The Town of Huntington
Hazard Mitigation Plan Update

Adopted by the Huntington Select Board on December 7, 2016

The Huntington Hazard Mitigation Committee

and

Pioneer Valley Planning Commission
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Charles Dazelle, Highway Superintendent
Robert Garriepy, Police Chief
Linda Hamlin, Planning Board
Susan McIntosh, Conservation Commission
Jeff McKittrick, Selectboard Chair
John McVeigh, Selectboard

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1: PLANNING PROCESS

Introduction

The Federal Emergency Management Agency (FEMA) and the Massachusetts Emergency Management Agency (MEMA) define Hazard Mitigation as any sustained action taken to reduce or eliminate long-term risk to people and property from natural hazards such as flooding, storms, high winds, hurricanes, wildfires, earthquakes, etc. Mitigation efforts undertaken by communities will help to minimize damages to buildings and infrastructure, such as water supplies, sewers, and utility transmission lines, as well as natural, cultural and historic resources.

Planning efforts, like the one undertaken by the Town of Huntington and the Pioneer Valley Planning Commission, make mitigation a proactive process. Pre-disaster planning emphasizes actions that can be taken before a natural disaster occurs. Future property damage and loss of life can be reduced or prevented by a mitigation program that addresses the unique geography, demography, economy, and land use of a community within the context of each of the specific potential natural hazards that may threaten a community.

Preparing, and updating a hazard mitigation plan every five years, can save the community money and facilitate post-disaster funding. Costly repairs or replacement of buildings and infrastructure, as well as the high cost of providing emergency services and rescue/recovery operations, can be avoided or significantly lessened if a community implements the mitigation measures detailed in the plan.

FEMA requires that a community adopt a pre-disaster mitigation plan as a condition for mitigation funding. For example, the Hazard Mitigation Grant Program (HMGP), the Flood Mitigation Assistance Program (FMA), and the Pre-Disaster Mitigation Program are programs with this requirement.

Hazard Mitigation Committee

Updating the Town of Huntington's Hazard Mitigation plan involved a 7-member committee:

- Gary Dahill, Fire Chief
- Charles Dazelle, Highway Superintendent
- Robert Garriepy, Police Chief
- Linda Hamlin, Planning Board
- Susan McIntosh, Conservation Commission
- Jeff McKittrick, Selectboard Chair
- John McVeigh, Selectboard

The Hazard Mitigation Planning process update for the Town included the following tasks:

- Reviewing and incorporating existing plans and other information including changes in development in the last five years since the Town's first Hazard Mitigation planning process
- Updating the natural hazards that may impact the community from the previous plan
- Conducting a Vulnerability/Risk Assessment to identify the infrastructure at the highest risk for being damaged by the identified natural hazards, particularly flooding
- Identifying and assessing the policies, programs, and regulations the community is currently implementing to protect against future disaster damages
- Identifying deficiencies in the current Hazard Mitigation strategies and establishing goals for updating, revising or adopting new strategies
- Adopting and implementing the final updated Hazard Mitigation Plan

The key product of this Hazard Mitigation Plan Update process is the development of an Action Plan with a Prioritized Implementation Schedule.

Committee Meetings

Meetings of the Hazard Mitigation Committee, all of which took place at the Huntington Town Hall, were held on the dates listed below. Agendas for these meetings are included in Appendix B.

April 20, 2016
Work group meeting included hazard mitigation planning overview, identify and organizing of the planning team and an initial discussion of hazards.

April 27, 2016
Work group discussed existing hazard mitigation strategies, completed the FEMA capabilities assessment and identified critical facilities in town.

May 11, 2016
Work group reviewed hazards that are likely to impact the town and conducted the risk assessment.

May 18, 2016
Work group reviewed mitigation strategies to highlight progress, selected new mitigation strategies and developed an Implementation Plan.

June 8, 2016
Work group reviewed public comments and identified a process for maintaining the plan over the next five years.

Sign-in sheets for each meeting can be found in Appendix B. While not all members of the Hazard Mitigation Committee were able to attend each meeting, all members collaborated on the plan and were updated on progress by fellow Committee members after meetings occurred.

Participation by Stakeholders

A variety of stakeholders were provided with an opportunity to be involved in the update of the Huntington Hazard Mitigation Plan. The different categories of stakeholders that were involved, and the engagement activities that occurred, are described below.

Local and regional agencies involved in hazard mitigation activities and surrounding community engagement and input

The Pioneer Valley Planning Commission is a regional planning agency for 43 towns and cities in Massachusetts' Hampden and Hampshire Counties. PVPC regularly engages with the Town of Huntington as part of its regional planning efforts, which include the following:

- Developing the Pioneer Valley Regional Land Use Plan, Valley Vision 2, which advocates for sustainable land use throughout the region and consideration for the impact of flooding and other natural hazards on development.

- Developing the Pioneer Valley Climate Action and Clean Energy Plan, which assesses the impact that climate change will have on the region and recommends strategies for mitigation that can be implemented by local municipalities and businesses.

- Collaborating with state agencies, such as the Department of Conservation and Recreation, to maintain inventories of critical infrastructure throughout the region.

All of these PVPC initiatives considered the impact of natural hazards on the region and strategies for reducing their impact to people and property through hazard mitigation activities. The facilitation of the Huntington Hazard Mitigation Plan by PVPC ensured that the information from these plans was incorporated into the Hazard Mitigation Planning process.

In addition, the Pioneer Valley Planning Commission is actively involved in the Western Region Homeland Security Advisory Council (WRHSAC). WHRSAC, which includes representatives from Western Massachusetts municipalities, Fire Departments, Public Works Departments, Police Departments, area hospitals and regional transit from throughout the four counties of western Massachusetts, is responsible for allocating emergency preparedness funding from the US Department of Homeland Security. The representatives of these disciplines who serve on the WRHSAC are charged with sharing the information discussed at meetings with their colleagues at their regular meetings. PVPC attends all WRHSAC meetings and all WRHSAC members are aware of the fact that Huntington was updating its Hazard Mitigation plan. Meetings of WRHSAC regularly involve discussion about how to improve emergency preparedness in western Massachusetts, and hazard mitigation activities are included in this discussion.

For the update of this Hazard Mitigation Plan, PVPC provided feedback from WRHSAC on regional mitigation activities and natural hazards pertaining to Huntington. This was the method through which WRHSAC was engaged in the planning process.

In addition, PVPC staff regularly present to their Executive Committee and Commission (representatives from the 43 cities and towns that comprise the Pioneer Valley, when new projects are launched and when funding opportunities are available). As result, all the communities in the region were informed of Huntington's Hazard Mitigation Plan update process and encouraged to comment.

PVPC staff included a summary article on the status of Hazard Mitigation planning in the region in the quarterly Regional Reporter that is mailed to area Chambers of Commerce, all member municipalities, area colleges and universities and other key stakeholders in the region. In this way, businesses, educational institutions and other key stakeholders were educated about and informed of Huntington’s hazard mitigation planning work.

Agencies that have the authority to regulate development

The Huntington Planning Board is the primary Town agency responsible for regulating development in town. Feedback to the Planning Board was ensured through the participation of a planning board member on the Hazard Mitigation Committee. In addition, the Pioneer Valley Planning Commission, as a regional planning authority, works with all agencies that regulate development in Huntington, including the municipal entities listed above and state agencies, such as Department of Conservation and Recreation and MassDOT. This regular involvement ensured that during the development of the Huntington Hazard Mitigation Plan, the operational policies and any mitigation strategies or identified hazards from these entities were incorporated into the Hazard Mitigation Plan.

Participation by the Public, Businesses, and Neighboring Communities

Two public planning sessions were held as part of the update of the Huntington plan – on May 11, 2016 and May 18, 2016. Both meetings occurred after the Hazard Mitigation Committee had provided input on hazards and mitigation strategies relevant to the community. Notice of both public meetings was posted at Huntington Town Hall in compliance with the Commonwealth of Massachusetts’ open meeting law. Public meeting notices can be found in Appendix B.

On April 28, 2016, the Pioneer Valley Planning Commission posted legal notice of public meetings on May 11, 2016 and May 18, 2016 in the Country Journal, the relevant new source for this part of the region. See Appendix B for a copy of the posting.

The Hazard Mitigation Committee determined that the most effective outreach strategy for engaging with the public, businesses and neighboring communities was through the media, and so this was the outreach strategy employed for reaching out to all three groups of stakeholders. The press release indicated that residents of Huntington were invited to attend the event, which was also intended to include representatives of businesses in Huntington and residents of neighboring communities.

Businesses and neighboring communities were also provided with an opportunity to provide feedback through the Pioneer Valley Planning Commission. PVPC is regularly involved in land use, transportation, and environmental planning initiatives in Huntington and surrounding communities. Regular feedback received from these other initiatives were incorporated into the hazard mitigation planning process. Neighboring communities that were provided with an opportunity to comment included municipalities that directly border Huntington, which are: Chesterfield, Westhampton, Southampton, Montgomery, Russell, Blandford, Chester and Worthington..

Additional outreach to surrounding communities occurred through the regular quarterly newsletter that PVPC sends out to its member communities about its recent activities. In these articles, adjacent municipalities were encouraged to reach out to PVPC about hazard mitigation plans by e-mailing or calling staff contacts at PVPC.

No feedback was received from members of the public during the public meetings. Any future input received from the public, as well as any other stakeholders, will be incorporated into the plan during future regular updates. Public participation will be a critical component of the Hazard Mitigation Plan maintenance process. The Hazard Mitigation Committee will hold all future meetings in accordance with Massachusetts open meeting laws. In addition, the public will be invited to provide comments through e-mail. The comments will be reviewed by the Hazard Mitigation Committee and incorporated as appropriate.

Select Board Meeting

In 2016, the Select Board agreed to begin the process of updating the town's Hazard Mitigation Plan. Once the plan was provisionally approved by FEMA, the Select Board held a public hearing on the plan and then adopted it.

2: LOCAL PROFILE

Community Setting

Huntington is a rural community comprised of 26.9 square miles (approximately 17,200 acres) located in the hilltowns of Western Massachusetts. The hilltowns are a cluster of rural towns in the Berkshires, on the western border of the Pioneer Valley. Huntington has the largest population among the hilltowns in the region, and is also that area's regional center. The Westfield River runs through the center of the town and into Huntington's historic town center. Chesterfield is located to the north, Chester to the west, and Westhampton to the east. Blandford, Russell, and Montgomery are to the south. The Springfield metropolitan area lies to the southeast.

Huntington was originally incorporated as the Town of Norwich in 1775 and was the first community in Hampshire County to have service from the newly constructed railroad. The railroad brought a boom of manufacturing, but not enough to compete with industry in neighboring communities. A downtown was established, which has remained characteristically rural and quaint to this day. Huntington's downtown hosts the largest developed commercial center which includes several restaurants and small markets and the only medical service in the southern hilltowns.

Although there is no industry in Huntington, outdoor recreation has become a prolific piece of the town's economy. The Knightville and Littleville Dams on the pristine Westfield River provide excellent hiking, cross country skiing, and swimming on Lake Norwich. Littleville Lake provides a boat ramp for smaller watercraft.

This rural, mainly residential community, with its scenic landscape and downtown, and vast opportunities for outdoor recreation, has experienced steady population growth in recent years. But due to limited access to interstates or other regional highways, Huntington still retains its "hilltown" character

Geography

Huntington is located in southwestern Hampshire County and is approximately 27 square miles in area. It is bordered by Chesterfield, Westhampton, Southampton, Montgomery, Russell, Blandford, Chester and Worthington. Huntington lies 17 miles west of the Springfield metropolitan area.

Population Characteristics

According to the U.S. Census Bureau, there are 2,180 residents (a .002% increase since 2000) and a total of 1,000 housing units (a 6.95% increase since 2000) in Huntington. The median household income is $52,275 and 9.8% of individuals in town live below the poverty line. (American Community Survey 20010-14).The UMass Donahue Institute estimates that by 2035 Huntington's population will decline to 2,000 people.

Infrastructure

Huntington's infrastructure reflects its small, but growing population and rugged terrain.

Roads and Highways

Huntington's town center is found where Route 112 branches north off of east-west traveling Route 20, in the very southwestern corner of town. This is also the convergence of two branches of the Westfield River, providing for some scenic bridge and river views within the downtown and along both routes. Route 66 also connects to Route 112 near the geographical center of Huntington, traveling westward into Westhampton. Almost all other paved roads in town intersect with one of these three Routes.

Rail

There is a rail line that belongs to CSX railroad running along the southern edge of town, through the town center. It parallels Route 20.

Public Transportation

The Franklin Regional Transit Authority (FRTA) runs a shuttle in Huntington and the surrounding towns for senior citizens. The shuttle van operates Monday through Friday and provides access to medical appointments and shopping in Westfield.

Public Drinking Water Supply and Sewer Service

Most homes in Huntington rely on private wells and septic systems. There are two small community water systems, one public in Huntington Village and one private at Norwich Hill. Both have adequate capacity, quality, and quantity to serve the foreseeable future. In addition, there are sewer facilities within Huntington's downtown, located south of Montgomery road on the west side of the river including the Gateway Regional High School. A large portion of Huntington is upon a high yield sand and gravel aquifer in the outwash plain located adjacent to the Westfield River. Water quantity is not a problem except possibly in some very small, localized areas

Schools

Huntington is part of the Gateway Regional School district, which serves students in Huntington, Russell, Blandford, Chester, Worthington, Montgomery, and Middlefield. All but one of district's schools is located within Huntington. They include the Littleville Elementary School, Gateway Regional Middle School and Gateway Regional High School.

Natural Resources

Huntington's most significant natural resource is the Westfield River and the large wildlife areas and parks within town limits. However, this historically rural town has been shaped by several of its other natural resources as well.

Water Resources

The three branches of the Westfield River (East, Middle and West) and major tributaries was, and remains, probably the single most critical natural feature in identifying what Huntington was, and what it will be. It is classified as a Class B waterway, suitable for boating, fishing, and swimming. Portions of the River are already included in the National Wild and Scenic Rivers System, and additional portions may soon be so nominated.

Norwich Pond, located in the north-eastern portion of town, and Littleville Lake, running along Huntington's western border, are valuable aesthetic and recreational resources.
In 1987, the Knightville Dam overflowed, and in 2005 water rose 16 feet in 5.5 hours. This dam is a major potential hazard to the Town of Huntington.

Forests and Fields

The majority of Huntington is forested, approximately 14,432 acres. Much of the forest is hardwood, consisting of red and white oak, red and sugar maple, cherry, ash, and birch. The majority conifers are white pine and hemlock, with some spots of cedar, red pine, and, rarely, spruce. There are also a few hundred acres of cropland, pastureland, and open land, providing additional vegetation types and habitat opportunities.

Development

Huntington's growth was initiated first by farmers, then by industry following the railroad, and more recently, residential development. But the town's topography, soils, and physiography (lakes, rivers, wetlands and watershed areas) shape and constrain these land use patterns.

Zoning

In addition to other factors, zoning and other land use regulations constitute Huntington's "blueprint" for its future. Land use patterns over time will continue to look more and more like the town's zoning map until the town is finally "built out"—that is, there is no more developable land left. Therefore, in looking forward over time, it is critical that the town focus not on the current use and physical build-out today, but on the potential future uses and build-out that are allowed under the town's zoning map and zoning bylaws. Zoning is the primary land use tool that the town may use to manage development and direct growth to suitable and desired areas, while also protecting critical resources, and ensuring that development is in keeping with the town's character.

The Huntington Zoning Bylaw establishes eight base zones, and two overlay zones:

Four residential zones – Residence 25, Residence 45, Residence 90, Residence 135;

One conservation zone – State or Federal Preserve

Two commercial (business) zones – Business, Central Business;

One industrial zone – Industrial;

Two overlay zones –Floodplain, Aquifer.

Although appropriate zoning is all relevant to protecting the health and safety of the Town residents, three of Huntington's districts are specifically relevant to natural hazard mitigation. These are outlined here:

Floodplain - The floodplain overlay applies to those areas within the boundary of the one-hundred-year flood that are considered hazardous according to FEMA. It limits some uses for preventing potential flood damage.

Aquifer Protection District - This purpose of this overlay district is to protect and preserve Huntington's groundwater resources from potentially damaging pollution, or environmental degradation, by regulating certain uses within the district. The regulations state specific prohibited and restricted uses, regulates drainage, details site plan requirements and special permit procedures.

The Zoning Bylaw also establishes a Site Plan/Special Permit Approval procedure for specific uses and structures within Huntington. This review allows the Special Permit Granting Authority the ability to review development to ensure that the basic safety and welfare of the people of Huntington are protected, and includes several specific evaluation criteria that are relevant to natural hazards.

Current Development Trends

Today, the majority of Huntington's 26.9 square miles is undeveloped and features steep topography and rolling woodland. Residential land use is also prolific land use, especially along the busier through-roads. Agricultural land encompasses approximately 568 acres according to MassGIS. Open public land an outdoor recreation land is listed as 169 acres, while land used for industrial and commercial uses constitutes approximately 37 and 35 acres respectively. Open water in the Town of Huntington comprises over 300 acres.

Currently, development in Huntington is encouraged, by existing zoning and other land use regulations, to seek areas where the environmental conditions and existing public utilities support such development.

There have been no significant changes in development in Huntington Since the first Hazard Mitigation Plan was approved in 2009 that have affected the town's vulnerability to natural hazards.

National Flood Insurance Program Status

Huntington is a participating member of the National Flood Insurance Program, and has the following NFIP policy and claim statistics as of 01/13/2016.

- Flood Insurance Maps (FIRMs) are used for flood insurance purposes and are on file.
- FIRMs have been effective since July 15, 1978 with no updates since then. PVPC has requested an update to all Hampshire County FIRMs, but has not been advised if or when these will be completed. Hampden County FIRMs were updated by FEMA as of July 21, 2014 (http://www.mass.gov/anf/docs/itd/services/massgis/nfhl-status.pdf)
- There are 26 policies in effect in Huntington for a total of $4,600,000 worth of flood insurance coverage.
- As of January 13, 2016, there were a total of 10 NFIP loss claims in Huntington for which a total $100,995 was paid.
- There are no structures defined as "Repetitive Loss Properties" under the NFIP within Huntington.

The Town will maintain compliance with the NFIP throughout the next 5-year hazard mitigation planning cycle by monitoring its Flood Plain Overlay District and ensuring that the district accurately reflects the 100-year floodplain and FEMA Flood Insurance Rate Map.

3: HAZARD IDENTIFICATION AND ANALYSIS

The following section includes a summary of disasters that have affected or could affect Huntington. Historical research, conversations with local officials and emergency management personnel, available hazard mapping and other weather-related databases were used to develop this list. The Hazard Mitigation Committee referred to the 2013 Massachusetts Hazard Mitigation list of hazards as a starting point for determining the relevant hazards in Huntington. The table below illustrates a comparison between the relevant hazards in the state plan and in Huntington's plan.

Comparison of Hazard identified in the 2013 Massachusetts Hazard Mitigation Plan and the Huntington Hazard Mitigation Plan	
2013 Massachusetts Hazard Mitigation Plan	**Town of Huntington Relevance**
Coastal Hazards	The Town of Huntington is not located on the coast and therefore not at risk of coastal hazards.
Dam Failure	Dam Failure is a risk to Huntington.
Drought (Severe Weather)	Drought is a risk to Huntington.
Earthquake	Earthquakes are a risk to Huntington.
Extreme Temperature (Severe Weather)	Extreme Temperature is not considered a risk to Huntington.
Flood (including Ice Jam)	Flooding is a risk to Huntington.
High Wind (Severe Weather)	High Wind is a risk to Huntington and is included in the Severe Thunderstorm/Wind/Tornado/Microburst category.
Hurricane/Tropical Storm	Hurricanes are a risk to Huntington.
Ice Storm (Severe Winter Weather)	Ice Storms are a risk to Huntington and included in the category Severe Snowstorms/Ice Storms.
Landslide	Landslides are not a risk to Huntington.
Major Urban Fires	Major Urban Fires are not considered a risk to Huntington. However, wildfires and brush fires are considered a risk.
Nor'easter	Nor'easters are a risk to Huntington and included in the category Flooding.
Snow & Blizzard (Severe Winter Weather)	Snow & Blizzards are a risk to Huntington and included in the category Severe Snowstorms/Ice Storms.
Thunderstorm (Severe Weather)	Thunderstorms are a risk to Huntington and included in the category Severe Thunderstorms/Wind/Tornadoes/ Microbursts.
Tornado (Severe Weather)	Tornadoes are a risk to Huntington and included in the category Severe Thunderstorms/Wind/Tornadoes/ Microburst.
Tsunami	The Town of Huntington is not located on the coast or near the coast for tsunami to be a risk.
Wildland Fire	Wild Fire is considered a risk to the Town of Huntington.

Natural Hazard Analysis Methodology

This chapter examines the hazards in the Massachusetts State Hazard Mitigation Plan which are identified as likely to affect Huntington. The analysis is organized into the following sections: Hazard Description, Location, Extent, Previous Occurrences, Probability of Future Events, Impact, and Vulnerability. A description of each of these analysis categories is provided below.

Hazard Description

The natural hazards identified for Huntington are: floods, severe snowstorms/ice storms, hurricanes, severe thunderstorms / wind / tornadoes, wildfire/brushfire, earthquakes, dam failure / levee breech, and drought. Many of these hazards result in similar impacts to a community. For example, hurricanes, tornadoes and severe snowstorms may cause wind-related damage.

Location

Location refers to the geographic areas within the planning area that are affected by the hazard. Some hazards affect the entire planning area universally, while others apply to a specific portion, such as a floodplain or area that is susceptible to wild fires. Classifications are based on the area that would potentially be affected by the hazard, on the following scale:

Percentage of Town Impacted by Natural Hazard	
Land Area Affected by Occurrence	**Percentage of Town Impacted**
Large	More than 50% of the town affected
Medium	10 to 50% of the town affected
Small	Less than 10% of the town affected

Extent

Extent describes the strength or magnitude of a hazard. Where appropriate, extent is described using an established scientific scale or measurement system. Other descriptions of extent include water depth, wind speed, and duration.

Previous Occurrences

Previous hazard events that have occurred are described. Depending on the nature of the hazard, events listed may have occurred on a local, state-wide, or regional level.

Probability of Future Events

The likelihood of a future event for each natural hazard was classified according to the following scale:

Frequency of Occurrence and Annual Probability of Given Natural Hazard	
Frequency of Occurrence	**Probability of Future Events**
Very High	70-100% probability in the next year
High	40-70% probability in the next year
Moderate	10-40% probability in the next year
Low	1-10% probability in the next year
Very Low	Less than 1% probability in the next year

Impact

Impact refers to the effect that a hazard may have on the people and property in the community, based on the assessment of extent described above. Impacts are classified according to the following scale:

Impacts, Magnitude of Multiple Impacts of Given Natural Hazard	
Impacts	**Magnitude of Multiple Impacts**
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.
Critical	Multiple injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 week.
Limited	Minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 day.
Minor	Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of facilities.

Vulnerability

Based on the above metrics, a hazard index rating was determined for each hazard. The hazard index ratings are based on a scale of 1 through 5 as follows:

1 – Very high risk
2 – High risk
3 – Medium risk
4 – Low risk
5 – Very low risk

The ranking is qualitative and is based, in part, on local knowledge of past experiences with each type of hazard. The size and impacts of a natural hazard can be unpredictable. However; many of the mitigation strategies currently in place and many of those proposed for implementation can be applied to the expected natural hazards, regardless of their unpredictability.

Hazard Identification and Risk Analysis				
Type of Hazard	**Location of Occurrence**	**Probability of Future Events**	**Impact**	**Hazard Risk Index Rating**
Flooding	100 year: Large Localized: Small	100 year: low Localized: Very High	100 year: Critical Localized: Limited	100-year: 2-High Localized: 1- Very High
Severe Snowstorms/Ice Storms	Large	Very High	Limited	1-Very High
Severe Thunderstorms/ Winds/Tornadoes/ Microbursts	Severe Thunderstorms/ Winds: Large Tornadoes/ Microbursts: Small	Severe Thunderstorms/ Winds: Moderate Tornadoes/ Microbursts: Very Low	Severe Thunderstorms/ Winds: Limited Tornadoes/ Microbursts: Critical	Severe Thunderstorms/ Winds: 2-High Tornadoes/ Microbursts: 4- Low
Hurricanes	Large	Moderate	Limited	2-High
Wildfire / Brushfire	Large	Moderate	Limited	4-Low
Earthquakes	Large	Very Low	Catastrophic	4- Low
Dam Failures	Large	Very Low	Catastrophic	1-Very High
Drought	Large	Very Low	Minor	4- Low

Flooding

Hazard Description

There are three major types of storms that can generate flooding in Huntington:

- *Continental storms* are typically low-pressure systems that can be either slow or fast moving. These storms originate from the west and occur throughout the year.
- *Coastal storms,* also known as nor'easters, usually occur in late summer or early fall and originate from the south. The most severe coastal storms, hurricanes, occasionally reach Massachusetts and generate very large amounts of rainfall.
- *Thunderstorms* form on warm, humid summer days and cause locally significant rainfall, usually over the course of several hours. These storms can form quickly and are more difficult to predict than continental and coastal storms.

A floodplain is the relatively flat, lowland area adjacent to a river, lake or stream. Floodplains serve an important function, acting like large "sponges" to absorb and slowly release floodwaters back to surface waters and groundwater. Over time, sediments that are deposited in floodplains develop into fertile, productive farmland like that found in the Connecticut River valley. In the past, floodplain areas were also often seen as prime locations for development. Industries were located on the banks of rivers for access to hydropower. Residential and commercial development occurred in floodplains because of their scenic qualities and proximity to the water. Although periodic flooding of a floodplain area is a natural occurrence, past and current development and alteration of these areas will result in flooding that is a costly and frequent hazard.

Location

In Huntington, there are several floodplain areas – primarily along the three tributaries (middle, east, west) of the Westfield River. There are some smaller 500-year floodplains mapped as well, in several low-lying areas throughout Huntington. There are approximately 1,177 acres of land within the FEMA mapped 100-year floodplain, and 64 acres of land within the 500-year floodplain, within the Town of Huntington.

Areas prone to flooding in a 100-year flood scenario include:

- Old Chester Road
- Upper Russell and Russell Road (Route 20)
- Laurel Road
- Main Street
- Bridge Street

Areas prone to localized flooding due to undersized or blocked culverts include:

- Week Hill on Goss Road
- Nagler Cross Road
- Barr Hill Road
- Kimball Road

- Commonwealth Road (to Lake)
- Sampson Road
- County Road
- Bear Hill Road

Localized flooding in these areas often leads to flooding of residential yards. Waters from a 100- or 500-year flood could easily reach structures.

Based on these locations, flooding (100-year) has a "large" location of occurrence, with more than 50% percent of the land area affected and localized flooding has a "small" location of occurrence with less than 10% of land area affected.

Extent

Floods can be classified as one of two types: flash floods and general floods.

Flash floods are the product of heavy, localized precipitation in a short time period over a given location. Flash flooding events typically occur within minutes or hours after a period of heavy precipitation, after a dam or levee failure, or from a sudden release of water from an ice jam. Most often, flash flooding is the result of a slow-moving thunderstorm or the heavy rains from a hurricane. In rural areas, flash flooding often occurs when small streams spill over their banks. However, in urbanized areas, flash flooding is often the result of clogged storm drains (leaves and other debris) and the higher amount of impervious surface area (roadways, parking lots, roof tops).

General floods may last for several days or weeks and are caused by precipitation over a longer time period in a particular river basin. Excessive precipitation within a watershed of a stream or river can result in flooding particularly when development in the floodplain has obstructed the natural flow of the water and/or decreased the natural ability of the groundcover to absorb and retain surface water runoff (e.g., the loss of wetlands and the higher amounts of impervious surface area in urban areas).

The average annual precipitation for Huntington and surrounding areas in western Massachusetts is 46 inches.

Previous Occurrences

Huntington has experienced many flooding events over the last decade. Generally, these small floods have had minor impacts, temporarily impacting roads and residents' yards. However, town-wide flooding in 2005 (when people had to be rescued from the Knightville Basin and evacuated from their homes), 2006, and 2007 caused significant damage. Flooding that impacted the town in 2007, was most costly instance in recent history due to costly road repairs. The Town suffered over $100,000 in damage with some parts of town isolated and some rescues necessary. Huntington lost two culverts with repair costs surpassing $90,000.

More recently, Hurricane Irene caused widespread flooding Huntington. Areas flooding included: Old Chester Road, Upper Russell Road, Route 20, Main Street and Federal Street.

Probability of Future Events

Based on previous occurrences, the probability of 100-year flooding in Huntington is "low," with a 1 to 10 percent probability in any given year and the probability of localized flooding is “very high” with a 70 to 100% chance of flooding. Flooding frequencies for the various floodplains in Huntington are defined by FEMA as the following:

- 10-year floodplain – 10 percent chance of flooding in any given year
- 25-year floodplain – 2.5 percent chance of flooding in any given year
- 100-year floodplain – 1 percent chance of flooding in any given year
- 500-year floodplain – 0.2 percent chance of flooding in any given year

Climate scientists predict that in the next few decades, climate change will increase the frequency and intensity of all storms that can cause flooding. Currently, floods are the most costly natural hazard in the United States, and climate change will only increase this damage. More information about the effect of Climate Change can be found in the Pioneer Valley Planning Commission’s Climate Action Plan, available at www.sustainableknowledgecorridor.org.

The Massachusetts State Climate Change Adaptation Report has additional information about the impact of climate change and can be accessed at www.mass.gov/eea/air-water-climate-change/climate-change/climate-change-adaptation-report.html.

Impact

The impact of a 100-year flood event would be critical in Huntington. This equates to approximately 25% or more of property in affected areas damaged.

To approximate the potential impact to property and people that could be affected by this hazard, the total value of property in town, $279,521,738, is used. An estimate 25 percent of damage would occur to 50% of structures resulting in a total of $34,940,217 worth of damage. The cost repairing or replacing the roads, bridges, utilities and contents of structures is not included in this estimate.

The impact of localized flooding in Huntington would be “limited.” This equates to approximately 10 percent or more of property in affected area damaged.

To approximate the potential impact to property and people that could be affected by this hazard, the total value of all property in town, $279,521,738, is used. An estimated 10 percent of damage would occur to 10 percent of structures, resulting in a total of $2,795,217 worth of damage. The cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included in this estimate.

Vulnerability

Based on the above analysis, Huntington faces a vulnerability of "2- High" from 100-year flooding and a "1-Very High" from localized flooding.

While Huntington's zoning now prohibits or discourages development in the floodplains, much of the town's historic development occurred in areas prone to flooding. Many of the town's critical facilities, including the fire station, highway garage, schools, regional health center, water treatment facility, sewer treatment plant and numerous municipal building are located in flood prone areas and are vulnerable. Depending on the severity and location of flooding, the town's ability to operate could be severely compromised.

Severe Snowstorms / Ice Storms

Hazard Description

Snow is characterized as frozen precipitation in the form of six-sided ice crystal. In order for snow to occur, temperatures in the atmosphere (from ground level to cloud level) must be at or below freezing. The strongest form of a severe snow storm is a blizzard. Blizzards are characterized by frequent wind gusts above 35 miles per hour, limited to no visibility due to falling snow and extreme cold that lasts longer than three hours.

Ice storms are liquid rain that falls and freezes upon contact with cold objects. There must be an ice build-up of greater than ¼ inch for it to be considered an ice storm. When more than a ½ inch of ice build-up is forecasted a winter storm warning can be triggered.

Severe winter storms can pose a significant risk to property and human life. The rain, freezing rain, ice, snow, cold temperatures and wind associated with these storms can cause the following hazards:

- Disrupted power and phone service
- Unsafe roadways and increased traffic accidents
- Infrastructure and other property are also at risk from severe winter storms and the associated flooding that can occur following heavy snow melt
- Tree damage and fallen branches that cause utility line damage and roadway blockages
- Damage to telecommunications structures
- Reduced ability of emergency officials to respond promptly to medical emergencies or fires
- Elderly are affected by extreme weather

Location

The entire town of Huntington is susceptible to severe snowstorms and ice storms. Because these storms occur regionally, they impact the entire town. As a result, the location of occurrence is “large,” with over 50 percent of land area affected.

Areas susceptible to critical snow and ice hazard due to high elevation and steep grades include:

- Goss Hill Road
- Nagler Cross Road
- Bean Hill Road
- Barr Hill Road
- Harlow Clark Road
- County Road
- Pond Brook Road

Areas that are susceptible to snow drifts include:

- Pisgah Road
- Searles Road

- Pond Brook Road
- County Road
- Tucker Road
- Sampson Road
- Gorham Road
- Goss Hill Road

Extent

The Northeast Snowfall Impact Scale (NESIS) developed by Paul Kocin of The Weather Channel and Louis Uccellini of the National Weather Service (Kocin and Uccellini, 2004) characterizes and ranks high-impact Northeast snowstorms. These storms have large areas of 10-inch snowfall accumulations and greater. NESIS has five categories: Extreme, Crippling, Major, Significant, and Notable. The index differs from other meteorological indices in that it uses population information in addition to meteorological measurements. Thus NESIS gives an indication of a storm's societal impacts.

NESIS scores are a function of the area affected by the snowstorm, the amount of snow, and the number of people living in the path of the storm. The aerial distribution of snowfall and population information are combined in an equation that calculates a NESIS score which varies from around one for smaller storms to over ten for extreme storms. The raw score is then converted into one of the five NESIS categories. The largest NESIS values result from storms producing heavy snowfall over large areas that include major metropolitan centers.

Northeast Snowfall Impact Scale Categories		
Category	**NESIS Value**	**Description**
1	1—2.499	Notable
2	2.5—3.99	Significant
3	4—5.99	Major
4	6—9.99	Crippling
5	10.0+	Extreme

Source: http://www.ncdc.noaa.gov/snow-and-ice/rsi/nesis

Previous Occurrences

New England generally experiences at least one or two severe winter storms each year with varying degrees of severity. Severe winter storms typically occur during January and February; however, they can occur from late September through late April.

The Hazard Mitigation Committee identified the following as storms that have impacted Huntington in recent history:

- October 29-30,2011- Heavy snowfall before trees had lost their leaves cause major power outages across Western Massachusetts. Parts of Huntington were without power for days.
- Winter of 2014- Repeated Large Snow Events made snow clearing difficult.

Based on data available from the National Oceanic and Atmospheric Administration, there are 47 winter storms since 1958 that have registered on the NESIS scale. Of these, approximately 26 storms resulted in snow falls in the Pioneer Valley of at least 10 inches. These storms are listed in the table on the next page, in order of their NESIS severity.

Winter Storms Producing Over 10 inches of Snow in the Pioneer Valley, 1958-2013

Date	NESIS Value	NASIS Category	NESIS Classification
3/12/1993	13.2	5	Extreme
3/2/1960	8.77	4	Crippling
2/15/2003	7.5	4	Crippling
2/2/1961	7.06	4	Crippling
1/21/2005	6.8	4	Crippling
1/19/1978	6.53	4	Crippling
12/25/1969	6.29	4	Crippling
2/10/1983	6.25	4	Crippling
2/14/1958	6.25	4	Crippling
2/5/1978	5.78	3	Major
2/23/2010	5.46	3	Major
2/8/1994	5.39	3	Major
1/9/2011	5.31	3	Major
2/18/1972	4.77	3	Major
12/11/1960	4.53	3	Major
2/7/2013	4.35	3	Major
2/22/1969	4.29	3	Major
1/18/1961	4.04	3	Major
2/8/1969	3.51	2	Significant
2/5/1967	3.5	2	Significant
4/6/1982	3.35	2	Significant
3/4/2013	3.05	2	Significant
3/15/2007	2.54	2	Significant
3/31/1997	2.29	1	Notable
2/2/1995	1.43	1	Notable
1/25/1987	1.19	1	Notable

Source: http://www.ncdc.noaa.gov/snow-and-ice/rsi/nesis

Probability of Future Events

Based upon the availability of records for Hampshire County, the likelihood that a severe snow storm will hit Huntington in any given year is “Very High," or a 70 to 100 percent probability in any given year.

Research on climate change indicates that there is great potential for stronger, more frequent storms as the global temperature increases. More information about the effect of Climate Change can be found in the Pioneer Valley Planning Commission’s Climate Action Plan, available at www.sustainableknowledgecorridor.org.

The Massachusetts State Climate Change Adaptation Report has additional information about the impact of climate change and can be accessed at www.mass.gov/eea/air-water-climate-change/climate-change/climate-change-adaptation-report.html.

Impact

The impact of an event would be “limited,” with between 10 and 25 percent of property in the affected area damaged. To approximate the potential impact to property and people that could be affected by this hazard, the total value of all residential property in town, $279,521,738, is used.

An estimated 25 percent of damage would occur to 10 percent of structures, resulting in a total of $6,988,043 worth of damage. The cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included in this estimate.

Vulnerability

Based on the above assessment, Huntington faces a "1-Very High" vulnerability from severe snow storms and ice storms. Based on local knowledge and expertise on the local Hazard Mitigation Committee, ice storms are expected to cause greater damage than severe snow.

The entire town is vulnerable to the impacts of severe snow and ice. The town’s energy and communication infrastructure could be vulnerable to heavy snow or ice, which has been known to cause power outages across the region. Ice buildup on roadways and the steep grades and winding nature of rural roads in town can decrease visibility in a snow event, making winter travel difficult.

Hurricanes / Tropical Storms

Hazard Description

Hurricanes are classified as cyclones and defined as any closed circulation developing around a low-pressure center in which the winds rotate counter-clockwise in the Northern Hemisphere (or clockwise in the Southern Hemisphere) and whose diameter averages 10 to 30 miles across. The primary damaging forces associated with these storms are high-level sustained winds and heavy precipitation. Hurricanes are violent rainstorms with strong winds that can reach speeds of up to 200 miles per hour and which generate large amounts of precipitation. Hurricanes generally occur between June and November and can result in flooding and wind damage to structures and above-ground utilities.

Location

Because of the hazard's regional nature, all of Huntington is at risk from hurricanes and tropical storms, meaning the location of occurrence is "large," with over 50 percent of land area affected. Ridge tops are more susceptible to wind damage. (See flooding location for areas that could be most impacted by the flooding from rainfall.)

Extent

As an incipient hurricane develops, barometric pressure (measured in millibars or inches) at its center falls and winds increase. If the atmospheric and oceanic conditions are favorable, it can intensify into a tropical depression. When maximum sustained winds reach or exceed 39 miles per hour, the system is designated a tropical storm, given a name, and is closely monitored by the National Hurricane Center in Miami, Florida. When sustained winds reach or exceed 74 miles per hour the storm is deemed a hurricane. Hurricane intensity is further classified by the Saffir-Simpson Hurricane Wind Scale, which rates hurricane wind intensity on a scale of 1 to 5, with 5 being the most intense.

Saffir-Simpson Scale	
Category	**Maximum Sustained Wind Speed (MPH)**
1	74–95
2	96–110
3	111–129
4	130–156
5	157 +

Source: National Hurricane Center, 2012

Previous Occurrences

Hurricanes that have affected Huntington and the rest of the Pioneer Valley are shown in the following table.

Major Hurricanes and Tropical Storms Affecting Huntington		
Hurricane/Storm Name	**Year**	**Saffir/Simpson Category (when reached MA)**
Great Hurricane of 1938	1938	3
Great Atlantic Hurricane	1944	1
Carol	1954	3
Edna	1954	1
Diane	1955	Tropical Storm
Donna	1960	Unclear, 1 or 2
Groundhog Day Gale	1976	Not Applicable
Gloria	1985	1
Bob	1991	2
Floyd	1999	Tropical Storm
Irene	2011	Tropical Storm
Sandy	2012	Super Storm

Source: National Hurricane Center, 2012

While Hurricane Able (1952) and Hurricane Doria (1971) both tracked directly through Huntington, they did not cause any significant damage to Huntington. The Great Hurricane of 1938, cause widespread wind and flooding damage across New England and Huntington. Most recently Hurricane Irene caused flooding in Huntington.

Probability of Future Events

Huntington's location in western Massachusetts reduces the risk of extremely high winds that are associated with hurricanes, although it can experience some high wind events. Based upon past occurrences, it is reasonable to say that there is a "moderate" probability of hurricanes or tropical storms, or a 10 to 40 percent probability in any given year.

Impact

A description of the damages that could occur due to a hurricane is described by the Saffir-Simpson scale, as shown below.

Hurricane Damage Classifications			
Storm Category	**Damage Level**	**Description of Damages**	**Wind Speed (MPH)**
1	MINIMAL	No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Also, some coastal flooding and minor pier damage. An example of a Category 1 hurricane is Hurricane Dolly (2008).	74-95
	Very dangerous winds will produce some damage		
2	MODERATE	Some roofing material, door, and window damage. Considerable damage to vegetation, mobile homes, etc. Flooding damages piers and small craft in unprotected moorings may break their moorings. An example of a Category 2 hurricane is Hurricane Francis in 2004.	96-110
	Extremely dangerous winds will cause extensive damage		
3	EXTENSIVE	Some structural damage to small residences and utility buildings, with a minor amount of curtain wall failures. Mobile homes are destroyed. Flooding near the coast destroys smaller structures, with larger structures damaged by floating debris. Terrain may be flooded well inland. An example of a Category 3 hurricane is Hurricane Ivan (2004).	111-129
	Devastating damage will occur		
4	EXTREME	More extensive curtain wall failures with some complete roof structure failure on small residences. Major erosion of beach areas. Terrain may be flooded well inland. An example of a Category 4 hurricane is Hurricane Charley (2004).	130-156
	Catastrophic damage will occur		
5	CATASTROPHIC	Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Flooding causes major damage to lower floors of all structures near the shoreline. Massive evacuation of residential areas may be required. An example of a Category 5 hurricane is Hurricane Andrew (1992).	157+
	Catastrophic damage will occur		

The Town of Huntington faces a “Limited” impact from hurricanes, with between 10 and 25% percent of property in the affected area damaged.

To approximate the potential impact to property and people that could be affected by this hazard, the total value of all property in town, $279,521,738 is used. Wind damage of 5 percent with 10 percent of structures damaged would result in an estimated $860,464 of damage. Estimated flood damage to 10 percent of the structures with 20 percent damage to each structure would result in $5,590,434 of damage. The cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included in this estimate.

Vulnerability

Based on the above analysis, Huntington faces a "2-High" vulnerability from hurricanes and tropical storms.

The entire town would be vulnerable to the impact of a hurricane. Areas prone to flooding, which include most of the town’s critical facilities, are particularly vulnerable. Additionally high winds could impact the town’s communication and energy infrastructure and older buildings.

Severe Thunderstorms / Wind / Tornadoes/Microbursts

Hazard Description

A thunderstorm is a storm with lightning and thunder produced by a cumulonimbus cloud, usually producing gusty winds, heavy rain, and sometimes hail. Effective January 5, 2010, the NWS modified the hail size criterion to classify a thunderstorm as 'severe' when it produces damaging wind gusts in excess of 58 mph (50 knots), hail that is 1 inch in diameter or larger (quarter size), or a tornado (NWS, 2013).

Wind is air in motion relative to surface of the earth. For non-tropical events over land, the NWS issues a Wind Advisory (sustained winds of 31 to 39 mph for at least 1 hour or any gusts 46 to 57 mph) or a High Wind Warning (sustained winds 40+ mph or any gusts 58+ mph). For non-tropical events over water, the NWS issues a small craft advisory (sustained winds 25-33 knots), a gale warning (sustained winds 34-47 knots), a storm warning (sustained winds 48 to 63 knots), or a hurricane force wind warning (sustained winds 64+ knots). For tropical systems, the NWS issues a tropical storm warning for any areas (inland or coastal) that are expecting sustained winds from 39 to 73 mph. A hurricane warning is issued for any areas (inland or coastal) that are expecting sustained winds of 74 mph. Effects from high winds can include downed trees and/or power lines and damage to roofs, windows, etc. High winds can cause scattered power outages. High winds are also a hazard for the boating, shipping, and aviation industry sectors.

Tornadoes are swirling columns of air that typically form in the spring and summer during severe thunderstorm events. In a relatively short period of time and with little or no advance warning, a tornado can attain rotational wind speeds in excess of 250 miles per hour and can cause severe devastation along a path that ranges from a few dozen yards to over a mile in width. The path of a tornado may be hard to predict because they can stall or change direction abruptly. Within Massachusetts, tornadoes have occurred most frequently in Worcester County and in communities west of Worcester, including towns in eastern Hampshire County. High wind speeds, hail, and debris generated by tornadoes can result in loss of life, downed trees and power lines, and damage to structures and other personal property.

Microbursts are sudden down bursts of air that that funnel air directly down until it hits the ground and disperses outwards. Microbursts most commonly occur during strong thunderstorms. The scale and suddenness of microbursts make them difficult to predict with certainty, but it is possible to forecast the conditions that make microbursts much more likely. The high winds associated with microbursts can knock over full grown trees, damage buildings and are especially problematic for aircrafts.

Location

As per the Massachusetts Hazard Mitigation Plan, the entire Town is at risk of high winds, severe thunderstorms, and tornadoes. However, the actual area that would be affected by these hazards is "small," or less than 10 percent of total land area.

Extent

An average thunderstorm is 15 miles across and lasts 30 minutes; severe thunderstorms can be much larger and longer. Southern New England typically experiences 10 to 15 days per year with severe thunderstorms. Thunderstorms can cause hail, wind, and flooding.

Microbursts are typically less than three miles across. They can last anywhere from a few seconds to several minutes. Microbursts cause damaging winds up to 170 miles per hour in strength and can be accompanied by precipitation.

Tornadoes are measured using the enhanced F-Scale, shown with the following categories and corresponding descriptions of damage:

Enhanced Fujita Scale Levels and Descriptions of Damage			
EF-Scale Number	**Intensity Phrase**	**3-Second Gust (MPH)**	**Type of Damage Done**
EF0	Gale	65–85	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages to sign boards.
EF1	Moderate	86–110	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
EF2	Significant	111–135	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
EF3	Severe	136–165	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.
EF4	Devastating	166–200	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.

Rainfall records for a 24-hour period and per month are listed below:

Rainfall Records for Huntington MA		
Month	**24-Hour Record**	**Monthly Record**
January	2.8"	8.9"
February	3.23"	7.68"
March	2.8"	7.72"
April	3.55"	8.75"
May	3.62"	11.54"
June	3.74"	10.4"
July	4.33"	9.73"
August	7.56"	18.68"
September	7.68"	3.23"
October	3.39"	9.06"
November	2.44"	7.56"
December	2.99"	7.25"

Source: http://www.myforecast.com/bin/climate.m?city=570880&metric=false

The extent of hail that can be present in severe thunderstorms can be found in the table below.

Hail Extent	
Hail Size	**Object Analog**
.50	Marble, moth ball
.75	Penny
.88	Nickel
1.00	Quarter
1.25	Half dollar
1.50	Walnut, ping pong
1.75	Golf ball
2.00	Hen egg
2.50	Tennis ball
2.75	Baseball
3.00	Tea cup
4.00	Grapefruit
4.50	Softball

Source: http://www.spc.noaa.gov/misc/tables/hailsize.htm

Previous Occurrences

Because thunderstorms and wind affect the town regularly on an annual basis, there are not significant records available for these events. As per the Massachusetts Hazard Mitigation Plan, there are approximately 10 to 30 days of thunderstorm activity in the state each year. Most occur in the late afternoon and evening hours, when the heating is the greatest. The most common months are June, July, and August, but the Great Barrington, MA tornado (1995) occurred in May and the Windsor Locks, CT tornado (1979) occurred in October.

Within Massachusetts, tornadoes have occurred most frequently in Worcester County and in communities west of Worcester. In 2011, a tornado ranked F3 (Severe Damage) on the Fujita Scale of Tornado Intensity, blew through the towns of West Springfield, Westfield, Springfield, Monson, Wilbraham, Brimfield, Sturbridge, and Southbridge. The tornado and related storm killed 3 people and resulted in hundreds of injuries across the state. Nine incidents of tornado activity (F3 or less) have occurred in Hampshire County since 1954 and no known tornadoes have touched down in Huntington.

On average, since 1993, there have been between 5-6 severe thunderstorms per year (defined as with winds over 50 miles per hour) in the region around Huntington.

In 2008 there was a micro-burst along Bromley Road in Huntington. The hazard mitigation committee was not aware of any other microbursts in Huntington since this occurrence.

Probability of Future Events

One measure of tornado activity is the tornado index value. It is calculated based on historical tornado events data using USA.com algorithms. It is an indicator of the tornado level in a region. A higher tornado index value means a higher chance of tornado events. Data was used for Hampshire County to determine the Tornado Index Value as shown in the table below.

Tornado Index for Hampshire County	
Hampshire County	125.73
Massachusetts	87.60
United States	136.45

Source: USA.com, http://www.usa.com/hampshire-county-ma-natural-disasters-extremes.htm

Based upon the available historical record, the estimated probability of a tornado or microburst in Huntington is "very low," or less than 1 percent in any given year. As per the Massachusetts Hazard Mitigation Plan, there are approximately 10 to 30 days of thunderstorm activity in the state each year. Thus, there is a “moderate” probability (10 percent to 40 percent change in any given year) of a severe thunderstorm or winds affecting the town.

Impact

Overall, the Town of Huntington faces a “limited” impact from severe thunderstorms or winds, with 10 percent or more of the town affected and a “critical” impact from tornadoes and microburst, with 10 to 40 percent of the town affected. The potential for locally catastrophic damage is a factor in any severe weather event. In Huntington, a tornado that hit residential areas would leave much more damage than a tornado with a travel path that ran along the town’s forested areas, where little settlement has occurred. Most buildings in town have not been built to Zone 12, Design Wind Speed Codes, because most of the town’s housing was built

before the first edition of the Massachusetts State Building Code went into effect on January 1, 1975.

To approximate the potential impact to property and people that could be affected by severe weather, tornado, or wind, the total value of all residential property in town, $279,521,738 is used. An estimated 100 percent of damage would occur to 1 percent of structures, resulting in a total of $2,795,217 worth of damage. The cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included in this estimate.

Vulnerability

Based on the above assessment, Huntington has a vulnerability of "2-High" from severe thunderstorms and wind, and a “4-low” vulnerability from tornadoes and microbursts.

The entire town would be vulnerable to the destruction caused by severe thunderstorms, wind and tornadoes. The vulnerabilities associated with flooding could be present if substantial rain accompanies severe thunderstorms. Additionally high winds could impact the town’s communication and energy infrastructure and old buildings.

Wildfire / Brushfire

Hazard Description

Wildfires are typically larger fires, involving full-sized trees as well as meadows and scrublands. Brushfires are uncontrolled fires that occur in meadows and scrublands, but do not involve full-sized trees. Both wildfires and brushfires can consume homes, other buildings and/or agricultural resources. Typical causes of brushfires and wildfires are lightning strikes, human carelessness, and arson.

FEMA has classifications for 3 different classes of wildfires:

- *Surface fires* are the most common type of wildfire, with the surface burning slowly along the floor of a forest, killing or damaging trees.
- *Ground fires* burn on or below the forest floor and are usually started by lightening
- *Crown fires* move quickly by jumping along the tops of trees. A crown fire may spread rapidly, especially under windy conditions.

Location

Approximately 14,432 acres (84 percent) is forested and therefore at risk of wildfire. The location of occurrence is "large," with more than 50 percent of land area affected.

Extent

Wildfires can cause widespread damage to the areas that they affect. They can spread very rapidly, depending on local wind speeds and be very difficult to get under control. Fires can last for several hours up to several days.

In Huntington, 84 percent of the land is forested, and is therefore at risk of fire. A large wildfire could damage almost all of the town's land mass in a short period of time. However, Massachusetts receives more than 40 inches of rain per year and much of the landscape is fragmented, and together these two traits make wildfires uncommon in Massachusetts. Nevertheless, in drought conditions, a brushfire or wildfire would be a matter of concern. A large wildfire could damage a large swath of Huntington's landscape.

Based on major wildfires that have occurred in western Massachusetts, it is estimated that such a fire would likely destroy around 50 to 500 acres of forested area.

Previous Occurrences

During the past 100 years, there have not been many wildfires occurring in the Pioneer Valley. However, several have occurred during the past 20 years, as shown in the list below:

- 1995 – Russell, 500 acres burned on Mt. Tekoa
- 2000 – South Hadley, 310 acres burned over 14 days in the Litihia Springs Watershed

- 2001 – Ware, 400 acres burned
- 2010 – Russell, 320 acres burned on Mt. Tekoa
- 2012 – Eastern Hampden County, dry conditions and wind gusts created a brush fire in Brimfield, and burned 50 acres
- 2016 –Montgomery, 60 acres burned on Mt. Tekoa

Three wildfires have happened in Huntington in recent history. In 2001, a wildfire burned for one day in town. More recent events include the Pisgah Fire (2015), which burned 60-70 acres of land and the Knightville Fire (2015), which burned less than 5 acres of land. Sparks from trains grinding on tracks has been an issue lately. In dry conditions, they spark fires. Chester, a neighboring town has also recently identified this is an issue.

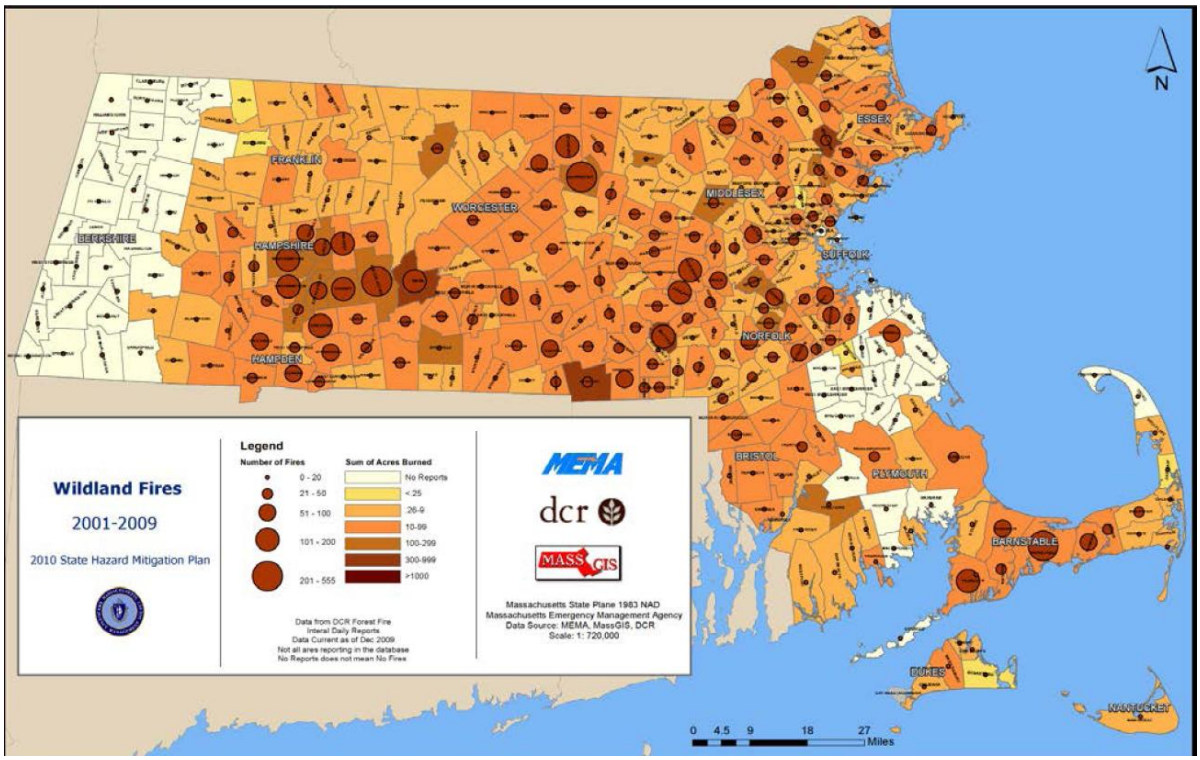
The following fire incidents have been reported in Huntington in the past. This data includes structural fires, brush fires, car fires, etc.

Total Fire Incidents in Huntington	
2009	11
2010	14
2011	16
2012	20
2013	11

Source: Massachusetts Fire Incidence Reporting System, County Profiles, 2014 Fire Data Analysis

According to the Fire Department there are approximately 30 unauthorized burns a year and approximately 60 burn permits are issued annually.

Wildland Fires in Massachusetts, 2001-2009



Source: Massachusetts Hazard Mitigation Plan

Probability of Future Events

In accordance with the Massachusetts Hazard Mitigation Plan, the Hazard Mitigation Committee found it is difficult to predict the likelihood of wildfires in a probabilistic manner because the number of variables involved. However, given the history of previous wildfires, and their proximity to the Town, the likelihood of a future wildfire is determined to be "moderate," or between a 10 and 40 percent probability in any given year.

Climate scenarios project summer temperature increases between 2ºC and 5ºC and precipitation decreases of up to 15 percent. Such conditions would exacerbate summer drought and further promote high-elevation wildfires, releasing stores of carbon and further contributing to the buildup of greenhouse gases. Forest response to increased atmospheric carbon dioxide—the so-called "fertilization effect"—could also contribute to more tree growth and thus more fuel for fires, but the effects of carbon dioxide on mature forests are still largely unknown.

Impact

Huntington faces a "limited" impact from wildfires, with minimal damage anticipated in such an event. To approximate the potential impact to property and people that could be affected by this hazard, the total value of all property in town, $279,521,738 is used.

An estimated 100 percent of damage would occur to 1 percent of structures, resulting in a total of $2,795,217 worth of damage. The cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included in this estimate.

Vulnerability

Based on the above assessment, Huntington faces a ”4-low" vulnerability from wildfire and brushfires.

Given that 84% of Huntington is forested, the entire town is vulnerable to wildfires. Depending on where the burn were to happen different critical facilities or evacuation routes, as well as residents, could be impacted.

Earthquakes

Hazard Description

An earthquake is a sudden, rapid shaking of the ground that is caused by the breaking and shifting of rock beneath the Earth's surface. Earthquakes can occur suddenly, without warning, at any time of the year. New England experiences an average of 30 to 40 earthquakes each year although most are not noticed by people.[1] Ground shaking from earthquakes can rupture gas mains and disrupt other utility service, damage buildings, bridges and roads, and trigger other hazardous events such as avalanches, flash floods (dam failure) and fires. Un-reinforced masonry buildings, buildings with foundations that rest on filled land or unconsolidated, unstable soil, and mobile homes not tied to their foundations are at risk during an earthquake.[2]

Location

Because of the regional nature of the hazard, the entire town is susceptible to earthquakes, and the location of occurrence is "large," with over 50 percent of land affected.

Extent

The magnitude of an earthquake is measured using the Richter Scale, which measures the energy of an earthquake by determining the size of the greatest vibrations recorded on the seismogram. On this scale, one step up in magnitude (from 5.0 to 6.0, for example) increases the energy more than 30 times. The intensity of an earthquake is measured using the Modified Mercalli Scale. This scale quantifies the effects of an earthquake on the Earth's surface, humans, objects of nature, and man-made structures on a scale of I through XII, with I denoting a weak earthquake and XII denoting a earthquake that causes almost complete destruction.

Richter Scale Magnitudes and Effects	
Magnitude	**Effects**
< 3.5	Generally not felt, but recorded.
3.5 - 5.4	Often felt, but rarely causes damage.
5.4 - 6.0	At most slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions.
6.1 - 6.9	Can be destructive in areas up to about 100 kilometers across where people live.
7.0 - 7.9	Major earthquake. Can cause serious damage over larger areas.
8 or >	Great earthquake. Can cause serious damage in areas several hundred kilometers across.

[1] Northeast States Emergency Consortium Web site: *www.nesec.org/hazards/earthquakes.cfm.*

[2] Federal Emergency Management Agency Web site: *www.fema.gov/hazards/earthquakes/quake.shtm.*

Modified Mercalli Intensity Scale for and Effects			
Scale	**Intensity**	**Description Of Effects**	**Corresponding Richter Scale Magnitude**
I	Instrumental	Detected only on seismographs.	
II	Feeble	Some people feel it.	< 4.2
III	Slight	Felt by people resting; like a truck rumbling by.	
IV	Moderate	Felt by people walking.	
V	Slightly Strong	Sleepers awake; church bells ring.	< 4.8
VI	Strong	Trees sway; suspended objects swing, objects fall off shelves.	< 5.4
VII	Very Strong	Mild alarm; walls crack; plaster falls.	< 6.1
VIII	Destructive	Moving cars uncontrollable; masonry fractures, poorly constructed buildings damaged.	
IX	Ruinous	Some houses collapse; ground cracks; pipes break open.	< 6.9
X	Disastrous	Ground cracks profusely; many buildings destroyed; liquefaction and landslides widespread.	< 7.3
XI	Very Disastrous	Most buildings and bridges collapse; roads, railways, pipes and cables destroyed; general triggering of other hazards.	< 8.1
XII	Catastrophic	Total destruction; trees fall; ground rises and falls in waves.	> 8.1

Source: US Federal Emergency Management Agency

Previous Occurrences

The most recent earthquakes in the region that could have affected the Town of Huntington are shown in the table below. There is no record of any damage to the Town of Huntington as a result of these earthquakes.

Largest Earthquakes in region 1924 – 2014		
Location	**Date**	**Magnitude**
Ossipee, NH	December 20, 1940	5.5
Ossipee, NH	December 24, 1940	5.5
Dover-Foxcroft, ME	December 28, 1947	4.5
Kingston, RI	June 10, 1951	4.6
Portland, ME	April 26, 1957	4.7

Middlebury, VT	April 10, 1962	4.2
Near NH Quebec Border, NH	June 15, 1973	4.8
West of Laconia, NH	Jan. 19, 1982	4.5
Plattsburg, NY	April 20, 2002	5.1
Bar Harbor, NH	October 3, 2006	4.2
Hollis Center, ME	October 16, 2012	4.6

Source: Northeast States Emergency Consortium website, www.nesec.org/hazards/earthquakes.cfm

New England States Record of Historic Earthquakes		
State	**Years of Record**	**Number Of Earthquakes**
Connecticut	1668 - 2007	137
Maine	1766 - 2007	544
Massachusetts	1668 - 2007	355
New Hampshire	1638 - 2007	360
Rhode Island	1776 - 2007	38
Vermont	1843 - 2007	73
New York	1840 - 2007	755
Total Number of Earthquakes within the New England states between 1638 and 1989 is 2262.		

Source: Northeast States Emergency Consortium website, *www.nesec.org/hazards/earthquakes.cfm*

Probability of Future Events

One measure of earthquake activity is the Earthquake Index Value. It is calculated based on historical earthquake events data using USA.com algorithms. It is an indicator of the earthquake activity level in a region. A higher earthquake index value means a higher chance of earthquake events. Data was used for Hampshire County to determine the Earthquake Index Value as shown in the table below.

Earthquake Index for Hampshire County	
Hampshire County	0.17
Massachusetts	0.70
United States	1.81

Based upon existing records, there is a “very low” frequency of earthquakes in Huntington, with less than a 1 percent chance of an earthquake in any given year.

Impact

Massachusetts introduced earthquake design requirements into their building code in 1975 and improved building code for seismic reasons in the 1980s. However, these specifications apply only to new buildings or to extensively-modified existing buildings. Buildings, bridges, water supply lines, electrical power lines and facilities built before the 1980s may not have been designed to withstand the forces of an earthquake. The seismic standards have also been upgraded with the 1997 revision of the State Building Code. Liquefaction of the land near water could also lead to extensive destruction.

Huntington faces a “catastrophic” impact from earthquakes, with more than 50% of property expected to be damaged. To approximate the potential impact to property and people that could be affected by this hazard, the total value of all property in town, $279,521,738 is used. An estimated 50% percent of damage would occur to 25 percent of structures, resulting in a total of $34,940,217 worth of damage. The cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included in this estimate.

Vulnerability

Based on this analysis, Huntington maintains a "4- Low" vulnerability from earthquakes.

Older buildings are particularly vulnerable to earthquakes because their construction pre-dates building codes that included strong seismic consideration. A loss of historic buildings could represent a loss of Huntington’s history and culture and a loss of the critical facilities in town could impede the town’s ability to operate. The town’s identified evacuation routes contain bridges, and may not be able to function if an earthquake were to hit.

Dam Failure

Hazard Description

Dams and levees and their associated impoundments provide many benefits to a community, such as water supply, recreation, hydroelectric power generation, and flood control. However, they also pose a potential risk to lives and property. Dam or levee failure is not a common occurrence, but dams do represent a potentially disastrous hazard. When a dam or levee fails, the potential energy of the stored water behind the dam is released rapidly. Most dam or levee failures occur when floodwaters above overtop and erode the material components of the dam. Often dam or levee breeches lead to catastrophic consequences as the water rushes in a torrent downstream flooding an area engineers refer to as an “inundation area.” The number of casualties and the amount of property damage will depend upon the timing of the warning provided to downstream residents, the number of people living or working in the inundation area, and the number of structures in the inundation area.

Many dams in Massachusetts were built during the 19th Century without the benefit of modern engineering design and construction oversight. Dams of this age can fail because of structural problems due to age and/or lack of proper maintenance, as well as from structural damage caused by an earthquake or flooding.

The Massachusetts Department of Conservation and Recreation Office of Dam Safety is the agency responsible for regulating dams in the state (M.G.L. Chapter 253, Section 44 and the implementing regulations 302 CMR 10.00). To be regulated, these dams are in excess of 6 feet in height (regardless of storage capacity) and have more than 15 acre feet of storage capacity (regardless of height). Dam safety regulations enacted in 2005 transferred significant responsibilities for dams from the State of Massachusetts to dam owners, including the responsibility to conduct dam inspections.

Location

There are three dams located within Huntington’s boundaries. The location of occurrence for a dam failure has been determined to be "Large," with more than 50 percent of land area affected.

Dams and Dykes in Huntington		
Dam	**Hazard Level**	**Condition**
Littleville Lake Dam	High Hazard	Unknown
Knightville Dam	High Hazard	Unknown
Norwich Pond Dam	Non-Jurisdictional	--

Extent

Often dam or levee breaches lead to catastrophic consequences as the water ultimately rushes in a torrent downstream flooding an area engineers refer to as an “inundation area.” The number of casualties and the amount of property damage will depend upon the timing of the

warning provided to downstream residents, the number of people living or working in the inundation area, and the number of structures in the inundation area.

Dams in Massachusetts are assessed according to their risk to life and property. The state has three hazard classifications for dams:

- *High Hazard*: Dams located where failure or improper operation will likely cause loss of life and serious damage to homes, industrial or commercial facilities, important public utilities, main highways, or railroads.
- *Significant Hazard*: Dams located where failure or improper operation may cause loss of 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 Hazard*: Dams located where failure or improper operation may cause minimal property damage to others. Loss of life is not expected.

Previous Occurrences

To date, there have been no dam or levee failures in Huntington.

Probability of Future Events

As Huntington's dams age, and if maintenance is deferred, the likelihood of a dam failure will increase, but, currently the frequency of dam failures is "Very Low" with a less than 1 percent chance of a dam failing in any given year.

As described in the Massachusetts Hazard Mitigation Plan, dams are designed partly based on assumptions about a river's flow behavior, expressed as hydrographs. Changes in weather patterns can have significant effects on the hydrograph used for the design of a dam. If the hygrograph changes, it is conceivable that the dam can lose some or all of its designed margin of safety, also known as freeboard. If freeboard is reduced, dam operators may be forced to release increased volumes earlier in a storm cycle in order to maintain the required margins of safety. Such early releases of increased volumes can increase flood potential downstream. Throughout the west, communities downstream of dams are already seeing increases in stream flows from earlier releases from dams. Dams are constructed with safety features known as "spillways." Spillways are put in place on dams as a safety measure in the event of the reservoir filling too quickly. Spillway overflow events often referred to as "design failures," result in increased discharges downstream and increased flooding potential. Although climate change will not increase the probability of catastrophic dam failure, it may increase the probability of design failures.

Impact

An impact from a dam failure is ranked as "catastrophic," with more than 50 percent of property in the affected area damaged or destroyed. To approximate the potential impact to property and people that could be affected by this hazard, the total value of all property in town, $279,521,738 is used. An estimated 100 percent of damage would occur to 10 percent of

structures, resulting in a total of $27,952,173 worth of damage. The cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included in this estimate.

Vulnerability

Based on this analysis, Huntington has a "1- Very Low" vulnerability from dam or levee failure.

If the Littleville Lake Dam were to fail, there could be serious damage to the town of Huntington. Approximately 100 homes, the Gateway Regional Middle School, the Gateway Regional High School, Littleville Elementary School, Town Hall, 20 historic structures, 13 business and major transportation facilities (Route 20 and Route 112) are all located in the dam's inundation zone. All of these structures would be susceptible to damage and could result in a loss of historic character to the town and hamper its' ability to function. The Littleville Lake Dam also functions as a back-up water supply for the town of Springfield. A failure could impact that city's water supply.

The other two dams in town have not been analyzed to see what could happen if they were to fail.

Drought

Hazard Description

Drought is a normal, recurrent feature of climate. It occurs almost everywhere, although its features vary from region to region. In the most general sense, drought originates from a deficiency of precipitation over an extended period of time, resulting in a water shortage for some activity, group, or environmental sector. Reduced crop, rangeland, and forest productivity; increased fire hazard; reduced water levels; increased livestock and wildlife mortality rates; and damage to wildlife and fish habitat are a few examples of the direct impacts of drought.

Location

Because of this hazard's regional nature, a drought would impact the entire town, resulting in a "large" location of occurrence, or more than 50 percent of total land area affected.

Extent

The severity of a drought would determine the scale of the event and would vary among town residents depending on whether the residents' water supply is derived from a private well or the public water system. Massachusetts' wells are permitted according to their ability to meet demand for 180 days at maximum capacity with no recharge; if these conditions extended beyond the thresholds that determine supply capacity the damage from a drought could be widespread due to depleted groundwater supplies. The U.S. Drought Monitor also records information on historical drought occurrence. Unfortunately, data could only be found at the state level. The U.S. Drought Monitor categorizes drought on a D0-D4 scale as shown below.

U.S. Drought Monitor		
Classification	**Category**	**Description**
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies

Previous Occurrences

In Massachusetts, six major droughts have occurred statewide since 1930.[3] They range in severity and length, from three to eight years. In many of these droughts, water-supply systems were found to be inadequate. Water was piped in to urban areas, and water-supply systems were modified to permit withdrawals at lower water levels. The following table indicates previous occurrences of drought since 2000, based on the US Drought Monitor:

Annual Drought Status	
Year	**Maximum Severity**
2000	No drought
2001	D2 conditions in 21% of the state
2002	D2 conditions in 99% of the state
2003	No drought
2004	D0 conditions in 44% of the state
2005	D1 conditions in 7% of the state
2006	D0 conditions in 98% of the state
2007	D1 conditions in 71% of the state
2008	D0 conditions in 57% of the state
2009	D0 conditions in 44% of the state
2010	D1 conditions in 27% of the state
2011	D0 conditions in 0.01% of the state
2012	D2 conditions in 51% of the state
2013	D1 conditions in 60% of the state
2014	D1 conditions in 54% of the state
2015	D1 conditions in 100% of the state

Source: US Drought Monitor

To date, Huntington has not been significantly impacted by any previous droughts in the state. The town has not experienced a threat to its water supply and doesn't anticipate any severe water shortages throughout the town.

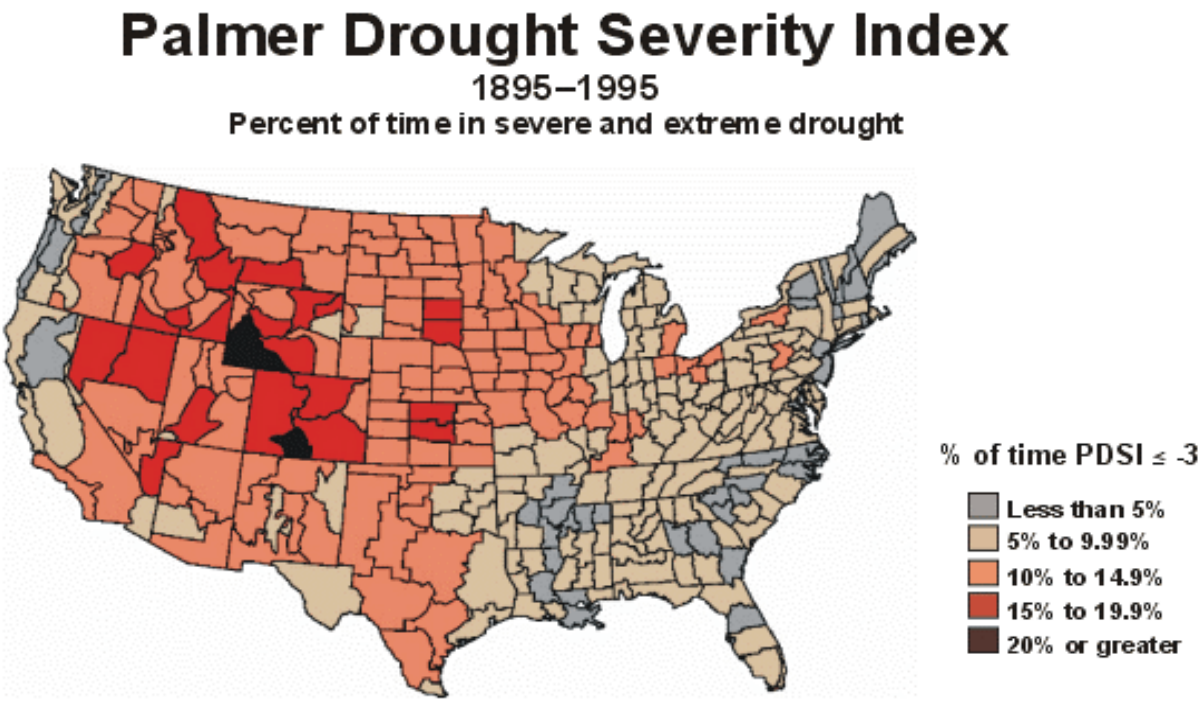
Probability of Future Events

In Huntington, a severe drought has a "very low" probability of future occurrence, or less than 1 percent in any given year.

Based on past events and current criteria outlined in the Massachusetts Drought Management Plan, it appears that western Massachusetts may be more vulnerable than eastern Massachusetts to severe drought conditions. However, many factors, such as water supply sources, population, economic factors (i.e., agriculture based economy), and infrastructure, may affect the severity and length of a drought event. When evaluating the region's risk for drought

[3] US Geological Survey Water-Supply Paper 2375. "National Water Summary 1989 – Floods and Droughts: Massachusetts." Prepared by S. William Wandle, Jr., US Geological Survey.

on a national level, utilizing a measure called the Palmer Drought Severity Index, Massachusetts is historically in the lowest percentile for severity and risk of drought.[4]



Impact

Due to the water richness of western Massachusetts, Huntington is unlikely to be adversely affected by anything other than a major, extended drought. The impacts of drought are categorized by the U.S. Drought Monitor to include:

- Slowing or loss of crops and pastures
- Water shortages of restrictions
- Low water levels in streams, reservoirs, and wells

As a result, the impact of a drought would be “minor” with only minimal property damage or disruption on quality of life.

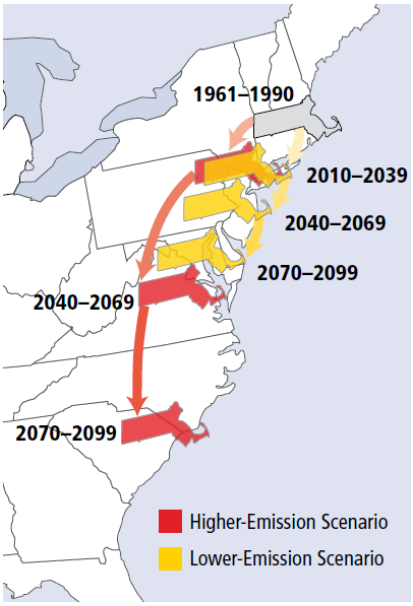
Vulnerability

Based on the above assessment, Huntington has a vulnerability of "4-Low” from drought. While such a drought would require water saving measures to be implemented, there would be no foreseeable damage to structures or loss of life resulting from the hazard.

[4] National Drought Mitigation Center – http://drought.unl.edu

Impacts of Climate Change

Greater variation and extremes in local atmospheric temperatures due to global changes in climate are now among the natural hazards that this plan anticipates. Huntington is likely to experience more instances of extreme and sustained heat and cold. And, because warmer air holds more moisture, higher temperatures will also bring wetter winters, more severe storms, and more frequent flooding. Locally, there will also be more single-day records highs, and more total days with highs above 90 degrees, and more heat waves with 3 or more days above 90 degrees. More extreme temperatures throughout Western Massachusetts and New England mean that there will be more floods, droughts, and tornados. There will also be more Atlantic hurricanes and nor-easters. Anticipated increases in extreme local temperatures is directly related to many of the previously described vulnerabilities, as well as increasing the risk of heat-related disease and injury, especially among senior citizens and residents unable to afford air conditioning.



At current rates of greenhouse gas accumulation and temperature increases, the climate of Massachusetts will become similar to those of present-day New Jersey or Virginia by 2040-2069, depending on future GHG emissions. *Source: NECIA 2006*

Anticipated Climatic Variation

In Western Massachusetts, annual precipitation is expected to increase by 14% by the end of the 21st century. However, most of this precipitation increase will come during the winter months – as much as 30% more than today – while summertime precipitation will actually decrease slightly. Also, most of the added winter precipitation is expected to be in the form of rain, rather than snow. This will mean a continuation of the current regional trend of a decreasing snowfall totals, as well as the number of days with snow cover on the ground, but more precipitation overall. The increased amount of strong precipitation events and overall increase in rainfall, combined with the aging stormwater infrastructure in the region, will likely result in more flooding in the region.

Anticipated Climatic Variations for Massachusetts Due to Climate Change

Category	Current (1961-1990 avg.)	Predicted Change 2040-2069	Predicted Change 2070-2099
Average Annual Temperature (°F)	46°	50°to 51°	51° to 56°
Average Winter Temperature (°F)	23°	25.5° to 27°	31° to 35°
Average Summer Temperature (°F)	68°	69.5° to 71.5°	74° to 82°
Days over 90 °F	5 to 20 days	-	30 to 60 days
Days over 100 °F	0 to 2 days	-	3 to 28 days
Annual Precipitation	41 inches	43 to 44 inches	44 to 47 inches
Winter Precipitation	8 inches	8.5 to 9 inches	9 to 10.4 inches
Summer Precipitation	11 inches	10.9 to 10.7 inches	10.9 to 11 inches

Sources: Massachusetts Climate Adaptation Report 2011, NECIA

Increased temperatures will likely have the following projected impacts to people, property, and the local economy:

- There will be greater stress on special populations, such as senior citizens and economically disadvantaged people, without access to air conditioning during heat waves.
- Increased temperatures and changes in growing seasons for various crops will put stress on current food production and require farming operations to adjust by planting new varieties of crops.
- Livestock will be at greater risk from extreme and extended heat.
- Increased energy usage in order to cool buildings in the summer and long-term electrical needs will increase.

Other Hazards

In addition to the hazards identified above, the Hazard Mitigation Team reviewed the full list of hazards listed in the Massachusetts Hazard Mitigation Plan. Due to the location and context of the Town, coastal erosion, landslides, ice jams, and tsunamis, were determined to not be a threat.

Extreme temperatures, while identified in the state Hazard Mitigation Plan, was determined by the Huntington Hazard Mitigation Committee to not currently be a primary hazard to people, property, or critical infrastructure in Huntington. While extreme temperatures can result in increased risk of wildfire, this effect is addressed as part of the "Wildfire/Brushfire" hazard assessment. As described in the hazard assessment of climate change, extreme temperatures are likely to have a larger effect on the Town in the future. The Hazard Mitigation Committee will continue to assess the impact of extreme temperature and update the Hazard Mitigation Plan accordingly.

4: CRITICAL FACILITIES

Facility Classification

A Critical Facility is defined as a building, structure, or location which:

- Is vital to the hazard response effort
- Maintains an existing level of protection from hazards for community residents and property
- Would create a secondary disaster if a hazard were to impact it

The Critical Facilities List for the Town of Huntington has been identified utilizing a Critical Facilities List provided by the State Hazard Mitigation Officer. Huntington's Hazard Mitigation Committee has broken up this list of facilities into four categories:

- Facilities needed for emergency response in the event of a hazard event.
- Facilities that are not needed for emergency response, but are considered essential to the everyday operation of the town
- Facilities or institutions that include special populations which would need additional attention in the event of a hazard event.
- Facilities that have potential supplies and resources needed for response.

The critical facilities and evacuation routes potentially affected by hazard areas are identified following this list. The Past and Potential Hazards/Critical Facilities Map (Appendix D) also identifies these facilities.

Category 1 – Emergency Response Services

The Town has identified the emergency response facilities as the highest priority in regards to protection from natural hazards:

Emergency Operations Center

Primary: Highway Facility/ Police Garage- 7 Mill Street
Alternate: Fire Station-8 Russell Road

Fire Station

Huntington Fire Department – 8 Russell Road
Huntington Fire Station #2 - 48 Searle Road

Police Station

Huntington Police Department- 24 Russell Road

Highway Garage

Highway Department- 7 Mills Street

Potable Water

Small community systems, fed by two wells
Water Tank- Blandford Hill

Emergency Fuel Stations

Highway Department – 7 Mill Street

Emergency Electrical Power Facility

6 portable generators: Board of Health-1 generator; Highway Department-2 generators, Fire Department-2 portable on fire trucks
Fire Department: one built into a truck, and one permanently mounted and switched for each fire station

Emergency Shelters

Gateway Middle/High School – 12 Littleville Road

Non-Potable Water Sources

Numerous locations in Huntington along the river and throughout the community—Fire Department has a list, but it is not publicized.

Transfer Station

7 Mill Street

Helicopter Landing Sites

Primary: Gateway School Complex
Alternate: Knox's Field (Corner of Church and Searle Street)
Alternate: Field (Coroner of Allen Coit Road and Pond Brook Road)

Communications

Radio Towers at Fire Station #1 and #2
Cell towers (Major carriers: AT&T, Verizon and Sprint: 2 on Westwood Street, 1 on Lyman Street

Primary Evacuation Routes

Route 20
Route 112
Route 66

Bridges Located on Evacuation Routes

There are six bridges on Route 112

Category 2- Non-Emergency Response Facilities

The town has identified these facilities as non-emergency facilities; however, they are considered essential for the everyday operation of Huntington.

Problem Culverts

Nagler Cross Road
Barr Hill Road
Goss Hill Road
Kimball Road
Commonwealth Road (to lake)
Sampson Road

Water Supply

Water Tower
4 Public Wells-
- 2 at Gateway School Complex
- 2 on Route 20/Russell Road

Norwich Lake

Category 3 – Facilities/Populations to Protect

The following populations and facilities may require special attention during a hazard event.

Special Needs Population

Russian Mennonites on Basket Street, Searle Road and County Road at the beginning of Worthington Road near Rocky Brook

Elderly Housing/Assisted Living

Hamblin Court on Worthington Road and East Main Street (Rte 112)

Schools

Gateway Middle/High School- 12 Littleville Road
Littleville Elementary School- 4 Littleville Road
HCDC one-day pre-school-9 Russell Road

Private Daycare	Capacity
Anderson, Stephanie- 41 Harlow Clark Road	6
Iglesias, Melissa- 31 Old Chester Road	8
Mattoney, Kathleen- 94 County Road	8

Places of Worship

Huntington Evangelical Church and Chapel – 17 and 22 Russell Road
First Congregational Church of Huntington – 6 Searle Road
Pioneer Valley Assembly – 63 Old Chester Road
Fare-Thee-Well Wholeness Center – 153 Pond Brook Road

Historic Buildings/Sites

Huntington Town Hall
Huntington Historical Society's Schoolhouse Museum
Stanton Hall/ Second Congregational Church
St. Thomas Catholic Church – 8 East Main Street
Norwich Bridge and Norwich Bridge cemetery
North Hall-Searle Road
Ellis cemetery-Goss Hill Road
World War I monument -112/20
Multiple homes in historic district
Robert Cross Bridge- East Main Street
Norwich Hill Cemetery
Knightville Dam
St. Thomas Cemetery

Apartment Complexes

4 Main Street (5 units)
6 Blandford Hill Road (4 units)
27-31 Basket Street (7 units in 3 buildings)
25 Russell Rd (5 units)
Two on Pine Street (2-3 units each)
1 Basket Street (6 units)

Employment Centers (> 50 employees)

Gateway Middle/High School- 12 Littleville Road
Health Center-73 Russell Road
Littleville Elementary-4 Littleville Road

Category 4 – Potential Resources

Contains facilities that provide potential resources for services and supplies.

Food

Huntington Country Store- 70 Worthington Road (Route 112)
B & D Variety Store- 22 East Main Street (Route 112)
Moltenbrey's Market- 44 Worthington Road (Route 112)
Bridge Store- 10 East Main Street (Route 112)

Hospital/Medical Supplies (nearest)

Hilltown Community Health Center- 73 Russell Road
Noble Hospital (in Westfield- 12 miles)
Cooley-Dickinson Hospital (in Northampton-18 miles)

Gas

Gallagher's Old Fashioned Service- 5 East Main Street (Route 112)

Building Material Suppliers

Gateway Farm and Pet- 59 Russell Road (Route 20)

Heavy Materials Suppliers

Donovan Brothers
Down to Earth Excavating

Gravel Pits

Donovan Brothers-Worthington Road/112
Charles McDonalds- Sampson Rd
Carrington's- Goss Hill Rd
Baillargeon- Thomas Rd
Bert Nugent- Thomas Rd

Critical Facilities and Evacuation Routes Potentially Affected by Hazard Areas			
Hazard Type	**Hazard Area**	**Critical Facilities Affected**	**Evacuation Routes Affected**
Flooding (100-year)	Old Chester Road		
	Upper Russell and Russell Road	EOC, Fire Station, Police Station, Town Hall, City of Springfield Water Pumping Station	Route 20
	Main Street	Post Office	Route 112
	Bridge Street	Sewer Treatment Plant	
Flooding	Rocky Brook Drive	Culverts	
	Arnold Drive		
	Worthington Road		Route 112
Severe Snowstorms/Ice Storms	Goss Hill Road, Nagler Cross Road, Bean Hill Road, Barr Hill Road, Old Church Road.	Energy and Communication Infrastructure	
	Harlow Clark Road, County Road, Pond Brook Road, Pisgah Road		Route 66
	Searles Road, Tucker Road, Sampson Roach Gorham Road		
Severe Thunderstorms, which cause wind damage	Whole town/ Norwich Hill (particularly susceptible)	Energy and Communication Infrastructure	
Hurricanes	Whole town	Energy and Communication Infrastructure	
Tornadoes/Microburst	Whole town	Depends where it hits	Depends where it hits
Wildfire/Brushfire	Knightville Dam Basin/CSX Railroad	None	Route 20
Earthquakes	Whole Town	Older buildings not constructed to earthquake standards.	Route 112 (Has numerous bridges)
Dam Failures	Littleville Lake Dam Inundation Zone	Gateway Regional Middle/High School, Emergency Shelter, Town Hall, 20 Historic Structures, 13 Business	Route 20, Route 112
Drought	Whole Town	None	None

5: MITIGATION CAPABILITIES & STRATEGIES

Capability Assessment Summary: Existing Authorities Policies, Programs, & Resources and Ability to Expand on & Improve Existing Policies & Programs

One of the steps of this Hazard Mitigation Plan update process is to evaluate all of the Town's existing policies and practices related to natural hazards and identify potential gaps in protection.

Huntington has most of the no cost or low cost hazard mitigation capabilities in place. Land use zoning, subdivision regulations and an array of specific policies and regulations that include hazard mitigation best practices, such as limitations on development in floodplains and wetlands, stormwater management, tree maintenance, etc. Huntington also has appropriate staff dedicated to hazard mitigation-related work for a community its size, including a Town Administrator, a professionally run Department of Public Works, a Building Inspector and a Tree Warden. Huntington also has some of the recommended plans in place, including a Community Development Plan and a Capitol Improvements Plan. Not only does Huntington have these capabilities in place, but they are also deployed for hazard mitigation as appropriate. The Town also has very committed and dedicated volunteers who serve on Boards and Committees and in Volunteer positions. The Town collaborates closely with surrounding communities and is party to Mutual Aid agreements through the MEMA. Huntington is also an active member community of the Pioneer Valley Planning Commission (PVPC) and can take advantage of no cost local technical assistance as needed provided by the professional planning staff at the PVPC.

Huntington's most obvious hazard mitigation need is for federal funds to implement prioritized actions. While Huntington is a well-managed fiscally sound Town, it is not a wealthy community and with state constraints on municipalities raising their own funds, Huntington has very limited financial resources to invest in costly hazard mitigation measures. Huntington is, however, committed to locally matching all HMGP grants received.

After reviewing existing policies and the hazard identification and assessment, the Town Hazard Mitigation Committee developed a set of hazard mitigation strategies it would like to implement.

The Town of Huntington has developed the following goal to serve as a framework for mitigation of the hazards identified in this plan.

Goal Statement

To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to the following hazards: flooding, severe snowstorms/ice storms, severe thunderstorms, hurricanes, tornadoes, microbursts, wildfires/brushfires, earthquakes, dam failures, and drought.

Overview of Mitigation Strategies by Hazard

An overview of the general concepts underlying mitigation strategies for each of the hazards identified in this plan is as follows:

Flooding

The key factors in flooding are the water capacity of water bodies and waterways, the regulation of waterways by flood control structures, and the preservation of flood storage areas and wetlands. As more land is developed, more flood storage is demanded of the town's water bodies and waterways. The Town currently addresses this problem with a variety of mitigation tools and strategies. Flood-related regulations and strategies are included in the Town's general bylaws, zoning bylaw, and subdivision regulations. Representatives from the planning board suggested that the regulating committees could reevaluate their actions to ensure that these regulations are being properly enforced as new development comes into town. Infrastructure like dams and culverts are in place to manage the flow of water.

Severe Snowstorms / Ice Storms

Winter storms can be especially challenging for emergency management personnel. The Massachusetts Emergency Management Agency (MEMA) serves as the primary coordinating entity in the statewide management of all types of winter storms and monitors the National Weather Service (NWS) alerting systems during periods when winter storms are expected. Even though the storm has usually been forecast, there is no certain way for predicting its length, size or severity. Therefore, mitigation strategies must focus on preparedness prior to a severe snow/ice storm.

The Town's current mitigation tools and strategies focus on preparedness, with many regulations and standards established based on safety during storm events. To the extent that some of the damages from a winter storm can be caused by flooding, flood protection mitigation measures also assist with severe snowstorms and ice storms. The Town has adopted the State Building Code, which ensures minimum snow load requirements for roofs on new buildings.

Hurricanes

Hurricanes provide the most lead warning time of all identified hazards, because of the relative ease in predicting the storm's track and potential landfall. MEMA assumes "standby status" when a hurricane's location is 35 degrees North Latitude (Cape Hatteras) and "alert status" when the storm reaches 40 degrees North Latitude (Long Island). Even with significant warning, hurricanes cause significant damage – both due to flooding and severe wind.

The flooding associated with hurricanes can be a major source of damage to buildings, infrastructure and a potential threat to human lives. Flood protection measures can thus also be considered hurricane mitigation measures. The high winds that often accompany hurricanes can also damage buildings and infrastructure, similar to tornadoes and other strong wind events.

Severe Thunderstorms / Winds / Tornadoes

Most damage from tornadoes and severe thunderstorms come from high winds that can fell trees and electrical wires, generate hurtling debris and, possibly, hail. According to the Institute for Business and Home Safety, the wind speeds in most tornadoes are at or below design speeds that are used in current building codes, making strict adherence to building codes a primary mitigation strategy. In addition, current land development regulations, such as restrictions on the height of telecommunications towers, can also help prevent wind damages.

Wildfires / Brushfires

Wildfire and brushfire mitigation strategies involve educating people about how to prevent fires from starting, as well as controlling burns within the town.

Earthquakes

Although there are five mapped seismological faults in Massachusetts, there is no discernible pattern of previous earthquakes along these faults nor is there a reliable way to predict future earthquakes along these faults or in any other areas of the state. Consequently, earthquakes are arguably the most difficult natural hazard for which to plan. Most buildings and structures in the state were constructed without specific earthquake resistant design features. In addition, earthquakes precipitate several potential devastating secondary effects such as building collapse, utility pipeline rupture, water contamination, and extended power outages. Therefore, many of the mitigation efforts for other natural hazards identified in this plan may be applicable during the Town's recovery from an earthquake.

Dam Failure

Dam failure is a highly infrequent occurrence, but a severe incident could prove catastrophic. In addition, dam failure most often coincides with flooding, so its impacts can be multiplied, as the additional water has nowhere to flow. The only mitigation measures currently in place are the state regulations governing the construction, inspection, and maintenance of dams. This is managed through the Office of Dam Safety at the Department of Conservation and Recreation.

Drought

Although Massachusetts does not face extreme droughts like many other places in the country, it is susceptible to dry spells and drought. The primary mitigation strategy currently in place is to require subdivisions to provide an environmental review that assesses the impact that the development will have on groundwater.

Existing Mitigation Capabilities

The Town of Huntington had numerous policies, plans, practices, programs and regulations in place, prior to the creation of this plan, that were serving to mitigate the impact of natural hazards in the Town of Huntington. These various initiatives are summarized, described and assessed on the following pages and have been evaluated in the "Effectiveness" column.

Existing Mitigation Capabilities				
Strategy	**Action Type**	**Description**	**Hazards Mitigated**	**Effectiveness / Improvements**
Flood Control Structures	Capital Construction	Three functioning dams in town.	Flooding	Somewhat effective. Dam maintenance/ inspections responsibility of owner that may not have funding.
Culvert Replacement	Capital Construction	Priority list of necessary culvert replacements and other construction projects to effectively manage flooding	Flooding	Somewhat Effective. Need to actively seek funding for replacement.
Floodplain District	Zoning By-law	Overlay district to protect areas delineated as part of the 100-year floodplain by regulating uses and special permit requirements.	Flooding	Effective. No Changes.
Aquifer Protection District	Zoning By-law	District to protect groundwater resources by regulating certain uses, drainage, and other requirements within recharge area of aquifer.	Flooding/Drought	Effective. No Changes.
Open Space Communities	Zoning By-law	Provides regulations for cluster subdivision development by special permit. Allows protection of contiguous open space.	Flooding/Drought	Effective. No Changes.

Existing Mitigation Capabilities				
Strategy	**Action Type**	**Description**	**Hazards Mitigated**	**Effectiveness / Improvements**
Common Driveway	Zoning By-law	Provides for minor residential development without additional roads thereby lessening environmental impact.	Flooding/ Severe Snow/ Ice/Drought	Effective. No Changes.
Earth Removal	Zoning By-law	Rigorous requirements for special permit approval for large-scale earth removal, restricting location and regulating drainage, vegetation, etc.	Flooding/Drought	Effective. No Changes.
Special Permit	Zoning By-law	Some uses require special permit approval, and must meet environmental standards.	Flooding	Effective. No Changes.
Wireless Communications Facilities	Zoning By-law	Structures are required to be as minimally invasive as possible to the environment, and regulations call for a “fall zone radius” as a further precaution.	Severe Snow/Ice/ Severe Thunderstorms/Wind/ Tornadoes/Microbursts/ Earthquakes	Effective. No Changes.
Mobile Home Regulations	Zoning By-law	Mobile/ manufactured home parks are prohibited throughout town. A special permit is required for individual manufactured homes to be allowed in residential districts.	Flooding/Severe Thunderstorms/Wind/ Tornadoes/Microbursts	Effective. No Changes.
Preliminary Plan	Subdivision Regulations	The Fire Chief, along with the Planning Board, is involved in the review of the preliminary plan.	Wildfire/Brushfire	Effective. No Changes.
Definitive Plan	Subdivision Regulations	100-year floodplain, wetlands, water bodies, conservation areas, drainage patterns, proposed septic or sewer and water supply must all be shown.	Flooding/Drought	Effective. No Changes.

Existing Mitigation Capabilities				
Strategy	**Action Type**	**Description**	**Hazards Mitigated**	**Effectiveness / Improvements**
Definitive Plan	Subdivision Regulations	The Fire Chief, along with the Planning Board is involved in the review of the definitive plan. Plan must account for each home being within 300 feet of a hydrant.	Wildfire/Brushfire	Effective. No Changes.
Additional Requirements	Subdivision Regulations	Hydrology Study and Drainage Calculation; Sanitary Sewer Study; Water Study; Environmental Impact Statement; Development Impact Statement; Wetlands Protection; Erosion/Sediment Control Plan	Flooding/Drought	Effective. No Changes.
Additional Requirements	Subdivision Regulations	Special Water Protection District – all proposals reviewed to ensure the development is safe from flooding.	Flooding	Effective. No Changes.
Design Standards	Subdivision Regulations	Protection of natural features – minimize impact on surroundings.	Flooding	Effective. No Changes.
Design Standards	Subdivision Regulation	Utilities must be placed underground at the time of construction.	Severe Snow/Ice/Severe Thunderstorms/Wind/ Tornadoes/Microbursts	Effective. No Changes.
Design Standards	Subdivision Regulation	Street grade regulations (maximum ranges from 5 to 10% depending on the street category); minimum sight distances at intersections; guardrails can be required	Severe Snow/Ice	Effective. No Changes.

Existing Mitigation Capabilities				
Strategy	**Action Type**	**Description**	**Hazards Mitigated**	**Effectiveness / Improvements**
Huntington Community Development Plan	Planning Document	The CD Plan identifies key goals and actions to promote natural resource preservation in the town, including areas in the floodplain; such as wetlands, groundwater recharge areas, farms and open space, rivers, streams and brooks.	Flooding/Drought	Somewhat Effective. Need to work to implement goals and strategies.
National Flood Insurance Program Participation	Operational Strategy	As of 2016, there were 26 residents with policies	Flooding	Effective. Consider participating in FEMA's CRS program.
State Building Code	Regulation	The town has adopted the state building code	Severe Snow/Ice/Severe Thunderstorms/Wind/ Tornadoes/Microbursts/ Earthquakes	Effective. No Changes.
Backup Electric Power	Operational Strategy	Shelters have access to three mobile generators	Severe Snow/Ice	Somewhat Effective. Shelters need permanent back-up power.
Tree Management	Operational Strategy	List of dangerous trees created annually for Eversource	Severe Snow/Ice/Severe Thunderstorms/Wind/ Tornadoes/Microbursts	Effective. No Changes.
Burn Permit	Operational Strategy	Residents must obtain burn permits, and personnel provide information on safe burn practices.	Wildfire/Brushfire	Somewhat Effective.
Public Education/Outreach	Education	The Fire Department has an ongoing educational program in the schools.	Wildfire/Brushfire	Effective. No Changes.
New Dam Construction Permits	Operational Strategy	State law requires a permit for the construction of any dam.	Dam Failure	Effective. No Changes.

Existing Mitigation Capabilities				
Strategy	**Action Type**	**Description**	**Hazards Mitigated**	**Effectiveness / Improvements**
Dam Inspections	Regulation	DCR has an inspection schedule that is based on the hazard rating of the dam.	Dam Failure	Somewhat Effective. Identify sources of funding for dam safety inspections.

STATUS OF 2009 ACTION STRATEGIES

The Hazard Mitigation Committee reviewed the action strategies from the 2009 plan to determine what progress had been made to date. The town was not able to implement most of the mitigation strategies identified in the last plan. Limited staffing hampered the town's ability to pursue grant funding for capital improvement projects, like culvert replacements. Other action items required regional coordination and commitments that have not come to fruition. The Hazard Mitigation Committee is bringing forwards all strategies into this plan update.

2009 Prioritized Implementation Schedule – Action Plan					
Priority	**Mitigation Action**	**Responsible Department/Board**	**Proposed Completion Date**	**Funding Source/ Estimated Cost**	**2016 Status**
1	Seek funding from HMGP for top priority culvert replacement projects	Emergency Management Committee, EMD	2011	HMGP/$500,000	Priority culverts identified. No funding secured.
2	Work to implement relevant goals and policies in Huntington's Community Development plan	Planning Board	2012	DHCD, DOER Green communities Div. /$200,000	Progress Unknown.
3	Ensure Dam owners realize their responsibility to inspect and maintain their dams	Select Board, EMD	2010	Integrate into existing funding	No Progress. Change to focus on the one dam with no hazard rating.
4	Need permanent back-up power at emergency shelters	EMD	2011	H.S./$50,000	No Progress.
5	The Town should evaluate whether to become part of FEMA's Community Rating System	Select Board and EMD	2010	No cost	No Progress.
6	Consider participation in regional debris management plan	Select Board/EMD	2011	H.S.	No movement at the regional level.
7	Update definitions in Aquifer Protection District to be consistent with State definitions	Planning Board	2010	Minimal cost can be absorbed into existing work	No Progress.

8	Consider creating more performance-based evaluations for development regulated by special permits	Planning Board	2011	Minimal cost	No Progress.
9	Evaluate older structures categorized as critical facilities to determine if they are earthquake resistant and seek funding to make them so if they are not	Select Board, EMD	2013	HMGP/$1,000,000	No Progress.

Prioritized Implementation Plan

After reviewing existing mitigation strategies in place, the Hazard Mitigation Committee identified they planned to pursue in the implementation of this plan. The risks and vulnerabilities identified in Chapter 3 were compared to existing mitigation strategies to understand where gaps exist. Selected strategies were then prioritized using the following methodology.

Prioritization Methodology

The Huntington Hazard Mitigation Planning Committee reviewed and prioritized a list of previously identified and new mitigation strategies using the following criteria:

- **Application to multiple hazards** – Strategies are given a higher priority if they assist in the mitigation of several natural hazards.

- **Time required for completion** – Projects that are faster to implement, either due to the nature of the permitting process or other regulatory procedures, or because of the time it takes to secure funding, are given higher priority.

- **Estimated benefit** – Strategies which would provide the highest degree of reduction in loss of property and life are given a higher priority. This estimate is based on the Hazard Identification and Analysis Chapter, particularly with regard to how much of each hazard's impact would be mitigated.

- **Cost effectiveness** – in order to maximize the effect of mitigation efforts using limited funds, priority is given to low-cost strategies. For example, regular tree maintenance is a relatively low-cost operational strategy that can significantly reduce the length of time of power outages during a winter storm. Strategies that have identified potential funding streams, such as the Hazard Mitigation Grant Program, are also given higher priority.

- **Eligibility Under Hazard Mitigation Grant Program –** The Hazard Mitigation Grant Program (HMGP) provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. Funding is made available through FEMA by the Massachusetts Emergency Management Agency. Municipalities apply for grants to fund specific mitigation projects under MEMA requirements

The following categories are used to define the priority of each mitigation strategy:

- **Low** – Strategies that would not have a significant benefit to property or people, address only one or two hazards, or would require funding and time resources that are impractical

- **Medium** – Strategies that would have some benefit to people and property and are somewhat cost effective at reducing damage to property and people

- **High** – Strategies that provide mitigation of several hazards and have a large benefit that warrants their cost and time to complete

- **Very High** – extremely beneficial projects that will greatly contribute to mitigation of multiple hazards and the protection of people and property. These projects are also given a numeric ranking within the category.

Cost Estimates

Each of the following implementation strategies is provided with a cost estimate. Projects that already have secured funding are noted as such. Where precise financial estimates are not currently available, categories were used with the following assigned dollar ranges:

- **Low** – cost less than $50,000
- **Medium** – cost between $50,000 – $100,000
- **High** – cost over $100,000

Cost estimates take into account the following resources:

- Town staff time for grant application and administration (at a rate of $25 per hour)
- Consultant design and construction cost (based on estimates for projects obtained from town and general knowledge of previous work in town)
- Town staff time for construction, maintenance, and operation activities (at a rate of $25 per hour)

Project Timeline

The following chart is a completed list of projects recommended by the Committee. The following action plan identifies Responsibility, Funding and a Time Frame for the mitigation projects recommended. The actions will begin as soon as the plan is approved and the community is eligible for funding, unless otherwise stated, and will be completed as noted in the implementation date column in the table below (called "Timeframe" in table).

Mitigation Strategies to be Implemented								
Action Name	**Action Type**	**Description**	**Hazards Addressed**	**Responsibility/ Oversight**	**Priority**	**Estimated Cost**	**Funding Source**	**Time Frame**
Culvert Replacements	Capital Construction	Seek funding from HMGP for top priority culvert replacement projects	Flooding	DPW/EMD	1	High	HMGP Grants	2021
Back-up power at shelter	Capital Construction	Purchase permanent generators for town's shelters	All Hazards	EMD/ Fire/ Police/ DPW	2	Medium	Capital Improvement Funds/ HMGP grants	2019
Dam Inspections	Operational Procedure	Work with the state to identify Norwich Pond Dam owners in order to get dam inspected.	Dam Failure	Select Board/ EMD	3	Low	Staff/Volunteer Time	2021
Aquifer Protection Overlay Update	Regulation	Update definitions in the Aquifer Protection District to be consistent with the state definitions	Flooding/Drought	Planning Board	4	Low	Staff/Volunteer Time	2018
FEMA Community Rating System	Operational Procedure	The Town should evaluate whether to become part of FEMA's Community Rating System.	Flooding	Conservation Commission/ Select Board/ EMD	5	Low	Staff/Volunteer Time	2018
Building Inspections	Operation Procedure/ Capital Construction	Evaluate older structures categorized as critical facilities to determine if they are earthquake resistant and seek funding to make them so if they are not	Earthquake	Building Inspector	6	Inspections: Low Retrofits: High	Inspections: Staff Time Retrofits: HMGP Grants/ Capital Improvement Funds	Inspections: 2018 Retrofits: 2021+
Community Development Plan	Plan Implementation	Work to implement relevant goals and policies in Huntington's Community Development Plan	All Hazards	Planning Board	7	High	Town Funding, Grant Sources	2021
Performance-based Evaluations for Development	Regulation	Consider creating more performance based evaluations for development regulated by special permits	All Hazards	Planning Board	8	Low	Staff/Volunteer Time DLTA	2021

Mitigation Strategies to be Implemented								
Action Name	**Action Type**	**Description**	**Hazards Addressed**	**Responsibility/ Oversight**	**Priority**	**Estimated Cost**	**Funding Source**	**Time Frame**
Regional Debris Management Plan	Planning Process	Consider participation in a regional debris management plan	All Hazards	Selectboard/EMD	9	Medium	—	Timeframe would be dependent on available funding and regional coordination

6: PLAN REVIEW, EVALUATION, IMPLEMENTATION, AND ADOPTION

Upon completion of the draft Hazard Mitigation Plan, a public meeting was held by the Town staff and the Pioneer Valley Planning Commission on July 20, 2016 to present and request comments from town officials and residents. The Hazard Mitigation Plan was then submitted to the Massachusetts Emergency Management Agency (MEMA) and the Federal Emergency Management Agency for their review. Upon receiving conditional approval of the plan by FEMA, the plan was presented to the Town's Select Board and adopted.

Plan Implementation

The implementation of this plan began upon its formal adoption by the Town Select Board and approval by MEMA and FEMA. Those Town departments and boards responsible for ensuring the development of policies, bylaw revisions, and programs as described in this plan will be notified of their responsibilities immediately following approval. The Town's Hazard Mitigation Committee will oversee the implementation of the plan.

Incorporation with Other Planning Documents

Existing plans, studies, reports and municipal documents were incorporated throughout the planning process. This included a review and incorporation of significant information from the following key documents:

- ***Huntington Comprehensive Emergency Management Plan***
- ***Huntington Zoning Ordinance and Subdivision Regulations***
- ***Huntington Community Development Plan***
- ***Massachusetts' State Hazard Mitigation Plan***

After this plan has been approved by both FEMA and the local government, links to the 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 action plan, into other planning processes and documents. In addition, during annual monitoring meetings for the Hazard Mitigation Plan implementation process, the Hazard Mitigation Committee will review whether any of these plans are in the process of being updated. If so, the Hazard Mitigation Committee will remind people working on these plans, policies etc of the Hazard Mitigation plan, and urge them to incorporate the Hazard Mitigation plan into their efforts. The Hazard Mitigation Committee will also review current Town programs and policies to ensure that they are consistent with the mitigation strategies described in this plan. The Hazard Mitigation Plan will also be incorporated into updates of the Town's Comprehensive Emergency Management Plan. The Hazard Mitigation Committee will keep track of how these strategies were incorporated into other planning processes.

While it is the understanding of the Hazard Mitigation Committee that the previous Hazard Mitigation plan has been integrated into other planning mechanisms in the Town, the committee did not track this work. The committee is committed to doing so going forward.

Plan Monitoring and Evaluation

The Town's Emergency Management Director will call meetings of all responsible parties to review plan progress as needed, based on occurrence of hazard events. The public will be notified of these meetings in advance through a posting of the agenda at Town Hall. Responsible parties identified for specific mitigation actions will be asked to submit their reports in advance of the meeting.

Meetings will involve evaluation and assessment of the plan, regarding its effectiveness at achieving the plan's goals and stated purpose. The following questions will serve as the criteria that is used to evaluate the plan:

Plan Mission and Goal

- Is the Plan's stated goal and mission still accurate and up to date, reflecting any changes to local hazard mitigation activities?
- Are there any changes or improvements that can be made to the goal and mission?

Hazard Identification and Risk Assessment

- Have there been any new occurrences of hazard events since the plan was last reviewed? If so, these hazards should be incorporated into the Hazard Identification and Risk Assessment.
- Have any new occurrences of hazards varied from previous occurrences in terms of their extent or impact? If so, the stated impact, extent, probability of future occurrence, or overall assessment of risk and vulnerability should be edited to reflect these changes.
- Is there any new data available from local, state, or Federal sources about the impact of previous hazard events, or any new data for the probability of future occurrences? If so, this information should be incorporated into the plan.

Existing Mitigation Strategies

- Are the current strategies effectively mitigating the effect of any recent hazard events?
- Has there been any damage to property since the plan was last reviewed?
- How could the existing mitigation strategies be improved upon to reduce the impact from recent occurrences of hazards? If there are improvements, these should be incorporated into the plan.

Proposed Mitigation Strategies

- What progress has been accomplished for each of the previously identified proposed mitigation strategies?
- How have any recently completed mitigation strategies affected the Town's vulnerability and impact from hazards that have occurred since the strategy was completed?

- Should the criteria for prioritizing the proposed mitigation strategies be altered in any way?
- Should the priority given to individual mitigation strategies be changed, based on any recent changes to financial and staffing resources, or recent hazard events?

Review of the Plan and Integration with Other Planning Documents

- Is the current process for reviewing the Hazard Mitigation Plan effective? Could it be improved?
- Are there any Town plans in the process of being updated that should have the content of this Hazard Mitigation Plan incorporated into them?
- How can the current Hazard Mitigation Plan be better integrated with other Town planning tools and operational procedures, including the zoning bylaw, the Comprehensive Emergency Management Plan, and the Capital Improvement Plan?

Following these discussions, it is anticipated that the committee may decide to reassign the roles and responsibilities for implementing mitigation strategies to different town departments and/or revise the goals and objectives contained in the plan. The committee will review and update the Hazard Mitigation Plan every five years.

Public participation will be a critical component of the Hazard Mitigation Plan maintenance process. The Hazard Mitigation Committee will hold all meetings in accordance with Massachusetts open meeting laws and the public is invited to attend. The public will be notified of any changes to the Plan via the meeting notices board at Town Hall, and copies of the revised Plan will be made available to the public at Town Hall.

TOWN OF HUNTINGTON
SELECTBOARD OFFICE
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Jeff McKittrick John McVeigh Ed Renauld
Helen Speckels, Administrative Assistant

CERTIFICATE OF ADOPTION

Town of Huntington, MASSACHUSETTS

BOARD OF SELECTMEN

A RESOLUTION ADOPTING THE TOWN OF HUNTINGTON HAZARD MITIGATION PLAN UPDATE

WHEREAS, the Town of Huntington established a Committee to update the Town's Hazard Mitigation Plan Update; and

WHEREAS, the Town of Huntington participated in the update of the Town of Huntington's Hazard Mitigation Plan;

and WHEREAS, the Town of Huntington Hazard Mitigation Plan contains several potential future projects to mitigate potential impacts from natural hazards in the Town of Huntington, and

WHEREAS, a duly-noticed public meeting was held by the Board of Selectmen on December 7, 2016 for the public and municipality to review prior to consideration of this resolution; and

WHEREAS, the Town of Huntington authorizes responsible departments and/or agencies to execute their responsibilities demonstrated in the plan, and

NOW, THEREFORE BE IT RESOLVED that the Town of Huntington Board of Selectmen formally approves and adopts the Town of Huntington Hazard Mitigation Plan, in accordance with M.G.L. c. 40.

ADOPTED AND SIGNED this December 7, 2016:

Jeff McKittrick

John McVeigh

Ed Renauld

ATTEST :

Helen Speckels

Helen Speckels

7: APPENDICES

Appendix A - Technical Resources

1) Agencies

Massachusetts Emergency Management Agency (MEMA)..... .....508/820-2000
Hazard Mitigation Section 617/626-1356
Federal Emergency Management Agency (FEMA) 617/223-4175
MA Regional Planning Commissions:
Berkshire Regional Planning Commission (BRPC).....413/442-1521
Cape Cod Commission (CCC).....508/362-3828
Central Massachusetts Regional Planning Commission (CMRPC)..... 508/693-3453
Franklin Regional Council of Governments (FRCOG).....413/774-3167
Martha's Vineyard Commission (MVC).....508/693-3453
Merrimack Valley Planning Commission (MVPC).....978/374-0519
Metropolitan Area Planning Council (MAPC).....617/451-2770
Montachusett Regional Planning Commission (MRPC).....978/345-7376
Nantucket Planning and Economic Development Commission (NP&EDC).....508/228-7236
Northern Middlesex Council of Governments (NMCOG).....978/454-8021
Old Colony Planning Council (OCPC).....508/583-1833
Pioneer Valley Planning Commission (PVPC).....413/781-6045
Southeastern Regional Planning and Economic Development District (SRPED).....508/823-1803
MA Board of Building Regulations & Standards (BBRS).....617/227-1754
MA Coastal Zone Management (CZM).....617/626-1200
DCR Water Supply Protection.....617/626-1379
DCR Waterways.....617/626-1371
DCR Office of Dam Safety.....508/792-7716
DFW Riverways.....617/626-1540
MA Dept. of Housing & Community Development.....617/573-1100
Woods Hole Oceanographic Institute.....508/457-2180
UMass-Amherst Cooperative Extension.....413/545-4800
National Fire Protection Association (NFPA).....617/770-3000
New England Disaster Recovery Information X-Change (NEDRIX) – 781/485-0279
MA Board of Library Commissioners.....617/725-1860
MA Highway Dept, District 2.....413/582-0599
MA Division of Marine Fisheries.....617/626-1520
MA Division of Capital & Asset Management (DCAM).....617/727-4050
University of Massachusetts/Amherst.....413/545-0111
Natural Resources Conservation Services (NRCS).....413/253-4350
MA Historical Commission.....617/727-8470
U.S. Army Corps of Engineers.....978/318-8502
Northeast States Emergency Consortium, Inc. (NESEC).....781/224-9876
National Oceanic and Atmospheric Administration: National Weather Service.....508/824-5116

US Department of the Interior: US Fish and Wildlife Service 413/253-8200
US Geological Survey.....508/490-5000

2) Mitigation Funding Resources

404 Hazard Mitigation Grant Program (HMGP) .....MA Emergency Management Agency
406 Public Assistance and Hazard Mitigation .....MA Emergency Management Agency
Community Development Block Grant (CDBG).....DHCD, also refer to RPC
Dam Safety Program.....MA Division of Conservation and Recreation
Disaster Preparedness Improvement Grant (DPIG) .....MA Emergency Management Agency
Emergency Generators Program by NESEC‡ .....MA Emergency Management Agency
Emergency Watershed Protection (EWP) Program.....USDA, Natural Resources Conservation Service
Flood Mitigation Assistance Program (FMAP).....MA Emergency Management Agency
Flood Plain Management Services (FPMS).....US Army Corps of Engineers
Mitigation Assistance Planning (MAP).....MA Emergency Management Agency
Mutual Aid for Public Work.....Western Massachusetts Regional Homeland Security Advisory Council
National Flood Insurance Program (NFIP) † .....MA Emergency Management Agency
Power of Prevention Grant by NESEC‡ .....MA Emergency Management Agency
Roadway Repair & Maintenance Program(s).....Massachusetts Highway Department
Section 14 Emergency Stream Bank Erosion & Shoreline Protection .....US Army Corps of Engineers
Section 103 Beach Erosion..... ..US Army Corps of Engineers
Section 205 Flood Damage Reduction.....US Army Corps of Engineers
Section 208 Snagging and Clearing .....US Army Corps of Engineers
Shoreline Protection Program.....MA Department of Conservation and Recreation
Various Forest and Lands Program(s).....MA Department of Environmental Protection
Wetlands Programs .....MA Department of Environmental Protection

‡NESEC – Northeast States Emergency Consortium, Inc. is a 501(c)(3), not-for-profit natural disaster, multi-hazard mitigation and emergency management organization located in Wakefield, Massachusetts. Please, contact NESEC for more information.

† Note regarding National Flood Insurance Program (NFIP) and Community Rating System (CRS): The National Flood Insurance Program has developed suggested floodplain management activities for those communities who wish to more thoroughly manage or reduce the impact of flooding in their jurisdiction. Through use of a rating system (CRS rating), a community's floodplain management efforts can be evaluated for effectiveness. The rating, which indicates an above average floodplain management effort, is then factored into the premium cost for flood insurance policies sold in the community. The higher the rating achieved in that community, the greater the reduction in flood insurance premium costs for local property owners. MEMA can provide additional information regarding participation in the NFIP-CRS Program.

3) Internet Resources

Sponsor	Internet Address	Summary of Contents
Natural Hazards Research Center, U. of Colorado	http://www.colorado.edu/litbase/hazards/	Searchable database of references and links to many disaster-related websites.
Atlantic Hurricane Tracking Data by Year	http://wxp.eas.purdue.edu/hurricane	Hurricane track maps for each year, 1886 – 1996
National Emergency Management Association	http://nemaweb.org	Association of state emergency management directors; list of mitigation projects.
NASA – Goddard Space Flight Center "Disaster Finder:	http://www.gsfc.nasa.gov/ndrd/dis aster/	Searchable database of sites that encompass a wide range of natural disasters.
NASA Natural Disaster Reference Database	http://ltpwww.gsfc.nasa.gov/ndrd/main/html	Searchable database of worldwide natural disasters.
U.S. State & Local Gateway	http://www.statelocal.gov/	General information through the federal-state partnership.
National Weather Service	http://nws.noaa.gov/	Central page for National Weather Warnings, updated every 60 seconds.
USGS Real Time Hydrologic Data	http://h20.usgs.gov/public/realtime.html	Provisional hydrological data
Dartmouth Flood Observatory	http://www.dartmouth.edu/artsci/g eog/floods/	Observations of flooding situations.
FEMA, National Flood Insurance Program, Community Status Book	http://www.fema.gov/fema/csb.html	Searchable site for access of Community Status Books
Florida State University Atlantic Hurricane Site	http://www.met.fsu.edu/explores/tropical.html	Tracking and NWS warnings for Atlantic Hurricanes and other links
The Tornado Project Online	http://www.tornadoroject.com/	Information on tornadoes, including details of recent impacts.
National Severe Storms Laboratory	http://www.nssl.uoknor.edu/	Information about and tracking of severe storms.
Independent Insurance Agents of America IIAA Natural Disaster Risk Map	http://www.iiaa.iix.com/ndcmap.html	A multi-disaster risk map.
Earth Satellite Corporation	http://www.earthsat.com/	Flood risk maps searchable by state.
USDA Forest Service Web	http://www.fs.fed.us/land	Information on forest fires and land management.

HUNTINGTON HAZARD MITIGATION PLAN UPDATE

Meeting #1: Wednesday, April 20, 2016

NAME	POSITION	EMAIL / PHONE
John McVeigh	Selectman	Selectmanmcveigh@Yahoo.com
GARY F. DAHILL	FIRE CHIEF	58X1@COMCAST.NET
Linda Hamlin	Planning Board	llindahamlin@netscape.net
CHARLES DAZELLE	HIGHWAY SUPT	HIGHWAY DEPARTMENT@HUNTINGTONHIGHWAY.COM
SHAWN RAIRIGH	PVPC	srairigh@pvpc.org
Robert CARREIRA	Huntington Police Dept.	policechief@huntingtonma.us

HUNTINGTON HAZARD MITIGATION PLAN UPDATE

Meeting #2: Wednesday, April 27, 2016

NAME	POSITION	EMAIL / PHONE
John McVeigh	Selectman	Selectmanmcveigh@ydroo.com (860) 967-1046
Linda Hamlin	P.B.	
Robert Garrison	Police Chief	
SHAWN RAIRICH	PVPC	
Charles Dazzio	Highway	
Jeff McKittrick	Selectboard	
GARY F. DAHILL	FIRE CHIEF	

HUNTINGTON HAZARD MITIGATION PLAN UPDATE

Meeting #3: Wednesday, May 11, 2016

NAME	POSITION	EMAIL / PHONE
Robert GARNIER	Police Dept	
CHARLES ORTOLLO	Highway Supt	413-667-3324
John McVeigh	Selectboard	860-967-1046
Linda Hamlin	Planning Bd	413-667-3346

HUNTINGTON HAZARD MITIGATION PLAN UPDATE

Meeting #4: Wednesday, May 25, 2016

NAME	POSITION	EMAIL / PHONE
Stano Rairight	PVPC	
Chris Dazzio	Huntington Highway Supt.	
GARY F. DAHILL	FIRE CHIEF	
Linda Hamlin	Planning Bd	

HUNTINGTON HAZARD MITIGATION PLAN UPDATE

Public Meeting #1: Wednesday, May 11, 2016

NAME		STREET/NEIGHBORHOOD/VILLAGE
Gary F. Dahill	GARY F. DAHILL	FIRE CHIEF
Linda Hamlin	Linda Hamlin	Planning Board
Susan McIntosh	Susan McIntosh	Conservation Commission
Robert Garrick	Robert GARRICK	Police Chief
Chad Hall	CHARLES DARRIE	HIGHWAY SUPT
John McVeigh	John McVeigh	Selectboard

Country Journal • Thursday, April 28, 20

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LEGAL NOTICE
MORTGAGEE'S
SALE OF REAL ESTATE

By virtue of and in execution of the Power of Sale contained in a certain mortgage given by **Robert L. Pouliot** to Argent Mortgage Company, LLC, dated March 7, 2006 and recorded at Hampshire County Registry of Deeds in Book 8645, Page 113 of which mortgage Deutsche Bank National Trust Company, as Trustee for Argent Securities Inc., Asset-Backed Pass-Through Certificates, Series 2006-W4 is the present holder by assignment from Citi Residential Lending Inc. As Attorney in fact For Argent Mortgage Company, LLC to Deutsche Bank National Trust Company, as Trustee for, Argent Securities Inc. Asset-Backed Pass-Through Certificates, Series 2006-W4, Under the Pooling and Servicing Agreement dated April 1, 2006 dated January 15, 2009 recorded at Hampshire County Registry of Deeds in Book 9706, Page 148; confirmatory assignment from Argent Mortgage Company, LLC to Deutsche Bank National Trust Company, as Trustee for Argent Securities Inc., Asset-Backed Pass-Through Certificates, Series 2006-W4 dated September 25, 2015 recorded at Hampshire County Registry of Deeds in Book 12097, Page 291; and assignment from Deutsche Bank National Trust Company, as Trustee for, Argent Securities Inc. Asset-Backed Pass-Through Certificates, Series 2006-W4, Under the Pooling and Servicing Agreement dated April 1, 2006 to Deutsche Bank National Trust Company, as Trustee in trust for the benefit of the Certificateholders for Argent Securities Inc. 2006-W4, Asset-Backed Pass-Through Certificates, Series 2006-W4 dated January 19, 2010 recorded at Hampshire County Registry of Deeds in Book 10086, Page 74, for breach of conditions of said mortgage and for the purpose of foreclosing the same, the mortgaged premises located at 203 Norwich Lake, Huntington, MA 01050 will be sold at a Public Auction at 2:00PM on May 13, 2016, at the mortgaged premises,

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ng input from residents on the service that Comcast Provides.

Residents may provide feedback by responding to our survey posted at www.burg.org or attending a public hearing on **Monday, May 2nd at 6:00 p.m.** Williamsburg Town Offices, Meal site room, 141 Main Street, Haydenville, Ma.

4/21,4/28/16

Public Meetings for Hazard Mitigation Plan

Huntington residents are invited to provide comments on the update of the Town of Huntington's Hazard Mitigation Plan at two public meetings, which will be held **May 11 and May 18, 2016. Both meetings will take place from 6 p.m. to 7 p.m.** at the Huntington Town Hall, 24 Russell St, in Huntington. All members of the public are welcome to attend the event. Local businesses, residents of neighboring communities, and municipal officials of neighboring communities are also encouraged to attend and provide their feedback.

The meetings will include an introduction to the Hazard Mitigation update process, an overview of past hazards in the Town, and a summary of mitigation initiatives. Municipal officials and PVPC staff will be available to answer questions and listen to comments.

The plan is being produced by the Town with assistance from the Pioneer Valley Planning Commission and is funded by the Federal Emergency Management Agency (FEMA) and the Massachusetts Emergency Management Agency (MEMA).

This planning effort is being undertaken to help the Town of Huntington 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.

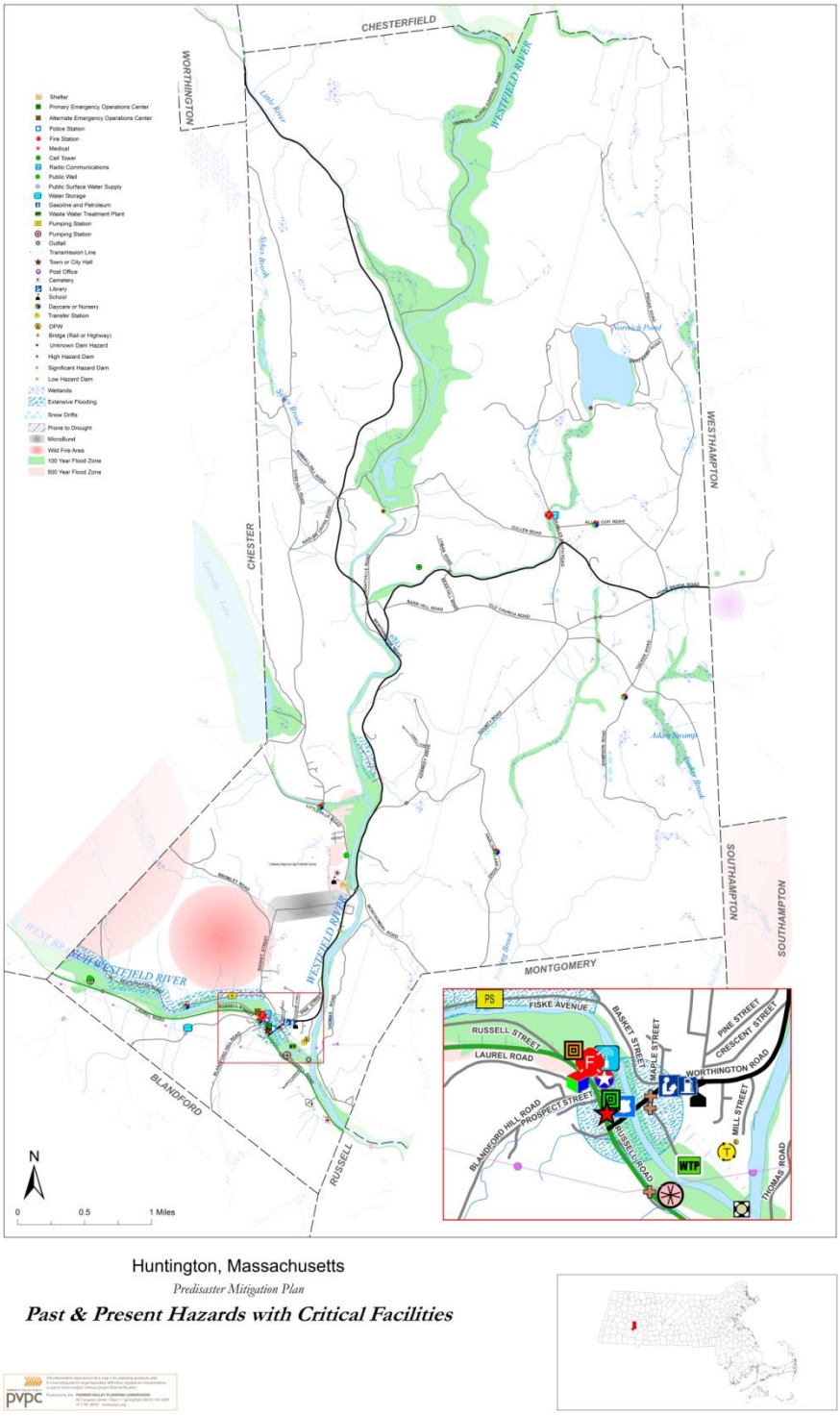
For more information, please contact PVPC's Shawn Rairigh at srairigh@pvpc.org or (413) 781-6045.

4/28,5/5/16

Appendix C – List of Acronyms

FEMA	Federal Emergency Management Agency
MEMA	Massachusetts Emergency Management Agency
PVPC	Pioneer Valley Planning Commission
EPA	Environmental Protection Agency
DEP	Massachusetts' Department of Environmental Protection
NWS	National Weather Service
HMGP	Hazard Mitigation Grant Program
FMA	Flood Mitigation Assistance Program
SFHA	Special Flood Hazard Area
CIS	Community Information System
DCR	Massachusetts Department of Conservation and Recreation
FERC	Federal Energy Regulatory Commission
TRI	Toxics Release Inventory
FIRM	Flood Insurance Rate Map
NFIP	National Flood Insurance Program
CRS	Community Rating System
BOS	Board of Selectmen
DPW	Department of Public Works
LEPC	Local Emergency Planning Committee
EMD	Emergency Management Director
Con Com	Conservation Commission
Ag Com	Agricultural Commission
EOC	Emergency Operations Center
CEM Plan	Comprehensive Emergency Management Plan
EMA	Emergency Management Agency
RACES	Radio Amateur Civil Emergency Service
WMECO	Western Massachusetts Electric Company
HAZMAT	Hazardous Materials

Appendix D – Past and Potential Hazards/Critical Facilities Map



Huntington, Massachusetts

Predisaster Mitigation Plan

Past & Present Hazards with Critical Facilities