THE TOWN OF SOUTHWICK

LOCAL NATURAL HAZARDS MITIGATION PLAN UPDATE 2016

Adopted by the Southwick Board of Selectmen on _____

Prepared by:

Southwick Hazard Mitigation Planning Committee

With technical assistance provided by the Pioneer Valley Panning Commission with funding received from the Federal Emergency Management Agency (FEMA) via the Massachusetts Emergency Management Agency (MEMA)

ACKNOWLEDGEMENTS

The Southwick Board of Selectmen extends special thanks to the Southwick Natural Hazards Mitigation Planning Committee:

Charles Dunlap, Emergency Management Director
Dick Grannells, Town Engineer
Tom FitzGerald, Health Department
Randy Brown, DPW Director

The Southwick Board of Selectmen also thanks the Massachusetts Emergency Management Agency (MEMA) for developing the Commonwealth of Massachusetts Natural Hazards Mitigation Plan (http://www.state.ma.us/dem/programs/mitigate/index.htm) which served as a model for this plan update.

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1: PLANNING PROCESS

Introduction

The Federal Emergency Management Agency (FEMA) and the Massachusetts Emergency Management Agency (MEMA) define natural 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, and similar occurrences. Mitigation efforts undertaken by communities help minimize damages to public buildings and infrastructure, such as water supplies, sewers and utility transmission lines, as well as private property and natural, cultural and historic resources.

Pre-disaster mitigation planning, including this effort by the Town of Southwick and the Pioneer Valley Planning Commission, is 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 adequately 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 a local natural hazards mitigation plan before a disaster happens can save the community money and will 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

In 2014-2015, the Town of Southwick completed an update of their 2008 Hazard Mitigation Plan, in collaboration with the Pioneer Valley Planning Commission. All portions of the plan were reviewed and updated as necessary. Planning for hazard mitigation in Southwick involved a 4-member committee:

- Charles Dunlap, Emergency Management Director
- Dick Grannells, DPW Town Engineer
- Tom FitzGerald, Health Director
- Randy Brown, DPW Director

The hazard mitigation planning process for the Town included the following tasks:

- Reviewing and incorporating existing plans and other information.
- Identifying the natural hazards that may impact the community.
- 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 strategies and establishing goals for updating, revising or adopting new strategies.
- Adopting and implementing the final Hazard Mitigation Plan.

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

Committee Meetings

Members of the Southwick Emergency Management Agency (SEMA) held meetings on the following dates, during which the committee assessed the hazards affecting Southwick, reviewed current strategies in place to mitigate natural hazards, and identified new mitigation strategies to be implemented:

- March 12th, 2014 - Southwick Emergency Management Agency Members
- April 24th, 2014 - Charles Dunlap
- May 5, 2014 - Southwick Emergency Management Agency Members
- May 22nd, 2014 - Thomas FitzGerald, Charles Dunlap
- July 10th, 2014 - Charles Dunlap
- September 18th, 2014 - Charles Darling, Charles Dunlap
- September 22nd, 2014 - Charles Dunlap, Tom FitzGerald
- October 8th, 2014 - Charles Dunlap, PVPC

In addition, meetings were held with the following municipal officials:

- February 3rd, 2015 - Randy Brown, DPW Director
- March 18, 2015 - Randy Brown, DPW Director; Alan Slessler, Town Planner; Dennis Clark, Conservation Commission; Charles Dunlap, SEMA

While different sets of municipal officials attended each meeting, all Town staff collaborated on the plan and were updated on progress by PVPC and their colleagues as necessary.

Participation by Stakeholders

A variety of stakeholders were provided with an opportunity to be involved in the development of the Southwick 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 Southwick 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 Southwick 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 staff attend all WRHSAC meetings and all WRHSAC members are aware of the fact that Southwick 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 Southwick. 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 Southwick'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 Southwick's hazard mitigation planning work.

Agencies that have the authority to regulate development

There are several Town commissions, boards, and committees within the Town of Southwick that have the authority to regulate development. These entities are:

- Sewer Implementation Committee
- Conservation Commission
- Historical Commission
- Planning Board
- Open Space Planning
- Park and Recreation Commission
- Local Emergency Planning Committee

Feedback from the stakeholder agencies listed above was ensured through the participation of the Hazard Mitigation Committee members, who regularly meet and collaborate with members of these entities and town staff that regularly staff meetings of these commissions, boards, and committees.

In addition, the Pioneer Valley Planning Commission, as a regional planning authority, works with all agencies that regulate development in Southwick, 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 Southwick 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 development of the Southwick plan – on Tuesday, February 3rd, 2015 and March 18th, 2015. 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 in Southwick Town Hall in compliance with the Commonwealth of Massachusetts' open meeting law. Meeting agendas and notices can be found in Appendix B.

Prior to the first public meeting, the PVPC released a press release announcing the meeting on February 3rd, 2015. The press release encouraged residents to attend the meeting or provide input by e-mailing or calling staff contacts at PVPC or the Town of Southwick. The press release was sent to the Springfield

Republican, which was identified by PVPC and the Hazard Mitigation Committee as the primary media outlet for Southwick residents to be notified about the planning process.

On March 16, 2015, the Pioneer Valley Planning Commission sent a second press release to all area media outlets to inform the public that a draft of the Southwick Hazard Mitigation Plan had been placed on PVPC's website. The release also indicated that hard copies were available at PVPC's offices and at Southwick Town Hall, and that all residents, businesses and other concerned parties of Southwick and adjacent communities were encouraged to comment on the plan by e-mailing or calling staff contacts at PVPC or the Town of Southwick. A list of media organizations to which the second press release was sent can be found in Appendix B, which are the television stations, radio stations, and newspapers located in western Massachusetts, northern Connecticut, and southern Vermont.

Citizens from adjacent municipalities were encouraged to comment on Southwick's plan by e-mailing or calling staff contacts at PVPC or the town. The Pioneer Valley Planning Commission's regional scope ensured that residents and government officials throughout the Pioneer Valley saw the press release and request for comments. The two PVPC press releases and a screen shot of PVPC's website showing the link to the draft plan can be found in Appendix B.

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.

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 Southwick were invited to attend the event, which was also intended to include representatives of businesses in Southwick 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 Southwick 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 Southwick.

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. These notices are included in Appendix B.

No feedback was received from the public, businesses, or neighboring communities during the planning process. Any future input received from the public, as well as any other stakeholders, will be incorporated into the plan during future regular updates.

Select Board Meeting

In 2013, 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 adopted it on _____.

2: LOCAL PROFILE

Infrastructure

Southwick's infrastructure and location have been major factors in its development. The town's active manufacturing industry is due, in part, to convenient roadway connections. Today, with most of Southwick's residents commuting to regional employment centers such as Springfield, Holyoke, Windsor Locks, Enfield and Hartford, the town's transportation accessibility makes it a popular bedroom community. As a community that places great value on the preservation of its natural resources and farming tradition, infrastructure has helped to shape and guide local land use patterns.

Roads and Highways

The principal highways in Southwick are:

- State Route 57 (Granville Road / Feeding Hills Road), which connects to Interstate 91
- State Route 10 / U.S. Route 202 (College Highway), which connects to I-90 and U.S. Route 20
- State Route 168 (Congamond Road)

Public Transportation

There is no scheduled public transportation service in Southwick (the town is not a member of the Pioneer Valley Transit Authority). On-demand van service for seniors and people with disabilities is provided through a service agreement with the Franklin Regional Transit Authority through the Southwick Council on Aging.

Water and Sewer

Most homes in Southwick that are east of Routes 10/202 and a small part of town west of Routes 10/202 are supplied by town water drawn from the Great Brook Aquifer. Homes in the western section of Southwick rely on private wells for drinking water. A few homes on the west side of the town draw on a small aquifer at the base of Drake and Sodom Mountains (Loomis Ridge Aquifer), located in the Munn Brook Valley. The City of West Springfield also has municipal wells that draw from the Great Brook Aquifer and share the Zone II aquifer recharge area.

Sanitary sewer service is currently limited in Southwick. The local sewer system, which primarily covers the center of town and the lakes area, ties into Westfield's sewage treatment plant (there is no town-owned treatment plant). Therefore, most homes, businesses and industries must still provide and depend upon their own septic systems. Septic systems and other means of on-site sewage disposal are regulated by the Southwick Board of Health under Title 5 of the Massachusetts Environmental Code.

Schools

Southwick is a member of the Southwick-Tolland-Granville Regional School District. Children attend the Southwick-Tolland Regional High School, Powder Mill Middle School and Woodland Elementary School.

All three of these schools share a campus on Feeding Hills Road in Southwick. Total enrollment during the 2012-13 academic year, including Granville and Tolland, was 1,761 students with a total budget of $19.7 million. (http://profiles.doe.mass.edu/profiles/)

Natural Resources

The relatively large areas and variety of natural resources in Southwick make it a beautiful and desirable place to live. The town's 2009 Open Space and Recreation Element of the most recent Community Development Plan recognizes the value of these natural resources and uses detailed maps to pinpoint priority resources and make key recommendations for protection.

Water Resources

Southwick's plentiful water resources include numerous streams, wetlands, lakes, and ponds. The abundance of water resources is also reflected in the reliable availability of groundwater for private and public wells. Southwick sits within two separate watersheds: the Westfield River watershed and the Farmington River watershed. The majority of the town is situated in the Westfield River watershed, including Congamond Lakes.

Southwick has more than 465 acres of surface water, which accounts for about 2 percent of the town's total 31.7 square mile area. The major surface water resource of Southwick is the chain of three connected lakes, collectively known as Congamond Lakes (North, Middle, and South Ponds). The lakes drain southward into Canal Brook, and northward into Great Brook, the town's largest surface stream. These lakes are the focus for considerable recreational use and are ringed by residences and recreational facilities.

Canal Brook begins at the southern end of South Pond, and flows southerly into Connecticut, and eventually into the Farmington River. Great Brook, from its outlet at the south end of Middle Pond flows west and north of the lakes, turning easterly just south of the town center and then northeasterly into Westfield. Both streams eventually flow into the Connecticut River. Great Brook flows past the well fields for Southwick, the City of West Springfield, and the City of Westfield. It is reported that the West Springfield well fields can cause significant induced infiltration from the brook. Owing to the wetlands and/or steep escarpments adjacent to Great Brook, there has been little development immediately along the brook. However, it does flow adjacent to the most densely developed area of town. The town's other major stream, Munn Brook, in the northwest section, flows out of Granville down a steep and scenic gorge through an area of town-owned conservation land. It then turns northerly flowing through a broad valley of mixed residential and agricultural land use. The Munn Brook Valley is underlain by an aquifer, running north to south on the west side of town.

In addition to the Congamond Lakes and the above-mentioned brooks, there are numerous smaller brooks, as well as ponds and impoundments throughout the town. These water bodies are a valuable community resource that contributes greatly to the scenic and rural character of the town. They include Pearl Brook, Johnson Brook, Tuttle Brook, Shurtleff Brook, White Brook, Palmer Brook, Bradley Brook and Slab Brook. Many of the ponds are natural, but some are old farm ponds built during the WPA period and are used for irrigation, water supply, fire protection, and recreation.

Water resources are found throughout the town, but concentrated in the two principal stream systems that drain the town. On the west side of Southwick, the Shurtleff and Munn Brook system drains a large area of mountainous terrain on the town's western border, feeding an aquifer that runs north into Westfield. On the east side, a larger aquifer is associated with the Congamond Lakes/Great Brook drainage. Much of this area contributes directly to Southwick's wells.

In addition to water supply, these water resources, especially wetlands, are important for water quality and wildlife habitat. Along with recreation, they provide viable habitat, nesting, food, and water for a variety of species. Wetlands also provide filtration of all pollutants that enter them, hence cleaning the water on which all species depend.

Southwick has approximately 2,800 acres (4.4 square miles) of wetlands and wet soils. Most of the upland wetlands consist of wooded swamps with limited areas of shrub swamp, shallow and deep marsh and wet meadow. The most extensive wetland area in town is along Palmer Brook, South Pond, Canal Brook and the Goose Pond area at the southern end of the Congamond Lakes. This wetland includes large areas of marsh, shrub swamp, and bog as opposed to the wooded swamps of the upland wetlands. An extensive wetland area also borders Great Brook from its beginning at the Congamond Lakes northward toward the center of town. The floodplain of Great Brook, from South Longyard Road north, includes substantial areas of wetlands as well. More limited wetlands are often found along Munn Brook and other small streams.

Wetlands not associated with brooks or rivers are called "isolated wetlands." Vernal pools are examples of these and fill with water only during the wet seasons, providing habitat for salamanders, frogs, and other threatened species.

Forests

Southwick boasts a significant amount of undeveloped acreage and forest in its landscape. Approximately 11,600 acres (18.1 square miles), or 60 percent, of Southwick is forested. Forested areas are mapped in the Open Space Element of the current Community Development Plan, and prioritized based on their concentration, and connections with other resources like streams and wetlands. Some highlighted areas are located along the Shurtleff/Munn Brook system and the Great Brook corridor; and the wooded slopes on the town's Eastern and Western borders, and areas surrounding Fred Jackson Road, North of Goose Pond, and South of Kellogg Brook.

Development

Several factors have and continue to influence the development patterns of Southwick. These include: existing development and the availability of land for new development; the existing road network; physical and topographic features, such as steep slopes, soil conditions, lakes, tributaries and floodplains; protection of land for conservation or agricultural use through conservation restrictions, the Massachusetts Agricultural Preservation Restriction (APR) program, deed restrictions and other measures; and the availability of utility services, especially public water and sanitary sewers.

Southwick's master plan, as well as its Zoning Bylaw and related land use regulations, constitute a "blueprint" for the town's future. Land use patterns will continue to evolve, influenced and limited by local planning goals and regulations, as well as nature features and economic conditions. Eventually, Southwick will be "built out"— there will be no more undeveloped (or unprotected) land left to build on. Therefore, it is critical to the natural hazard mitigation planning process focus not on current land uses and build-outs, but on the likely and potential future uses and build-outs that are allowed by regulations.

Agencies that have the authority to regulate development

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Current Development Trends

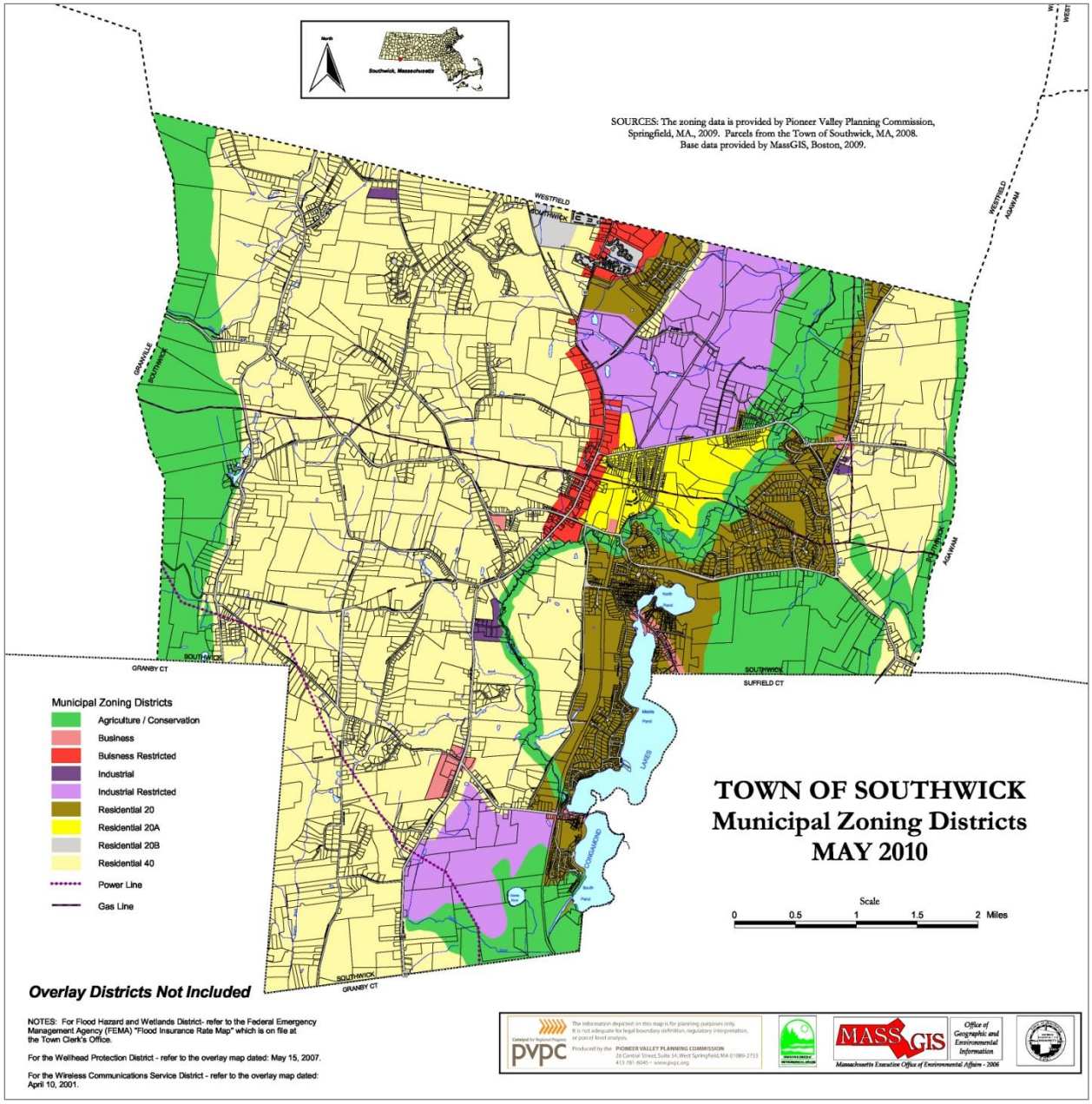
Southwick's population in 2012 was 9,502 residents, as estimated by the 2010 US Census. This population continues the town's trend of population growth since 1950, when there were just 2,855 residents.

The majority of Southwick's 20,267 acres (31.7 square miles) is undeveloped forest and water, totaling nearly 12,000 acres (18.8 square miles). Agricultural land totaling 4,000 acres (6.3 square miles) and residential land totaling 3,200 acres (5.0 square miles) account for the majority of the remaining town area. Commercial and industrially used land consists of approximately 450 acres (.7 square miles), with public/urban open land contributing an additional 680 acres (1.1 square miles).

Currently, development in Southwick is moderately encouraged by existing zoning regulations to locate in areas where the infrastructure and environmental conditions can best support growth. The town's Zoning Bylaw limits development, primarily subdivisions, in areas that are preserved for agriculture and conservation, or in areas that are designated flood hazard zones. However, municipal boards have continued to issue special permits that have allowed new development in these areas, which is inconsistent with the Zoning Bylaw.

In the past 5 years, there have been two significant developments in Southwick: the Rails End Subdivision near Depot Hill, and Noble Steed near Vining Hill Road. The Hazard Mitigation Committee indicated that neither of these new developments is in an area of town that is particularly susceptible to hazards.

Southwick Base Zoning Districts



Southwick Zoning Districts

Zoning is an important land use tool available to Massachusetts towns for managing development and directing growth to suitable and desired areas while protecting critical resources and ensuring that development is in keeping with local character.

Southwick has nine base zoning districts and five overlay districts. The base districts define the allowed uses and dimensional requirements, while the overlay districts establish additional restrictions in certain areas for the protection of specific public interests. The location, boundaries and characteristics of the base districts are described below.

Base Zoning Districts

- Agricultural and Conservation District AC: Areas of town which are best suited for land uses and activities in keeping with the Town's rural character, primarily but not limited to farm and forest uses, and single-family homes by special permit.

- Residence Zone R-40: Areas of town which are best suited for low to medium-density residential development as well as land uses and activities in keeping with the Town's rural character, primarily but not limited to farm and forest uses.

- Residence Zone R-20: Areas of town which are best suited for the same uses as R-40; but also allowing public boathouses, bathhouses, and commercial uses for recreation, etc.

- Residence Zone R-20-A: Areas of town which are best suited for the same uses as R-20; but also allowing apartment buildings.

- Residence Zone R-20-B: Areas of town which are best suited for the same uses as R-20; but also allowing group housing.

- Business Zone B: Areas of town which are best suited for offices, commercial, and retail businesses.

- Business Restricted Zone BR: Areas of town which are best suited for offices, commercial, and retail businesses by special permit or site plan approval.

- Industrial Zone I: Areas of town which are best suited for manufacturing and industrial uses, as well as any use permitted in the Business District.

- Industrial Restricted Zone IR: Areas of town which are suited for similar uses as in Industrial District I, but subject to site plan approval and additional performance standards.

Overlay Districts

- Flood Hazard and Wetlands District FH: This overlay district establishes additional regulations within flood hazard and wetlands areas in order to prevent flooding and manage stormwater and water quality.

- Wellhead Protection District: This overlay district sets forth standards, rules and permitting procedure for uses that are located within the town's well water source recharge areas.

- Flexible Residential Zoning District FRD: This overlay district is permitted in R-40, R-20, R-20-A and R-20-B, only upon issuance of a special permit and site plan approval, it allows clustering of residential buildings in order to preserve open space.

- Wireless Communications Services District: This overlay district regulates wireless communications towers and facilities.

- Adult Entertainment District: This overlay district provides regulations for adult-oriented businesses and restricts their location to the Industrial Restricted Zone (IR).

The Zoning Bylaw specifies a Site Plan Approval procedure for most business, industrial, and commercial buildings. Site Plan Review gives the Planning Board the authority to review development proposals to ensure that basic safety and welfare interests of Southwick residents are protected.

National Flood Insurance Program (NFIP)

The National Flood Insurance Program has produced maps that identify floodways across America. Southwick is a participating member of the National Flood Insurance Program, and had the following NFIP policy and claim statistics as of October of 2014:

- Flood Insurance Maps (FIRMs) are used for flood insurance purposes and are on file with the Town Planning Board and Building Inspector.

- FIRMs have been effective since July 16, 1984 with the current map in effect since July 16, 2013.

- Southwick has 23 in-force policies in effect for a total of $4,833,100 worth of insurance.

- There have been a total of 13 NFIP claims for which $12,290 has been paid.

- As of 2014, there have been no Repetitive Loss Properties in Southwick.

- 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 flood plain and FEMA Flood Insurance Rate Map (FIRM).

3: HAZARD IDENTIFICATION & ANALYSIS

The following section includes a summary of disasters that either have affected or could affect Southwick. Historical research, conversations with local officials and emergency management personnel, available hazard mapping, and weather-related databases were used to develop this list. Identified hazards are the following:

- Floods / Flash Floods
- Severe snowstorms / Ice storms / Blizzards
- Hurricanes / Tropical Storms
- Severe thunderstorms / Wind / Tornadoes / Hail
- Wildfires / Brushfires
- Earthquakes
- Dam failure
- Drought
- Extreme Temperatures

Natural Hazard Analysis Methodology

The hazard analysis is organized into the following categories: Hazard Description, Location, Extent, Previous Occurrences, Probability of Future Events, Impact, and Vulnerability. A description of each of these categories is provided below.

Hazard Description

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

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:

Location of Occurrence, Percentage of Town Impacted by Given Natural Hazard	
Location of Occurrence	**Percentage of Town Impacted**
Very Large	More than 70% of the town affected
Large	51 to 70% 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:

Extent of Impacts, Magnitude of Multiple Impacts of Given Natural Hazard	
Extent of 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 – Highest risk
2 – High risk
3 – Medium risk
4 – Low risk
5 – Lowest 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 Analysis Worksheet for Southwick				
Type of Hazard	**Location of Occurrence**	**Probability of Future Events**	**Impact**	**Vulnerability**
Flooding	Large	High	Minor	3 - Medium Risk
Flash Flooding	Large	Moderate	Major	3 - Medium Risk
Severe Snowstorms / Ice Storms	Very Large	High	Limited	3 - Medium Risk
Blizzards	Very Large	Moderate	Major	3 - Medium Risk
Hurricanes / Tropical Storms	Very Large	Low	Minor	3 - Medium Risk
Severe Thunderstorms / Hail	Very Large	High	Limited	3 - Medium Risk
Wind	Very Large	High	Limited	3 - Medium Risk
Tornadoes	Very Large	High	Limited	3 - Medium Risk
Wildfires / Brushfires	Very Large	Low	Limited	2 - High Risk
Earthquakes	Very Large	Moderate	Critical	3 - Medium Risk
Dam Failures	Small	Low	Critical	4 - Low Risk
Drought	Very Large	Low	Minor	4 - Low Risk / 5 - Lowest Risk
Extreme Heat	Very Large	Low	Minor	3 - Medium Risk
Extreme Cold	Very Large	Low	Minor	3 - Medium Risk

Flooding / Flash Flooding

Hazard Description

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

- 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, including both hurricanes and nor'easters, originate from the south and usually occur in late summer, early fall, and winter. The most severe coastal storms, hurricanes, occasionally reach Massachusetts and generate very large amounts of rainfall or frozen precipitation.

- 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

The major floods recorded in western Massachusetts during the 20th Century have been the result of rainfall alone or rainfall combined with snowmelt. For the most part, Southwick's floodplains are narrow corridors that follow very closely the paths of streams and brooks. These are highly susceptible to flooding at any time of the year when heavy storms can dramatically increase stream levels within a short period. The floodplains of Great Brook and Munn Brook are most prone to flooding. In addition, there are some floodplains areas along Palmer Brook and Goose Pond, just southwest of South Congamond Pond; along the confluence of Johnson Brook, Tuttle Brook, and Pearl Brook near the town center; along Munn and Shurtleff Brooks in the northwestern corner of town; and along Kellogg Brook, at the northern border with Westfield. There are some smaller 500-year floodplains mapped as well, in several low-lying areas throughout Southwick.

Most of the smaller streams feed into these two and thus they experience the heaviest flooding and cause the most damage during prolonged rainfall. The areas along the Congamond Lakes are also cause for concern. In addition to damage of buildings directly in the floodplain, development can result in a

loss of natural flood storage capacity and can increase the water level of the lakes. Flood levels may then increase, causing damage to structures not normally in the flood path.

In addition, the following areas have been identified as being subject to localized flooding:

Town Hall

The Southwick Town Hall abuts Great Brook, which is at risk for flooding during a major storm. This area is not within a FEMA mapped 100-year flood zone.

- The Town Hall was flooded in 1938 and 1955.
- Annual potential for flooding in floodplain from both spring runoff and heavy summer/fall rains.

College Highway – from Granville Road to Feeding Hills Road

There are no critical facilities structures located along this stretch of College Highway, except one daycare center. However, there are several located nearby, just south of the intersection with Granville Road/Depot Street. In addition there are approximately 20 residential or commercial structures in this area that have been affected or could be affected by a flood incident. Based on a median home value of $259,400 and 100 percent damage to 100 percent of these structures, the damage from flooding would be approximately $5,188,000. The cost for repairing or replacing any power lines, telephone lines, and contents of structures is not included in this estimate. In addition, this is a primary evacuation route.

- This area is partially within a FEMA mapped 100-year flood zone.
- Heavy rains in 1955 caused flooding in this area.
- During major storm events, water covers small stretches of College Highway.
- Potential annual event due to heavy rains and runoff.
- Flooding of road due to accumulation of heavy rain and runoff.
- Potential for damage/repair to the road surface.
- Nearby critical facilities include: Town Hall, sewer pump station, water pump station, Fire Department, Police Department, Department of Public Works, one group home.

Klaus Anderson Road/Curtis Road

There are no critical facilities located in this area that could be affected by a flood incident; however this is a key evacuation route in case of emergency.

- This area is partially within a FEMA mapped 100-year flood zone.
- During major storm events, water comes up to the bridge level where the road crosses Johnson Brook and Pearl Brook.
- Potential annual event due to heavy rains and runoff.
- Flooding of road due to accumulation of heavy rain and runoff.
- Potential for damage/repair to the road surface.

Sheep Pasture Road

There are approximately 3 residential structures located in this area which could be affected by a flood incident, however none are critical facilities. Based on a median home value of $259,400 and 100 percent damage to 100 percent of these structures, the damage from flooding would be approximately $778,200. The cost for repairing or replacing any power lines, telephone lines, and contents of structures is not included in this estimate.

- This area is partially within a FEMA mapped 100-year flood zone.
- Beavers back-up the culvert that underpasses the road at Great Brook.
- Potential annual event due to heavy rains and runoff.
- Potential for damage/repair to the road surface.

Berkshire Avenue

There are approximately 5 residential structures located in this area that have been affected or could be affected by a flood incident, but no critical facilities. Based on a median home value of $259,400 and 100 percent damage to 100 percent of these structures, the damage from flooding would be approximately $1,297,000. The cost for repairing or replacing any power lines, telephone lines, and contents of structures is not included in this estimate.

- This area is partially within a FEMA mapped 100-year flood zone.
- Heavy rains can back-up the culvert under the road at Great Brook.
- Potential annual event due to heavy rains and runoff.
- Potential for damage/repair to the road surface.

Well Fields on Feeding Hills Road

There are approximately 3 residential structures located in this area which could be affected by a flood incident, however none are critical facilities. Based on a median home value of $259,400 and 100 percent damage to 100 percent of these structures, the damage from flooding would be approximately $778,200. The cost for repairing or replacing any power lines, telephone lines, and contents of structures is not included in this estimate.

- This area is partially within a FEMA mapped 100-year flood zone.
- Heavy rains can back-up the culvert under the road at Great Brook.
- Potential annual event due to heavy rains and runoff.
- Potential for damage/repair to the road surface.

Fernwood Road and Pinewood Road

This small subdivision has a history of flooding during heavy rains. There are approximately 5 residential structures located in this area that have been affected or could be affected by a flood incident, but no critical facilities. Based on a median home value of $259,400 and 100 percent damage to 100 percent of these structures, the damage from flooding would be approximately $1,297,000. The cost for repairing or replacing any power lines, telephone lines, and contents of structures is not included in this estimate. Potential annual event due to heavy rains and runoff.

- Potential for damage/repair to the road surface.

Point Grove Road

There are approximately 5 residential structures located in this area that have been affected or could be affected by a flood incident, but no critical facilities. Based on a median home value of $259,400 and 100 percent damage to 100 percent of these structures, the damage from flooding would be approximately $1,297,000. The cost for repairing or replacing any power lines, telephone lines, and contents of structures is not included in this estimate. This area is in very close proximity to North Congamond Pond, and can be impacted by the amount of water flowing out of the Lakes and into Great Brook. It can be susceptible to flash flooding.

- Potential annual event due to heavy rains and runoff.
- Potential for damage/repair to the road surface.

Hunter Ridge Circle

This is a flood-prone detention pond, intended to serve the small subdivision located on Hunter Ridge Circle and Mallard Lane. There are approximately 3 residential structures located in this area which could be affected by a flood incident, however none are critical facilities. Based on a median home value of $259,400 and 100 percent damage to 100 percent of these structures, the damage from flooding would be approximately $778,200. The cost for repairing or replacing any power lines, telephone lines, and contents of structures is not included in this estimate.

Granville Road by Hummell Lane

There are approximately 2 residential structures located in this area which could be affected by a flood incident. Based on a median home value of $259,400 and 100 percent damage to 100 percent of these structures, the damage from flooding would be approximately $518,800. The cost for repairing or replacing any power lines, telephone lines, and contents of structures is not included in this estimate.

North Loomis Street

Flooding has occurred at this spot on North Loomis Street where Shurtleff Brook crosses. One residential structure is located nearby which could be affected by a flood incident in this area. Assuming 100 percent damage to this structure, the estimated cost of repair or replacing would be $259,400.

Based on these locations, flooding and flash flooding have a “large” location of occurrence, with between 51 and 70 percent 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).

According to data from USA.com, the average annual precipitation for Southwick is 49 inches.

The Hazard Mitigation Committee indicated that all locations of localized flooding can receive high water marks of up to several feet during sufficiently large rainstorms.

Previous Occurrences

The Hazard Mitigation Committee identified the locations listed under the "location" section as where localized flash flooding has occurred previously. Southwick has experienced many small flooding events over the last decade. Generally, these small floods have had minor impacts, temporarily impacting roads. However, two large town-wide floods in 1938 and 1955 had far-reaching impacts throughout Southwick. Flood control devices at the outlets to Congamond Lakes have since been constructed, and are closely monitored during heavy rains.

Probability of Future Events

The area within the 100-year flood plain has a 1 percent chance of a severe flood in any given year. However, since 1948, incidents of extreme rainfall events (large amounts of rain in a short period of time) in the U.S. have increased 30 percent. But New England states have experienced a far greater increase than the national average. In Massachusetts, the increase is 81 percent; upstream on the Connecticut River, New Hampshire is up 115 percent and Vermont is up 84 percent. (Source: Environment America Research & Policy Center, 2012). Extreme rainfall is a cause of flooding, which is a major concern of this plan.

The Hazard Mitigation Committee has determined the risk of flooding to be "high," or a 40 to 70 percent chance in any given year. The chances of localized flooding are classified as "moderate," or a 10 to 40 percent chance in any given year.

Impact

The value of all residential structures in the Town of Southwick is $1,022,814,200 as of 2015.

There are approximately 1,038 acres of land within the FEMA mapped 100-year floodplain and 937 acres of land within the 500-year floodplain within the Town of Southwick. A total of 150 residential structures are located within the SFHA in Southwick, totaling approximately $38,910,000 of damage. The damage estimate is a rough estimate and likely reflects a worst-case scenario. Computing more detailed damage assessments based on assessor's records is a labor-intensive task and beyond the scope of this project.

In addition to the floodplains mapped by FEMA for the 100-year and 500-year flood, Southwick often experiences minor flooding at isolated locations due to drainage problems, or problem culverts. Projected damage is indicated in the "location" section above. Most of the flood hazard areas listed here were identified due to known past occurrence in the respective area. There are many areas with no record of previous flood incidents that could be affected in the future by heavy rain and runoff.

Vulnerability

Based on the above analysis, Southwick has a vulnerability of "3 - Medium Risk" from both flooding and flash flooding.

Severe Snowstorms / Ice Storms / Blizzards

Hazard Description

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.

Location

The entire town is susceptible to severe snowstorms, meaning the location of occurrence is "very large," or over 70 percent of land area affected. The town has had problems with the following roadways:

Granville Road (Rt 57)
Any severe winter weather incident can cause critical snow and ice hazard at the crossing of Granville Road (Rt 57) as it travels over Sodom Mountain and Shurtleff Brook into Granville. As this is the major thoroughfare into Granville, it is a trouble spot, often the site of accidents.

Lake Roads
The roads around Congamond Lakes can be extremely dangerous during large snow events. Many of the roads are very narrow, and more importantly, most of the roads have steep embankments which do not allow room for plowed snow. This impairs visibility and clogs driveways.

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

Southwick 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.

Based on data available from the National Oceanic and Atmospheric Administration, there were 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 Southwick, the likelihood that a severe snow storm, ice storm, or blizzard will occur in any given year is "high," or between 40 and 70 percent.

Impact

The impact of a severe snowstorm, ice storm, or blizzard is considered to be "limited," with more than 10 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, $1,022,814,200, is used. An estimated 20 percent of damage would occur to 10 percent of structures, resulting in a total of $20,456,284 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, Southwick's vulnerability to snow storms, ice storms, and blizzards is "3 - Medium Risk."

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 Southwick is at risk from hurricanes and tropical storms, meaning the location of occurrence is "very large," or over 70 percent of all land affected. The following locations have been identified as potentially more susceptible to damage:

Sodom/Drake Mountains
The higher elevations near the tops of the mountains on the western portion of town can generate severe wind incidents, especially during intense thunderstorms, hurricanes, or blizzards.

Granville Gorge
The topography of the road traveling through the gorge creates a wind tunnel, creating hazardous conditions for travelers.

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 the Pioneer Valley are show in the following table. Southwick's EMD recalled the effects of Hurricane Diane in 1955, "*I was 12 years old as an eye witness to the devastation.... significant flood damage to roads, North Pond Dam breaching and emptying all three Congamond Lakes... major flooding that occurred with houses washed down Great Brook.*" In addition, Hurricane Irene also caused road washouts along with minor flooding.

Major Hurricanes in the Pioneer Valley		
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

Probability of Future Events

Southwick'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 "low" probability (1 to 10 percent in any given year) of hurricanes and tropical storms.

Impact

Southwick has experienced small blocks of downed timber and uprooting of trees onto structures. The 1938 and 1955 hurricanes were major events and caused wind damage and flooding statewide. There is potential for disruption of power and phone line services, structural damage to buildings, and flooding of evacuation routes. The impact of a tropical storm or hurricane is considered to be "minor," with minimal property damage expected.

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 Very dangerous winds will produce some damage	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
2	MODERATE Extremely dangerous winds will cause extensive damage	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
3	EXTENSIVE Devastating damage will occur	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
4	EXTREME Catastrophic damage will occur	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
5	CATASTROPHIC Catastrophic damage will occur	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+

Vulnerability

Based on the above analysis, Southwick faces a vulnerability of "3 - Medium Risk" from hurricanes and tropical storms.

Severe Thunderstorms / Wind / Tornadoes / Hail

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). Less frequently, hail is present, which can become very large. Tornadoes can also be generated during these events.

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 (cars, etc.).

Location

As per the Massachusetts Hazard Mitigation Plan, the entire town is at risk of high winds, severe thunderstorms, hail, and tornadoes, meaning the location of occurrence is "very large," or over 70 percent of land area affected. Some microburst incidents reported along the Congamond Road area, no structural damages. Hilltops and ridges are most susceptible to strong winds.

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.

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.

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).

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

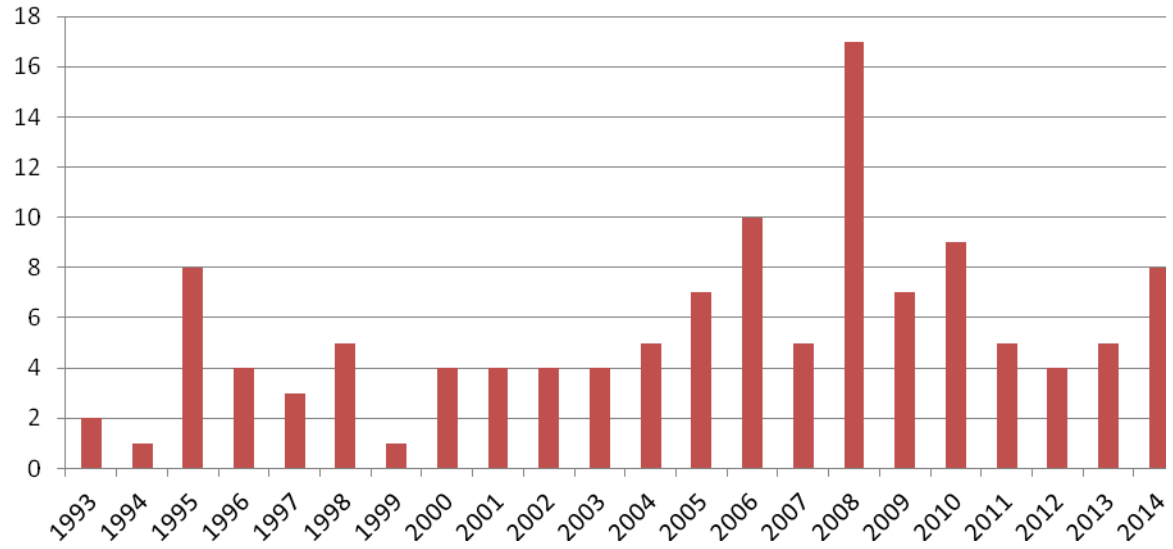
Rainfall Records for Southwick, MA		
Month	**24-Hour Record**	**Monthly Record**
January	2.21"	9.61"
February	2.21"	7.29"
March	2.48"	9.5"
April	2.99"	9.89"
May	4.81"	12.02"
June	5.91"	13.59"
July	2.8"	8.39"
August	7.68"	21.91"
September	5.08"	8.98"
October	4.29"	11.58"
November	3.31"	8.51"
December	2.99"	8.39"

http://www.myforecast.com/bin/climate.m?city=19530&zip_code=01095

Previous Occurrences

In 1992, an F0 touched down in Southwick. In western Massachusetts, the majority of sighted tornadoes have occurred in a swath east of Southwick, known as "tornado alley." Sixteen incidents of tornado activity occurred in Hampden County between 1959 and 2011. Most recently, on June 1, 2011 an F3 tornado struck eight municipalities in western and central Massachusetts.

The number of severe thunderstorms in Hampden County that included winds over 50 miles per hour, since 1993, are included in the table below. On average, since 1993, there have been between 5-6 severe thunderstorms per year.



Source: NOAA Storm Events Database, 2014, www.ncdc.noaa.gov/stormevents/
On July 26, 2011, a strong cold front moved across southern New England in which severe thunderstorms developed. These storms produced large hail and damaging winds. The strong winds knocked down many trees and power lines in Berkshire, Hampden, and Hampshire Counties. Hail sizes were from quarter-size to ping-pong-ball-size. (from MA Hazard Mitigation Plan, p. 14-26) No hail damage was reported in Southwick.

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 Hampden County to determine the Tornado Index Value as shown in the table below.

Tornado Index for Hampden County	
Hampden County	138.23
Massachusetts	87.60
United States	136.45

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

Based upon the available historical record, as well as Southwick's location in a high-density cluster of state-wide tornado activity, it is reasonable to estimate that there is a low frequency of tornado occurrence in Southwick 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. The probability of future events of severe thunderstorms, hail, wind, and tornadoes is considered "high," or between a 40 and 70 percent chance in any given year.

Impact

The potential for locally catastrophic damage is a factor in any tornado, severe thunderstorm, or wind event. In Southwick, a tornado that hit the residential areas would leave much more damage than a tornado with a travel path that ran along the town's forested uplands, where little settlement has occurred. Most buildings in the Town of Southwick have not been built to Zone 1, Design Wind Speed Codes. The first edition of the Massachusetts State Building Code went into effect on January 1, 1975, with most of the town's housing build before this date.

The impact from severe thunderstorms, hail, tornadoes, or wind is considered to be "limited," with over 10 percent of property in the affected area damaged or destroyed . Using a total value of

$1,022,814,200 of all structures in Southwick, and an estimated 20 percent of damage to 10 percent of structures, an estimated $20,456,284 worth of damage would occur. This estimate does not include building contents, land values or damages to utilities.

Vulnerability

Based on the above assessment, Southwick has a vulnerability of "3 - Medium Risk" from severe thunderstorms, wind, hail, and tornadoes.

Wildfire / Brushfire

Hazard Description

Wildland fires 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 wildland fires 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 wildland fires:

- Surface fires are the most common type of wildland fire, 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

Hampden County has approximately 273,000 acres of forested land, which accounts for 67 percent of total land area. The overall location of occurrence in Southwick of wildfire or brushfire is "very large," or over 70 percent of land area affected.

Agricultural Fields
Moderate risk exists for potential wildfire incidents in the agricultural portions of town. Because there is agricultural land scattered throughout Southwick, it is difficult to pinpoint exact locations which could be more susceptible to brushfires.

Sodom Mountain/Campgrounds by Granville Gorge
Several brushfires have occurred in this area, primarily due to campers. Thus far, no structures have been damaged by the incidents, as most of the brushfires were quickly suppressed. Southwick has a mutual aid agreement with the neighboring town of Granville and has worked with them on several occasions to fight fires in this area.

Forested areas with high fuel content have more potential to burn. The risk of fire increases for wooded areas with higher elevation. There is limited access for reaching a wildfire in these areas as well.

Extent

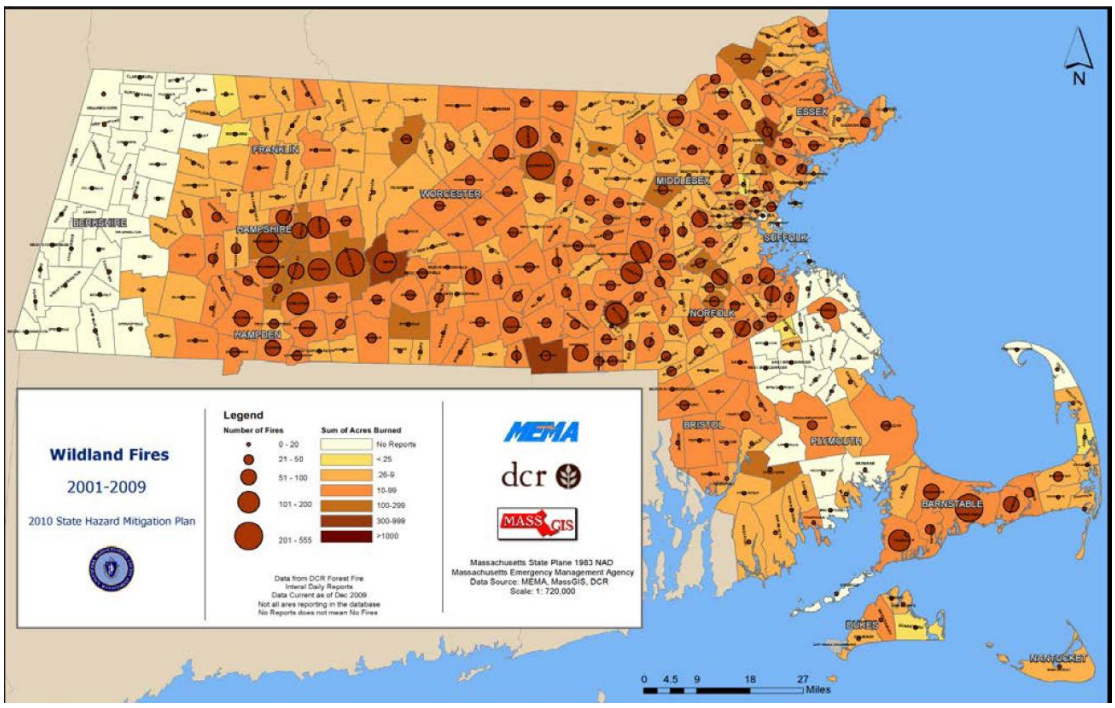
Southwick is 60 percent forested and thus at risk of wildfire. Wildfires can cause widespread damage to the areas that they affect. They can spread very rapidly, depending on local wind speeds and be very difficult to get under control. Fires can last for several hours up to several days.

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

Wildland Fires in Massachusetts, 2001-2009



Source: Massachusetts Hazard Mitigation Plan

Probability of Future Events

While wildfires have not been a significant problem in Southwick to date, there is the potential that changing land use patterns and weather conditions will increase the town's vulnerability to these fires. Even though increased heavy rains and flooding are anticipated in the future, so are longer periods of

drought. Severe storms also topple trees and other vegetation that dry out and provide fuel for fires if not removed. Both of these circumstances increase the possibilities for wildfires. Furthermore, a fire that starts under these conditions usually burns hotter and is harder to extinguish. Also, soils and root systems that are starved for moisture can ignite. Residential structures in rural, forested parts of town increase the total area that is vulnerable to fire. Homes in rural areas also place families and neighborhoods closer to the areas where wildfires are more likely to occur, increasing the need for emergency responders. Based on past occurrences, the likelihood of a wildfire or brushfire is "low," or between 1 and 10 percent.

Impact

The impact of a wildfire or brushfire is considered "limited," with more than 10 percent of property in the affected area damaged or destroyed. There are several structures that are close to forested areas. Assuming approximately 3 structures could be impacted by a wildfire, with 100 percent damage to 100 percent of the structures, the estimated cost of repairing or replacing these buildings is $778,200. This estimate does not include building contents, land values or damages to utilities.

Vulnerability

Southwick faces a vulnerability of "2 - High Risk" from wildfire and brushfires.

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, with a "very large" location of occurrence (over 70 percent of total land area).

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.

[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.*

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.

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 that occurred in the New England Region are shown in the table below. There is no record of damage in Southwick as a result of these events.

New England Earthquakes with a Magnitude of 4.2 or more, 1924 – 2012		
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 Hampden County to determine the Earthquake Index Value as shown in the table below.

Earthquake Index for Hampden County	
Hampden County	0.24
Massachusetts	0.70
United States	1.81

Based upon existing records, the probability of future events is "moderate," or 10 to 40 percent chance 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.

The impact from earthquakes is considered "critical" with over 25 percent of property in the affected area damaged or destroyed. Assuming a total value of all structures in town of $1,022,814,200 and an estimated loss of 100 percent to 20 percent of structures an earthquake would result in $204,562,840 worth of damage. The costs of repairing or replacing roads, bridges, power lines, telephone lines, or the contents of the structures are not included in this estimate.

Vulnerability

Based on the above analysis, Southwick faces a vulnerability of "3 - Medium Risk" from earthquakes.

Dam Failures

Hazard Description

Dams 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 failure is not a common occurrence, but dams do represent a potentially disastrous hazard. When a dam fails, the potential energy of the stored water behind the dam is released rapidly. Most dam failures occur when floodwaters above overtop and erode the material components of the dam. Often dam breaches 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 13 dams in Southwick. Of these, only the Dr. Logie Dam on Shurtleff Brook is regulated by the Office of Dam Safety. As of its most recent inspection (May 25, 2012), the dam was rated by the Office of Dam Safety to be in "Poor" condition.

Southwick depends on several significant dams or other water-control devices throughout town. At the southern end of Congamond Lakes, a system of batter boards is utilized to manage the water level in the lake. At the northern end, a large dam and embankment prevents a potential breech. In addition, the town is somewhat susceptible to high hazard dams in neighboring towns, such as Cobble Mountain Reservoir in Granville and the Granville Reservoir.

The overall location of occurrence for a dam failure in Southwick is considered "small," with less than 10 percent of land area affected.

Southwick Dams, Classified by Hazard Risk				
Dam	**Hazard Risk**	**Condition**	**Year Completed**	**Owner**
Ahrens Pond Dam	N/A	N/A	Unknown	Unknown
Basil Tysz Dam	N/A	N/A	Unknown	Unknown
Cigar Pond Dam #1 (Lower)	N/A	N/A	Unknown	Unknown
Cigar Pond Dam #2 (Upper)	N/A	N/A	Unknown	Unknown
Congamond Lake Outlet - Middle Pond Dam	N/A	N/A	1900	Town of Southwick
Congamond Lakes Dam	N/A	N/A	1900	Town of Southwick
Congamond Lakes North Dike	N/A	N/A	1956	Town of Southwick - Conservation
Dr. Logie Pond Dam	Significant	Poor*	1955	Whalley Properties Inc.
Hathaway & Steane Farm Pond Dam	N/A	N/A		Double M-B Ranch
Hathaway & Steane Pond Dam #1	N/A	N/A		Unknown
Hathaway & Steane Pond Dam #2**	N/A	N/A		Whalley Properties Inc.
Sackett District Reservoir Dam	N/A	N/A	1898	City of Westfield
Unnamed Dam Below Cigar Dam #1	N/A	N/A		Unknown

* Most recent inspection May 25, 2012. **Impoundment drained and no longer regulated.

Source: Massachusetts Emergency Management Agency (MEMA), Department of Conservation and Recreation (DCR) updated 2013

Extent

Often dam 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 failures in Southwick.

Probability of Future Events

As Southwick's high hazard dams age, and if maintenance is deferred, the likelihood of a dam failure will increase, but, currently the probability of a future dam failure is considered "low," with between 1 and 10 percent chance in any given year.

Impact

In addition to the dams located within the Town of Southwick, there are three high hazard dams immediately upstream of Southwick in Granville, the potential failure of which could cause significant damage in Southwick. Of these, there is particular concern among Southwick officials regarding the Granville Dam, a water supply structure for the City of Westfield that is located in Granville. In addition, a failure of Cobble Mountain Dam would likely cause property damage in Granville and Blandford.

A dam failure is considered to have a "critical" impact on Southwick, with over 25 percent of property in the affected area damaged or destroyed. Assuming a total value of all structures in town of $1,022,814,200 and an estimated loss of 100 percent to 20 percent of structures an earthquake would result in $204,562,840 worth of damage. The costs of repairing or replacing roads, bridges, power lines, telephone lines, or the contents of the structures are not included in this estimate.

Vulnerability

Based on this analysis, Southwick has a vulnerability of "4 - Low Risk" from dam failure.

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. Of course, these impacts can have far-reaching effects throughout the region and even the country.

Location

Because of this hazard's regional nature, a drought would impact the entire town, meaning the location of occurrence is "very large," or over 70 percent of land 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. 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 Categories[3]		
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

[3] US Drought Monitor, http://droughtmonitor.unl.edu/classify.htm

Previous Occurrences

In Massachusetts, six major droughts have occurred statewide since 1930.[4] 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:

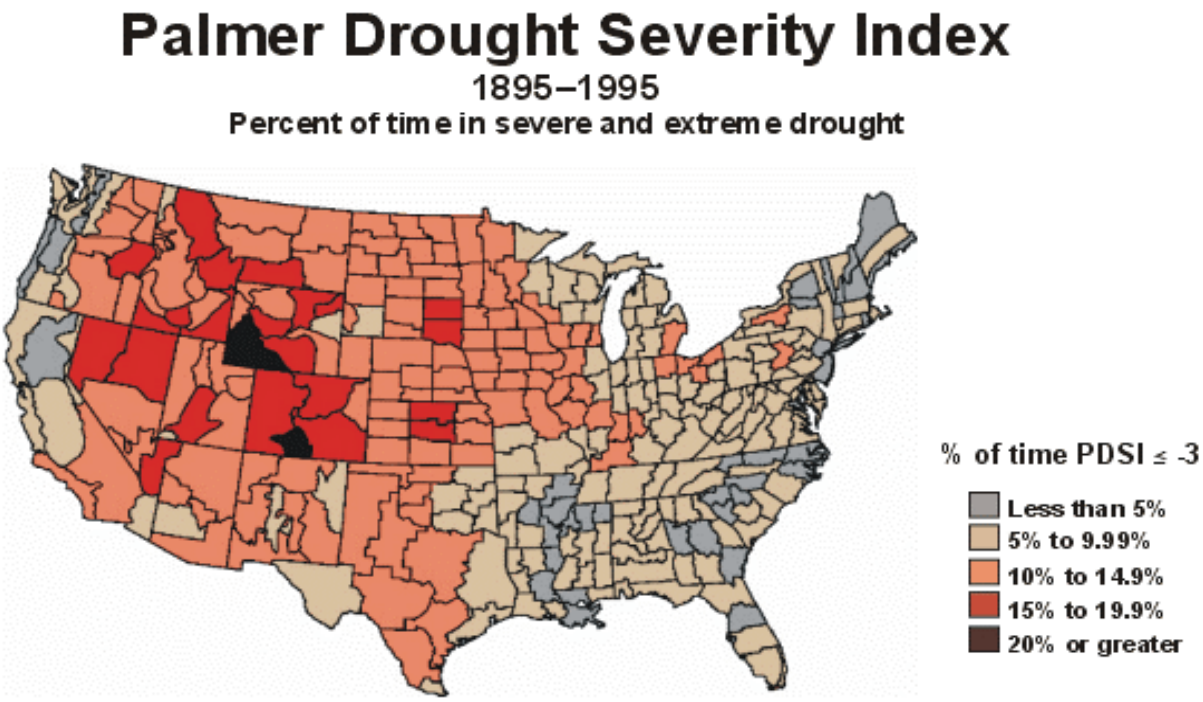
Annual Drought Status	
Year	**Maximum Severity**
2000	No drought
2001	D2 conditions in 21% of the state
2002	D2 conditions in 99% of the state
2003	No drought
2004	D0 conditions in 44% of the state
2005	D1 conditions in 7% of the state
2006	D0 conditions in 98% of the state
2007	D1 conditions in 71% 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

Source: US Drought Monitor

Probability of Future Events

In Southwick, as in the rest of the state, drought occurs at "low" rate of between 1 percent and 10 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.

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



Impact

Due to the water richness of western Massachusetts, Southwick is unlikely to be adversely affected by anything other than a major, extended 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. This means the impact of drought is considered to be "minor," with minimal property damage occurring.

Vulnerability

Based on the above assessment, Southwick faces a vulnerability of between "4 - Low Risk" and "5 - Lowest Risk."

Extreme Temperatures

As per the Massachusetts Hazard Mitigation Plan, extreme cold is a dangerous situation that can result in health emergencies for susceptible people, such as those without shelter or who are stranded or who live in homes that are poorly insulated or without heat. There is no universal definition for extreme temperatures, with the term relative to local weather conditions. For Massachusetts, extreme temperatures can be defined as those that are far outside the normal ranges. The average temperatures for Massachusetts are:

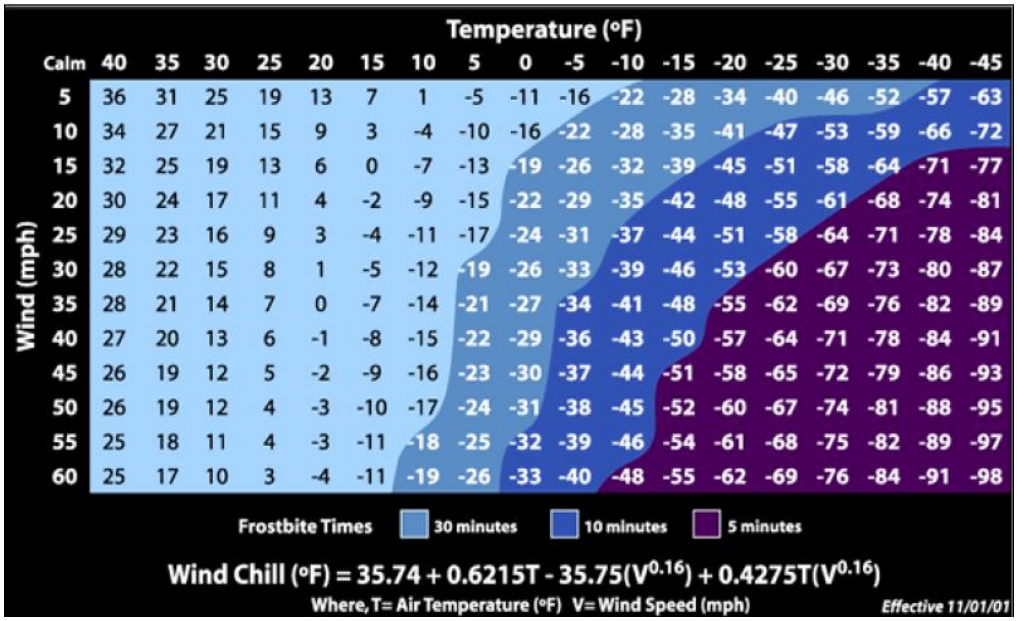
- Winter (Dec-Feb) Average = 27.51ºF
- Summer (Jun-Aug) Average = 68.15ºF

Criteria for issuing alerts for Massachusetts are provided on National Weather Service web pages: http://www.erh.noaa.gov/box/warningcriteria.shtml.

Extent

As per the Massachusetts Hazard Mitigation Plan, the extent (severity or magnitude) of extreme cold temperatures are generally measured through the Wind Chill Temperature Index. Wind Chill Temperature is the temperature that people and animals feel when outside and it is based on the rate of heat loss from exposed skin by the effects of wind and cold. The chart shows three shaded areas of frostbite danger. Each shaded area shows how long a person can be exposed before frostbite develops. In Massachusetts, a wind chill warning is issued by the NWS Taunton Forecast Office when the Wind Chill Temperature Index, based on sustained wind, is –25ºF or lower for at least three hours.

Wind Chills



For extremely hot temperatures, the heat index scale is used, which combines relative humidity with actual air temperature to determine the risk to humans. The NWS issues a Heat Advisory when the Heat Index is forecast to reach 100-104 degrees F for 2 or more hours. The NWS issues an Excessive Heat Warning if the Heat Index is forecast to reach 105+ degrees F for 2 or more hours. The following chart indicates the relationship between heat index and relative humidity:

Heat Index

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Category	Heat Index	Health Hazards
Extreme Danger	130 °F – Higher	Heat Stroke or Sunstroke is likely with continued exposure.
Danger	105 °F – 129 °F	Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity.
Extreme Caution	90 °F – 105 °F	Sunstroke, muscle cramps, and/or heat exhaustions possible with prolonged exposure and/or physical activity.
Caution	80 °F – 90 °F	Fatigue possible with prolonged exposure and/or physical activity.

Previous Occurrences

The following are some of the lowest temperatures recorded in parts of Massachusetts for the period from 1895 to present (Source: NOAA, www.ncdc.noaa.gov.):

- Blue Hills, MA- –21°F
- Boston, MA- –12°F
- Worcester, MA- –19°F

The following are some of the highest temperatures recorded for the period from 1895 to present (Source: NOAA, www.ncdc.noaa.gov.):

- Blue Hills, MA - 101°F
- Boston, MA - 102°F
- Worcester, MA - 96°F

Probability of Future Events

The probability of future extreme heat and extreme cold is considered to be "low," or between 1 and 10 percent in any given year.

Impact

The impact of extreme heat or cold in Southwick is considered to be "minor," with minimal property damage.

Vulnerability

Southwick's vulnerability from extreme heat and cold is considered to be, "3 - Medium Risk."

Other Hazards

In addition to the hazards identified above, the Hazard Mitigation Workgroup 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, and tsunamis, were determined to not be a threat.

Ice jams, a hazard identified in the state Hazard Mitigation Plan, was determined by the Southwick Hazard Mitigation Committee to not be a primary hazard to people, property, or critical infrastructure in town. To the extent that ice jams do result in flooding, ice jams are addressed in the "Flooding" section of this chapter. The Hazard Mitigation Committee will continue to assess the impact of ice jams 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 Southwick has been identified utilizing a Critical Facilities List provided by the State Hazard Mitigation Officer. The Southwick 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 identified as non-essential and not required in an emergency response event, but which are considered essential for 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.

- Potential facilities that could be used as resources to assist in mitigating a hazard

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 and Services as the highest priority in regards to protection from natural and man-made hazards.

1. **Emergency Operations Center / AEOC**
   Town Offices – 454 College Highway
   DPW - 661 College Highway

2. **Fire Station**
   Southwick Fire Department – 15 Depot Street

3. **Police Station**
   Southwick Police Department – 11 Depot Street

4. **Highway Division**
   DPW Office – 661 College Highway

5. Water Division

DPW Office – 661 College Highway

6. Emergency Fuel Stations

Southwick Fire Department – 15 Depot Street
Mobil Station – 600 College Highway
Shell Station – 326 College Highway
Pride - 198 College Highway
Sunoco Station – 555 College Highway
Union Mart – 801 College Highway

7. Emergency Electrical Power Facility

Emergency generators to serve EOC, Fire, and Police Departments
Two (2) mobile generators.

8. Emergency Shelters

Town Offices – 1st floor auditorium
Southwick-Tolland Regional High School

9. Water Sources

Numerous locations in Southwick, any available.

10. Transfer Station

22 Industrial Road

11. Utilities

Water tank – Juniper Street

12. Helicopter Landing Sites

Intersection of Foster Road and Feeding Hills Road (but permitted anywhere feasible)

13. Communications

Cell Towers – Congamond Road, Tannery Road, Industrial Road

14. Primary Evacuation Routes

U.S. Route 202 (MA Route 10)
MA Route 57
MA Route 168

15. Bridges/Culverts Located on Evacuation Routes

U.S. Route 202 – culvert just north of Sunnyside Ranch Road (Kellog Brook)
U.S. Route 202 – culvert just south of Industrial Road (Johnson Brook)
U.S. Route 202 – culvert north of intersection with Congamond Road (Pearl Brook)
Route 57 – culvert at Fred Jackson Road (Tuttle Brook)
Route 57 – culvert east of Great Brook Lane (Great Brook)
There are also culverts under the narrow causeways separating North and Middle Congamond Pond and Middle and South Congamond Pond.

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 Southwick.

1. Water Supply

Public well (see Past and Potential Hazards/Critical Facilities Map) – main and redundant.

2. Sewer Infrastructure (Pump Stations)

Several Pump Stations throughout town (see Past and Potential Hazards/Critical Facilities Map)

3. Problem Culverts

- Shurtleff Brook Culvert on Granville Road
- Shurtleff Brook Culvert on Fred Jackson Road
- Shurtleff Brook Culvert on North Loomis Street
- Pearl Brook Culvert on College Highway
- Munn Brook Bridge on North Loomis Street
- Kline Road Culvert
- Davis Road Culvert

Category 3 – Facilities/Populations to Protect

The third category contains people and facilities that need to be protected in event of a disaster.

1. Special Needs Population

12-16 Depot Street – 48 apartments for elderly and handicapped
212 Sheep Pasture Road – group home for mentally disabled (6 persons)
18 Depot Street – group home for mentally disabled (8 persons)
272 Granville Road – group home

2. Elderly Housing/Assisted Living

Saw Mill Park – 1 Saw Mill Park Road (off of Route 10-202)
Southwick-Granville Senior Citizens Housing Corporation – Fred Ahrend Circle (off of Sheep Pasture Road); 48 apartments
Rosewood Estates - 81 Rosewood Lane
Depot Court - 12 Depot Court

3. Recreation Areas

Southwick Recreation Center – 58 & 64R Powder Mill Road
Country Clubs/Golf Courses (4)
Congamond Lakes

4. Schools

Woodland Elementary School – 80 Powder Mill Road
Powder Mill Middle School – 94 Powder Mill Road
Southwick-Tolland Regional High School – 93 Feeding Hills Road
Southwick Baptist School - 261 College Highway

5. Churches

Our Lady of the Lake Church – 224 Sheep Pasture Road
Christ Lutheran Church – 568 College Highway
Southwick Baptist Church – 261 College Highway
Southwick Assembly of God – 267 College Highway
Southwick Community Episcopal Church – 660 College Highway
Southwick Congregational Church – 488 College Highway
Christ Church United Methodist – 220 College Highway

6. Historic Buildings/Sites

Laflin–Phelps Homestead – 20 Depot Street
Old Town Library
Cemeteries (see Past and Potential Hazards/Critical Facilities Map)

7. Apartment Complexes

Lakewood Village – 160 Point Grove Road
Cedar Street Apartments – Cedar Street, off of Bonnie View Road
Captain Fowler Apartments – 628 College Highway & 12 Feeding Hills Road
Scuderi Apartments – 5 Feeding Hills Road
Briarwood Apartments – 59 College Highway
Atrium Partners – 5 South Longyard Road

8. Employment Centers

Comark Communication – 104 Feeding Hills Road
Whalley Way – commercial/industrial area off of Hudson Drive

9. Camps

Sodom Mountain Campground – 233 South Loomis Street
Southwick Acres Campground – 256 College Highway

10. Library

Southwick Public Library - 95 Feeding Hills Road

Category 4 – Potential Resources

Contains facilities that provide potential resources for services or supplies.

1. Food/Water

Big Y Foods – 195 College Highway

2. Hospitals/Medical Supplies

Big Y Pharmacy – 195 College Highway
RiteAid Pharmacy – 605 College Highway
CVS - 215 College Highway

3. Heating Fuel

Modern Oil – 9 Industrial Road

4. Gas

Mobil Station – 600 College Highway
Shell Station – 326 College Highway
Pride Station – Congamond Road and College Highway
Sunoco Station – 555 College Highway
Union Mart – 801 College Highway

5. Building Materials Suppliers

IBS – College Highway and Coes Hill Road
Great Brook Lumber – Industrial Road
Tractor Supply Co. - 689 College Highway

6. Heavy & Small Equipment Suppliers

Gaugh Osborne Inc – 805 College Highway
Crestview Trucking – 25 Industrial Road

7. Gravel Pits

Baxter Sand and Gravel – North Loomis Road
Jakobowski – Sam West Road
Lane's – Hudson Drive
Tilcon – Whalley Way
Pratt Enterprises – Sheep Pasture Road
Town Sand Pit (by public well)

Critical Facilities and Evacuation Routes Potentially Affected by Hazard Areas			
Hazard Type	**Hazard Area**	**Critical Facilities Affected**	**Evacuation Routes Affected**
Flooding (100-year Flood)	100-year Floodplain along Great Brook and Johnson Brook	Public wells; problem culverts (Feeding Hills Road; Berkshire Avenue; Sheep Pasture Road; College Highway); Town Hall; DPW offices	Klaus Anderson Road; Feeding Hills Road/Granville Road (Route 57); College Highway (Route 10-202)
Flooding	College Highway – from Coes Hill Road to Granville Road	Town Hall; DPW offices; water and sewer pumping station; Police, Fire, DPW depts on Depot St.	College Highway (Route 10-202); Depot Street
Flooding	Klaus Anderson Road	Culvert over Johnson Brook	Klaus Anderson Road
Flooding	Sheep Pasture Road	Culvert over Great Brook	None
Flooding	Berkshire Avenue	Culvert over Great Brook	None
Flooding	Feeding Hills Road	Culvert over Great Brook	Feeding Hills Road (Route 57)
Severe Snow/Ice Storm	Granville Road over Sodom Mountain	None	Granville Road (Route 57)
Wildfires/Brushfires	Agricultural Areas	Potential (depends on location)	Potentially (depends on location)
Wildfires/Brushfires	Sodom Mountain Campgrounds	None	Granville Road (Route 57)

5: MITIGATION CAPABILITIES/STRATEGIES

One of the steps of this Hazard Mitigation Plan is to evaluate all of the town's existing policies and practices related to natural hazards and identify potential gaps in protection. After reviewing these policies and the hazard identification and assessment, the Hazard Mitigation Committee developed a set of hazard mitigation strategies it would like to implement.

Southwick 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, stormwater management, tree maintenance, etc. Southwick also has appropriate staff dedicated to hazard mitigation-related work for a community its size, including a Town Administrator, an Emergency Management Director, a professionally run Department of Public Works, a part-time Building Inspector, a Planner, and a Tree Warden, and Southwick has recommended plans in place, including a Master Plan, an Open Space and Recreation Plan, and a Comprehensive Emergency Management Plan. Not only does Southwick 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. Southwick 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.

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

The Town of Southwick 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 / flash floods, severe snowstorms / ice storms / blizzards, hurricanes, severe thunderstorms / wind / tornadoes / hail, wildfires / brushfires, earthquakes, dam failures, drought, and extreme temperatures.

The Town of Southwick's Emergency Management Director has significant administrative and technical capability and a close working relationship with the Emergency Management Directors from

surrounding communities as well as with the Departments of Health and Public Works. Southwick was the first town in the state to qualify for StormReady certification in 2009. The town now has all the equipment necessary to keep communication intact and survive a natural disaster, including two vehicles fully equipped with everything from computers and generators to food and water. To become StormReady, a city, town or commercial site must excel in six specific areas. Those areas are communication, ability to receive NWS updates, hydrometeorological (water) monitoring, local warning dissemination, community preparedness, and administration.

Overview of Mitigation Capabilities/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 / Flash Flooding

There are five dams within the Town of Southwick. There is also a system of outlet level control structures, batter boards, which can be raised or lowered depending on the water level in Congamond Lakes to help regulate water flow. The town's DPW manages a regularly-updated priority list of needed culvert replacement and other construction projects. They are currently seeking funding from the Hazard Mitigation Grant Program to address the top priority needs.

In collaboration with the Pioneer Valley Planning Commission, the town received a DEP 319 grant to work on structural stormwater improvement projects around the Congamond Lakes. The project has facilitated the construction of three stormwater controls at "hot spots" around the lake in order to mitigate stormwater flows impacting the lake. A second part of the project involved working with homeowners around the lake to mitigate erosion and encourage on-site stormwater infiltration.

The Town of Southwick has adopted several land use regulations that serve to limit or regulate development in floodplains, to manage stormwater runoff, and to protect groundwater and wetland resources, the latter of which often provide important flood storage capacity.

Special permit and site plan approval both require adherence to specific regulations dealing with surface and ground water protection, runoff, flooding, etc. There are also several districts dealing specifically with these issues. In 1974, the town established an Agricultural and Conservation District (AC). This covers the floodplains along the Great Brook as well as the town's well fields, and also includes the Sodom Mountain Range and the Provin Mountain Range, Goose Pond Area, and prime agricultural areas. The purpose of the AC zone is to protect natural drainage, flood retention areas and the natural water table, to prevent water pollution and soil erosion, and to continue and promote agricultural use. Residential homes are allowed with the granting of a Special Permit. A Flood Hazard and Wetlands District was established in 1978 in the Zoning Bylaws, which regulated development in the floodplain of lakes, rivers and streams. Additionally, a Wellhead Protection Overlay District was added in 1991, aimed at protecting groundwater resources, a future water supply for the town.

In addition to the Zoning Bylaws and the Subdivision Regulations, Southwick has adopted Wetlands Conservation regulations to specifically deal with the challenge of protecting the multiple wetlands, ephemeral ponds, vernal pools, ponds, etc. throughout town. Although focused on wetlands conservation, this chapter is extremely relevant to flood protection as healthy wetlands can naturally abate flooding. In addition, several subsections contain specific regulations for flood mitigation.

The Town of Southwick's Open Space and Recreation Element of its Community Development Plan inventories the natural features and environments in the town, many of which, such as wetlands, groundwater recharge areas, farms, rivers, streams, and brooks, contain floodplain, dam failure inundation, or localized flooding areas.

The plan highlights the importance of balancing future development with the preservation of the community's natural and scenic resources. The preservation of open space and farmland will provide flood storage capacity, which reduces the amount of impervious surfaces in an area, as well as other benefits not directly related to natural hazard mitigation.

Severe Snowstorms / Ice Storms / Blizzards

There are no restrictions on development that are directly related to severe winter storms. However, the Town of Southwick's Land Development Ordinance sets grade limits on streets, and restrictions on utility placement, which, although not specified as weather hazard mitigation, can serve to minimize accident potential and power loss from severe winter storms. For new or recently built structures, the primary protection against snow-related damage is construction according to the State Building Code, which addresses designing buildings to withstand snowloads. The Town of Southwick currently employs a building inspector to ensure that construction meets state standards. The town works throughout the year to accumulate a list of dangerous trees and tree limbs for Western Mass Electric Company (WMECO) to take down annually. This collaborative system allows the town to rely on WMECO to help with tree management, and WMECO to stay current on the status of its power line network.

Hurricanes

There are no restrictions on development that are directly related to hurricanes. However, the Town of Southwick's Land Development Ordinance does have some provisions that are wind-related, specifically, zoning bylaws related to wireless communications facilities and mobile home parks. In addition, the Ordinance sets restrictions on utility placement, which, although not specified as weather hazard mitigation, can serve to minimize accident potential and power loss from severe wind. For new or recently built structures, the primary protection against wind-related damage is construction that adheres to the State Building Code, which, when followed, results in buildings that withstand high winds. The Town of Southwick currently employs a building inspector to ensure that construction meets state standards.

Severe Thunderstorms / Winds / Hail / 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

There are currently no restrictions on development that are based on the need to mitigate the hazards of wildfires/brushfires. However, there are several instances throughout the Zoning Bylaws and Subdivision Regulations where fire prevention is addressed. The Chief of the Fire Department is granted the authority to prohibit certain uses within the Wellhead Protection District, and to regulate uses according to the established environmental performance standards. Burn permits for the Town of Southwick are issued by the Southwick Fire Department (or the Police Department on weekends or holidays). During this process, the applicant is provided guidelines for when and where the burn may be

conducted as well as fire safety tips. The Southwick Fire Department provides fire prevention education at all schools and day cares in Southwick, at which time educational material is handed out. Field trips to the station are available by appointment.

Earthquakes

State and local building inspectors are guided by regulations put forth in the Massachusetts State Building Code. The first edition of the Massachusetts State Building Code went into effect on January 1, 1975 and included specific earthquake resistant design standards. These seismic requirements for new construction have been revised and updated over the years and are part of the current Massachusetts State Building Code.

Dam Failures

Massachusetts State Law (M.G.L. Chapter 253 Section 45) regulates the construction of new dams. A permit must be obtained from the Department of Conservation and Recreation (DCR) before construction can begin. One of the permit requirements is that all local approvals or permits must be obtained. The DCR requires that dams rated as Low Hazards are inspected every ten (10) years, dams that are rated as Medium/Significant Hazards are inspected every five (5) years, and dams that a rated as High Hazards are inspected every two (2) years. This is the responsibility of the dam owner. There is no mention made regarding the construction of new dams in the Town of Southwick zoning or subdivision regulations, although alterations to watercourses, including streams, brooks, ponds, and wetlands is highly restricted through the Chapter 450: Wetlands Conservation regulations.

Drought

Southwick's Land Development Ordinance has several sections governing flood and stormwater management, proper drainage, and ground and surface water protection. The bylaws protecting these features of the landscape can also be seen as preventing drought, as they promote the natural processes of infiltration and groundwater recharge. Water is a main focus of Southwick's Open Space and Recreation Plan, and it serves as an excellent resource as an inventory of all the town's water resources, and a summary of the town's needs to protect them. It also articulates the town's goals and vision for protecting and utilizing its water resources most effectively. Southwick currently has a Water Conservation Plan in place, with several strategies and recommendations for further protecting the town's water resources. The plan discusses all aspects of water conservation, from encouraging practices in the home to stronger comprehensive water management town-wide.

Extreme Temperatures

The town's current mitigation strategy for extreme temperatures is having backup electric generators at emergency shelters to allow for safe places for residents to go during extreme heat or cold. Because extreme heat can increase the chance of wildfire or brushfire, mitigation strategies for that hazard can also be considered mitigation of extreme temperatures.

Existing Mitigation Capabilities

The Town of Southwick had many mitigation capabilities in place prior to the update of this Hazard Mitigation Plan in 2015. These capabilities are described on the following pages and have been evaluated in the "Effectiveness" column. Capabilities include some active hazard mitigation strategies as well as existing regulations and other initiatives that mitigate the consequences of natural hazards in the community. Strategies that were completed since the last version of the plan are listed in bold. For a list of completed strategies that were previously identified as part of the prioritized implementation list, see the table of "Completed and Deleted Mitigation Strategies" later in this section.

Existing Mitigation Capabilities				
Capability	**Action Type**	**Description**	**Hazards Mitigated**	**Effectiveness**
Flood Control Structures	Capital Construction	Five dams; batter board outlet level control system.	Flooding / Flash Flooding	Very effective for preventing flooding downstream.
Culvert Replacements	Capital Construction	Priority list of necessary culvert replacements and other construction projects to effectively manage flooding.	Flooding / Flash Flooding	Very effective for managing flood control needs.
Stormwater Management Project	Capital Construction	State funded (DEP 319 grant) stormwater management project, construction of structural BMPs to manage stormwater flowing into lake.	Flooding / Flash Flooding	Very effective for creating management strategies to mitigate stormwater flow.
Zoning Special Permits	Zoning Bylaws	Proposed uses must meet requirements for groundwater recharge and preventing erosion.	Flooding / Flash Flooding	Effective for preventing incompatible development.

Existing Mitigation Capabilities				
Capability	**Action Type**	**Description**	**Hazards Mitigated**	**Effectiveness**
Zoning Site Plan Approval	Zoning Bylaws	Plans must meet requirements for surface and groundwater pollution prevention, drainage, runoff, and flooding.	Flooding / Flash Flooding Drought	Effective for managing contamination and stormwater on a site.
Agriculture and Conservation District	Zoning Bylaws	Protects flood retention areas, among other lands.	Flooding / Flash Flooding	Effective for preventing imperviousness.
Flood Hazard and Wetlands District	Zoning Bylaws	Areas delineated as part of the 100-year floodplain are protected by strict use regulations	Flooding / Flash Flooding	Very effective for preventing incompatible development within the floodplain.
Wellhead Protection District	Zoning Bylaws	Areas delineated as primary recharge areas for groundwater aquifers are protected by strict use regulations The Fire Department may prohibit certain hazardous uses within this district.	Flooding / Flash Flooding Drought Wildfires / Brushfires	Very effective for preventing groundwater contamination, and for controlling stormwater runoff and promoting groundwater recharge.
Subdivision Submission Requirements	Subdivision Regulations	Proposed subdivisions must submit plans identifying significant site features, existing topography with drainage patterns, and proposed stormwater drainage.	Flooding / Flash Flooding	Somewhat effective at protecting water bodies and other features, managing stormwater, and determining viability of proposed drainage plan.
Subdivision Wetland Conservation Policies	Subdivision Regulations	Subdivision applicants must demonstrate that changes in runoff will not result in erosion or increased flooding.	Flooding / Flash Flooding	Very effective at managing stormwater runoff.

Existing Mitigation Capabilities				
Capability	**Action Type**	**Description**	**Hazards Mitigated**	**Effectiveness**
Wetland Conservation Regulations for Resource Area and Buffer	Regulations	Projects within 100 feet of an isolated wetland are strictly regulated.	Flooding / Flash Flooding	Effective at protecting wetlands and managing stormwater runoff.
Southwick Community Development Plan – Open Space Element	Planning Document	Inventories natural features and promotes 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 / Flash Flooding Drought	Effective in identifying sensitive resource areas, including floodplains. Encourages forestland and farmland protection, which will help conserve the town's flood storage capacity.
Participation in the National Flood Insurance Program	Regulation	The town participates in the NFIP.	Flooding / Flash Flooding	Somewhat effective provided that the town remains enrolled in the National Flood Insurance Program.

Existing Mitigation Capabilities				
Capability	**Action Type**	**Description**	**Hazards Mitigated**	**Effectiveness**
Subdivision Grade Regulations	Subdivision Regulations	Standards include street grade regulations (6-8% maximum); and intersection grade regulations	Severe Snowstorms / Ice Storms / Blizzards	Effective.
State Building Code	State Regulation	The Town of Southwick has adopted the Massachusetts State Building Code.	All Hazards	Effective for new buildings only.
Backup Electric Power	Operational Strategy	Emergency shelters have backup power and there are two mobile generators.	All Hazards	Very effective in case of a loss of power.
Tree Management	Capital Construction	A list of dangerous trees is created annually for WMECO.	Severe Snowstorms / Ice Storms / Blizzards Severe Thunderstorms / Wind / Tornadoes Hurricanes / Tropical Storms	Very effective. Preventative collaboration.

Existing Mitigation Capabilities				
Capability	**Action Type**	**Description**	**Hazards Mitigated**	**Effectiveness**
Wireless Communications Services District	Zoning Bylaw	Restrictions on height, and other features of wireless communication towers.	Severe Snowstorms / Ice Storms / Blizzards Severe Thunderstorms / Wind / Tornadoes Hurricanes / Tropical Storms	Somewhat effective for preventing damage to nearby property.
Prohibition of Trailers	Regulation	Trailers (or mobile homes/RVs) are not permitted within town limits as permanent living quarters.	Severe Snowstorms / Ice Storms / Blizzards Severe Thunderstorms / Wind / Tornadoes Hurricanes / Tropical Storms	Somewhat effective for preventing damage to susceptible structures (mobile homes).
Environmental Performance Standards for Development	Operational Strategy	The Fire Department may regulate uses if they do not meet environmental performance standards in terms of fire protection.	Wildfire / Brushfire	Effective.
Burn Permits	Regulation	Residents must obtain burn permits, and personnel provide information on safe burn practices.	Wildfire / Brushfire	Effective.
Fire Safety Public Outreach / Education	Operational Strategy	The Fire Department has an ongoing educational program in the schools and daycares.	Wildfire / Brushfire Extreme Temperatures	Effective.
New Dam Construction Permits	Regulation	State law requires a permit for the construction of any dam.	Dam Failure	Effective. Ensures dams are adequately designed.

Existing Mitigation Capabilities				
Capability	**Action Type**	**Description**	**Hazards Mitigated**	**Effectiveness**
Dam Inspections	Regulation	DCR has an inspection schedule that is based on the hazard rating of the dam (low, medium, high hazard).	Dam Failure	Low. The responsibility for this is now on dam owners, who may not have sufficient funding to comply.
Water Conservation Plan (currently being updated)	Planning Document	Makes recommendations for protecting Southwick's water quality supply	Drought	Very effective if some of the strategies are put into place.
Experienced, engaged and very active EMD	Resources	Southwick's EMD makes a point of staying up to date on all certifications and takes advantage of training opportunities and grant funding to keep the EOC cutting edge	All	Very effective
Sound fiscal status of local government	Resources	Southwick has a full-time Chief Administrative Officer and has a Aa2 bond rating.	All	Very effective

Completed and Deleted Mitigation Strategies

The town has implemented several mitigation strategies that were identified in the previous 5 years. These completed strategies, as well as strategies that have been deleted, are described below.

Completed and Deleted Mitigation Strategies					
Action Name	**Action Type**	**Description**	**Hazards Mitigated**	**Responsible Agency**	**Notes**
Emergency Warning System	Operations	The Town has an emergency warning system that alerts residents to emergency situations.	All	EMD, BOS	Completed. System has been determined to work effectively.
Regional shelters	Operations	Coordination with local vendors to supply shelters in case of natural disaster.	All	EMD	Deleted. Town has determined that regional sheltering is not practical due to impracticality of transporting residents to neighboring towns during an emergency. An inventory of local shelter supplies is ongoing.
Municipal Board Education	Operations	Train municipal boars about the importance of bylaws, zoning districts, and subdivision regulations to hazard mitigation.	All	EMA, Con Com, Ag Com, DPW, Water Commissioners	Completed. Flyers and memos have been sent out to municipal boards regarding hazard mitigation activities.
Stormwater Management Bylaw	Regulations	Stormwater Management Bylaw requires development to restrict stormwater flow to predevelopment conditions.	Flooding / Flash Flooding	Planning Board, Con Com, DPW, BOS	Completed. Town adopted the stormwater management bylaw in 2008.
Wellhead District Revisions	Regulations	Revise the Wellhead Protection District Bylaw	Flooding / Flash Flooding Drought	Planning Board, Con Com, Water Commissioners	Completed. Town amended bylaw in 2007 to require new development to obtain a stormwater management permit.
Subdivision Regulation Standards	Regulations	Implement standards in the Subdivision regulations to regulate stormwater (erosion control, infiltration, impervious surface requirements)	Flooding / Flash Flooding	Planning Board, Con Com	Completed. This strategy was completed as part of the new Stormwater Management Bylaw

Completed and Deleted Mitigation Strategies					
Action Name	**Action Type**	**Description**	**Hazards Mitigated**	**Responsible Agency**	**Notes**
Graduated water rate	Regulations	Implement a graduated water rate system	Drought	Ag Com, Water Dept, Water Commissioners	Deleted. Town updated revisions to its water rates but determined that a flat rate was more suitable than a graduated rate system.
Dam safety inspection funding	Operations	Identify sources of funding for dam safety inspections and necessary repairs or retrofitting	Dam Failure	EMD, Ag Com	Deleted because there were determined to be no town-owned dams in Southwick.
Dam safety review process	Regulations	Consider incorporating dam safety into development review process.	Dam Failure	Planning Board, EMD	Deleted because there were determined to be no town-owned dams in Southwick.
Drinking water supplies	Operations	Promote strategies to provide reliable drinking water supplies.	Drought	Water Commissioners, Water Dept, Board of Health, Planning Board	Completed. The Town provided a new well source 3 years ago in the same area as existing wells. Well is called Great Brook Well 2.

Prioritized Implementation Plan

Several of the action items previously identified in the 2007 Hazard Mitigation Plan are currently continuing, either because they require more time to secure funding or their construction process is ongoing. In addition, the Hazard Mitigation Committee identified several new strategies that are also being pursued. These new strategies are based on experience with currently implemented strategies, as well as the hazard identification and risk assessment in this plan.

The Town of Southwick has recognized several existing mitigation capabilities that require improvements or changes, and has the capacity within its local boards and departments to address those changes. These measures have been included in the proposed mitigation strategy action plan. The Southwick EMD, collaborating with the DPW as appropriate will address the needs for generator upgrades, and culvert replacement. The Town's Conservation Administration and Conservation Commission will address the updates to the Open Space and Recreation Plan.

Prioritization Methodology

The Southwick 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.

Several hazard mitigation strategies identified in the previous Hazard Mitigation Plan have not yet been completed, but were changed in priority during the update of this plan by the Hazard Mitigation Committee. The Committee changed priorities by evaluating the entire list of mitigation strategies in a comprehensive manner according to the factors listed above. For strategies that have changed in priority, the previous priority is provided in parenthesis in the "Priority" column.

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 $80 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 $80 per hour)

Project Timeline

Each strategy is provided with an estimated length of time it will take for implementation. Where funding has been secured for the project, a specific future date is provided for when completion will occur. However, some projects do not currently have funding and thus it is difficult to know exactly when they will be completed. For these projects, an estimate is provided for the amount of time it will take to complete the project once funding becomes available.

New and Existing Mitigation Strategies to be Implemented									
Status	**Action Name**	**Action Type**	**Description**	**Hazards Mitigated**	**Responsible Agency**	**Priority**	**Cost**	**Funding Source**	**Time-frame**
New strategy	Culvert Replacement	Operations	Address top priorities on culvert replacement list, pending availability of funding. Culverts include: Shurtleff Brook Culvert on Granville Road, Shurtleff Brook Culvert on Fred Jackson Road, Shurtleff Brook Culvert on North Loomis Street, Pearl Brook Culvert on College Highway, Munn Brook Bridge on North Loomis Street, Kline Road Culvert, Davis Road Culvert. Culverts should be replaced to accommodate higher stormwater flows.	Flooding / Flash Flooding	DPW	High	$300,000 per culvert	HMGP/ Local Funds / Chapter 90	1 year from funding announcement to apply, secure funds & 18 months
Town has worked with DCR, Tighe and Bond, and private dam owners to reclassify dams, including Great Brook, John Walley's Dam. T&B could not determine owner of Logie Lane Dam.	Dam Owner Education	Education and Outreach	Work with state to ensure dam owners understand their responsibility to inspect the dams regularly.	Dam Failure	EMA, Ag Com	Medium	Low	Town Staff	March 2016 to Dec 2016

New and Existing Mitigation Strategies to be Implemented									
Status	**Action Name**	**Action Type**	**Description**	**Hazards Mitigated**	**Responsible Agency**	**Priority**	**Cost**	**Funding Source**	**Time-frame**
Town has worked with individual homeowners and NFIP insurers to determine whether properties are located within floodplain.	NFIP Education	Education and Outreach	Educate citizens living in the floodplain about the NFIP.	Flooding / Flash Flooding	EMA	Medium	Low	Town Staff/ Volunteers	July 2016 to June 2018
Emergency management staff have attended classes with Tighe and Bond about new regulations. Education will continue in upcoming years.	Site Plan and Subdivision Review Training	Regulations	Conduct site plan and subdivision review training to address topographic change, removal of cover vegetation, risk of erosion or siltation, and increase stormwater runoff.	Flooding / Flash Flooding	Planning Board, Con Com	Medium	Low	Town Staff/ Volunteers	April-July 2019

New and Existing Mitigation Strategies to be Implemented									
Status	**Action Name**	**Action Type**	**Description**	**Hazards Mitigated**	**Responsible Agency**	**Priority**	**Cost**	**Funding Source**	**Time-frame**
The Town has several outreach initiatives in the past few years, including public safety open house for schools, information on public outreach television station, and an annual 24-hour emergency communications exercise that is open to the public. Town will continue these initiatives in the future.	Emergency Information	Education and Outreach	Collect, update, disseminate emergency information to the public ('home survival kit'; home preparation for natural disasters, evacuation procedures, etc.)	All Hazards	EMA	Medium	Low	Town Staff	October 2017
Town has not evaluated CRS during the past 5 years but now plans to review information to determine feasibility of CRS.	Community Rating System	Education and Outreach	Evaluate whether to become a part of FEMA's Community Rating System	Flooding / Flash Flooding	BOS, EMD, Board of Assessors	Medium	Low	Town Staff	March 2016 to Feb 2017

New and Existing Mitigation Strategies to be Implemented									
Status	**Action Name**	**Action Type**	**Description**	**Hazards Mitigated**	**Responsible Agency**	**Priority**	**Cost**	**Funding Source**	**Time-frame**
The OSRP was revised 2 years ago and will continue to be updated to ensure that it is current.	Open Space and Recreation Plan	Planning Document	Implement goals and strategies in Open Space and Recreation Plan.	Flooding / Flash Flooding Drought	Planning Board, Con Com, Ag Com, BOS	Low	Low	Town Staff/ Volunteers	Jan 2018 to June 2018
No work has been completed on this task due to low priority of strategy. Strategy will be pursued in the next 5 years.	Earthquake Evaluation	Operations	Evaluate the older structures to be used as emergency shelters to determine if they are earthquake resistant.	Earthquake	Building Inspector, EMD	Low	Low	Town Staff	July 2019-Dec 2019
Town regularly distributes pamphlets to public about fire safety and will continue to do so in the future.	Fire Safety and Education	Education and Outreach	Develop and distribute an educational pamphlet on fire safety and prevention.	Wildfires / Brushfires Extreme Temperatures	Fire Department, EMA	Low	Low	Town Staff	October (Fire Safety Month) 2016

New and Existing Mitigation Strategies to be Implemented									
Status	**Action Name**	**Action Type**	**Description**	**Hazards Mitigated**	**Responsible Agency**	**Priority**	**Cost**	**Funding Source**	**Time-frame**
Town has had conservations with Eversource about burying of power lines, but no power lines have yet been buried due to cost. Subdivisions are required to have buried power lines. Town will continue to pursue underground power lines in the future.	Underground Power Lines	Operations	Work with Eversource Energy to facilitate the underground placement of new utility lines in general and existing utility lines in locations where repetitive outages occur.	Severe Snowstorms / Ice Storms / Blizzards Severe Thunderstorms / Wind / Tornadoes Hurricanes / Tropical Storms	DPW	Low	Low	Town Staff	Octo 2016-June 2017
Town is not aware of any regional initiatives currently taking place to develop a Regional Debris Management Plan. If such an initiative begins the Town will participate.	Debris Management	Planning	Participate in the creation of a Regional Debris Management Plan.	All Hazards	DPW	Low	Low	Western Regional Homeland Security Advisory Council	2 years from funding date

New and Existing Mitigation Strategies to be Implemented									
Status	**Action Name**	**Action Type**	**Description**	**Hazards Mitigated**	**Responsible Agency**	**Priority**	**Cost**	**Funding Source**	**Time-frame**
The Town provided a new well source 3 years ago in the same area as existing wells. Well is called Great Brook Well 2.	Drinking Water Supplies	Operations	Promote strategies to provide reliable drinking water supplies.	Drought	Water Commissioners, Water Dept, Board of Health, Planning Board	Low	Low	Town Staff	May (Drinking water awarenes s month) 2016

6: PLAN ADOPTION & IMPLEMENTATION

Plan 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 March 18th, 2015 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 of Southwick Select Board and adopted.

Plan Implementation

The implementation of this plan began upon its formal adoption by the Town of Southwick 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:

- *Southwick Comprehensive Emergency Management Plan* (particularly the Critical Infrastructure Section) – the Critical Infrastructure section was used to identify those infrastructure components in Southwick that have been identified as crucial to the function of the Town; also, this resource was used to identify special needs populations as well as potential emergency shortcomings.

- *Southwick Open Space and Recreation Plan* – this Plan was used to identify the natural context within which the Southwick mitigation planning would take place. This proved useful insofar as it identified water bodies, rivers, streams, infrastructure components (i.e. water and sewer, or the lack thereof), as well as population trends. This was incorporated to ensure that the town's mitigation efforts would be sensitive to the surrounding environment. During the OSRP update, Southwick can use the work of the PDM Plan to incorporate identified hazard areas into open space and recreation planning. This could either take the form of acquiring parcels of land that are currently un-developed, but situated within an identified hazard area, as permanent open space, thereby minimizing the likelihood that critical infrastructure components will be constructed in an area prone to damage from natural hazards.

- *Southwick Community Development Plan*—this Plan was used to identify any action items that might prove successful, based on previous planning efforts.

- *Southwick Zoning Bylaw/Ordinance* - The Town's Zoning Bylaw was used to gather and identify those actions that the Town is already taking that are reducing the potential impacts of a natural hazard (i.e. floodplain regulations) to avoid duplicating existing successful efforts.

- *State of Massachusetts Hazard Mitigation Plan* - This plan was used to insure that the Town's PDM was consistent with the State's Plan.

- MassDOT culvert and bridge surveys supplemented by local knowledge.

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 information and recommendations included in the Hazard Mitigation Plan will also be incorporated into updates of the Town's Comprehensive Emergency Management Plan, the Town's Master Plan, Open Space and Recreation Plan, and other community plans that may be developed and require and/or benefit from information on and action steps to mitigate the long term consequences of natural hazards.

The Town has also incorporated its Hazard Mitigation Plan into existing planning mechanisms in the time since the previously version of this plan was approved in 2008. This process included the following:

- Review of the strategies identified in the Hazard Mitigation Plan into the Southwick OSRP, particularly those pertaining to water supply protection, sewer improvements, and the preservation of open space and restrictions on development.

- Review and incorporation of the hazard identification and risk assessment completed as part of this plan into the Town's Comprehensive Emergency Management (CEM) Plan, in order to ensure the CEM Plan includes the best information possible for preparing and responding to hazards that could affect Southwick.

- Review of the Hazard Mitigation Plan when considering any changes to the Town's zoning bylaws that pertain to the hazard mitigation strategies identified in this plan, including the language pertaining to telecommunications facilities, the Flood Plain Overlay District, and the Groundwater Protection District.

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. In addition to monitoring and review of this plan and its implementation, the EMD and other members of the Southwick Natural Hazards Mitigation Planning Committee will work to assure that the goals and hazard mitigation actions will be integrated into other planning mechanisms, such as the Open Space and Recreation plan, any updates to the Town's Master Plan, as well as planned work to update the Town's zoning regulations.

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 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.

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 – an association of private companies & industries involved in disaster recovery planning)……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 Works.....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	http://www.tornadoroject.com/	Information on tornadoes,

Sponsor	Internet Address	Summary of Contents
Online		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.

Appendix B – Documentation of the Planning Process

Southwick Hazard Mitigation Meeting
Agenda

Southwick Town Hall
February 3rd, 2015, 3:00 p.m.

1. Overview of Hazard Mitigation Planning Process
    a. Background on Hazard Mitigation Planning
    b. Planning process and requirements
2. Review of Chapter 1: Planning Process
3. Review of Chapter 2: Local Profile
4. Review of Chapter 3: Hazard Identification and Risk Assessment
5. Review of Chapter 4: Critical Infrastructure
6. Review of Chapter 5: Mitigation Strategies
7. Review of Chapter 6: Plan Review, Evaluation, Implementation, and Adoption

Southwick Hazard Mitigation Meeting
Sign-In Sheet
February 3rd, 2015, 3:00 p.m., Southwick Town Hall

Name	Position	E-mail
Randy Brown	DPW Director	rbrown@southwickma.net

Southwick Hazard Mitigation Plan
Public Input and Workshop

Agenda

Southwick Town Hall
Tuesday, February 3, 4:00 p.m.

1. Welcome and introductions
2. Overview of hazard mitigation planning process
3. Hazard identification and risk assessment
    a. Types of hazards affecting Southwick
    b. Previous occurrences, extent, location, impact, future probability, and vulnerability of each hazard
4. Existing mitigation measures
5. Recommended new mitigation strategies or changes to existing mitigation strategies
6. Discussion
7. Next steps

Southwick Hazard Mitigation Plan Public Outreach Meeting
Sign-In Sheet
February 3rd, 2015, 4:00 p.m., Southwick Town Hall

Name	Position	E-mail
Charles H. Dunlap	EMA DIRECTOR	EMA@SOUTHWICKMA.NET
Randy Brown	DPW Director	rbrown@southwickmass.net

Southwick Hazard Mitigation Meeting
Agenda

Southwick Town Hall
March 18, 2015, 9:30 a.m.

1. Review of Chapter 4: Critical Infrastructure

2. Review of Chapter 5: Mitigation Strategies

3. Review of Chapter 6: Plan Review, Evaluation, Implementation, and Adoption

Southwick Hazard Mitigation Committee Meeting
Sign-In Sheet
March 18, 9:30 a.m., Town Hall

Name	Position	Phone	E-mail
Randy Brown	DPW	413-569-6772	rbrown@southwick.mass.net

Southwick Hazard Mitigation Plan
Public Input and Workshop

Agenda

Southwick Town Hall
March 18th, 10:00 a.m.

1. Welcome and introductions
2. Overview of hazard mitigation planning process
3. Hazard identification and risk assessment
    a. Types of hazards affecting Southwick
    b. Previous occurrences, extent, location, impact, future probability, and vulnerability of each hazard
4. Existing mitigation measures
5. Recommended new mitigation strategies or changes to existing mitigation strategies
6. Discussion
7. Next steps

Southwick Hazard Mitigation Plan Public Input and Workshop
Sign-In Sheet
March 18, 10 a.m., Town Hall

Name	Address	Phone	E-mail
Randy Brown	Southwick DPW 454 College Highway	413-569-6772	rbrown@southwick ma.net
Charles H Dunlop	454 college Highway	413 569-0308	ema@SOUTHWICKMA.NET
MICHAEL MCMAHON	EDC 454 COLLEGE HIGHWAY		INFO @ SOUTHWICKMA. INFO
Dennis Clark	Conservation Commission	415 575-2949	DCLARK@SOUTHWICKMA.NET
Alan Stessle	Planning		

Southwick Hazard Mitigation Plan

Public Outreach Event

March 18, 2015

Agenda

2

- Overview and benefits of hazard mitigation
- Plan development process
- Identified hazards and mitigation strategies
- Questions and discussion

What is Hazard Mitigation?

3

FEMA

"Any sustained action taken to reduce or eliminate long-term risk to people and property from natural hazards."

Examples:

- Limiting development in high-risk areas
- Retrofitting structures to protect them from floods, high winds, etc.
- Minor drainage flood control projects in areas of localized flooding
- Fire safety education

Mitigation and Preparedness

4

Hazard Mitigation	Emergency Preparedness
Planning and zoning	Evacuation plans and emergency shelters
Open space preservation	Radio communications equipment
Education and outreach	Emergency response drills
Drainage improvements	

Benefits of Hazard Mitigation

5

- Makes community eligible to apply for MEMA/FEMA grant opportunities for hazard mitigation projects
- Mitigation is less expensive than disaster clean up
- Having a plan provides an approach for using limited resources more effectively

Components of a Hazard Mitigation Plan

6

Questions considered:

- What are the hazards in Southwick?
- How is Southwick affected by these hazards?
- How effective are current mitigation strategies?
- What new strategies could be implemented?

Overview of Planning Process

7

- Meetings with town officials as part of a Hazard Mitigation Committee
- Hazard Mitigation Committee members:
  - Charles Dunlap, Emergency Management Director
  - Dick Grannells, Town Engineer
  - Tom FitzGerald, Health Department
  - Randy Brown, DPW Director

Overview of Planning Process (continued)

8

- Two public outreach meetings
- After this meeting, the plan will be revised with comments incorporated and submitted to MEMA and FEMA for comment
- Select Board will then review and adopt

Hazard Identification and Analysis Worksheet for Southwick				
Type of Hazard	Location of Occurrence	Probability of Future Events	Impact	Vulnerability
Flooding	Large	High	Minor	3 - Medium Risk
Flash Flooding	Large	Moderate	Major	3 - Medium Risk
Severe Snowstorms / Ice Storms	Very Large	High	Limited	3 - Medium Risk
Blizzards	Very Large	Moderate	Major	3 - Medium Risk
Hurricanes / Tropical Storms	Very Large	Low	Minor	3 - Medium Risk
Severe Thunderstorms / Hail	Very Large	High	Limited	3 - Medium Risk
Wind	Very Large	High	Limited	3 - Medium Risk
Tornadoes	Very Large	High	Limited	3 - Medium Risk
Wildfires / Brushfires	Very Large	Low	Limited	2 - High Risk
Earthquakes	Very Large	Moderate	Critical	3 - Medium Risk
Dam Failures	Small	Low	Critical	4 - Low Risk
Drought	Very Large	Low	Minor	4 - Low Risk / 5 - Lowest Risk
Extreme Heat	Very Large	Low	Minor	3 - Medium Risk
Extreme Cold	Very Large	Low	Minor	3 - Medium Risk

Question and Comments

10

Contact information:

Josiah Neiderbach
Planner, Pioneer Valley Planning Commission
E-mail: jneiderbach@pvpc.org
Phone: 413-781-6045

Catalyst for Regional Progress
PVPC
Timothy W. Brennan, Executive Director

MEDIA RELEASE

CONTACT: Catherine Ratté, PVPC Principal Planner (413) 781-6045 cratte@pvpc.org

FOR IMMEDIATE RELEASE
January 29, 2015

Town of Southwick to Hold Public Engagement Event for Hazard Mitigation Plan

Southwick residents are invited to provide comments on the update of the Southwick Hazard Mitigation Plan on **Tuesday, February 3** at 4:00 p.m. at the Town Hall. The plan is being updated 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). All members of the public are welcome to attend the event.

The meeting will include an introduction to the hazard mitigation planning process and a summary of existing mitigation initiatives. PVPC staff will be available to answer questions and listen to comments from the public.

This planning effort is being undertaken to help the Town of Southwick 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. A mitigation action is any action taken to reduce or eliminate the long-term risk to human life and property from hazards.
For more information, please contact PVPC's Catherine Ratté at cratte@pvpc.org or (413) 781-6045.

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Catalyst for Regional Progress
PVPC
Timothy W. Brennan, Executive Director

MEDIA RELEASE

CONTACT: Josiah Neiderbach, PVPC Planner, (413) 781-6045 or jneiderbach@pvpc.org

FOR IMMEDIATE RELEASE
March 16, 2015

Town of Southwick to Hold Public Engagement Event for Completed Draft of Hazard Mitigation Plan

Southwick residents are invited to provide comments on the update of the Town of Southwick Hazard Mitigation Plan on **Wednesday, March 18** at 10:00 a.m. in the Land Use Room of Southwick Town Hall, 454 College Highway. 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 meeting will include an introduction to the planning process, a summary of existing mitigation initiatives, and an outline of recommended strategies for addressing natural hazards in Southwick. Municipal officials and PVPC staff will be available to answer questions and listen to comments on the draft plan, which is posted at http://www.pvpc.org/plans/town-southwick-hazard-mitigation-plan. A paper copy of the plan will also be available at Southwick Town Hall.

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 Southwick 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. A mitigation action is any action taken to reduce or eliminate the long-term risk to human life and property from hazards.

For more information, please contact PVPC's Josiah Neiderbach at jneiderbach@pvpc.org or (413) 781-6045.

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Media Organizations Sent Press Releases

Media Organization	Address	Town	State	Zip Code
African American Point of View	688 Boston Road	Springfield	MA	01119
Agawam Advertiser News	23 Southwick Street	Feeding Hills	MA	01030
Amherst Bulletin	115 Conz Street	Southwick	MA	01060
Belchertown Sentinel	1 Main Street	Belchertown	MA	01007
Berkshire Eagle	75 South Church Street	Pittsfield	MA	01202
Brattleboro Reformer	62 Black Mountain Rd.	Brattleboro	VT	05301
CBS 3 Springfield	One Monarch Place	Springfield	MA	01144
Chicopee Register	380 Union Street	West Springfield	MA	01089
CommonWealth Magazine	18 Tremont Street	Boston	MA	02108
Country Journal	5 Main Street	Huntington	MA	01050
Daily Hampshire Gazette	115 Conz Street	Southwick	MA	01060
El Sol Latino	P.O. Box 572	Amherst	MA	01004
Going Green	PO Box 1367	Greenfield	MA	01302
Hilltown Families	P.O. Box 98	West Chesterfield	MA	01084
Holyoke Sun	138 College Street	South Hadley	MA	01075
Journal Register	24 Water Street	Palmer	MA	01069
La Voz Hispana	133 Maple Street #201	Springfield	MA	01105
Ludlow Register	24 Water Street	Palmer	MA	01069
Massachusetts Municipal Association	One Winthrop Street	Boston	MA	02110
Quaboag Current	80 Main Street	Southwick	MA	01082
Recorder	14 Hope Street	Greenfield	MA	01302
Reminder	280 N. Main Street	East Longmeadow	MA	01028
Southwick Suffield News	23 Southwick Street	Feeding Hills	MA	01030
State House News Service	State House	Boston	MA	02133
Tantasqua Town Common	80 Main Street	Southwick	MA	01082
The Longmeadow News	62 School Street	Westfield	MA	01085
The Republican	1860 Main Street	Springfield	MA	01102
The Westfield News	62 School Street	Westfield	MA	01085
Town Reminder	138 College Street	South Hadley	MA	01075
Urban Compass	83 Girard Avenue	Hartford	CT	06105
Valley Advocate	115 Conz Street	Southwick	MA	01061
Vocero Hispano	335 Chandler Street	Worcester	MA	01602
WAMC Northeast Public Radio	1215 Wilbraham Road	Springfield	MA	01119
Southwick River News	80 Main Street	Southwick	MA	01082
West Springfield Record	P.O. Box 357	West Springfield	MA	01098
WFCR-Public Radio	131 County Circle	Amherst	MA	01003

WGBY-Public TV	44 Hampden Street	Springfield	MA	01103
WGGB ABC40/FOX 6 News	1300 Liberty Street	Springfield	MA	01104
WHMP-FM	15 Hampton Avenue	Southwick	MA	01060
Wilbraham-Hampden Times	2341 Boston Road	Wilbraham	MA	01095
Worcester Telegram & Gazette	20 Franklin Street	Worcester	MA	01615
WRNX/WHYN/WPKR Radio	1331 Main Street	Springfield	MA	01103
WWLP-TV 22	PO Box 2210	Springfield	MA	01102

Pioneer Valley Planning Commission Regional Reporter
January 2015

Let PVPC Guide Your Community Through the Hazard Mitigation Planning Process!

Over the past 10 years, PVPC has helped 40 communities in the Pioneer Valley develop hazard mitigation plans, making them eligible for grant opportunities from the Federal Emergency Management Agency (FEMA) and the Massachusetts Emergency Management Agency (MEMA).

Through the hazard mitigation planning process, communities assess their vulnerability to natural hazards, such as flooding, snowstorms, hurricanes, wildfire, and tornadoes. They also prioritize a set of mitigation strategies that will help eliminate the long-term risk to human life and property from these hazards. Common mitigation strategies that are eligible for grant funding from FEMA and MEMA include minor localized flood reduction projects, structural retrofitting of existing buildings, culvert improvements, installation of emergency backup generators, and infrastructure retrofits.

PVPC provides guidance in all aspects of the development of hazard mitigation plans, including identification and mapping of natural hazards, collaboration with municipal officials to prioritize mitigation strategies, and public outreach. PVPC can also assist communities in applying for grants to fund mitigation projects, through its Local Technical Assistance *(LTA)* program. Contact Josiah Neiderbach at jneiderbach@pvpc.org to find out more.

Pioneer Valley Planning Commission Regional Reporter
April 2013

The Pioneer Valley Planning Commission is currently working with 23 member municipalities to create new hazard mitigation plans and update expiring plans. These plans, approved by the Federal Emergency Management Agency (FEMA), make these municipalities eligible to apply for hazard mitigation grant funds to address identified top community priorities to mitigate the long-term consequences of natural disasters.

PVPC is currently in the process of creating or updating plans for 10 communities. This includes developing new hazard mitigation plans for Granville, Longmeadow, Montgomery, Russell, and Wales, as well as updating the current plans for Agawam, Easthampton, Hampden, Southwick, and Ware.

PVPC also recently applied for funds from FEMA to create or update plans for an additional 13 communities. This includes creating new plans for Blandford and Tolland, as well as updating existing plans for Chesterfield, Hadley, Hatfield, Holyoke, Ludlow, Monson, Northampton, South Hadley, Southampton, Westhampton, and Wilbraham.

Copies of approved hazard mitigation plans are available on PVPC's website at http://www.pvpc.org/activities/landuse-mitplans-2011.shtml. For more information please contact PVPC's Josiah Neiderbach at (413) 781-6045 or jneiderbach@pvpc.org.

Pioneer Valley Planning Commission Regional Reporter
December 2012

PVPC working with member communities to mitigate the long term consequences of natural hazards

PVPC is working with 10 member municipalities to update and/or develop new Hazard Mitigation plans. Granville, Longmeadow, Montgomery, Russell, and Wales are all developing their first Hazard Mitigation plans; while Agawam, Easthampton, Hampden, Southwick, and Ware are working on updates.

PVPC was also engaged by the University of Massachusetts Amherst campus to write their campus Hazard Mitigation plan, and PVPC has just submitted a grant application to MEMA to update plans for Hadley, Hatfield, Holyoke, Ludlow, Monson, Northampton, South Hadley, Southampton, Westhampton, and Wilbraham.

Having a FEMA approved Hazard Mitigation plan makes each municipality eligible to apply for Hazard Mitigation grant funds to address identified top community priorities to mitigate the long-term consequences of natural disasters.

For more information, please contact Catherine Ratté at cratte@pvpc.org or 413/781-6045.

Southwick Residents set for update on Hazard Mitigation Plan

March 16, 2015

MassLive.com

http://www.masslive.com/news/index.ssf/2015/03/southwick_residents_set_for_up.html

SOUTHWICK - An update on the town's Hazard Mitigation Plan has been scheduled for Wednesday at 10 a.m. in the Land Use Room at Town Hall. The meeting will include an introduction to the planning process, a summary of existing mitigation initiatives and an outline of recommended strategies for addressing natural hazards in Southwick. Town officials are being assisted by staffers from the Pioneer Valley Planning Commission in preparing the hazard plan. Copies of the plan will be available at the meeting. Creation of the plan is funded by federal and state Emergency Management Agencies.

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 & Potential Hazards/Critical Facilities Map

CERTIFICATE OF ADOPTION

TOWN OF SOUTHWICK, MASSACHUSETTS

BOARD OF SELECTMEN

A RESOLUTION ADOPTING THE SOUTHWICK

LOCAL NATURAL HAZARD MITIGATION PLAN UPDATE 2016

WHEREAS, the Town of Southwick established a Committee to prepare the Southwick Local Natural Hazards Mitigation Plan; and

WHEREAS, several public planning meetings were held between January and March 2015 regarding the development and review of the Southwick Local Natural Hazard Mitigation Plan Update 2016; and

WHEREAS, the Southwick Local Hazard Mitigation Plan Update 2016 contains several potential future projects to mitigate hazard damage in the Town of Southwick, and

WHEREAS, a duly-noticed public hearing was held by the Southwick Board of Selectmen on _____, 2016 to formally approve and adopt the Southwick Local Natural Hazard Mitigation Plan Update 2016.

NOW, THEREFORE BE IT RESOLVED that the Southwick Board of Selectmen adopts the Southwick Local Natural Hazard Mitigation Plan Update 2016.

ADOPTED AND SIGNED this _____, 2016.

ATTEST