk associated with natural hazards that are important to you? Please type your answer in the space below.

Answered: 69 Skipped: 227

#	RESPONSES	DATE
1	We need to build using energy efficiency standards	5/11/2023 6:40 PM
2	Secure power lines so they're less vulnerable to outtages. Make sure communication towers have power backups so we're not left in the dark when power outtages occur.	5/4/2023 3:11 PM
3	Keep trees trimmed and note large trees that could endanger electrical and other necessary services - notify homeowners if it is their responsibility to fix.	5/3/2023 3:23 PM
4	I am cocerned about overdevelopment of open spaces/green spaces for multiple reasons: because we are reducing nature's capacity to respond to natural hazards; because we are straining natural resources as population density increases (water for example).	1/17/2023 8:51 PM
5	Educate residence on how they can help mitigate the effects of natural hazards from themselves and neighbors.	1/13/2023 11:14 AM
6	Remove trees on properties that are in wetlands that threaten to fall on wires coming from street to homes	1/13/2023 9:42 AM
7	no	1/9/2023 7:27 AM
8	Ask homeowners to keep fire hydrants clear of snow	12/29/2022 6:31 PM
9	Cleaning the water supply of PFAS. Such a risk to all residents - this must be cleaned up and preventative measures must be taken to avoid recurrence. The town must invest funds into cleaning up the water supply.	12/28/2022 3:28 PM
10	Town needs to evaluate how to reduce risks associated with infrastructure impacts. People need to better understand the impact of climate change now amend in the future	12/27/2022 5:45 PM
11	they are NATURAL hazards. dont try to fix them.	12/23/2022 11:21 AM
12	Raise consciousness of our natural areas and engage community support to maintain them. The library has made a good effort toward this by sponsoring the hikes of Dwight MacKerron.	12/22/2022 6:15 PM
13	Save the wetlands. Fix the problems.	12/20/2022 7:49 PM
14	Evaluate flood zones and then work to improve buffers, floodwater paths and possibly set aside larger buffer zones.	12/18/2022 12:20 PM
15	maintenance of public roads	12/16/2022 7:32 AM
16	Good communication between town and residents of planning, mitigation steps, resident involvement, and easy access to information. On the last, specifically, I would recommend a published and distributed document(s) for residents that doesn't rely solely on internet access because lower income and senior citizens are less likely to have access to such resources, AND in the event of a storm or other event that disrupts electrical and internet services no one would have access to electronic resources but could still read a piece of paper. On infrastructure impacts, the town should consider a joint (multi-town) arrangement to gain leverage with utility providers such as Comcast and National Grid to improve accountability or expand offerings to residents by establishing a town(multi-town) electrical supply service like Taunton Municipal Power.	12/14/2022 7:34 AM
17	Dennis Moynihan 18 Linden St N Easton 508-941-5562	12/9/2022 8:50 AM
18	More active tree pruning along roads. Especially standing dead wood near service wires.	12/5/2022 2:02 PM
19	Taking steps to reduce power outages during high wind events.	11/30/2022 2:02 PM

20	Have trees trimmed to protect the power lines, does not appear that has been done recently (in the past decade at least around Green St. area)	11/30/2022 10:08 AM
21	Consider those actions that will reduce green house gas emissions at the town level and encourage town residents to take actions on their own	11/29/2022 11:56 AM
22	God will provide	11/28/2022 10:29 PM
23	"My neighbors know to check on me." Great idea. Can we develop neighborhood mini-Cert teams that use a telephone tree for small neighborhoods to supply and gather information during natural disasters-seems we have less neighborly contact then back in the days of Blizzard of '78.	11/28/2022 5:29 AM
24	This may seem petty, however, on Eleonore Strasse, the configuration of the cul-de-sac, increases my concern of risk during snow removal. Snow removal for the roads' configuration, allows the plow's blade turn, which places a massive amount of snow in front of the driveway. My concern is in the event of an emergency, getting out would be greatly impacted. I've reached out to the local DPW for decades (since 1992) to work with me. Only very professional town drivers I've spoken to, will reverse their direction, to accommodate the cul-de-sac's configuration. This helps greatly! But depending on the storm, the same town employee drivers, are not always assigned to a local street such as mine. Non town employees who work to clear the roads are not aware of this situation.	11/27/2022 9:50 AM
25	Our water supply that is contaminated with PFA’s now into it’s 2nd year.AND what has the town done in these 2 years. Provides us with a station where we can fill our own jugs with Water being filtered . For us to cook with etc.	11/25/2022 7:27 PM
26	no	11/23/2022 8:48 PM
27	More protection of open space/fewer variances given for large-scale projects so that we can retain our undeveloped land for flood storage, wildlife, etc.	11/23/2022 6:00 PM
28	None	11/23/2022 3:59 PM
29	Tree trimming around power lines	11/23/2022 3:56 PM
30	In case of natural disaster. Do you have a phone abd text alert system like the schools use. If so. This should be publicized. It would be good to know what info it shares, who decides. When it is used. Under what conditions.	11/23/2022 2:17 PM
31	No	11/23/2022 2:11 PM
32	none	11/23/2022 1:28 PM
33	A central updated source via text for updates as to where problems exist and estimated time for resolution	11/23/2022 1:10 PM
34	Our attempts to convert to solar have been stymied for months by Natl Grid not getting the electric pole prepared. The neighborhood was without power four days last fall with a tree down on the road. They are ill equipped to respond to emergencies.	11/23/2022 12:12 PM
35	Town government should be intentionally looking for ways to reduce greenhouse gasses and conserve water and energy. They should partner with community influencers and businesses to reduce the carbon footprint. I'm glad to see the town is working on this.	11/23/2022 10:08 AM
36	As towns build more apartments, there is very little room for emergency preparedness in an apartment. Apartments can't have large stores of food/water/etc for emergencies. As towns continue to add housing through apartments (which is a good thing), provisions must be made by the town for this group of people.	11/23/2022 9:52 AM
37	community involvement and partnership	11/23/2022 9:48 AM
38	Overdevelopment has also strained the town’s water supply. Total Outdoor water bans should not be necessary every year if we have an adequate water supply.	11/22/2022 6:18 PM
39	Water band	11/22/2022 12:38 PM
40	Keep improving water supply and add more winter snow removal capacity	11/20/2022 12:46 PM
41	Act like you care.	11/20/2022 12:33 PM

42	Preparedness is extremely important and we should learn from what we just went through with Covid-19, and be prepared to do better.	11/19/2022 10:14 PM
43	Education and supplies	11/19/2022 8:47 PM
44	No	11/19/2022 8:46 PM
45	Compost	11/18/2022 9:47 AM
46	No	11/16/2022 8:56 PM
47	Trimming trees and checking telephone poles	11/16/2022 7:42 PM
48	No.	11/16/2022 7:15 PM
49	Stop defoliating or open spaces. Stop building these mega apartment buildings. We don't have the water to support them.	11/16/2022 6:01 PM
50	Do things buy the book- don’t let developers write their own rules.	11/16/2022 5:12 PM
51	Development of low lying areas that currently provide storage capacity for extreme runoff events. Not only does filling reduce capacity, it places homes and businesses in low lying areas making them susceptible to damages and other emergencies	11/16/2022 2:53 PM
52	No	11/15/2022 5:13 PM
53	Communicate, Communicate, Communicate. Let the townspeople know what is going on. Better to have more information than you need, than not enough.	11/15/2022 12:33 PM
54	an emergency heating fuel resource/agreement with a local supplier	11/14/2022 4:24 PM
55	Not that I can think of.	11/14/2022 11:33 AM
56	Climate changes actions impact on the intensity of weather related events	11/14/2022 11:09 AM
57	Don't leave high piles of snow near street entranes to businesses. Very difficult to see on coming traffic.	11/14/2022 10:56 AM
58	No	11/14/2022 6:36 AM
59	Improve solar/ access to generator back up for schools/public locations.	11/14/2022 3:27 AM
60	Take Climate change seriously - make a plan that will prepare us - no we do not have ocean surges, hurricanes, wildfires but we do loose our power and homeowners need help solving those problems of heating, light, and cooling.	11/13/2022 5:21 PM
61	Keeping sewer drains open	11/13/2022 4:45 PM
62	Preparedness information for residents	11/13/2022 4:32 PM
63	No	11/13/2022 3:26 PM
64	Community training and involvement	11/11/2022 12:46 AM
65	no	11/6/2022 11:47 AM
66	Not that I can think of.	11/4/2022 2:47 PM
67	Wetland protections to reduce flood risk. Our planning board and conservation commissions view on it is most waste water is dumped into wetlands. They pick and choose certain builders/homeowners they are friends with and let a lot of projects go through that should not. Lots of conflict of interest that is overlooked.	11/2/2022 1:26 PM
68	Not sure	11/2/2022 1:22 PM
69	Reliable electric is the top priority.	11/2/2022 1:18 PM

APPENDIX E: MITIGATION ACTION PRIORITIZATION TABLES

	Abington	Benefits					Feasibility				Economic		Regulatory		
	Enter 1, 2, or 3 in each empty cell responding to each column header 3=Very true/Best/Most Benefit/Least Cost/Easy or no permitting; 2=Somewhat true/Some benefit/Moderate Cost/Potential permitting complications; 1=Not true/Little to no benefit/Expensive	Protects Properties and Structures	Protects Natural Resources	Technical/Capacity Improvement (Training, Evaluations, Regulations, etc)	Improves Public Awareness	Improves Emergency Response or Public Protection After an Emergency	Appropriate Staffing Available	Technically Feasible	Public Support	Town/ Political Support	Cost	Funding Available / Attainable	Permitting/Regulatory Feasibility	Consistent with Local, State, & Federal Goals	
	Action														
1	Creation of lists for Fire Departments/Emergency Services to have on-hand to know to check in on specific seniors or people with mental or physical disabilities in an emergency scenario	1	1	2	3	2	1	2	2	2	2	2	1	2	23
2	Develop and incentivize neighbor-to-neighbor support systems.	1	2	1	3	3	1	2	2	2	2	2	1	2	24
3	Develop a Community Emergency Response Team (CERT)	2	2	2	3	3	1	2	2	2	2	2	2	2	27
4	Conduct a study to determine climate-related risks to the Town's water supply and alternatives to improve water supply resiliency to climate change. (MVP)	3	3	2	3	2	2	3	2	3	2	2	2	3	32
5	Stormwater Bylaw has been adopted; education and enforcement if necessary	3	3	2	3	2	2	3	2	3	2	2	2	3	32
6	Expand water resources with expansion of well	2	3	3	3	2	2	3	3	3	2	3	3	3	35
7	Tree Trimming program	3	3	1	2	3	1	2	3	3	1	2	1	2	27
8	Detention basin cleaning	3	3	2	2	2	2	2	3	3	1	1	2	3	29
9	Installation of refillable water stations	1	2	2	3	1	3	3	3	3	3	3	2	1	30
10	Preservation of trees and or replacement of more mature trees during development	3	3	3	3	3	2	3	2	3	2	1	2	2	32
11	Educate Town staff with training	3	3	2	3	2	2	2	2	3	1	2	1	2	28

	Easton	Benefits					Feasibility				Economic		Regulatory		
	Enter 1, 2, or 3 in each empty cell responding to each column header 3=Very true/Best/Most Benefit/Least Cost/Easy or no permitting; 2=Somewhat true/Some benefit/Moderate Cost/Potential permitting complications; 1=Not true/Little to no benefit/Expensive	Protects Properties and Structures	Protects Natural Resources	Technical/Capacity Improvement (Training, Evaluations, Regulations, etc)	Improves Public Awareness	Improves Emergency Response or Public Protection After an Emergency	Appropriate Staffing Available	Technically Feasible	Public Support	Town/ Political Support	Cost	Funding Available / Attainable	Permitting/Regulatory Feasibility	Consistent with Local, State, & Federal Goals	
	Action														
1	Create an Invasive Species control plan.	2	3	1	1	1	2	3	2	2	2	2	3	3	27
2	Develop and incentivize neighbor-to-neighbor support systems.	2	1	1	2	2	2	3	2	2	2	2	3	1	25
3	Look for regional opportunities for forest management grants (MVP).	1	2	1	1	1	2	2	2	2	3	3	3	3	26
4	Safeguard electrical systems during storm events through tree protection and management	3	2	1	1	3	2	2	3	3	3	2	3	3	31
5	Update FIRM with elevations	2	2	1	1	1	2	2	2	2	2	2	3	3	25
6	Update the Floodplain protection bylaw	3	3	2	2	1	3	3	2	2	1	1	3	3	29
7	Improve floodplain protection, evaluate revisions to wetland bylaw and floodplain protection district	2	2	1	2	1	3	3	2	2	1	1	3	3	26
8	Provide additional flood storage, at Sam Wright Field, 445 Bay Rd	2	2	1	2	1	2	3	2	2	3	3	3	3	29
9	Provide additional flood storage, upgrade highland st culvert and sam wright field culvert at mulberry meadow brook	3	2	1	2	1	2	3	2	2	1	1	3	3	26
10	Coordinate with ODS and DPW for annual inspection/ maintenance of dams and better coordination of maintenance, add funding to departmental operation budgets	3	2	1	1	1	2	3	2	2	3	2	3	3	28

	Stoughton	Benefits					Feasibility				Economic		Regulatory		
	Enter 1, 2, or 3 in each empty cell responding to each column header 3=Very true/Best/Most Benefit/Least Cost/Easy or no permitting; 2=Somewhat true/Some benefit/Moderate Cost/Potential permitting complications; 1=Not true/Little to no benefit/Expensive	Protects Properties and Structures	Protects Natural Resources	Technical/Capacity Improvement (Training, Evaluations, Regulations, etc)	Improves Public Awareness	Improves Emergency Response or Public Protection After an Emergency	Appropriate Staffing Available	Technically Feasible	Public Support	Town/ Political Support	Cost	Funding Available / Attainable	Permitting/Regulatory Feasibility	Consistent with Local, State, & Federal Goals	
	Action														
1	All emergency calls, website posts, Facebook posts, texts, etc. need to be translated. Train/educate Town staff on resources available for communication with various populations	3	3	3	3	3	3	3	3	3	2	2	3	3	34
2	Generator safety education program.	3	3	3	3	3	3	3	3	3	3	3	3	3	36
3	LEPC- Tabletop and live training	3	3	3	3	3	3	3	3	3	3	3	3	3	36
4	ICS Training for LEPC	3	3	3	3	3	3	3	3	3	3	3	3	3	36
5	Support Equipment for Emergency Response purposes due to Large Scale events	3	3	3	3	3	3	3	3	3	2	2	3	3	34
6	Town Wide Community Resilience program	3	3	3	3	3	3	3	3	3	3	3	3	3	36
7	Communications redundancy for Radio Towers	3	3	3	3	3	3	3	3	3	2	2	3	3	34
8	Construct Emergency Operations Center and Public Health facility with Heating and Cooling capabilities, charging	3	3	3	3	3	2	3	2	2	2	2	3	3	31
9	Increase of emergency staffing	3	3	3	3	3	3	3	3	3	3	3	3	3	36
10	Lake management program for all Town Ponds (Invasive species control, hydroraking)	3	3	3	3	3	3	3	3	2	2	2	3	3	33

11	Conduct a Hydrological and Hydraulic Analysis of all culverts and stormwater drainage infrastructure. Create Stormwater Master Plan.	3	3	3	3	3	3	3	3	2	2	2	3	3	33
12	Implements repairs/upgrades recommended from the H/H Analysis and Stormwater Master Plan. (Culvert on West Street at Ames Long Pond between Highland Street and Lake Drive, Culvert behind Police Station, Dam at Pratt's Court, Red Wing Brook flooding, CB upgrades)	3	3	3	3	3	3	3	3	2	2	2	3	3	33
13	Acquire Open Space to protect natural resources, habitat, and Town wells or planned well areas in Town (Cedar Swamp, Bird Street, Glen Echo, all wellhead areas)	3	3	3	3	3	3	3	3	3	2	3	3	3	35
14	Maintain public wells and associated infrastructure	3	3	3	3	3	3	3	3	3	3	3	3	3	36
15	Expand Sewer to eliminate septic systems in High Groundwater areas (Phase 1 of Park Street Sewer under construction, Phase 2 in Plannings stages)	3	3	3	3	3	3	3	3	3	3	3	3	3	36
16	Create Tree and Debris Management Program for all primary electrical distribution lines in Town	3	3	3	3	3	3	3	3	3	3	2	3	3	35
17	Maintain Sewer Lines in accordance with I/I program (Annual program $400K +/-)	3	3	3	3	3	3	3	3	3	3	3	3	3	36
18	Implement LID Stormwater features on Town Owned properties (Cedar Hill, DPW, Town Hall, Rec Center, Schools)	3	3	3	3	3	3	3	3	3	3	3	3	3	36
19	Develop and distribute educational materials and prepare signs for the public to generate awareness of hazards, mitigation steps, and disaster responses.	3	3	3	3	3	3	3	3	3	3	3	3	3	36
20	Inspect, repair and maintain town-owned detention basins for the purpose of increasing their capacity.	3	3	3	3	3	3	3	3	3	3	3	3	3	36

APPENDIX F: SAMPLE CERTIFICATE OF ADOPTION

<COMMUNITY LETTERHEAD>

CERTIFICATE OF ADOPTION

Town of [Abington], [Easton], or [Stoughton], MASSACHUSETTS

SELECT BOARD

A RESOLUTION ADOPTING THE ABINGTON, EASTON, AND STOUGHTON, MA NATURAL HAZARD MITIGATION PLAN 2023 UPDATE

WHEREAS the Town of [Abington], [Easton], or [Stoughton] recognizes the threat that natural hazards pose to people and property within the Town of [Abington], [Easton], or [Stoughton]; and

WHEREAS the Town of [Abington], [Easton], or [Stoughton] has participated in the preparation of a multi-hazard mitigation plan, hereby known as the *Abington, Easton, and Stoughton, MA Natural Hazard Mitigation Plan 2023 Update* in accordance with federal laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and

WHEREAS, the Abington, Easton, and Stoughton, MA Natural Hazard Mitigation Plan 2023 Update identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Abington, Easton, and Stoughton from the impacts of future hazards and disasters; and

WHEREAS, the Town of [Abington], [Easton], or [Stoughton] established a Committee to update to oversee the Abington, Easton, and Stoughton, MA Natural Hazard Mitigation Plan 2023; and

WHEREAS, a remote workshop was held on January 17, 2023, for interested members of the public to participate in the development of the Abington, Easton, and Stoughton, MA Natural Hazard Mitigation Plan 2023; and

WHEREAS, a duly-noticed remote public meeting was held by the Select Board on TBD for the public and municipality to review the Abington, Easton, and Stoughton, MA Natural Hazard Mitigation Plan 2023 prior to consideration of this resolution; and

WHEREAS, adoption by the Select board demonstrates the commitment of relevant departments and/or agencies to execute their responsibilities outlined in the Plan,

NOW, THEREFORE BE IT RESOLVED that the Town of [Abington], [Easton], or [Stoughton] Select Board formally approves and adopts the Abington, Easton, and Stoughton, MA Natural Hazard Mitigation Plan 2023, in accordance with M.G.L. c. 40. While content related to the Town of [Abington], [Easton], or [Stoughton] may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the Town to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

ADOPTED AND SIGNED this _____.

By: _____

ATTEST: By: _____