Municipal Vulnerability Preparedness Program

Community Resilience Building Workshop

Summary of Findings for West Boylston, Massachusetts

Town of West Boylston and the Central Massachusetts Regional Planning Commission

June, 2019

Contents

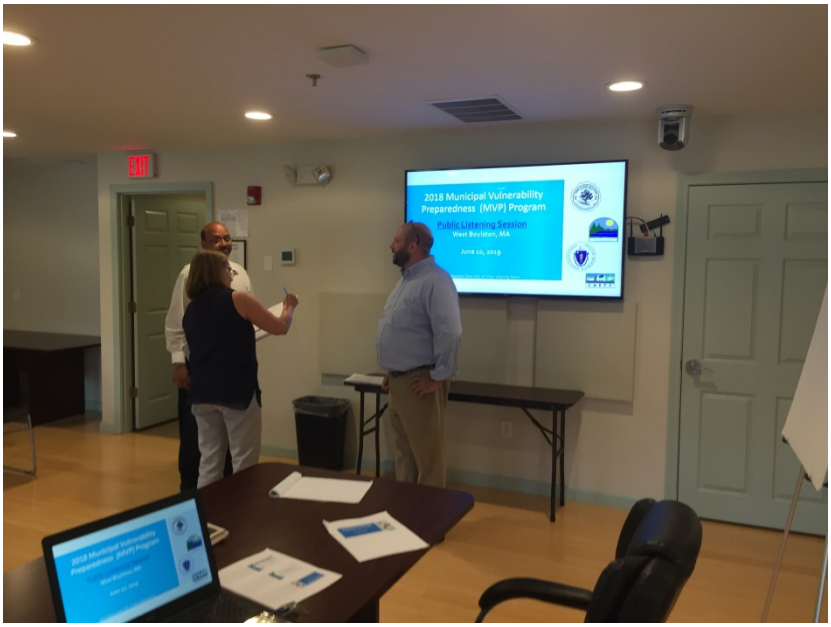
Workshop Summary

West Boylston MVP Workshop attendees discussing top climate-related hazards for the town

The Town of West Boylston's Municipal Vulnerability Preparedness (MVP) workshop was held on May 14, 2019 at the West Boylston Town Hall. The goal of the workshop was to identify top hazards and develop strategies to enhance resiliency related to the anticipated effects from climate change. West Boylston contracted with the Central Massachusetts Regional Planning Commission (CMRPC) to serve as the MVP provider, including completing the Community Resiliency Building (CRB) workshop. Through the Community Resilience Building (CRB) process, stakeholders actively engaged in an ongoing discussion to determine the top hazards related to climate change that currently impact or have the potential to impact West Boylston. The main objectives of the workshop were to: define top local natural and climate-related hazards of concern; identify existing and future strengths and vulnerabilities; develop prioritized actions for the community; and identify immediate opportunities to collaboratively advance actions to increase resilience.

On the day of the workshop the Central Massachusetts Regional Planning Commission delivered three presentations to those in attendance. These presentations (1) provided an overview of the workshop and CRB process; (2) gave a summary of climate change projections, impacts, and mitigation strategies; and (3) provided a detailed profile of natural hazards in West Boylston. After listening to the presentations given by CMRPC staff, workshop participants were asked to identify four climate-related hazards that impact the Town for in-depth discussion by small groups. After discussion and deliberation, participants identified the following hazards. These hazards are presented in no particular order and include: flooding; winter storms (including ice storms); droughts and wildfire; and severe storms (including tornados, thunderstorms, and damaging wind events). Having identified these hazards, workshop attendees were then broken into five groups to work through the CRB program's matrix and mapping exercise. Three of the groups focused on single-topic issues and focused on either environmental, social, or infrastructure-related issues. The remaining two tables were multi topic and discussed all three.

Thirty eight people attended the MVP workshop. Attendees included representatives from the central town government and local regulatory bodies, state representative for West Boylston, emergency services, the MVP Core team, senior and local housing authorities, a non-profit, several local businesses, the county jail, and CMRPC staff. A complete list of participants is included at the end of the report. A public listening session to discuss MVP results and recommendations for future actions was held on June 10th, 2019 with a televised on local access cable Board of Selectmen's meeting to present the same information on June 26th**.** The listening session and Board of Selectmen's meetings were properly promoted across several avenues, with a combined thirteen residents including all five selectmen in attendance.



A representative from CMRPC discussing the results of the MVP workshop with two members of the West Boylston Board of Selectmen

Top Hazards and Vulnerable Areas

A Bridge in West Boylston was destroyed by a flood in 1900 (left) and a mill was destroyed in another flood in 1902 (right). Events like this is like to increase as floods are projected to become more frequent in the future.

Top Hazards

Following the presentations at the beginning of the workshop, a full-group discussion was held for approximately fifteen minutes to determine the top four hazards for breakout groups to further assess solutions. Participants were asked to develop a comprehensive list of hazards that the community has historically dealt with, currently faces, and/or anticipates having to face in the future due to climate change. Examples such as sea level rise, drought, and tornadoes were listed by the MVP provider to prompt discussion. After generating a comprehensive list, workshop participants were asked to collectively agree on the top four hazards impacting West Boylston. Taking climate change projections, critical infrastructure, and other considerations into account, participants chose to focus on the following hazards. While these hazards represent the top hazards discussed at the workshop, they are presented in no particular order. These include:

- Flooding (all applicable types: river, storm water runoff, and ponds)
- Winter storms (snow, ice, and mixed precipitation)
- Droughts and wildfires
- Severe storms (tornadoes, thunderstorms and other damaging wind events)

Extreme weather in recent years demonstrates how the various hazards impact the town. There have been numerous flooding events over the years, and this threat is only going to increase as the majority of the town's developed land is near the Wachusett Reservoir and the various brooks and rivers that feed into it. Specific areas with critical infrastructure have been shown to be prone to flooding, thereby creating a variety of safety concerns. Winter/Ice Storms, a regional problem every winter, are expected to be more intense, include more mixed precipitation, damaging trees, power lines and other infrastructure.

Wildfires are expected to increase due to the impact of prolonged droughts. The drier forests and wooded areas will be more combustible in drought conditions. Drought will also likely lead to water shortages impacting the entire town whether or not residents and businesses are on town water or have wells. Heavy wind events are of primary concern as well. The town and the surrounding area have experienced a recent uptick in storms with hurricane-level winds. This phenomenon can be linked in part to the previously mentioned increase in average temperature and rising precipitation rates. However, this fourth hazard focused primarily on the winds associated with these storms, leaving heavy rain events to be discussed under flooding. The workshop participants agreed that different hazards affect the town at different times of the year. Flexibility and comprehensive response by town officials is needed to ensure the safety of the citizens in different hazards situations exacerbated by climate change.

Vulnerable Areas

The Quinapoxet River will be susceptible to increased flooding due to heavy rain and the surrounding woodlands will be vulnerable to wildfire during periods of severe heat and drought (picture courtesy of West Boylston)

The vulnerabilities listed below were discussed in the workshop's breakout groups.

Senior Citizen Communities

West Boylston has two private fifty-five and over communities (Angell Brook and Hillside Village), a public assistance community, Orchard Knoll, which includes thirty six elderly/disabled housing apartments, Oakdale Rehabilitation Center, and Briarwood Continuing Care Retirement Community, and these are all located to the south and west of the Wachusett Reservoir. On the

other side of the reservoir is the town's only senior center, managed by the West Boylston Council on Aging, and they provide these residents valuable services such as medical care, legal and financial clinics, meals, exercise classes, and other recreational activities. As climate change exacerbates environmental disasters, seniors living in these communities risk being cut off from the important services of the Senior Center and even being trapped in their communities due to flooding and road conditions, leaving them with minimal or no food and medical supplies.

Wachusett Reservoir

The Wachusett Reservoir is the prominent natural feature in the town, dividing the town into two regions, and is a source of drinking water for the Boston region. The reservoir is also the outlet for all the town's brooks, rivers, and storm water runoff. Three bridges, two roads and one rail, cross the reservoir and its confluence with the Quinapoxet and Stillwater Rivers, and it is these locations that face the biggest risk of damage should heavy rain cause the reservoir to flood. If these locations become impassible, particularly MA-140, or Sterling Street, emergency services will have to drive up and around Clinton to reach the northern portion of the town from the town center. Additionally, should the water quality of the Reservoir change due to excessive storm water runoff, the health of populations downstream will be put at serious risk.

Roads

The many brooks and wetlands throughout the town can and will cause hazardous road conditions as heavy rain causes flooding conditions around undersized culverts and inadequate drainage infrastructure. While flooding can cause serious damages to the roads and any infrastructure nearby, this hazard will be even more pronounced in the more rural areas of the town where residents have fewer options for evacuation routes than residents closer to the town center.

Emergency Shelter Facilities

Currently, West Boylston has one emergency shelter, the Middle/High School, which is equipped with a generator for backup power. Other municipal buildings suitable for use as emergency shelters, Major Edwards Elementary School, the Town Hall, and the Senior Center, need backup power and infrastructure improvements so that all are ADA accessible and can house even the most vulnerable populations during major weather events. A top concern for workshop participants regarding emergency shelters was the Senior Center, which is the only suitable municipal building located north of the reservoir and therefore is the only option for those residents, many of whom are senior citizens and in need of additional care.

Pan America Railway Line

The Pan America Railway Line spans the entire town, abuts several communities including the Angell Brook Condo Association, traverses several brooks, and roughly follows the Wachusett Reservoir's southern and western edge up to the Stillwater River where it cuts over and

continues towards the Town of Sterling. The rail line is used to haul both hazardous and non-hazardous freight to and from Worcester which poses a risk for the town and the reservoir in the event that snow, ice, flooding, or severe storms cause a train derailment. A derailment along any part of the rail's path will pose a serious health and safety risk for residents of the town and those downstream of the reservoir, and this will be heightened if a derailment occurs in a wooded area of the town where access by emergency services is limited.

State Owned Woodlands

Roughly half of the town's land is state owned and reaches into every community. The large amount of woodlands and state protected land is both seen as a strength and vulnerability for the town. The town's forest cover provides a number of ecosystem services, gives the town a rural character, and protects residents from the noise of nearby I-190 The state owned lands around the reservoir also protect the water quality from certain types of development. During periods of extreme heat and drought, these woodlands can become a hazard for the town as wildfires are more common in these conditions.

Current Concerns and Challenges Presented by Hazards and Climate Change

Attendees listen as each group presents their CRB Risk Matrices.

CMRPC, the MVP planning provider, had the unique advantage of preparing West Boylston's Hazard Mitigation Plan (HMP), which was adopted by the town's Board of Selectmen and accepted by FEMA in February 2018. Meetings with the MVP Core Team prior to the workshop as well as the HMP helped to identify past climate-related events that significantly impacted the Town. Disaster events of concern included frequent major winter storms (as in 2015 and 2018), ice storms (2008), severe rain events (2005, 2010, 2016), tropical storms (Irene, Sandy), infestations of invasive and otherwise undesirable species (Asian Longhorn Beetle, gypsy moths, aquatic invasive species, ticks), and extended periods of drought (2015 to 2016). The town is fortunate to have public water coverage over most of the town including both sides of the Reservoir, maintains three well sources, and four storage tanks; however, it will be important for the town to maintain a backup and response plan in the event of a drought when one or more wells cannot be replenished at or above the rate of use or if a severe storm damages one of the tanks.

At the workshop, CMRPC staff presented downscaled data on climate change provided by the State's Executive Office of Energy and Environment Affairs (EOEEA) and the Northeast Climate Science Center at the University of Massachusetts, Amherst. West Boylston lies mostly in the Nashua River Basin, and should projections for the watershed hold true, by mid-century, annual average temperatures will increase in the range of 3 to 6.4 degrees from the historical baseline,

hot days over 90 degrees will increase 9 to 30 days, days below freezing will fall 19 to 38 days, annual precipitation will increase 1.2 to 6.3 inches, yet seasonal drought conditions will become more frequent as precipitation becomes more concentrated in extreme intensity events and winter snowpack is reduced. Some of the challenges of these projected changes – many of which are already being observed – were discussed in a presentation at the workshop focused on specific hazards in the West Boylston area.

Challenges highlighted in the presentations and/or discussed as a group or in the breakout groups included:

- In general, attendees cited concerns that climate change will exacerbate problems that they are already dealing with and already lack the resources to address comprehensively – flooding and storm water management, vulnerable roads, ecological damage, and vulnerable populations, all within the context of a small community. This positive feedback loop created by climate change has the potential to increase already present hazardous risks.

- An increase in hot and warm days and decrease in cold days will mean increased need for cooling and less need for heating, especially among vulnerable groups such as children and seniors – this concern was elevated because of the Town's relatively limited formal shelter capacity and the lack of backup power at the Senior Center, an important resource for many of the town's senior population and residents in the town's northern region.

- Increased temperatures can also be expected to cause changes in the water cycle, leading to more intense rain events. Increased precipitation rates will lead to more frequent and severe flooding, including in areas outside of designated flood zones defined using historical data – particularly around the Wachusett Reservoir, the Oakdale neighborhood, and the Sterling Meadows community, which is situated near existing wetlands.

- Increased storm intensity will likely cause more tree damage leading to power outages and road closures, higher peak river flows requiring new approaches to storm water management, and increased erosion of river and brook banks and nearby infrastructure. While the town prides itself on the tree trimming service provided by the municipality's Light Plant, severe storms will still likely damage and impact the power lines throughout the town and especially the overhead transmission lines owned and maintained by National Grid. Tree damage will occur from intense wind storms such as recent tornadoes or from heavy snow and ice storms.

- More frequent and severe droughts will challenge water supplies and increase risks from wildfire. Increased risk of wildfire can lead to a wide-range of ecological outcomes including increased damage to human property and life, removal of suitable habitat space, and changes in ecosystem services made available by forest cover.

- Invasive plant and animal species can impact public health through increasing numbers of disease carrying pests (e.g., ticks and mosquitoes) and by damaging key ecosystems such as forests and wetlands, thereby increasing wildfire and flood risks.

- As the climate continues to change and disasters increase in frequency and strength the need to communicate with residents, businesses, and other institutions will increase as well. Changing climate will dictate the need for enhanced communications systems and related infrastructure as well as up to date and flexible emergency response and evacuation plans. These flexible response and evacuation plans will be particularly important for the senior citizens who live alone and do not have access to a vehicle.

The Wachusett Reservoir will experience higher levels and flooding due to increase heavy rain and storm water runoff which will impact the shoreline and the historic Old Stone Church (image courtesy of West Boylston)

Specific Categories of Concerns and Challenges

MVP workshop participants voted for their top action items; this helped prioritize items in the final report.

The following topics were identified by workshop attendees as concerns or challenges related to West Boylston's changing climate and natural hazards.

Infrastructure Topics

Emergency Shelters, Services, and Equipment

The town only has one municipal building, the Middle/High School, with the backup power capacity to act as an emergency shelter. Residents north of the Wachusett Reservoir are geographically closer to the town's Senior Center and are effectively cut off from the Middle/High School should a major storm render the two bridges that cross the reservoir impassible. Participants in the workshop frequently brought up the emergency shelter capacity in the town and held the view that should a storm or wildfire damage the Middle/High School, residents in West Boylston would have to rely on neighboring towns for shelter capacity, potentially stretching those resources to their limit. Beyond emergency shelter capacity, separation from the group of residents in the northern region of the town from almost all of the town services and equipment (the police department and the board of health are located north of the reservoir) was a major issue for participants as future storms have the capacity to inundate the reservoir's catchment area, flooding it and damage the two routes linking that portion of the town to the rest, especially the fire department. Municipal buildings such as the fire and police stations are in need of repair and upgrades in order to effectively respond to the forecasted increase in severe weather events, and the department of public work's garage and

service building does not have the capacity to handle the larger equipment that is now required to handle debris and snow removal as well as road repair machinery. An increase in the number and severity of wildfires, severe rain and snow, and flooding will damage the town's infrastructure and endanger all those who live in the town. Without buildings and command centers that can effectively store, maintain, and equip these important departments and services, these storms will lead to an increase in loss of property and life.

Public Utility Systems

The town of West Boylston is fortunate to have almost full town coverage with all major utility systems (water, sewer, electricity, gas, telecommunications), and locations that are not covered by these systems are undeveloped but close enough to existing lines that growth and access to the utilities would be feasible. The electrical grid in particular is operated and maintained by the town's Municipal Light Plant, which receives power from a set of transmission lines owned by National Grid that runs through the town and over the Wachusett Reservoir. While this can be seen as an asset and strength for the town, it is also a highly vulnerable area. As the climate changes and severe thunderstorms and wind storms become more common in all seasons, there is a higher chance that these above ground power lines are likely to become damaged, causing residents to lose power and rely on backup power generators, or worse live wires become lose and cause fires to nearby buildings and trees. Both the Municipal Light Plant and National Grid already run tree trimming programs to cut back on tree growth around power lines; however, they can only cut back trees a certain distance and cannot fully protect the area from damage to their infrastructure. Other utilities such as gas and water mains are designed and placed far enough below the surface that they are typically safe from major weather events. However, as summer and winter storms become more intense, precipitation increases, and periods of drought become more extreme, the ground water table and soil conditions can change drastically and suddenly, leaving these utilities susceptible to damage and even leading to major main breaks. Water and gas main breaks can lead to substantial flooding and sudden explosions, respectively; causing damage to roads, houses, and even loss of life.

Winter Conditions

While the number of below freezing days is expected to decrease in the future for the Nashua River Basin, the number and intensity of freezing rain and mixed precipitation storms is likely to increase. These storms cause far more damage to the town's infrastructure and wooded areas; ice can pull down wires and trees, and freezing rain can get inside cracks in pavement and foundations, expanding on below freezing days and causing further cracks and damage to the infrastructure. These types of storms can also cause serious damage to railroad tracks by causing severe damage to the track's foundation, rails, or rail ties. A fatal break in any of these components would likely lead to a train derailment; this is worrisome as the rail line exclusively carries freight rail and it is unknown whether or not any hazardous materials run along the route.. West Boylston's roads are currently in favorable conditions, but major damage to the two bridges along MA Route 140 (Sterling and Beaman Streets) would cut off the portion of the town north of the reservoir from the rest of the town and the only existing emergency shelter. Severe weather conditions not only damage roads and building foundations, it can hinder response times and availability of emergency services. Particularly in the north-west region of the town that is

least developed, emergency response times can be increased due to poor road conditions, inaccessible properties and developments, and a scarcity of available response units.

Road Flooding and Drainage

West Boylston contains a number of brooks, small rivers, and FEMA designated wetlands throughout the town with the Wachusett Reservoir as the key environmental feature in the middle of the town. With the increase in annual precipitation in the form of heavier and increasingly infrequent storms inundating these natural resources beyond their capacity, the town will be faced with increasing occurrences of flooding, particularly in low lying areas already experiencing flooding during heavy rain storms. Combined with the increased volume of storm water runoff, most culverts will become undersized to handle the amount of water and spill onto the roads and into developed areas, making roads impassable and causing property damage. Increasing the size of culverts and storm drains can mitigate and reduce the damage for now, but uncertainty in the amount of future rain the town can expect will mean that additional work to increase flow capacity or to implement innovative solutions, such as low impact development, will be necessary to protect existing and future development.

Societal Topics

Safety Education for Vulnerable Populations

Educating the public and wider region about proper safety precautions during natural disasters is going to become a routine and increasingly complex issue in the future as severe weather events become unpredictable and intense. The town will need to also ensure that emergency service personnel are educated and updated on response and mitigation plans, particularly surrounding West Boylston's increasingly aging population. These residents are among the most vulnerable populations and are increasingly clustered in senior living communities and in the northern region of the town. Other vulnerable groups (children, those with accessibility needs, residents with limited English proficiency, and lower income residents) are likely to require unique evacuation procedures or resources depending on the type of storm. The health and safety for these vulnerable populations will also be endangered during periods of severe heat and/or drought and will require specialized attention and easy access to buildings with reliable access to water and air-conditioning.

Water Quality

West Boylston has a steady and efficient system of water collection, storage, and distribution currently in effect, with three wells pumping an almost combined total of 1,500 gallons per minute and four storage tanks with a combined storage capacity of over 3,000,000 gallons. As future development increases water usage and drought conditions lead to periods where water use of all three wells is greater than the rate at which water is replenished, water quality will become a serious issue. Increases in mineral concentration in the well water can contaminate the stored water and the public drinking water, causing serious health risks for residents, particularly the most vulnerable populations with compromised health and immune systems. If through changing land use regulations and increased development the municipal wells are encroached upon, damage to these developments by severe storms can also cause groundwater contamination which would introduce the wells to additional pollution and chemicals. These additional risks would put increased pressure on the water filtration and

treatment system currently in use by West Boylston, and any impacts to the existing or future system will have serious impacts on the health and safety of all residents.

Debris Management

Man-made and natural debris throughout the town not only has a direct impact on the town and region's environmental health, but they are also a direct and indirect hazard on all members of the population, both in West Boylston and as far away as Boston. Natural debris such as felled trees, branches, and concentrations of uprooted underbrush has the potential to become fuel for wildfires, especially in periods of severe heat and drought. Man-made debris such as liter and scattered debris as the result of severe rain and wind storms can make their way into waterways or near wells and the breakdown of material can contaminate sources of drinking water. While the debris caused water contamination can have as big of an impact on water quality as natural contamination discussed above, debris which affects the water quality of the Wachusett Reservoir will impact all towns downstream along the Nashua River and the greater Boston area whose drinking water systems the reservoir is a part of. Vulnerable populations of this greater region will be impacted and put at risk in part without proper debris management and response procedures in West Boylston. Both types of debris can directly impact the town's residents by damaging structures, properties, and creating impasses along roadways and the railway. Wildfires caused by debris can put entire portions of a town at risk and have the ability to destroy entire properties before being contained and eliminated. Residents and businesses located in the more wooded areas of the town and residents north of the reservoir are at the greatest risk where access to firefighting equipment will be more limited.

Beaver and Man-made Dams

Despite a variety of natural water resources throughout the town, West Boylston only contains two dams, the aging Quinapoxet Dam near the Oakdale neighborhood and the Edward's Pond dam off of Malden Street near the town center. The town, due to its woodlands and water resources, also has a beaver population whose dams are becoming an ever present problem for the town. Through regulations mostly protecting beavers and beaver dams from human interference, these dams are causing a backup of brook and stream water whose surges are likely to impact communities downstream should these dams break under the pressure of increasingly powerful storms. While there are concerns the effects of a failure or removal of the Quinapoxet Dam on the community down river, this risk is fairly low due to the path of the Quinapoxet River and the location of the Oakdale neighborhood north of the river's confluence with the Stillwater River. Ultimately, the only effect a failure of the dam due to a powerful and major storm would have on the town is the subsequent flooding of Thomas Street and the railroad track, temporarily cutting off the neighborhood and north-west region of the town from emergency services. Given that a rain storm of this magnitude would also flood the two MA Route 140 bridges connecting the northern region of the town to the rest of the town, effective response and management planning will need to be in place as future storms like this become common. Similarly to the Quinapoxet Dam, Edward's Pond Dam is vulnerable to damage due to severe storms and being inundated with high levels of water. This dam is located upstream from low density housing and woodlands, and a water surge along Malden Brook due to a partial or total dam failure from a severe storm is likely to damage trees and properties, flood roads making Malden Street in

particular impassible, flood houses, and uproot debris and materials which will contaminate water and soil downstream. The existing and future health and safety of residents living downstream from Edward's Pond Dam is at risk should its structural integrity weaken due to an increase of major weather events.

Environmental Topics

Storm Water Runoff and Water Quality

As discussed above, increased rain and severe storms will, without proper maintenance, repair, and redesign, inundate culverts and storm drains throughout the town and flood roads and properties near the brooks, rivers, and Wachusett Reservoir. While severe rain poses problems for road and development infrastructure, it can also lead to future environmental issues once the water recedes back into the waterways. Flooded parking lots, particularly the Wal-Mart parking lot near Gates Brook along West Boylston Street, pick up oil, plastic, and other pollutants and materials and carry them back into the streams which eventually make their way to the reservoir. Storm water runoff from the light industrial sites in the southern region of West Boylston can pick up pollutants not only on the surface but imbedded in the soil due to heavy rain and carry them off into either the Nashua River watershed or the Blackstone River watershed, which the very southern region of the town is located in. Severe and heavy rainfall has the ability to affect not only the water quality of the reservoir and surrounding waterways, but also the well water the town is fed from. Heavy rain and severe storms will likely introduce the same kinds of pollutants into the groundwater which will make its way to the wells. While most contaminates will be filtered out through a municipal water treatment process, some private wells will not have the same efficiency and affect a more localized population.

Invasive Species

As the number of warm and hot days increase and the number of cold days decrease, the town and greater region will see a shift in flora and fauna which has adapted to the warmer and drier climate and a decrease in the native species better suited for cooler and wetter weather. These invasive species can migrate to the area on their own or through a secondary source (transportation of goods e.g. shipping pallets continues to be the largest threat to the continued spread of invasive species). Once embedded in the local environment, invasive species will compete with native species for resources, often quickly dominating the landscape over their native competitors. Invasive species can also attack and infect native and local animals, and even existing pests such as ticks and mosquitos can worsen as weather conditions make the environment more conducive for their growth and success. Invasive species, particularly invasive flora, can weaken the integrity of the existing woodland and make whole swaths of land vulnerable to wildfires, which the woodlands are already susceptible to due to increased periods of drought and heat.

Contaminated Sites and Pollution

West Boylston is not a heavy industry town and features few brownfield sites; the industrial properties that the town does have are located in the southern region of the town. Along the major state routes that cross the town, MA-Route 12, 140, there is an issue of large surface parking lots which flood and release imbedded contaminates left behind from vehicles into the ground and surface water and soil.

Additionally, there is a large golf course located in the central region of the town, and chemicals used to treat the course can seep into the nearby brooks and groundwater catchment region for the three wells used to supply the town with water. As the climate worsens and heavy rains, winter storms, and severe heat and drought become more common and inconsistent, surface lots can become cracked and release further contaminates into the environment and the amount of chemicals to treat and protect yards, fields, and other areas of recreation from drought and invasive species will also pollute and contaminate the town's natural resources. As every developed area of West Boylston is near undeveloped woodland, the entire town is at risk of the affects from contamination, pollution, and destruction of natural resources.

Current Strengths and Assets

West Boylston has already taken some steps to address natural hazards and climate change over recent years whether purposefully or not. The town's municipal services maintains and operates a number of utilities and infrastructure systems while communicating and establishing an overall wellbeing with the greater region. The town is also well suited to work with the community's senior citizens, provide for them and other vulnerable residents, and communicate locally with residents and emergency services. While the town's woodlands and water features pose an existing and future risk among the town's populations, they are also an asset to residents and visitors by providing space for recreation and habitat growth.

Infrastructure Strengths

- The town's municipal buildings, such as emergency shelters, public safety bases, and the senior center, are either well equipped to quickly respond to emergencies or are well suited to grow into that capacity.
- West Boylston contains several well connected utility systems (water, sewer, and power) and has fuel and water storage capabilities to handle periods of drought or heavy municipal vehicle usage.
- The West Boylston Municipal Light Plant and the Massachusetts Department of Recreation and Conservation both provide the town is debris management and tree trimming services in order to protect the town's utilities and prevent wildfires from starting during periods of drought and extreme heat.
- The town excels in communicating both internally between departments and externally with neighboring towns. Additionally, the town has cultivated a good working relationship with the towns and some of their municipal services such as the town of Oxford's waste facility.

Societal Strengths

- West Boylston has a variety of both public, private, and non-profit accommodations and services for senior citizens including senior communities, the public senior center, meals on wheels, elder safety education, and rehabilitation centers with medical staff.
- The town's emergency response team is particularly efficient in dealing with issues and keeping the community safe as well as partnering with county jail personnel and participating in the Central Massachusetts Law Enforcement Council.
- Through Code Red, social media, civic, religious, and social organizations, the town not only effectively communicates with the residents and others in the region but provide a system in which they can easily improve to reach a wider and larger audience and share important information and critical news.
- The West Boylston government continues to fund, promote, and plan improvements to public utilities, emergency shelters, and schools while strengthening the town's bylaws in the process.

Environmental Strengths

- The town's northwest corner features one end of the popular Central Massachusetts Regional Rail Trail, a recreational path that flourishes because of the well preserved woodlands.
- While also a vulnerability, the large amount of natural environment areas throughout West Boylston, in the form of woodlands, wetlands, brooks, rivers, and the Wachusett Reservoir, provide the town with a diverse range of flora and fauna and preserves a rural atmosphere in most communities. The large amount of woodlands is also providing a suitable habitat for a growing bat population which helps control the number of invasive insect species which can damage the town's natural environment.
- The town has taken efforts to improve their storm water and water management systems by looking at areas to improve drainage and culverts, adding backup retention ponds next to pumping stations, and ensuring that the majority of residents have access to the public water system. All of this is done not only to preserve the water quality of the reservoir but to protect municipal infrastructure and systems.

Top Recommendations to Improve Resilience

Prioritization of recommendations was achieved through four steps: 1) informal discussion at each breakout table during the workshop; 2) voting using stickers placed on the participant's table's CRB matrix (each attendee was given five stickers to select his/her top priority actions, with at least one sticker required to be used for each general topic area); 3) report-back from each table to the full audience to discuss and discern consensus priorities; and 4) final review and reconciliation of duplicate priorities.

The top recommendation for environmental actions is to complete an engineering study and assessment of all existing storm drains and culverts and to educate and communicate with the public on the importance of culverts and drains to minimizing flooding. Societal Actions' main priority is to purchase and budget maintenance for backup power generators at the Senior Center in the north end of town, Town Hall, and the elementary school. Similarly, the top priority for Infrastructure is to add backup power generators to the elementary school, senior center, and town hall, with an additional high priority to upgrade public safety equipment and facilities, including the Fire Department and Department of Public Works, to better respond to and manage environmental hazards.

A complete list of actions broken out by category is presented here:

Environmental Actions

Specific Topic	Summary of Actions	Priority
Standing Water from Flooding and Undersized Drainage Inlets and Culverts causing Blocked or Impassible Roads	Complete an engineering study and assessment of existing drainage facilities, culverts and retention ponds, evaluate and identify required improvements, assess brook water flow and ties to storm water alignment, develop re-engineered plans of critical areas, communicate throughout the town on flooding and drainage concerns, and educate the public on the importance of proper culvert and storm water maintenance. Initial areas to study include culverts and storm water inlets along Gates and Angell Brooks.	H
Wooded Areas and Wildfires	Supply the Fire Department with equipment to better control wildfires and focus on diversifying the area's tree species. Coordinate with the state to provide more efficient debris management and dead wood collection, the management of fire and heavy snow and ice risks between the urban interface and the woodlands, and the area's tree management plan.	H
Water Quality Impacts and Well Storage	Continue monitoring and testing wells, communicate with the Department of Conservation and Recreation regarding treatment, conduct public education and outreach efforts, and investigate ways to keep water clean for habitats	M
Train Derailment, Track Flooding, and Environmental Procedures	Plan for Hazmat coordination and response, communicate with railroad owners and operators for continued track maintenance, and monitor track flooding around Angell Brook, Thomas Street Bridge, and Gates Brook	M
Schools as Emergency Shelters	Maintain backup generator	M
Extended Power Outages	Continue to upgrade and maintain tree maintenance program	L

Salting Roads	Upgrade equipment and calibration, investigate environmental impacts of liquid pre-treatment, and work with watershed towns to explore alternate options	L
Increased Damage from Pollution	Study nature based solutions to reducing pollution outputs	L
Road Damage due to Flooding and Erosion	Complete a town wide assessment of storm drains and storm water facilities	L
Fuel Storage Facility at Noco Company Facility	Verify for compliance and review risk assessment plan	L
Wachusett Country Club	Assess for shelter-in-place capacity	L
Quabbin Aqueduct Shaft	Investigate power generation capacity	L
Department of Conservation and Recreation Office	Consider using the office as a communications center	L
Storm Debris along roadways	Develop plan to utilize the ALB wood processing center and other appropriate municipal sites to contain storm debris	L
Snow Drifts along Prospect Street	Coordinate with private owners on the management of snow along the street and explore the installation of snow fences	L
Quinapoxet and Edwards Dams	CRS Investigate and review FTRM maps	L
Rail Trail	Assess culverts, bridges, and nearby Quinapoxet dam	L
Beaver Dams	Assess the area's beaver population	L
Growing Bat Populations	Camp Woodhaven is to build a bat house so growing bat population can reduce the number of gypsy moths	L
Invasive Species	Locate invasive species and assess risk to the health of native species and residents, develop innovative controls and management, and monitor and determine how best to control invasive species such as gypsy moths, poison ivy, Asian long-horned beetles, and others	L
Wachusett Reservoir	Coordinate and communicate with the Department of Conservation and Recreation, the Massachusetts Water Resources Administration, and adjacent communities on utilizing best management practices to ensure high water quality and ensure there is frequent communication between the town and the state before predicted extreme events	L
Storm Water Management	Implement Capacity Management Operations and Maintenance Program, continue to participate with the Central Massachusetts Regional Storm Water Coalition, maintain MS4 compliance, continue to maintain pump station scata system and increase Capital Improvement funding, and increase public outreach and awareness efforts	L

Societal Actions

Specific Topic	Summary of Actions	Priority
Emergency Shelters	Purchase generators and budget maintenance funds so the senior center, elementary school, and town hall can be used as an emergency shelter along with the Middle/High School.	H
Lines of Communication Between the Town and Residents	Conduct study for recommendations to increase and improve communications between emergency services and residents and investigate creating a special center for vulnerable populations which is FEMA compliant	H
Emergency Response Capability and Transportation Logistics	Ensure efficient service is maintained and continue to coordinate logistics with all emergency services	M
Senior Housing, Long-term and Continuing Care Housing Facilities	Coordinate and work with agencies such as the Massachusetts Municipal Aid Plan, the Central Massachusetts Regional Public Health Agency, and local emergency response groups on efficient evacuation procedures for residents, especially those without access to private transportation, ensure all residents have adequate supplies in the event of an emergency, utilize the county jail kitchens in the event of an emergency, and consider supporting the use of an Ambi Bus in cases of emergency	M
Railroad Locations and Product Carried	Hire consultant to investigate environmental impacts on the tracks and rail bed due to excessive rain and heat and cold temperatures	M
Mass Decontamination Units	Ensure that agreements between the State and the Town are in place ahead of any natural disaster	M
Schools and Nursing Home	Explore risks and create a maintenance and snow removal plan for the facilities flat roofs	L
Wetlands and Retention Ponds	Explore potential long term issues around the wetlands, retention ponds, and surrounding communities	L
Edwards Pond Dam	Collaborate with the State and the Department of Public Works to create a plan if there is a dam failure	L
Sterling Street Flooding	Continue to monitor flooding in the area and communicate with the State about any concerns	L
Flammable Debris	Determine land ownership and assess ways to reduce risks of wildfires impacting the school	L
Quinapoxet Dam	Continue to maintain the area's culverts and investigate the impacts resulting from removing the Quinapoxet Dam	L
Municipal Owned Utilities	Continue to track the growth of development throughout the town and conduct maintenance to insure service of utilities for all residents	L

Worcester County House of Corrections	Coordinate with officials to optimize emergency response procedures	L
Pet Friendly Shelters	Complete an inventory of existing regional and local options for pet friendly shelters and develop a plan for future locations	L
Wachusett Recycling Center	Develop possible debris management and staging area	L
Food Pantries and Meals on Wheels	Complete an inventory and needs assessment and development a plan to improve the existing programs	L
Faith Based, Civic, and Social Organizations	Assess capacity and include in planning for future emergency needs	L
Wachusett Reservoir	Coordinate incident and emergency response management	L
Elder Safety Education	Develop public education hazard awareness using a variety of methods, ensuring residents with low English proficiency or limited computer skills are included.	L
Day Care Safety	Coordinate incident and emergency response plan and develop public education hazard awareness	L
West Boylston Cemetery	Address flooding issues	L
Camp Woodhaven	Work with owner to assess readiness for the camp to act as a shelter during summer related natural emergencies, continue to coordinate and communicate with emergency officials in regards to road conditions, and develop an incident and emergency response plan and public education program for hazard awareness	L
Worcester County House of Corrections Systems and Mobile Command Unit	Continue to coordinate and communicate with the town, utilize woodchoppers when needed, and utilize the mobile command post during emergencies	L
Town of West Boylston Bylaws	Create a bylaw and send to the Planning Board for review which would require the town to review and improve ADA compliance measures	L
Central Massachusetts Law Enforcement Council	Activate and encourage high civic and law enforcement participation with the Community Emergency Response Team, regularly scheduled drills, and exercises	L

Infrastructure Actions

Specific Topic	Summary of Actions	Priority
West Boylston Emergency Shelters	Add backup generators at the Senior Center, Major Edwards Elementary School, and the Town Hall and ensure all emergency shelters have adequate food, power, and supplies on hand	H
Public Safety Equipment and Facilities	Upgrade the Fire Department's facility, train firefighters to prepare and respond to wildfires, add a communications center to the Police Department's facility, and ensure all public safety locations have backup power and access to a line of communication	H
Department of Public Works Facility	Move the town's salt shed and construct new state of the art facility to house existing and enhanced operations and equipment	M
Senior Center	Ensure the facility has access to a walk-in clinic or in town medical facility and continue to coordinate with the Worcester Regional Transit Authority to increase the limited number of transit options for senior citizens and the senior center	M
Sewer System Infrastructure	Complete a system wide study of the existing conditions of the infrastructure, assess system flooding risks, assess and improve pumps and backup generators, and repair the system as needed	M
Internal and External Communications	Purchase and install supplemental radios to use between Emergency Services, the Department of Public Works, the Water Department, and the Municipal Light Plant. Hold regularly scheduled meetings with all relevant departments to discuss and monitor emergency preparedness procedures. Increase and expand Code Red usage and social media presence between all town departments and local residents and businesses. Regularly coordinate with the Massachusetts Water Resources Agency, the Department of Conservation and Recreation, the County Sheriff, and the Department of Fish and Game.	M
Flooding along Roadways	Complete an environmental assessment and comprehensive engineering study to improve drainage, investigate the use of natural culverts at high impact points, and redesign the storm water systems to tie into small brooks and remediate flooding concerns. Communicate with the state on flooding concerns around the sediment pons along the state owned MA-12 Causeway and collaborate on potential solutions.	M
Tree and Debris Management	Continue inventory and maintenance operations and response and cleanup program for dead and vulnerable materials	M
Salting Roads	Complete Environmental Impact Study and alternative solutions cost estimate for Wachusett Watershed Communities	L

Blowing Snow	Construct temporary Snow Screen along Prospect Street near the Wachusett Country Club	L
Municipal Fuel Tanks	Ensure that all fuel tanks are tied into existing and future backup power generators	L
Water Pumping Stations	Consider installing alternative levees or retention ponds next to storm water pumping stations to contain overflow surges.	L
Old Municipal Waste Facilities	Continue to monitor and maintain the capped facilities	L
Water Wells	Explore and test the interconnectedness of existing and future wells, monitor and maintain the existing wells, explore alternative sources of water for the town, especially north of the reservoir, and develop winter road treatment alternatives with less of an environmental impact	L
Culverts	Complete an inventory and study of all the culverts in the town, particularly along MA-12 and Malden Street, and prioritize locations which need increased capacity and repairs	L
Catch Basins	Continue maintenance inventory and schedule for all catch basins throughout town and complete a comprehensive study for improved drainage service capacity	L
Oxford Waste Facility	Maintain a relationship with Casela for waste, construction, and debris pickup and disposal while exploring options for additional hauling, disposal capacity, and assess contracting for emergency cleanup waste and disposal	L
Natural Gas Lines	Request/conduct risk assessment and map of 'minor leaks' and continue to monitor and report leaks and damages with Eversource	L
Verizon Communications Office	Maintain a relationship with Verizon	L
State Owned lands	Maintain a relationship with the State	L
Regional Dispatch Services	Continue, increase, and improve staffing and training capabilities at all regional dispatch centers	L
MA-140 Route	Assess east-west travel flow across the town and advance the geometry redesign for the town center triangle with Franklin St project to the design stage	L
Municipal Buildings	Assess the condition of all the town's municipally owned buildings	L
Evacuation Routes	Regularly review and assess capacity for continued flow along Worcester evacuation routes	L
Boston & Maine Railroad [Pan Am Railways is owner of the line]	Coordinate on rail culvert assessment study and with the Railroad's owner and operators on wildfire and derailment containment	L
Connectivity within Region	Conduct review/study of current status and improvement possibilities between West Boylston and neighboring communities	L

The Manor, the Mill, Country Club, Briarwood/Hillside, Oakdale Nursing Home	Assess for emergency services and/or shelter-in-place capacity	L
Railroad crossing at Hartwell Street Underpass	Address flooding issue and its associated risk for the railroad	L
Prescott Street Culvert over Waushacum Brook	Coordinate with the Department of Conservation & Recreation to expand the culvert's service capacity in order to reduce flooding	L
Power Grid and Transmission Lines	Conduct a benefit and risk analysis of the existing power grid and infrastructure, continue to maintain the existing grid and coordinate with National Grid on maintenance and access of the transmission lines and substation, revisit zoning and planning bylaws to investigate power line layouts, consider adding additional points of connection to the transmission lines, and ensure that trees are trimmed and debris is cleared near all power lines	L

Workshop Participation & Acknowledgements

Workshop Invitees and Participants

Department/Commission/Organization	Name	Attended?
Angell Brook	Phil Mallet	X
Assistant Executive Director, Housing Authority	Adam Gautie	X
Board of Assessors/Angell Brook	Dennis Fitzpatrick	X
Boylston Town Administrator	April Steward	X
Camp Woodhaven Director	Paula DeTellis	X
Chief of Emergency Preparedness	Alissa Errede	X
CSX Rail Road Company		
David P. Mercurio & Son Construction	David Mercurio	
Disaster Program Manager, American Red Cross	Christopher Rae	X
Executive Director, Housing Authority	Benjamin Gold	
Fire Department Employee		
Fire Department Employee		
Freedom Village Property Manager	Jill Cooney	
Holy Cross Chief Risk and Compliance Officer	Danielle M. Burl	
Holy Cross Director of Public Safety	Chief Shawn de Jong	X
Mass DCR	Kelley Freda	X
MEMA Region 4	Kristen Jerome	
National Grid	Mike Thompson	
Oakdale Nursing Home	Nathan Oriol	X
Oakdale Nursing Home Env. Services Cord.		

Department/Commission/Organization	Name	Attended?
Sheriff's Department	Deputy Jackson	X
Sheriff's Department	Lt. Hubacz	X
State Representative	Jim O'Day	X
Sterling Town Planner	Domenica Tatasciore	X
Sterling Water Department	Paul Lyons	X
The Manor	Savvas Fotiadis	X
Town Clerk	Elaine Novia	
UPS		
Waste Management Public Sector Rep	Ed Pacek	X
Waste Management Public Sector Rep	Matt Hill	X
West Boylston Board of Health	Bob Barrell	
West Boylston Board of Selectmen	Chris Russo	X
West Boylston Building Inspector	George Tignor	X
West Boylston CERT Team	Debbie Puleo	X
West Boylston CERT Team	Jim Ross	
West Boylston CERT Team	Virginia Smith	
West Boylston Con Com	Bill Chase	
West Boylston DPW	Eric Mensing	X
West Boylston Fire Department	Tom Welsh	X
West Boylston Municipal Light Plant	Jon Fitch	X
West Boylston Parks Commission	Jim Pedone	X
West Boylston Planning Board	Vinny Vignally	X
West Boylston Police Department	Tim Benson	X
West Boylston Police Department	Chief Minnich	
West Boylston School Committee	Jen Breen	X
West Boylston Senior Center Director	Lisa Viklund Clark	
West Boylston Municipal Administrator	Nancy Lucier	X
West Boylston Water District	Mike Coveney	
Weston and Sampson	Tom Frost	X
Worcester Public Health Alliance	Phil Leger	X
WRTA/CMRPC	Todd Fontanella	X
CMRPC	Andrew Loew	X
CMRPC	Trish Settles	X
CMRPC	Eli Goldman	X
CMRPC	Chris Bennett	X
CMRPC	Connor Robichaud	X
CMPRC	Peter Peloquin	X
CMRPC	Ian McElwee	X

Project Team

The following individuals were directly involved in planning and conducting the West Boylston workshop.

Organization	Name	Role
CMRPC	Andrew Loew	Facilitator/Presenter
CMRPC	Eli Goldman	Facilitator/Presenter
CMRPC	Chris Bennett	Scribe/Event Support
CMRPC	Matt Franz	Mapping support
CMRPC	Trish Settles	Lead Facilitator/Presenter
CMPRC	Ian McElwee	Scribe/Report writer
CMRPC	Peter Peloquin	Facilitator/Event Support
CMRPC	Connor Robichaud	Scribe/Event Support
West Boylston DPW	Eric Mensing	Core Team
Mass DCR	Kelly Freda	Core Team
West Boylston Planning Board	Vinny Vignally	Core Team
West Boylston Board of Health	Bob Barrell	Core Team
West Boylston Board of Selectmen	Chris Rucho	Core Team
West Boylston School Committee	Jen Breen	Core Team
West Boylston Municipal Administrator	Nancy Lucier	Core Team
West Boylston Conservation Commission	Bill Chase	Core Team
West Boylston Police Department	Fran Glynn	Core Team
West Boylston Police Department	David Westerman	Core Team

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Appendix

- Appendix A – Workshop Base Maps
- Appendix B – Workshop CRB Risk Matrices
- Appendix C – Workshop Presentations
- Appendix D – Listening Session Presentations