Community Resilience Building Workshop Summary of Findings

Final Report

April 23, 2019

Overview

Over the past several years, the Town of Auburn has been working towards implementing improved emergency response, coordination between and among departments, a centralized emergency operations center (EOC), a Community Emergency Response Team (CERT), and becoming a Green Community. Efforts have included: updating the Town's Master Plan; completing a Hazard Mitigation Plan update in 2018; constructing a new EOC in the police station and maintaining a backup EOC in the Town Hall; improving emergency communication and notification systems including Code Red; and planning for and improving emergency shelters.

The Town saw the need to engage the community as a whole in integrating climate change into town-wide resiliency planning. This Community Resilience Building Workshop, designed as part of the Municipal Vulnerability Preparedness (MVP) program, offered Auburn an opportunity to gather valuable perspectives from a diverse range of officials, volunteers, businesses, and interested residents.

In September 2016, Governor Charles D. Baker signed Executive Order 569, instructing State government to provide grant assistance to towns and cities in Massachusetts to complete climate change vulnerability assessments and resiliency planning. On April 13, 2018, the Baker Administration, through the Executive Office of Energy and Environmental Affairs, announced that applications for planning grants would be accepted through the MVP Program. On May 29, 2018 over $2 million in grant funding was awarded to 82 towns and cities, including the Town of Auburn. Municipalities are to work with an MVP-certified provider through a community-driven process to identify key climate-related hazards, vulnerabilities and strengths, develop adaptation actions and prioritize next steps. Upon successfully completing the program, communities will be designated as a "MVP Program Community" and become eligible for follow-up action grant funding and priority status for other State grant opportunities.

Matthew Benoit, Town Planner, was originally designated as the Project Manager for this work. When he changed jobs, the new Town Planner, Adam Menard, became the Project Manager. Auburn's application included letters of support from Mass Audubon, the Blackstone River Coalition, the Blackstone River Watershed Association (BRWA), the Central Mass Regional Planning Commission, the Auburn Conservation Commission, the Auburn Open Space Committee, and the Auburn Planning Board. After Auburn was notified that it was awarded an $18,000 grant for community resiliency planning, the Town of Auburn selected the BRWA to serve as contractor for facilitating this planning process. Ted Beauvais served as Lead for the BRWA facilitation team, who worked closely with Adam Menard and the Auburn core team, to prepare for the workshop over the next seven months.

Ted Beauvais interviewed seven key Auburn town officials from the Office of Emergency Management, Department of Public Works, Planning Division, Town Manager, School Department and Economic Development to begin the community engagement process and to learn about current and past issues related to natural hazards and disasters.

The Town issued a press release about the MVP program and workshop that was published in *The Auburn News,* the local weekly newspaper on February 8, 2019. It was also published in The Auburn, MA Daily on February 6, 2019. A one-day workshop was held at the Auburn Town Hall on February 28, 2019 with 27 participants from the community.

The Town issued a press release to share the key findings from the draft Summary of Findings report and invite residents to attend a listening session at the Town Hall to learn more and make comments. The Town posted the key findings and draft report on the Town's website for review.

The Town of Auburn held a public listening session the evening of April 8, 2019 at the Town Hall. The listening session was televised by Auburn Community Television. Refer to Appendix K for additional information.

Community Resilience Building Workshop
Summary of Findings

The Auburn MVP workshop utilized the Community Resilience Building (CRB) framework developed by The Nature Conservancy (www.communityresiliencebuiling.com) and adopted by the State for this planning initiative. Adam Whelchel, Director of Science for The Nature Conservancy, Connecticut Office (TNC-CT), is the creator of and lead on CRB. He led the Auburn workshop as the lead facilitator and assisted in the workshop planning.

The Workshop's central objectives 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;
- Identify immediate opportunities to collaboratively advance actions to increase resilience.

A list of workshop invitees was developed by the Auburn MVP core team and included representatives from town leadership, boards, commissions, committees, public safety and hazard mitigation, and community planning, as well as business, NGO and community organizations (the full list of participants appears later in this report).

The workshop included presentations on Massachusetts' Municipal Vulnerability Preparedness program, described the future impacts of climate change in the local area, and provided information and examples of nature-based approaches to addressing impacts of natural and climate-related hazards. All of the presentations can be seen in Appendix I. The participants, working in small groups, identified climate-related hazards, the impact of those hazards on Auburn's natural environment, infrastructure and society, and then developed recommendations to address these impacts. The recommendations are a combination of short-

term (less than 3 years), long-term (3-10 years or more) and ongoing items. Each breakout group then shared 3-5 of their highest priority recommendations with the entire group. Finally, the entire group discussed the highest recommendations from each group, categorized them and then voted to determine which were the top priorities among them.

Top Hazards and Vulnerable Areas

On September 10, 2018, the Town Board of Selectmen adopted the Auburn Hazard Mitigation Plan. Section 4.0 of this plan includes identification and analysis of natural hazards that have or could affect Auburn. The natural hazards that were identified and assessed for Auburn in this plan are: Flooding; Severe snowstorms, Ice storms, and Nor'easters; Hurricanes; Severe thunderstorms, Wind, and Tornadoes; Wildfire, and 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 significant power outages.

As part of the MVP workshop, Auburn Fire Chief, Stephen Coleman, gave a presentation on hazard identification and historical events. His presentation (see Appendix I) provided a useful context for the later discussions in the breakout groups.

The first task of the breakout groups was to consider Auburn's past, present, and future exposure to natural and climate-related hazards and to identify the hazards that will pose the greatest threat over the next decade or longer. Appendix C shows the hazards identified by each break-out group as well as those from the Town's Hazard Mitigation Plan. These are the hazards for which the breakout groups subsequently developed recommendations.

Top Hazards

- Flooding
- Damaging Winds
- Winter Snow and Ice Storms
- Heat Waves and Drought
- High Rainfall Events

In considering how these hazards may impact Auburn in the future, several areas of concern as well as specific locations were revealed.

Areas of Concern

- Vulnerable Drinking Water Supply Wells and Aquifer
- Flood-prone Areas and Infrastructure
- Major Interstate and State Highways with Aging Structures and Complex Intersections
- Dispersed Elderly and Vulnerable Residents

- Active Freight Rail Lines and Operations

Vulnerable Drinking Water Supply Wells and Aquifer

Auburn depends on about 10 wells located in five areas for drinking water. There is protected land near some of the wells, but half of them are located near I-90 and I-290. Due to the immediate proximity of these highways, some wells are now contaminated by road-salt runoff with some of the highest levels of sodium and chlorides in the State. Several wells have been taken out of service due to contamination. There are also significant concerns related to hazardous materials spills as a result of motor vehicle accidents. Consequently, aquifer protection is a major concern as is water quantity that could be imperiled by prolonged drought.

Flood-prone Areas and Infrastructure

Certain parts of Town - especially Drury Square, Auburn High School athletic fields, Rockland Road, Brook Road, and Holstrom Court – will flood when there is significant rainfall. This not only affects residents and their property, but it makes it difficult for emergency responders to reach these areas. With more major flooding, travel through the busy Drury Square area is impacted. Because the high school is the primary emergency shelter and it is located in the Drury Square flood prone area, there is a concern that it might not be usable when the surrounding roadways are flooded.

Critical infrastructure is also impacted by flooding. Notably, the sewer pump station in Holstrom Court is subject to flooding. Operation of the Worcester flood control diversion structure is a concern because although it solves a flooding problem in Webster Square in Worcester it also creates flooding problems in Auburn.

Major Interstate and State Highways with Aging Structures and Complex Intersections

Auburn is the crossroads of Central Massachusetts. Interstate Highways I-90 (Massachusetts Turnpike), I-290, and I-395 all pass through and intersect within the town. In addition, US Route 20 bisects the town as does State Route 12. Connecting all these highways is a robust network of collector and local roads. Specific concerns relate to spills of hazardous materials, particularly near public drinking water wells; use of road salt and the documented contamination of public water supplies; and traffic accidents and their impact on collateral Town roadways especially during extreme weather events. The age and condition of these major highways and bridges means that significant investments will be needed to maintain the transportation infrastructure.

Dispersed Elderly and Vulnerable Residents

The town has an aging population. According to recent census data, 27% of the Town's population is 60 or older. There is one nursing home, a memory care unit, and one assisted living facility. There are group homes and two public senior housing developments. Coordination and communication with these facilities and residents is critical to prepare for impacts from natural and climate-related hazards. For example, should an evacuation be required, suitable transport for hundreds of individuals would need to be made available.

Active Freight Rail Lines and Operations

Auburn has two rail lines that traverse the town – CSX and Providence and Worcester. The major concern is an accident resulting in a fuel spill or release of a hazardous material with impacts to the environment, infrastructure, and the population.

Current Concerns and Challenges Presented by Hazards

Auburn has been impacted by significant natural and climate-related hazards in recent decades. The major incidents the Town has faced include:

- The Blizzard of 1978 resulted in power outages and difficulty in providing emergency services
- Tropical Storm Irene, in August 2001, caused flooding and power outages.
- The October 2005 storm resulted in extensive flooding.
- Rainstorms on July 2, 2009 caused extensive flooding.
- In January 2011, heavy snow caused several roof collapses.
- The 2011 Halloween Nor'easter caused power outages.
- Superstorm Sandy, in October 2012, caused flooding and power outages.
- The drought of 2016 resulted in extended watering bans.

Specific Categories of Concerns and Challenges

Flooding has direct impacts on the areas and structures inundated and can also interrupt or block traffic flow and cause problems with emergency access. Flooding in and near the main shelter at the Auburn High School could render it unusable and require the secondary shelter at the Swanson Road Intermediate School to take over. Flooding can also cause damage to roads and drainage structures that impact the Town's budget. Important major intersections and critical infrastructure are subject to routine flooding. Currently, about 7 days a year have precipitation events of 1 inch or more. By mid-century this number is projected to increase by about 2 days a year with a consequent increase in flood frequency.

Snow and ice storms and associated winds that interrupt power have major and immediate impacts on people, businesses and public safety (traffic lights). Households with private wells also lose their water supply when the power goes out. People who depend on medical devices typically have a limited time to continue on battery backup or by switching from an oxygen machine to bottled oxygen, but if the power outage extends for days the devices will cease operation.

High winds cause old, dead, and dying trees and branches to fall and cause power outages and blockage of roads as well as damage to structures. Trees within utility rights of ways are

maintained, trimmed, or removed on a regular basis, but other trees on private property can also cause power outages. In some cases, the owners know the tree is a problem, but lack the funds to pay for removal.

With power loss, people lose heating or cooling. With mild weather this is not much of an issue, but with increasing days above 90 degrees F, and with more icy conditions in the winter, there is a strong possibility of power outages occurring when lack of heating or cooling can become life-threatening. Projections from ResilientMA indicate that days above 90 degrees F could increase from the baseline of about 4 days annually to about 14 days in the 2030's and about 22 days in the 2050's. Loss of either heating or cooling is a significant health concern – particularly for elderly people, infants, and those with chronic illnesses. The reliability and capacity of back-up power systems at emergency shelters to handle cooling during an extended heat wave needs to be assured on an ongoing basis.

Snow and ice storms also impact travel and emergency access. Vehicular accidents increase and with the heavy volume of truck traffic on the interstate and state highways and other major roadways, there is increased risk of spills of fuel and hazardous materials. This is of critical concern to the water supply wells that are in immediate proximity to these highways.

Extreme temperatures have direct health consequences for vulnerable populations and also result in higher utility bills for low income residents who have difficulty affording higher utility and fuel costs. There is a significant and dispersed population of elderly and vulnerable residents for whom a greater degree of planning and assistance is required to ensure their safety during natural hazard and climate-related emergencies.

Auburn's municipal drinking water supply is uniquely vulnerable as a result of the proximity of wellfields to major roadways. Protecting drinking water resources is complicated by the fact that these roadways are maintained by entities other than the Town.

The concentration of major highways and the traffic they carry makes Auburn's local roads vulnerable to overuse and congestion when drivers use them to avoid accidents and traffic events.

Auburn has a good legal foundation for water supply protection, development and stormwater management but additional measures such as bylaw updates, implementing regulations, and a staff person to implement them are needed.

Current Strengths and Assets

Auburn has a well-organized emergency response and communications organization. There is an Emergency Operations Center (EOC) at the police station, with a backup at the Town Hall. There is a Community Emergency Response Team (CERT) in place. All participants know their

roles and there are effective interdepartmental communications. Table-top exercises are regularly held to improve emergency planning and response.

Auburn has an effective capital improvement plan that replaces important pieces of equipment – fire trucks, police cruisers, plows, heavy equipment, etc. in a timely manner. Equipment is well maintained. In addition, other pieces of equipment that might be needed are on contract with private owners who can be activated as needed.

The Town has shelter and evacuation plans with Auburn High School designated as the primary shelter, the Swanson Road Intermediate School as the back-up shelter and the Senior Center also serving as a shelter. The Town relies on the Red Cross to assist with shelter operations. Pets are allowed at the shelters and there are designated areas for them and their owners. There are also trailers with emergency shelter supplies that can be moved where needed.

- The Town has an Emergency Communications Plan and has multiple ways to reach residents: Local Access Cable TV, Code Red, text, email, SM, phone, and AM radio.

- The Town has several public parks that provide open space and recreational opportunities. The Open Space Committee and Conservation Commission are strengths in identifying the important role of these areas in climate resilience and emergency response preparedness.

- All the dams in town are inspected regularly and maintained. One dam that needed some repairs is currently being worked on.

- Community support services like the library and food service providers, the public-school system, and faith-based populations were all identified as strengths.

- The Central Mass Mosquito Control Project across the Town reduces disease transmission.

- The availability of medical services and supplies is good, including the new Reliant Medical facility.

- Shared trailers with regional emergency response equipment are staged in Auburn.

- Mutual aid agreements are in place with other communities.

- Electronic billboards are being installed.

- The Town's Community Emergency Response Team (CERT) trains volunteers and promotes neighbors helping neighbors.

Top Recommendations to Improve Resilience

Each breakout group presented 3-5 top priority recommendations when the large group reconvened near the end of the workshop. Following their presentations there was a group discussion where similar (or identical) recommendations were grouped together. This resulted in seven groupings of recommendations that were voted on by all the participants with each person having three colored sticky dots to denote their preferences.

The three Highest Priority recommendations are: Improve Communications including outreach to senior citizens, other vulnerable populations, businesses and the public regarding emergency preparedness and response; Replace the Sword Street Culverts, a long-standing infrastructure concern for the Town in its Industrial Park; and Protect and Improve Water Quality and Quantity including flood avoidance and management, water supply protection, stormwater management and bylaws and/or regulations that should be passed to address these concerns.

The seven top priority recommendations from the Final Risk Matrix (see Appendix A) are displayed below in rank order:

Improve Communication – High Priority
Increase support and participation by improving communication about emergencies, power outages, extreme events. Focus on reaching seniors and other vulnerable residents not only in residential facilities and housing complexes but also those who are dispersed across town.
Increase participation in Code Red program and "Are You OK" program. Establish a "Neighbor to Neighbor" program.
Distribute a flyer to all households explaining all the different ways emergency communications are done. Use CERT funding.
Take full advantage of all electronic billboards in Town for emergency messaging. Work with businesses and the community to coordinate.
Review crisis and public communication policies and procedures to ensure that plans prepared by businesses are shared and communicated with the Town as well as to improve the Town's communications with residents, businesses, tourists and visitors, departments, and vulnerable populations.

Replace the Sword St. Culverts - High Priority
The request by the Town to have the State classify these four culverts as a bridge has been denied. Efforts to secure MassWorks funding have failed three times. This remains a high priority for the Town as failure of this structure impacts business in the Industrial Park and nearby residents.
Priority to secure funding is Short-Term and eventual replacement of the current structure is Long-Term.

Protect and Improve Water Quality and Quantity - High Priority
Review water quality bylaws and revise. Create overlay of water bodies and catchment areas. Address salt use in the Illicit Discharge Detection and Elimination Plan.
Update aquifer bylaws. Flood proof pumps and water purification. Protect against power loss.
Update zoning bylaws to encourage low impact development and green infrastructure based on maps and delineation. Develop rules and regs for existing bylaws including regulations to implement existing stormwater bylaw.
Hire an engineer to focus on stormwater regulations, enforcement, NPDES permits and coordination with MassDOT to improve drainage on State roads and highways.
Work with private businesses and other owners of floodway property to clear vegetation to restore and maintain flood flow capacity. Focus on high impact areas.
Purchase equipment to make and distribute brine as an alternative for ice control on roads to protect water supply. Evaluate other low impact methods of ice control on roads.

Build a Town-owned Fueling Station - Moderate Priority
Do a design and then build a facility on Town property. Include back-up generator which the current arrangement with a private vendor lacks. A study shows that this would also save the Town money.

Review Evacuation Planning and Housing Bylaws - Moderate Priority
Promote multi-family and mixed-use (town center) development to increase housing stock and increase housing density, use less land, and improve affordability. Update bylaws to promote multi-family, mixed use and nature-based green infrastructure approaches for stormwater runoff and open space. Consider a Village Overlay District.
Plan with all stakeholders for senior/disabled residents evacuation including transportation needs. Coordinate with assisted living, nursing homes and group homes and their existing plans. Plan for evacuating people with medical issues who cannot go to regular emergency shelters. Consider yearly contracts with bus companies/WRTA.

Assess Vulnerability of the Power Transmission Infrastructure - Lower Priority
Evaluate trees for proximity to lines and tree health. Look into moving some lines underground and include cost analysis.

Evaluate Back-up Power Systems at Critical Town Facilities - Lower Priority
Look at police, fire, schools, shelters, senior center to make sure existing generators have the capacity to meet the needs for cooling, refrigeration, and other demands during an extended power outage and they are maintained, tested, and operating properly.

CRB Workshop Participants

The table below shows everyone who was invited to the Community Resilience Building (CRB) workshop held on February 28, 2019. Those who attended are denoted with an asterisk to the left of their name. The group assignment by color refers to the break-out groups which were color-coded: Red, Blue, Green and Yellow.

Name	Position	Group Assignment (By Color)
*Adam Menard	Town Planner (Core Team Leader)	G
*Jeff Mitchell	DPW-Sewer (Core Team)	R
*Joe Fahey	School Facilities (Core Team)	Y

*Joe Shenette	Emergency Mgmt. (Core Team)	B
*Julie Jacobson	Town Manager (Core Team)	G
*Shannon Regan	Economic Development (Core Team)	R
*Stephen Coleman	Auburn Fire Chief (Core Team)	Y
*Todd Lemon	Auburn Police (Core Team)	R
*Deb Gremo	Town Clerk	B
*Bill Coyle	DPW Director	G
*Darlene Coyle	BOH/Health Director	B
Eileen Dyson-Alexander	BOH/Health Inspector	
*Jean Collins	Library Director	B
*Jean Boulette	Exec. Dir. Elder Affairs	R
Mike Marino	IT Director	
*Caleb Moody	Building Commissioner	Y
*Joanna Paquin	Civil Engineer	Y
Maryellen Brunelle	School Superintendent	
*Greg Morin	Auburn Fire Dept.	G
*Matt Benoit	Energy Manager	NA
Lori Brennan	Housing Authority	
Martin Reisner	Auburn Industrial Park	
Chris Bastien	Auburn Mall	
Barry Lorion	MassDOT	
Breda Broulliette	Red Cross	
Fr. Paul Bomba	St. Joseph Church	
Pastor Douglas Geeze	Faith Church	
Doreen Goodrich, Chair	Board of Selectmen	
Kenneth Holstrom, Vice-Chair	Board of Selectmen	
Daniel Carpenter	Board of Selectmen	
Lionel Berthiaume	Board of Selectmen	

Tristan LaLiberte	Board of Selectmen	
Sari Bitticks	Historic Commission	
*Michael Garland	Conservation Commission	G
Ron Brooks	Planning Board	
Tony Pellegrino	CERT	
*Gary Pray	CERT	B
Mark Maass	LEMPC/Emerg. Mgmt. Dir.	
Ann Weston	Open Space and Recreation Committee	
Eric Otterson	Board of Health	
Michael Moore	State Senator	
*Paul Frost	State Representative	NA
*Ken Smith	Auburn Water District	Y
Ed Gurries	Elm Hill Water District	
*Kevin Shaughnessy	National Grid	G
*Todd Fontanella	WRTA	R
*Eli Goldman	CMRPC	Y
Colin Novik	Greater Worcester Land Trust	
Mark Binnal	Open Space and Recreation Committee	
*Peter Peloquin	CMRPC	Y
*Wes Hutchinson	MassDOT	R
*Paul Marrone	CERT	G
TBD	Auburn Sportsman's Club	
*Ted Beauvais	BRWA Lead and Facilitator	NA
*Adam Whelchel	TNC-CT, Lead Facilitator/Presenter	NA
*Lee Dillard Adams	Resilience Partners Facilitator	R
*Pieter de Jong	BRWA Facilitator	G
*Ariel Mariano	Mass Audubon Facilitator/Presenter	Y
*Alexandra Vecchio	Mass Audubon Facilitator/Presenter	B

*Angie Davis	Auburn HS Scribe	R
*Shea Brown	Auburn HS Scribe	Y
*Emma Crowley	Auburn HS Scribe	B
*Julie Zona	Auburn HS Scribe	G
	Total Participants (Excluding the 10 Members of the Facilitation Team)	27

Citation for Summary of Findings Report

Auburn (2019). Community Resilience Building Workshop Summary of Findings. Blackstone River Watershed Association. Mass Audubon. The Nature Conservancy. Resilience Partners. Auburn, Massachusetts.

CRB Workshop Project Team

Organization	Name	Role
Town of Auburn	Adam Menard	Auburn MVP Project Coordinator Core Team Leader
BRWA	Ted Beauvais	Project Leader Facilitator Report Author
BRWA	Pieter de Jong	Break-out Group Facilitator
BRWA	Joy Trahan-Liptak	GIS Specialist
TNC-Connecticut	Adam Whelchel	Lead Facilitator MVP Project Advisor
Mass Audubon	Alexandra Vecchio	Climate Change Presenter Break-out Group Facilitator
Mass Audubon	Ariel Maiorano	Low Impact Development Presenter Breakout Group Facilitator
Resilience Partners	Lee Dillard Adams	Breakout Group Facilitator Report Reviewer

Acknowledgements

This MVP Summary of Findings was made possible by the commitment of many individuals and organizations. The lead Auburn representative and driving force behind the workshops was Adam Menard who serves as Auburn's Town Planner. Key background

information was provided via interviews early in the process by the following Auburn officials: Julie Jacobson (Town Manager), Joe Fahey (School Facilities Director), Jeff Mitchell (Assistant DPW Director), Adam Menard (Auburn Town Planner), Bill Coyle (Auburn DPW Director and Town Engineer), Shannon Regan (Economic Development Coordinator), and Joe Shenette (Deputy Director of Emergency Management).
Joe Fahey, School Facilities Director, arranged for morning refreshments and lunch by the cafeteria staff. Auburn High School provided volunteer scribes to record critical workshop content from each break-out group. Adam Whelchel (TNC-CT) offered invaluable guidance throughout the planning and implementation of the workshops and served as lead workshop facilitator. Funding for the planning and implementation of the workshops as well as development of this Summary of Findings came from a grant awarded to the Town of Auburn by the Massachusetts Executive Office of Energy and Environmental Affairs.

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J. Summary and Notes from Interviews

K. Summary of MVP Listening Session and Public Comments

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Community Resilience Building Risk Matrix **Town of Auburn** www.CommunityResilienceBuilding.org

Appendix A - Final Top Priorities

February 28, 2019 Workshop

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

H-**M**-**L** priority for action over the **S**hort or **L**ong term (and **O**ngoing)
V = Vulnerability **S** = Strength

Features	Location	Ownership	V or S	Flooding/Extreme Precipitation	High Winds	Ice/Snow Winter Storms	Heat and Drought	Priority H - M - L	Time Short Long Ongoing
Infrastructural									
Sword Street Culverts	Sword St. near Rt. 12	Town	V	**Replacing this structure was the #2 priority. Details are listed below.**				H	S/L
				The request to have these four culverts classified as a bridge by the State has been denied. Efforts to secure MassWorks funding have failed three times. This remains a high priority for the Town as failure of this structure impacts business in the Industrial Park and nearby residents.					S/L
				Priority to secure funding is Short-Term and eventual replacement of the current structure is Long-Term.					S/L
Access to Fuel for Town Vehicles	Currently Shell station at Rt. 20 and Millbury St.	Private	V/S	**Building a town-owned fueling station was the #4 priority.**				H	S
				Do a design and then build a facility on Town property. Include back-up generator which current arrangement lacks. A study shows that this would also save the Town money.					S
Back-up Electrical Supplies for Shelters and Other Facilities	Multiple	Town	V	**Evaluating back-up power at critical Town facilities was the #7 priority**				H	S
				Look at police, fire, schools, shelters, senior center to make sure existing generators have the capacity to meet the needs for cooling, refrigeration, and other demands during an extended power outage and they are operating maintained, tested, and operating properly.					S
Trees and Branches Falling on Power Lines	Multiple	Public/Private	V	**Assessing vulnerability of the power transmission infrastructure was the #6 priority**				H	S/O
				Evaluate trees for proximity to lines and tree health. Look into moving some lines underground and include cost analysis.					S/O
Societal									
Large Population of Senior Residents - About 35% and Other Difficult to Reach Sectors		Private	V	**Communication was the #1 priority There are multiple components listed below.**				H	O/S
Low Income Families		Private	V	Increase support and participation by communicating about emergencies, power outages, extreme events.					O
Emergency Communications with Elderly and Vulnerable Populations		Private	V/S	Increase participation in Code Red program and "Are You OK" program. . Establish a "Neighbor to Neighbor" program.					S
				Distribute a flyer to all households explaining all the different ways emergency communications are done. Use CERT funding.					S
				Take full advantage of all electronic billboards in Town for emergency messaging. Work with businesses and the community to coordinate.					S/O
				Review crisis and public communication policies and procedures to ensure that plans prepared by businesses are shared and communicated with the Town as well as efforts by the Town to improve communications with residents, businesses, tourists and visitors, departments, vulnerable populations					S/O
Housing Stock Including Multi-Family Housing	Town-wide	Private	V	**Evacuation planning and housing bylaw review were the #5 priority. The two components are listed below.**				H	S/L
Housing Bylaws	Town-wide	Public	V	Promote multi-family and mixed-use (town center) development to increase housing stock and increase housing density, use less land, and improve affordability. Update bylaws to promote multi-family, mixed use and nature-based green infrastructure approaches for stormwater runoff and open space. Consider a Village Overlay District.					S

Evacuation Plan	Town-wide	Public	V	Plan with all stakeholders for senior/disabled residents evacuation including transportation needs . Coordinate with assisted living, nursing homes and group homes and their existing plans. Plan for evacuating people with medical issues who cannot go to regular emergency shelters. Consider yearly contracts with bus companies/WRTA.		S
Environmental						
Local Aquifer	Town-wide	Unknown	V/S	**Water Quality and Quantity was the #3 priority. There are several components listed below.**	H	O/S
Impaired Waters	Town-wide	Town	V	Review water quality bylaws and revise. Create overlay of water bodies and catchment areas. Address salt use in IDDE Plan.		O
Well Protection/Aquifer Protection (about 10 wells)	See Map	Town/Auburn Water District	V	Update aquifer bylaws. Flood proof pumps and water purification. Protect against power loss.		S
Stormwater Initiatives and Implementation	Town-wide	Public and Private	V	Update zoning bylaws to encourage low impact development and green infrastructure based on maps and delineation. Develop rules and regs for existing bylaws including regulations to implement existing stormwater bylaw. .		S
Stormwater Management Staffing and Coordination with MassDOT	Town-wide	Public	V	Hire an engineer to focus on stormwater regulations, enforcement, NPDES permits and coordination with MassDOT to improve drainage on State roads and highways.		S
Flooding Assessment	Flood prone Areas	Public and Private	V	Work with private businesses and other owners of floodway property to clear vegetation to restore and maintain flood flow capacity. Focus on high impact areas.		S
Brine Use for Ice Control	Roadways	Town	V	Purchase equipment to make and distribute brine as an alternative for ice control on roads to protect water supply. Evaluate other low impact methods of ice control on roads.		S

Town of Auburn

Appendix B
Summary Base Map Showing Top Recommendations

1. Communication

   Town-wide

2. Sword Street Culvert Replacement

   See inset

3. Water Quality and Quantity

   - Non-Transient non-community well
   - Transient non-community well
   - Community groundwater well
   - Proposed well
   - Aquifers
   - Open Water
   - Wetland

4. Building a town-owned fueling station

   Location to be evaluated

5. Evacuation planning and housing bylaw review

   Town-wide

6. Assessing vulnerability of the power transmission infrastructure

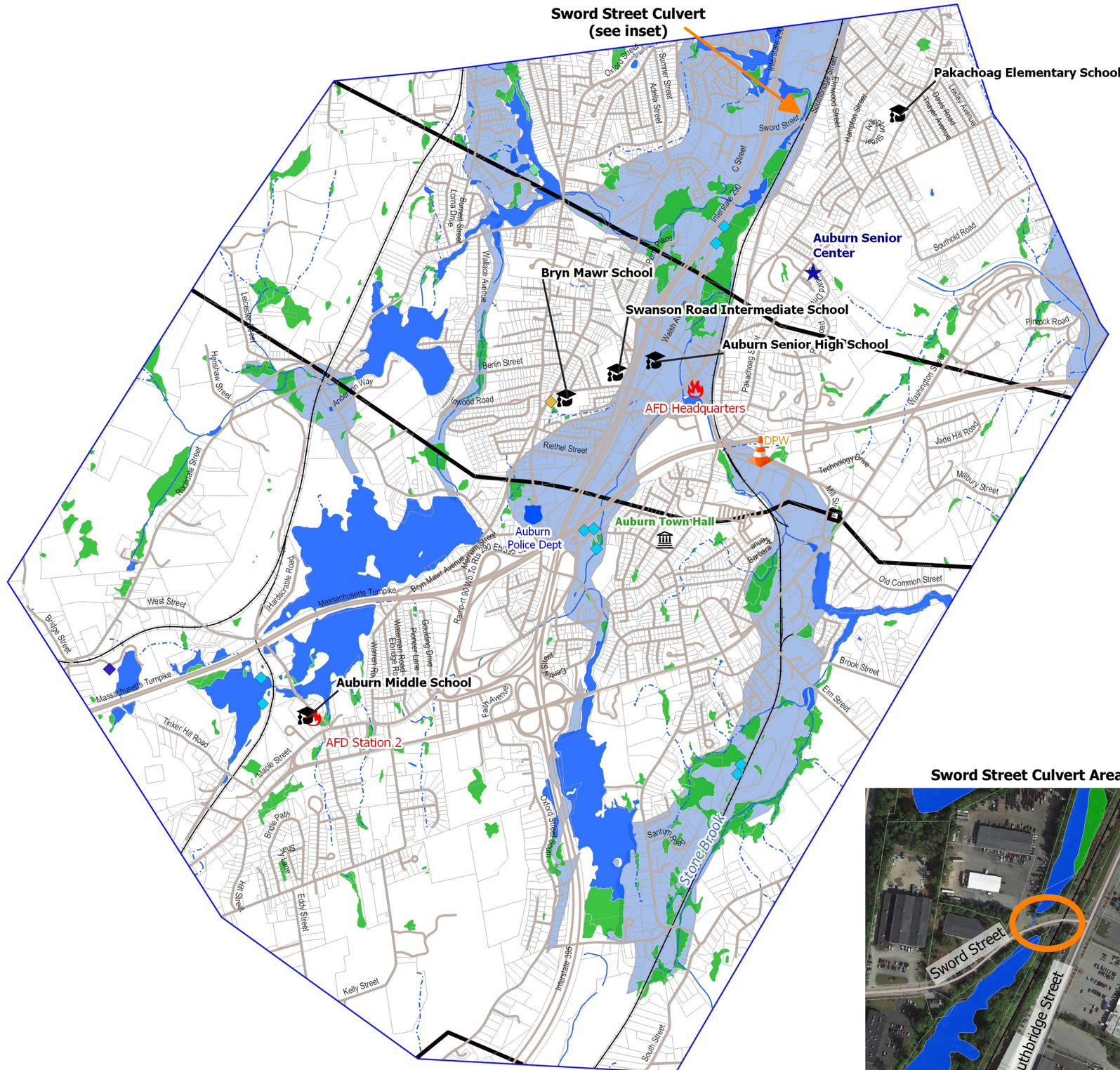
   Town-wide

7. Evaluating back-up power at critical town facilities - mapped as follows:

   - Auburn Fire Station
   - Auburn Police Station
   - Schools (5)
   - Auburn DPW
   - Town Hall
   - Auburn Senior Center

1500 0 1500 3000 4500 6000 ft

This map was prepared by the Blackstone River Watershed Association through a grant awarded to the Town of Auburn as part of the Massachusetts Executive Office of Energy and Environmental Affairs Municipal Vulnerability Preparedness (MVP) Program.



Sword Street Culvert Area

Appendix C – Comparison of Hazards

Auburn Hazard Mitigation Plan	**Auburn Municipal Vulnerability Preparedness Workshop**			
	Green Group	*Blue Group*	*Yellow Group*	*Red Group*
Flooding	Winter Storms/Ice Storms	Flooding	Extreme Storms	Flooding
Severe Snow Storms/Ice Storms/Nor'easters	Wind	Wind	Flooding	Ice/Snow
Hurricanes	Drought	Ice Storms	High Precipitation	Heat Waves
Severe Thunderstorms/Wind/ Tornadoes	Flooding	Extreme Temperatures		Wind/Tornadoes
Wildfire/Brushfire				
Earthquakes				
Dam Failure				
Drought				
Extreme Temperatures				

Appendix D – Tables of All Breakout Group Recommendations

The following tables display all of the recommendations for possible actions that were made by the four breakout groups. The recommendations have been categorized and grouped into three tables by priority - High, Medium or Low. The recommendations are also labelled as Environmental (E), Societal (S) or Infrastructural (I) actions. Their urgency is denoted as either Ongoing (O), Short-term (S) (typically several months up to three years) or Long-term (L) (three to ten or more years) or combinations thereof.

Highest Priority Recommendations

Continue participation in Central Mass Mosquito Control Project	E	O
Maintain and support existing open space	E	O
Perform a risk assessment of vulnerable trees (disease, location, pests, etc.)	E	S
Enhance ecological management plans so water (runoff) is viewed as a strength or resource	E	O/ S
Treat Eddy Pond annually for weed control; evaluate expanding to include Auburn Pond	E	O
Asian Longhorn Beetle brush and leaf collection drop-off – continue processing yard waste	E	O
Capped landfill on Rochdale St. – continue maintenance and monitoring; increase security of the public and community infrastructure; pursue legislative change to reclassify the area	E	O/ S
Maintain the local emergency plan to handle incidents that could occur from the ethanol train out of Worcester that traverses Auburn as well as other railroad related potential hazards. Work with the railroad companies and the State.	E	O
Work with LifeCare and Brookdale nursing home and assisted living facilities to improve communication with police, fire, ambulance and Auburn Senior Center regarding emergency evacuations	S	S
Develop a strategy and program to educate low income residents about available resources and where to go when there are power outages and extreme events. Include Pine Brook Ct. and Pheasant Ct. neighborhoods. Develop a low-cost education program through Auburn Youth and Family Services.	S	O/ S
Evaluate the feasibility of new Police and Fire Dept. buildings in the ongoing report due Sept. 2019	S	O
Tick-borne disease is a serious health concern and outreach and education programs in cooperation with State agencies to use repellents are needed	S	O
Continue to improve and expand the Community Emergency Response Team (CERT) by advertising and reaching out to increase participation, especially by young people in high school or vocational tech programs. Assess need for additional part-time or full-time staff. Provide training for new volunteers	S	O
Increase affordable housing stock for low income families.	S	O
Expand community support services by building a bigger library to support the Town, its functions and to help vulnerable populations.	S	L

Improve communications and planning between the Town and local hotels to support emergency sheltering during hazards for locals and travelers.	S	S
Continue to work with MassDOT to keep bridges on I-290 and the Mass Pike in good repair as these are high exposure/high risk parts of the transportation infrastructure	I	O
Communications towers on Rochdale St. and Leicester St. are part of the statewide communications network and could also be repurposed for emergency management.	I	O
There is excess capacity for wastewater treatment at the Upper Blackstone Water Pollution Abatement District and improvements (to reduce inflow and infiltration of non-wastewater) to this system can further increase capacity.	I	O
The three public housing complexes managed by the Town housing authority need more frequent inspections and emergency plans need to be kept up to date	I	O
Sewer and drainage systems in the Town need to receive continued maintenance and replacement as the infrastructure ages.	I	O
There are five high-hazard dams owned by the Town and water district. They need to continue to be inspected and maintained.	I	O
Continue to monitor and evaluate periodic flooding in the Rockland Rd. and Brook St. area. Several private homes located in the floodplain are impacted as are the high school athletic fields.	I	O
Interstates 90, 290 and 395 as well as Rts. 12 and 20 are major arterial roads bisecting the Town and a plan and detours need to be prepared should one of them be closed due to an accident or hazardous material spill. Work with the State on planning.	I	O/ S
Many Town buildings are old, including the Town Hall and Police Station. A public safety feasibility study is underway. As part of master planning, and in light of Auburn's Green Community status, planning for more energy efficient, accessible and better designed municipal buildings should be pursued.	I	O/ L
Implement the recently approved Auburn Hazard Mitigation Plan.	I	O
The new Auburn Middle School is in a floodplain. An assessment of Dark Brook Dam should be done to determine its vulnerability and viability. Assess the potential impact of floodwaters on the school and nearby roads.	I	S
Commence or continue Community Emergency Response Team (CERT) exercises at both the high school and middle school.	I	O

Medium Priority Recommendations

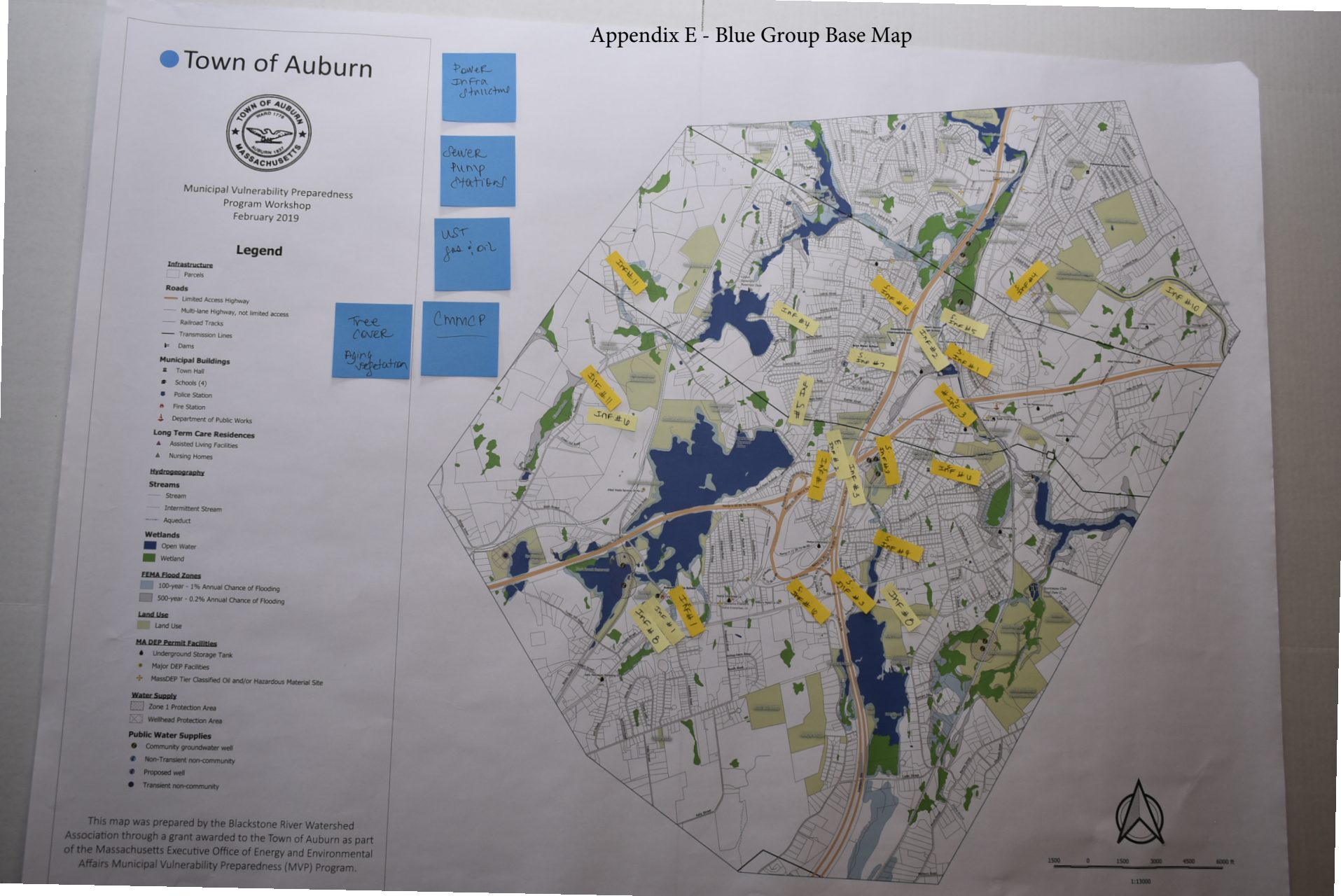
There is no town water supply in the west end of the Town and that creates a potential for brush fires esp. along the railroad tracks. Work with the railroad to clear and dispose of brush to reduce fire risk.	E	O
Look into adopting low impact development bylaws, esp. in light of stormwater management regulations that will encourage nature-based approaches.	E	S
The Town doesn't have a lot of forest and should work with Chapter 61-B landowners to encourage maintaining forested land.	E	O
Tree cutting to create solar farms is a concern and the recent bylaw that was adopted addresses this concern	E	O
Drinking water comes from wells owned and operated by water districts that should be supported by the Town	E	O
Medical services and support are available at Reliant Medical Group, St. Vincent's Medical Group, ReadyMed and independently practicing physicians in Town. Establish a communication plan for reaching and working with these health care providers in case of an emergency.	S	L
Work with churches in town to create a network to coordinate sheltering, emergency assistance and services, communication and outreach efforts esp. to reach elderly and vulnerable individuals.	S	S
Concern that some trailers in the trailer parks are vulnerable to flooding and blowing over in high winds. Newer structures meet tougher code standards. Include residents and owners in hazard preparedness and then communicating, information sharing and educating residents.	S	O/S
Housing stock in the Town is old and aging. Encourage use of existing energy resources and an affordable housing development plan with funding to implement.	S	O/S
Support and maintain staffing for Auburn Fire Dept. and Building Dept. for inspections of facilities that utilize or house hazardous materials.	I	O
Develop a town-wide map of septic systems and private wells.	I	L
Have the DPW prioritize the updating of high-risk and vulnerable sewage pumping stations, especially the Holstrom Ct. pumping station located in a flood zone.	I	O
Ensure compliance plans are in place for all underground oil and gas storage tanks to meet regulatory/permitting requirements. Ensure routine inspections are happening and documented.	I	O
Study best practices for hazard preparedness used by other regions that address the particular needs of trailer parks and their owners and residents.	I	L
Work with EverSource to learn more about flooding and water getting into gas mains. Ask EverSource to share information	I	S
Communicate, coordinate and plan with MassDOT regarding the sediment buildup in the culverts under Rt. 20 at Eddy Pond. Look for a long-term solution that would expand the structure and allow small water craft to	I	O/L

navigate between the two parts of Eddy Pond that are currently split by Rt. 20.		
Review zoning bylaws related to flat-roof buildings and update as needed.	I	O
Continue communication with Worcester and the US Army Corp of Engineers regarding the operation of the diversion channel/tunnel under Pakachoag Hill that connects to the Blackstone River in Millbury.	I	O

Lower Priority Recommendations

Promote the mission and work of the Conservation and Open Space Commissions so the public knows what they do and the roles these areas serve in climate resilience, emergency response preparedness, and education.	E	O
Pappas Park and walking trail need management plans to reflect species migration, needed climate change adaption, and erosion control along trail.	E	O
The Pakachoag Golf Couse is prone to flooding and management plans need to consider the vulnerabilities of the greens and fairways.	E	O
Stone Brook watershed open spaces, the Kettle Brook complex, the Stoneville area and Dark Brook Reservoir have stormwater bylaws in place but need to have regulations under development completed and invasive species control.	E	O
Public parks in Auburn need continued maintenance.	E	O
Acquire equipment for the mobile centers (for trailers), Board of Health shelter supplies (cots, first aid), and Fire/Cable communication center.	S	S
Improve communication and coordination with CSX and P&W railroads regarding operations and vegetation management new wellfields and wells. Contact people need to be identified and be responsive to the Town.	I	S
Implement rain gardens at the Auburn Middle School property.	I	S
Assess the feasibility of moving power lines underground, including costs.	I	L
Increase outreach and education to increase support and understanding of solar farms.	I	O

Appendix E - Blue Group Base Map



Appendix E - Green Group Base Map

Town of Auburn

Municipal Vulnerability Preparedness
Program Workshop
February 2019

Legend

Infrastructure
- Parcels

Roads
- Limited Access Highway
- Multi-lane Highway, not limited access
- Railroad Tracks
- Transmission Lines
- Dams

Municipal Buildings
- Town Hall
- Schools (4)
- Police Station
- Fire Station
- Department of Public Works

Long Term Care Residences
- Assisted Living Facilities
- Nursing Homes

Hydrogeography

Streams
- Stream
- Intermittent Stream
- Aqueduct

Wetlands
- Open Water
- Wetland

FEMA Flood Zones
- 100-year - 1% Annual Chance of Flooding
- 500-year - 0.2% Annual Chance of Flooding

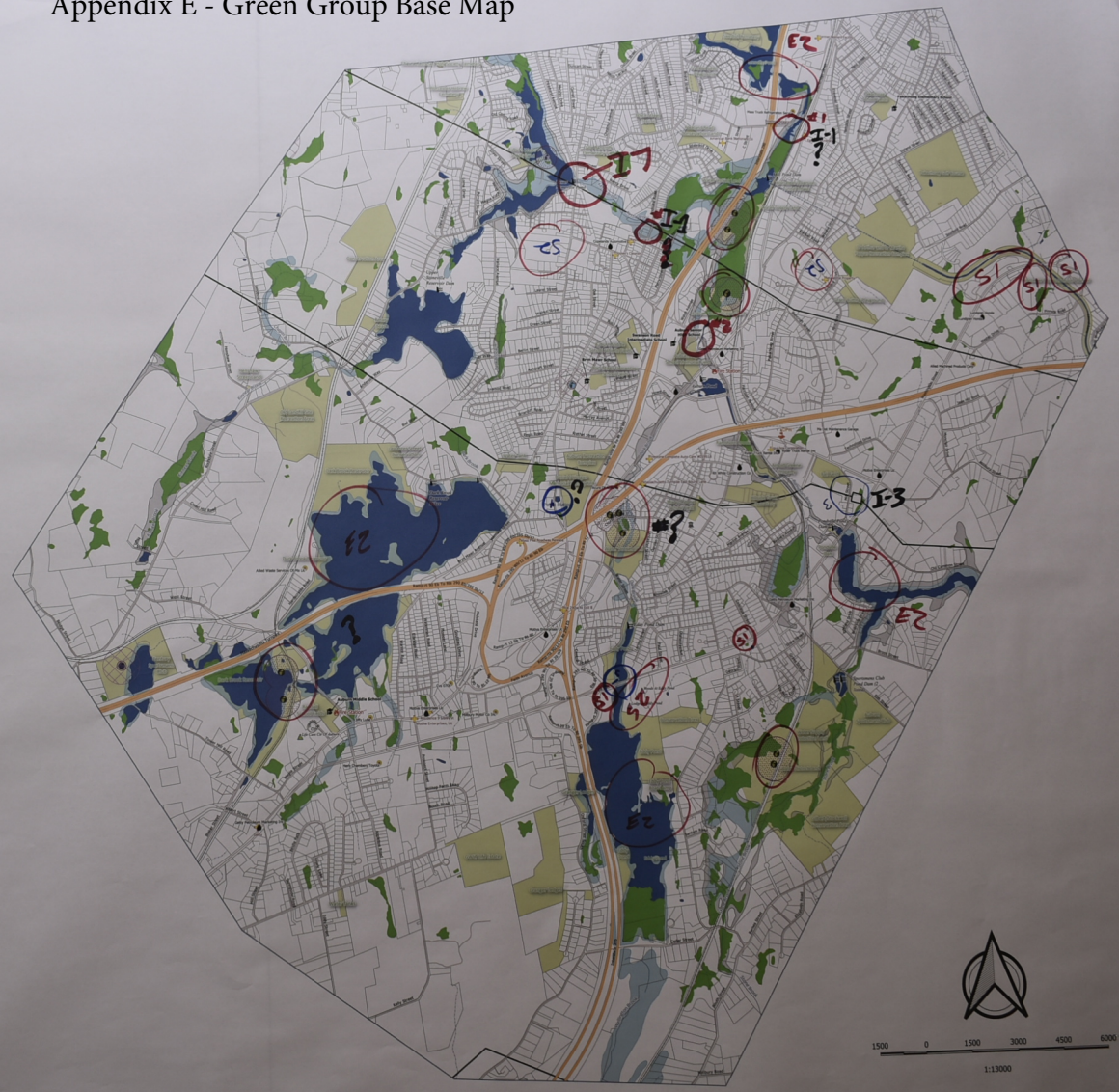
Land Use
- Land Use

MA DEP Permit Facilities
- Underground Storage Tank
- Major DEP Facilities
- MassDEP Tier Classified Oil and/or Hazardous Material Site

Water Supply
- Zone 1 Protection Area
- Wellhead Protection Area

Public Water Supplies
- Community groundwater well
- Non-Transient non-community
- Proposed well
- Transient non-community

This map was prepared by the Blackstone River Watershed Association through a grant awarded to the Town of Auburn as part of the Massachusetts Executive Office of Energy and Environmental Affairs Municipal Vulnerability Preparedness (MVP) Program.



Appendix E - Red Group Base Map

Town of Auburn

Municipal Vulnerability Preparedness
Program Workshop
February 2019

Legend

Infrastructure
- Parcels

Roads
- Limited Access Highway
- Multi-lane Highway, not limited access
- Railroad Tracks
- Transmission Lines
- Dams

Municipal Buildings
- Town Hall
- Schools (4)
- Police Station
- Fire Station
- Department of Public Works

Long Term Care Residences
- Assisted Living Facilities
- Nursing Homes

Hydrogeography

Streams
- Stream
- Intermittent Stream
- Aqueduct

Wetlands
- Open Water
- Wetland

FEMA Flood Zones
- 100-year - 1% Annual Chance of Flooding
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Land Use
- Land Use

MA DEP Permit Facilities
- Underground Storage Tank
- Major DEP Facilities
- MassDEP Tier Classified Oil and/or Hazardous Material Site

Water Supply
- Zone 1 Protection Area
- Wellhead Protection Area

Public Water Supplies
- Community groundwater well
- Non-Transient non-community
- Proposed well
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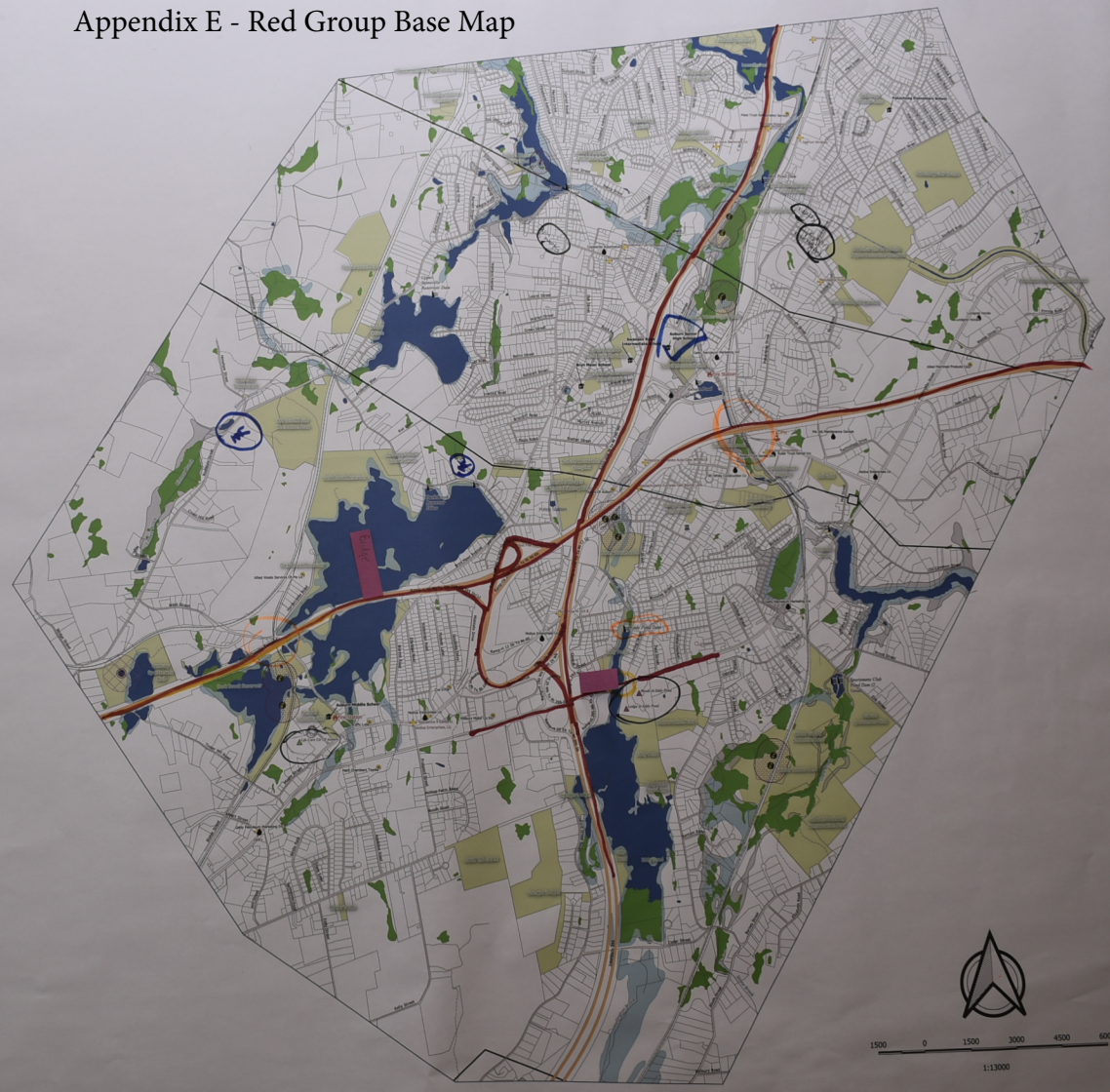
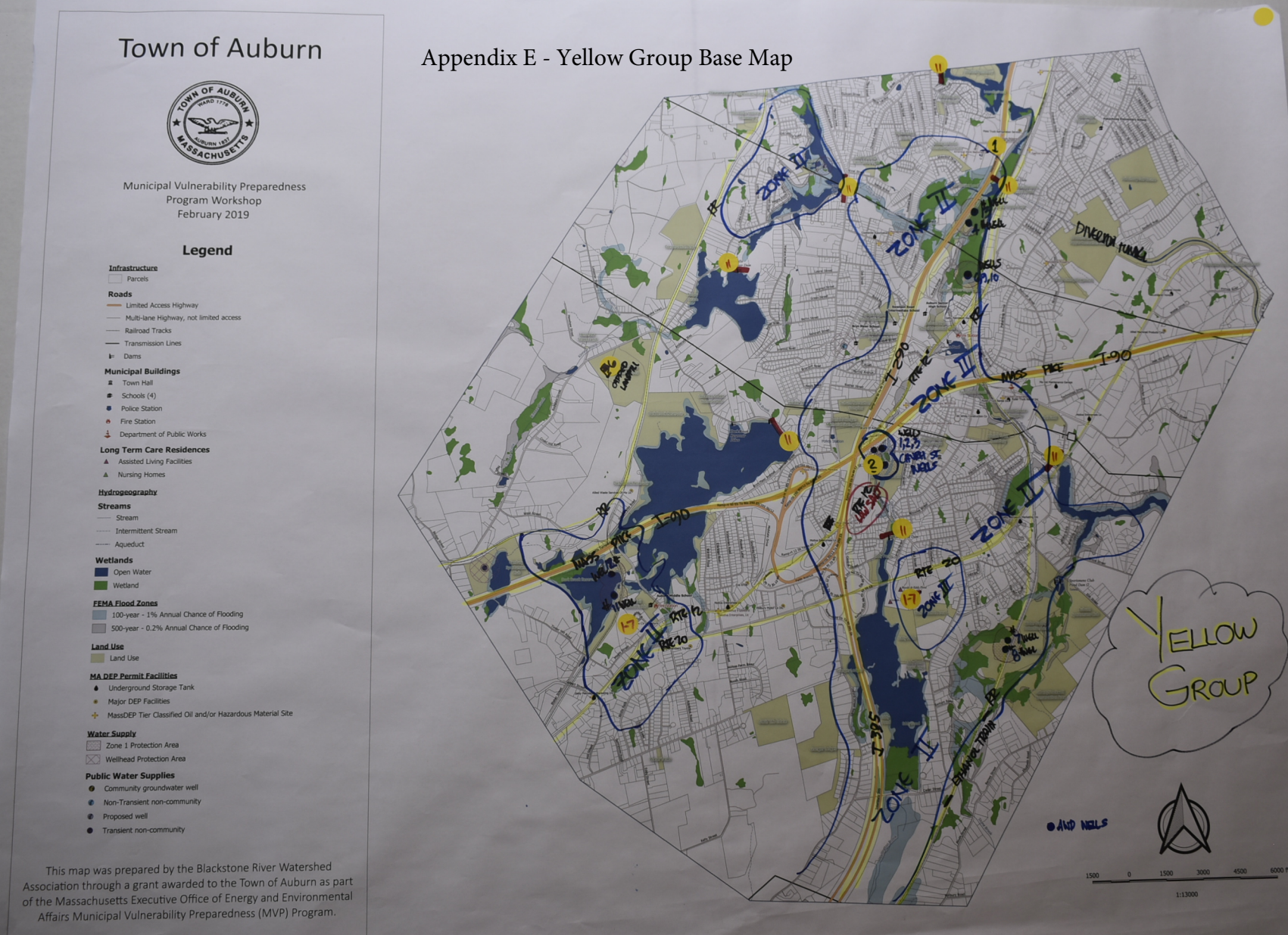


Appendix E - Yellow Group Base Map



Community Resilience Building Risk Matrix www.CommunityResilienceBuilding.org

Location: Auburn Town Hall Date: 2/28/19 Group: Blue

H-M-L priority for action over the Short or Long term (and Ongoing)
V = Vulnerability S = Strength

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

	Features	Location	Ownership	V or S	Flooding	High Wind	Ice	Extreme Temp	Priority H-M-L	Time Short Long Ongoing
	Environmental									
1)	Central Mass Mosquito Control Project	Across Auburn	[redacted] Town	S	Continue support [redacted]				H	O
2)	Open Space	Map	Public	S	Maintain & support existing space				H	O
3)	Trees	*Rural Auburn/ Across Town	Public & Private	V	Risk assessment of vulnerable trees (disease, location, etc)		& pests		H	S
4)	Surface Water Lakes + Rivers, Ponds, Resav.	Across Town	Water Dept [redacted]	S/V	Enhance ecological mgmt plans so water serves as strength				H	S/O
5)	Drinking Water Public Water Supply - Wells	Across Town	Private (ish) + Public	S/V	Support the water districts				M	O
6)	Open Space Committee	Town	Public	S	Promote so public knows what they are doing & the role these areas serve in climate resilience + ER preparedness + Education				L	O
7)	Conservation Commission	Town	Public	S	" As Above "				L	O
	[redacted]									

Community Resilience Building Risk Matrix www.CommunityResilienceBuilding.org

Location: Auburn Town Hall Date: 2/28/19 Group: Blue

H-M-L priority for action over the Short or Long term (and Ongoing)
V = Vulnerability S = Strength

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

Features	Location	Ownership	V or S	Flooding	High Wind	Ice	Extreme Temperature	Priority H-M-L	Time Short Long Ongoing
Infrastructural									
1) New Middle School in Floodplain	Auburn Middle School	Public	S/V	1) Assessment of Dark Brook Dam to determine its vulnerability & Viability (Flooding) 2) Implementation of rain gardens on property 3) CERT - Exercise/Trainings onsite			✓	1) H-M 2) L 3) H	1) S 2) S 3) O
2) Auburn High School	Map in Floodplain	Public	S/V	1) Continue CERT Eval's for ER Preparedness 2) Increase public-private communications to improve access & maintenance to the Dark Brook Stream				1) H 2) H	1) O 2) S
3) Transportation Network - RR & Roadways	Map	State	S	Maintain connection & cooperation w/ State officials				H	O
4) Haz Mat Facilities	Map	Pub	S/V	Support & maintain staffing for Auburn Fire Dept & Building Dept ↳ Inspectional Services				M	O
5) Power Lines	Map	Private	V	1) Tree Trimming in critical areas on public & private lands 2) Assessment study to determine feasibility of moving power lines underground including assoc costs				1) H 2) L	1) S 2) L
6) Septic & Well - Water Infrastructure	Map	Private	V	Town wide Mapping of septic & wells				M	L/O
7) Sewer Pump Stations	Map	Public	V	Prioritization & updating of high risk / vulnerable sewer pump stations (DPW)				M	O
8) Nursing Homes & Assisted Living	Map	Private Public	V	1) Support Emergency Preparedness across muni govt ↳ What do you need? 2) Support them so they can shelter in place + Response				1) M 2) M	1) O 2) O
9) Underground Storage for both oil & gas	Map	Private	V	Ensure compliance plans are in place to meet permitting / regulatory requirements + Ensure routine inspections are happening)				M	O
10) Trailer Parks (8-10) (temporary + seasonal pop)	Along Route 20 + Map	Private	V	1) Assessment of population & then increase ↳ including the owners in this process 2) Study best practices utilized in other regions		hazard preparedness info sharing + communication + education w/ similar housing stock / population		1) M 2) M	1) S 2) L
11) Solar Farms	Map	Private	S	Increase town outreach & education → increase support & understanding				L	O

Community Resilience Building Risk Matrix

Location: Auburn Town Hall Date: 2/28/19 Group: Blue

www.CommunityResilienceBuilding.org

H-M-L priority for action over the Short or Long term (and Ongoing)
V = Vulnerability S = Strength

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

Features	Location	Ownership	V or S	Flooding	High Wind	Ice	Extreme Temp	Priority H-M-L	Time Short Long Ongoing
Societal									
1) ER Services	Map	Public	S	1) Increase + support CERT program + assess need for add'l part-time or full-time staff support ↳ + general volunteers		2) Increase outreach + HS and technical school students → add to trained vol base		1) M 2) M	1) O 2) O
2) Town Dept Communications LEPC	N/A	Public	S	Ongoing support → doing great!				H	O
3) Medical Services/Supp.	Map	Private	S	Establish communication plan				M	L
4) Elderly Pop	Map + Private Homes	N/A Town	V	1) Increase support + participation in code Red Program & "Are You Ok Program" 2) Establish a neighbor to neighbor "check in" program				1) H 2) H	1) S 2) S
5) Low Income - Family	Map Flood Zone	N/A Town	V	1) See goals of #4 (elderly pop) 2) Increase Affordable Housing Stock				2) M-H	2) O
6) Faith Based Pop's ↳ Network together	Map Multiple	Private	S	Improve involvement of faith based institutions as potential 'shelter in place' options + coordinate communication + outreach efforts * See #4 goals				M	S
7) Public School System	Map Multiple (5)	Public	S	Ongoing support → doing great! Refer to them to learn their needs as needed					
8) Community Support Services (Library, Food service, etc)	Map Multiple	Public & Private	S	Build a bigger library to support the town + its functions + help vulnerable pop's. Emergency Evacuation Center - need to protect/ supp				H	L
9) Travel / Hotels - High # of tourists	Multiple	Private	S/V	Improve communications + planning between hotels + muni to help supp emergency sheltering during Hazards → utilize these to supp. locals & necessary visitors during ER				H	S

Community Resilience Building Risk Matrix — Environmental — www.CommunityResilienceBuilding.org

Location: Auburn Date: 2/28/19 Group: Green

H-M-L priority for action over the Short or Long term (and Ongoing)
V = Vulnerability S = Strength

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

Features	Location	Ownership	V or S	Flooding (3) (5)	High wind (2)	Winter storms (1 Storm)	Drought (3)	Priority H-M-L	Time Short Long Ongoing	
Aquifer about 10 wells	E 1		V	flood proofing pumps / water purification	power loss update by laws aquifer protection		acquifer water supply	H	S	*
Open Space 61-B Plan updated 61-A		Pub.	V	on top of it – continue to update				H	O	
Invasives - Aquatic Eddy pond	E-2			annually treatment – evaluate Possibly expand to Auburn Pd.				H	O	
Low impact Development				stormwater mgmt regs will encourage expanding this. Look at bylaws				M	S	
Forest (not a lot)			V	61-B land – property owner				M	O	
Solar Farms bylaw tree cutting approved			V/S					M	O	
Central Mass Mosquito Control			V/S					M	O	

Community Resilience Building Risk Matrix — Infra

Location: Auburn Date: 2/28/19 Group: Green

www.CommunityResilienceBuilding.org

H-M-L priority for action over the Short or Long term (and Ongoing)
V = Vulnerability S = Strength

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

Features	Location	Ownership	V or S	Floodings	High Wind	Winter storms	Drought	Priority H-M-L	Time Short Long Ongoing
~~Flood Zone~~		school	gate/water						
Rockland Rd / ~~Brook~~ St.	I-1	I-A (R)	V/S	✓ Flash flooding ✓ few homes / culverts	properties in Floodplain local problem ↗	monitor and Evaluate over time		H	O
Rte 12 & 20	✓	State	V	arterial roads; spills - hazardous material. ~~Tourists~~	✓ Prepare For one or both closed			H	O/S
Transmission/Dist	Randall Substation I-3	Uthl	V	✓	power outages From high winds ✓	↙ Some ROW mtce cont. cycle ✓		H	O
Fueling	Shell 20	Private	V/S	Town build fueling station Design study	action loss of fueling ✓	electric loss of power ✓	mass Hwy borrow fuel from them	H	S *
Gas mains	Town	town center pri.	V/S	Flooding - water in the mains (EVPL)	Eversource should Ask them for it	share info	M		S
old buildings Police Station	I-4	P		Backup! flooding in bldg	Public Safety Feasibility study is underway. Also need to look at Town Hall and other buildings	Green Comm. Strength master plan	H	O L	M H
Interstate Hwys Crossroads	Town	Pub.	V/S	back-ups; detours in town	Plan and Prepare For Coordinate w/ state	hwy closures		H	O/S
Rail Lines CSX P&W	Private Utility	Pri	V	~~cracking flooding~~	Ask for info sharing table top exercises	work w/ Rail companies		M	O
Haz. waste/Toxic Releases		Pri.	V	crashes; spills	Haz Mat plan is	updated & approved		H	O
Culverts Rt. 20 at Eddy Pond	I-5	Pub	V	sediment build-up	State Hwy not Town Connect 2 water bodies	communicate w/ by canoe State		M	O/L
Sword St. Culverts	I-6			Localized Flooding	work w/ MADOT to make this a bridge structure	Eval. Complete so it is a bridge Letter to state on this	Applied for 3 mass works grants and failed	H	S/L

Community Resilience Building Risk Matrix Infra (2) www.CommunityResilienceBuilding.org

Location: Auburn Date: 2/20/19 Group: Green

H-M-L priority for action over the Short or Long term (and Ongoing)
V = Vulnerability S = Strength

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

Features	Location	Ownership	V or S	Flooding	High winds	Winter Ice storms or heavy wet snow	Drought	Priority H-M-L	Time Short Long Ongoing
Dams all good one poor being fixed		Public	S	Inspected on Reg. Basis & mtce					O
Oxford St. N over Kettle Brook	I-7	Pub	V	Town owned Bridge inspected by State, Not Yet a State priority		Town maintains Br. Deck			O

Community Resilience Building Risk Matrix — Societal

Location: Auburn Date: 2/28/19 Group: Green

www.CommunityResilienceBuilding.org

H-M-L priority for action over the Short or Long term (and Ongoing)
V = Vulnerability S = Strength

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

Features	Location	Ownership	V or S	Flooding 4	High Wind 2	Winter Storms 1	Drought 3	Priority H-M-L	Time Short Long Ongoing
Public Health Tick Disease	town-wide	—	V	outreach and education state programs	Repellents should be used			H	O
Elderly Pop. Auburn is aging	town-wide		V	Meals on wheels recipients Send a flyer to all households re: emer. use	power outages	power outages CERT Funding	Know your neighbor	H	S
Trailer Parks	S1		V	flooding is a problem for some	tied down ~~down~~ blown over	power outages New ones meet code and anchored	acquifer	M	O
Assisted Living	S2		V	Coordinated Trans./Evac. plan.		They have done plans internally		H	S
Elderly Housing / Group Homes	S3		V	coord. w/ Auburn Housing Auth. on Trans. and Evac.				H	S
Evacuating (Buses) Seniors/Elderly	major & collector		V	Police Dept. maintains contact lists Plan w/ all stakeholders. Shelters don't handle medical issues				H	S/L
Communicating with Elderly-No Tech.	S1-S3 & town-wide		V	See 2nd item					
Shelter plan			S	✓ Flooding-Flash near school (Shelter)	Includes pets w/ cen. MA. animal rescue Maintain shelter plan update pet component			H	O
Oxygen dependent populations/ventilators			V	Public Health? Can they help - ask them				H	S

Community Resilience Building Risk Matrix Red

Location: Acushnet Date: 2/29/19 Group: Red

Environmental

www.CommunityResilienceBuilding.org

H-M-L priority for action over the Short or Long term (and Ongoing)
V = Vulnerability S = Strength

Top Priority ~~Hazards~~ (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

Features	Location	Ownership	V or S	Flooding	Ice & Snow	Heat Events & Cooling	Wind Tornado	Priority H-M-L	Time Short Long Ongoing
				Additional					
Water Supply Aquifer	(Wells)		V	Engineer or Town Staff to review & enforce Stormwater regs. - proposed, NPDES	Chemical treatment alternatives See Infra.			H	O
Surface Water near Roads Dartle Brk Res / Tpike → Eddy Pond / 290 →			V	"	"			"	"
Well field at intersection of Tpike & Rte 290		~~Town~~ Aquarion Water District	V		see infrastructure list				
Chemical Ice Control on Roads → Water Supply			V		see infrastructure				
Dunns Brk (Drury Sq)	Drury Sq		V		see infrastructure residential development				
Pappas Park, walking trail	Pachachaug Hill	Town	V/S			• Mgmt Plans to reflect species migration & adaptation needed.		L	O
Pachachaug Golf Course	~~Park~~ Upland St	Pub Town	V	- Flood prone - - Mgmt Plan to consider vulnerability of greens/fairways.				L	O
1. Stone Brk Watershed Open Space • Sportsmans Club • Conservation area									
2. Kettle Brk Complex & Watershed • Stone site		Con Com			Stormwater by laws in place, Regs under development /	Invasive species Control		L	O
3. Dark Brk Reservoir									

Appendix F - Red Group Infrastructural Features

Community Resilience Building Risk Matrix — www.CommunityResilienceBuilding.org

Location: Auburn   Date: 4/28/19   Group: Red   Red

INFRASTRUCTURE

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

H-M-L priority for action over the **S**hort or **L**ong term (and **O**ngoing)
V = Vulnerability **S** = Strength

Features	Location	Ownership	V or S	Flooding	Ice & Snow	Heat Events / Cool	Tornado / W/WD	Priority H-M-L	Time Short Long Ongoing
Regional & Redundant HS Emerg Shelter	HS.	Town	V/S	Sea units in flood plain; Staff (V) Police PLAN Training; Sandbag Supply	Flat roof - snow (V) monitor - maint; collapse hazard	(S) capacity - hundreds+ maintained Backup Generator		H	O L
Bridges on 290 All		State	V	State of BR; GPS – Washout risk; Keep in good repair	Plans for V chemical, Equipment to Make Brines of Road Treatment & Dismbursed	Plans for less chemical. (environmental)		H	O O S
TPike stretch in Town, Bridges throughout	linear	State	V	" high exposure, high risk	"			H+	O
Drury Sq Flooding		Town/State	V	better drainage & stormwater infrastructure; Proposed Zoning Bylaw/Vlg Center Overlay w/LID – pass			ice & wind; ALB area so wood debris is managed in town. – Resources needed if regional event	M	S (L)
Auburn St near HS	Near HS	Town / state ramp	V	Regional Aid Agreements & Mutual Aid & CERC				M	O
Other Streets used as cut through		Town	V					L	O
Communications Tower	Rockhill St, Leicester St.	Town	S/V	Statewide emergency communication Network. Towers could then be repurposed for Emer Mgmt.				H	O
Dam @ Camp Gleeson	Central St	Town	V	continuing maint & inspx; rebuilt 2011				L	O
Sewer Pump Station in flood zone	Holstrom Ct	Town	V	Better Stormwater management/reduction/infiltration control into Dunns Brk Need to; then Diversion Tunnel	Coordinate w/City of Worcester	Planning needed to avoid event	& manage consequences	M	S
Diversion Tunnel operations	S bridge –	City of Worc?	V						
Railroad Ops & Veg Mgmt near Wellfields & Wells	linear	CSX	V/S	Open Communication w/CSX. - need contact identified & responsive. Genesee & Wyoming (Plan)				L	S
? Electric Power Supply Distribution			V	large lines –					

? ~~Residential Heating~~ gas? oil? other?   H   O

? UBWPAD   I&I – there is excess capacity in Auburn's System - a strength

Community Resilience Building Risk Matrix — www.CommunityResilienceBuilding.org

Location: Auburn Date: 2/28/19 Group: Red

SOCIETAL

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

H-M-L priority for action over the Short or Long term (and Ongoing)
V = Vulnerability S = Strength

Features	Location	Ownership	V or S	Flooding	Ice & Snow	Heat Events cooling	Wind Tornado	Priority H-M-L	Time Short Long Ongoing
Evacuation/ Transportation/Srs PLAN Buses,	Leased/WRTA		S	Yearly contracts provide Vehicles & ability evac elders, disabled, etc	• Are there Evac Plans for key facilities Auburn need to have understand • WRTA had add. trvl capacity Auburn could consider utilizing to evac srs from residences			H	O
Reliant Medical	Auburn Mall in floodplain	Priv.	S						
Sr Population · Packaging Plt · Keteri · Stoneville	Housing & Dispersed	Public	V		Communication Plan for power outage Education, ID particularly vulnerable people - insulin, dialysis			H	
LifeCare Brookdale E & W	~~Flat~~	Pri (S)	V		· Better communication w/ Police, Fire, Senior Center regarding emergencies & evacuations			H	S
Low income homes/ families · Pine Brook Ct · Pheasant Ct.	~~Pine Brook Pheasant Ct~~ dispersed	Public - pri.	V		Education about what do what resources avail & plan/strategy for power outages & extreme events Develop low cost programs for low-income population - Auburn Youth Services			H	S/O
Sr Center - shelter w/ generator	Goddard	Town	S		Generator powers only part of building - evaluate	need power issues (partial)		H	S
Middle School - back up Shelter w/ generator	West St	Town	S		Evaluate back up power - reliability & the extent ie. refrigerators.			H	S
H.S. Shelter	Rte 12	Town	S						
2 Elementary Schools PK-2 Intermediate 3-5 Middle & HS		Town	V			Need AC.			
Emergency Communications Plan Cable, Text, SM, Email, Phone, AM Radio Local Repeater, Code Red			S					H	O
Mobile Centers for (trailers)		Town	S					L	S
• Both Shelter Supplies - cots, first aid.		Town	S		Broadcasting equipment for			H	O
• Fire/Cable Connection								M	
Police Bldg is EOC (generator)		T	S	Feasibility to replace Police & Fire building is ongoing - Sept 2019 Report					O/S
Aging Housing Stock					encourage use of existing energy resources & affordable housing development			Housing Plan - costs to implement	
Sheriff Comm-trailer		Regional	S						
"BEMLEC" Comm		Towns shared	S						
FIRE Shared Trailer & EOC	DFS		S						

Community Resilience Building Risk Matrix — ENV — www.CommunityResilienceBuilding.org

Location: Auburn Date: 2/28/19 Group: Yellow

H-M-L priority for action over the Short or Long term (and Ongoing)
V = Vulnerability S = Strength

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

	Extreme Storms	Flooding	↑ Precip	

	Features	Location	Ownership	V or S				Priority H-M-L	Time Short Long Ongoing
1*	Local Aquifer	townwide	Other Dist unknown	V/S	improve drainage along I-90, add WQ treatment devices in Zone II			H	O
2*	Impaired Waters (4) (TSS, ecoli, P, etc.)	"	town	V	" • revised bylaw/review • create overlay map of water bodies	"		H	S/O
3	Public Parks	Various	town	S	Continue maintenance			L	O
4	Asian LH Beetle/ Brush + leaf collection-drop off	"	N/A	V/S	Continue Processing Yard waste			H	O
5	No muni water/ Brush Fire Haz'd	West End	N/A	V	Continue working w/ RR to put brush safe distance from tracks continue maintenance			M	O
6	Capped Landfill (Pub safety comm site)	Rochdale St	town	V	◦ Cont. maintenance + monitoring ◦ ↑ security of pub comm infra ◦ pursue legislative change for area's re-classification			H	S/O
	Ethanol Train out of Worcester	RR	RR	V	Maintain local emergency plan			H	O
	Eddy + Auburn Pond Dams	various	town	S/V	Continue maint; inspections			H	O

Community Resilience Building Risk Matrix — INFRA — www.CommunityResilienceBuilding.org

Location: Auburn Date: 2/28/19 Group: Yellow

H-M-L priority for action over the Short or Long term (and Ongoing)
V = Vulnerability S = Strength

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

	Features	Location	Ownership	V or S	Extreme Storms (wind, ice, snow, rain)	Flooding	↑Precip		Priority H-M-L	Time Short Long Ongoing
1*	Sword St Culvert	on Sword St.	Town	V	replace + reclassify as a → Bridge • pursue funding				H	S
2*	Chloride contam. Wells (3)	various	Water District	V	Address salt in IDDE Plan				H	S
3*	Wells w/ vuln. Zone I	"	"	V	" delineate catchment areas for vuln water bodies				H	S
4	State Roads	"	Mass DOT	V/S	↑ comm of vuln's w/ state				L	O
5	Power Grid	townwide	Nat Grid	V/S	✓ continue good relationship continue comm w/ Nat Grid				H	O
6	Low Rise, flat roof buildings (zoning)	townwide	mixed	V	• Re-write zoning bylaws (1950's-60's) - consider mid rise structure • Bylaw review • mixed-use village center include cluster				M	O
7	Assisted Living Homes (2) Nursing Home (1)	Private ↔	various	V	• continued comm w/ facility managers • Em Plans up to date → monitor				H	O
8	Public Housing (3)	TOWN HA ↔	Various	V/S	• More frequent inspections • make sure em plans up to date				H	O
9	Sewer + Drainage systems	townwide	town	V/S	continue maintenance + replacement				H	O
10	Septic Systems	various (~20%)	Private	V	———				—	—
11	Dams - 5 hi hazard	various	Water Dist + ~~private~~ town	V	Continue inspections + maintenance				H	O
12	Diversion Channel	South bridge St (R+12)	USACE	V/S	Cont. comm w/ Worcester				M	O

Community Resilience Building Risk Matrix — SOCIETAL — www.CommunityResilienceBuilding.org

Location: Auburn Date: 2/28/19 Group: Yellow

H-M-L priority for action over the Short or Long term (and Ongoing)
V = Vulnerability S = Strength

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

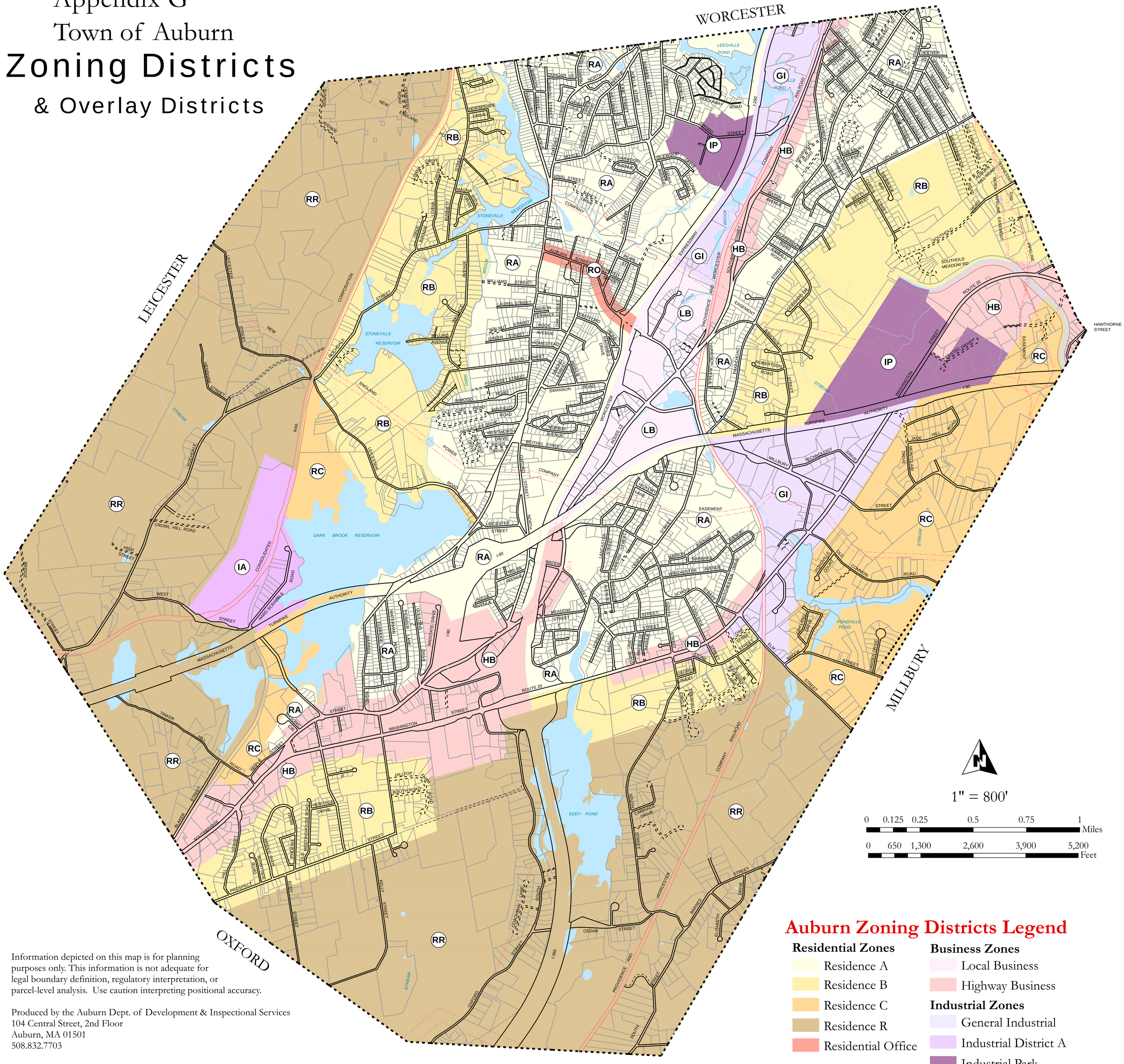
	Features	Location	Ownership	V or S	Extreme Storms	Flooding	↑ Precip		Priority H-M-L	Time Short Long Ongoing
1	Traffic – 5 major highways	townwide	Mass DOT	V/S						
2	Large Aging Pop (~35%)	townwide	N/A	V	Continue COA programs + meals on wheels continue ensuring adequate med resources • Add generators to town-owned sr housing				H	O
3	Housing Stock	"	private	V	Promote multifamily dev support housing plan in the works				H	O
4	Multifamily Housing	"	private	V	Promote m-family development Promote mixed-use housing (think: village center)				H	O
5	Communication (w/ Public + interdept.)	"	town	S	Continue best practices reach out for best practices – reaching public				H	O
6	Crisis Communication + Code Red	"	"	S/V	Continue updates to CM Plan, consider new tech				H	O
7	High School (Design. Shelter)	Auburn St.	town	S/V	ID a secondary shelter site maintain drainage system				M	O
8	Senior Center (secondary potential shelter)		town	S/V	ID overnight secondary shelter				M	O
	Electronic Billboards (2 upcoming, 1 fire station)	various	town	S	continue utilizing for comm work w/ business community to use their billboards in emergency				M	O
	CERT	N/A	"	S	Continue to advertise, train new ppl, promote reach out to young people & train				H	O
	Mutual Aid Agreements	N/A	N/A	S	Keep up comm w/ neighbors				H	O

Appendix G

Town of Auburn

Zoning Districts

& Overlay Districts



Auburn Zoning Districts Legend

Residential Zones

- Residence A
- Residence B
- Residence C
- Residence R
- Residential Office

Business Zones

- Local Business
- Highway Business

Industrial Zones

- General Industrial
- Industrial District A
- Industrial Park

Information depicted on this map is for planning purposes only. This information is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analysis. Use caution interpreting positional accuracy.

Produced by the Auburn Dept. of Development & Inspectional Services
104 Central Street, 2nd Floor
Auburn, MA 01501
508.832.7703

Source: Data provided by Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division, Cartegraphics Systems, Northeast Geoscience Inc., and the Town of Auburn Department of Development & Inspectional Services.

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Town of Auburn

Municipal Vulnerability
Preparedness Program Workshop
February 2019

Sites with DEP Permits

Legend

Infrastructure
- Parcels
- Roads
- Railroad Tracks
- Transmission Lines

MA DEP Permit Facilities
- Underground Storage Tank
- MassDEP Tier Classified Oil and or Hazardous Materials Sites

Number	Title
1	Rte 290w At Exit 8
2	Residence 9 Sibley St
3	Dooley's Cleaners
4	Egerton Minerals
5	Residential Property
6	American Bank Stationary Co
7	Getty
8	Massachusetts Turnpike East Bound Lane
9	Residential Fuel Oil Release
10	Liqui-box Corporation
11	Mass Pike Roadway Release
12	Former Rexnard Facility
13	Motiva Enterprises, Llc
14	Roadway Release
15	Firestone Complete Auto Care, #019518

Number	Title
1	Motiva Enterprises Llc
2	Rh White Construction Co
3	Motiva Enterprises Llc
4	Getty Petroleum Marketing Inc
5	Getty Petroleum Marketing Inc
6	Ma Dot Maintenance Garage
7	Getty Petroleum Marketing Inc
8	Copelands Automotive
9	Ryder Truck Rental Inc
10	Lundgren Honda
11	Motiva Enterprises Llc
12	Motiva Enterprises Llc

This map was prepared by the Blackstone River Watershed Association through a grant awarded to the Town of Mendon as part of the Massachusetts Executive Office of Energy and Environmental Affairs Municipal Vulnerability Preparedness (MVP) Program.

Source: MassGIS/MA DEP Oct 2017. Available from the Massachusetts Bureau of Geographic Information (MassGIS). Retrieved Jan 2019.

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Town of Auburn

Municipal Vulnerability
Preparedness Program Workshop
February 2019

Legend

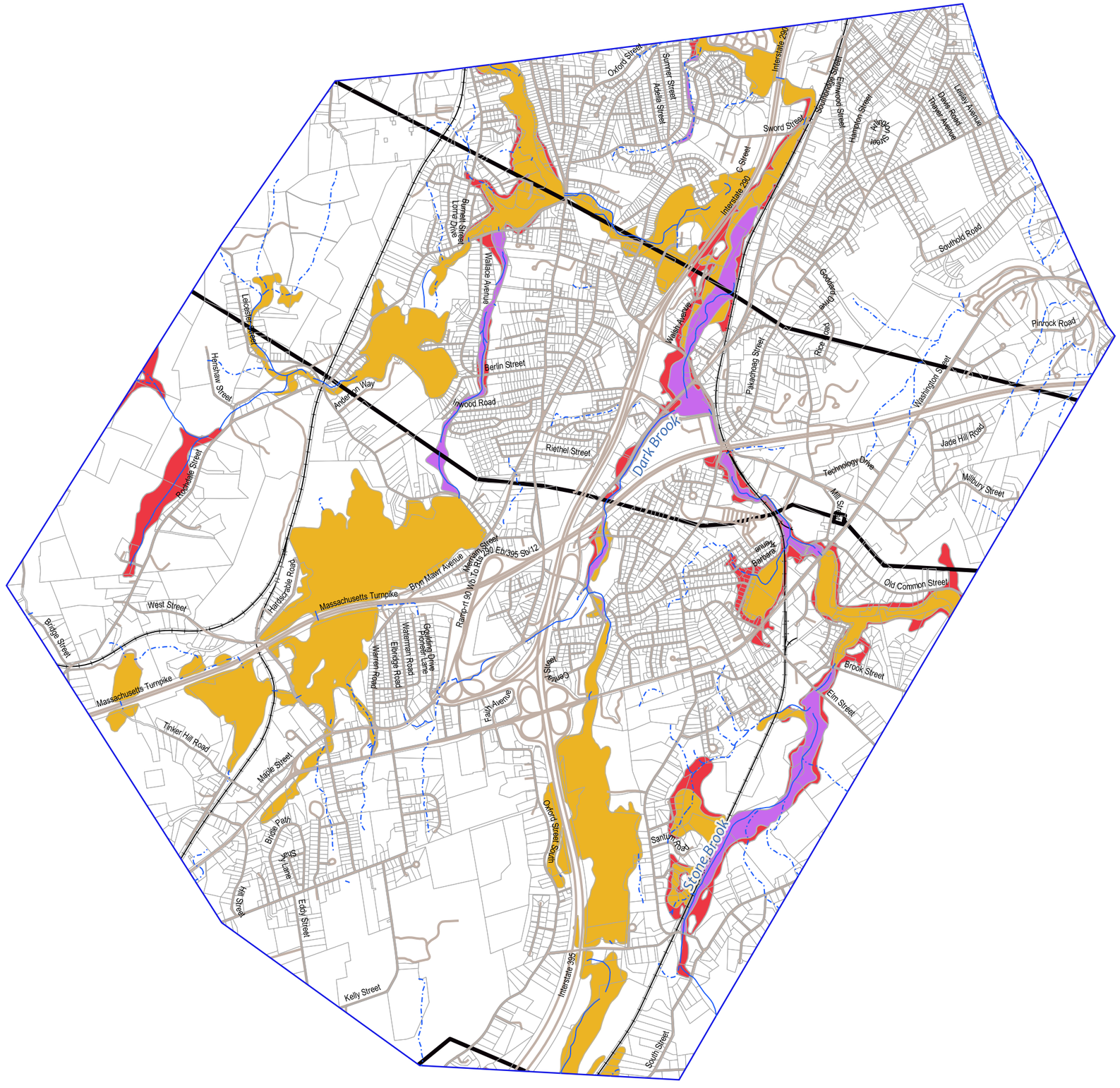
Infrastructure
- Parcels
- Roads
- Railroad Tracks
- Transmission Lines

Hydrogeography

Streams
- Stream
- Intermittent Stream

FEMA National Flood Hazard Levels
- 100-year (1% annual chance of flooding)
- 500-year (0.2% annual chance of flooding)
- Regulatory Floodway

Source: MassGIS/FEMA Flood Insurance Rate Maps July 2017. Available from the Massachusetts Bureau of Geographic Information (MassGIS). Retrieved Jan 2019.



1500 0 1500 3000 4500 6000 ft

This map was prepared by the Blackstone River Watershed Association through a grant awarded to the Town of Auburn as part of the Massachusetts Executive Office of Energy and Environmental Affairs Municipal Vulnerability Preparedness (MVP) Program.

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Town of Auburn

Municipal Vulnerability
Preparedness Program Workshop
February 2019

Income

Legend

Roads

Income

Percent of Households with Specified Income

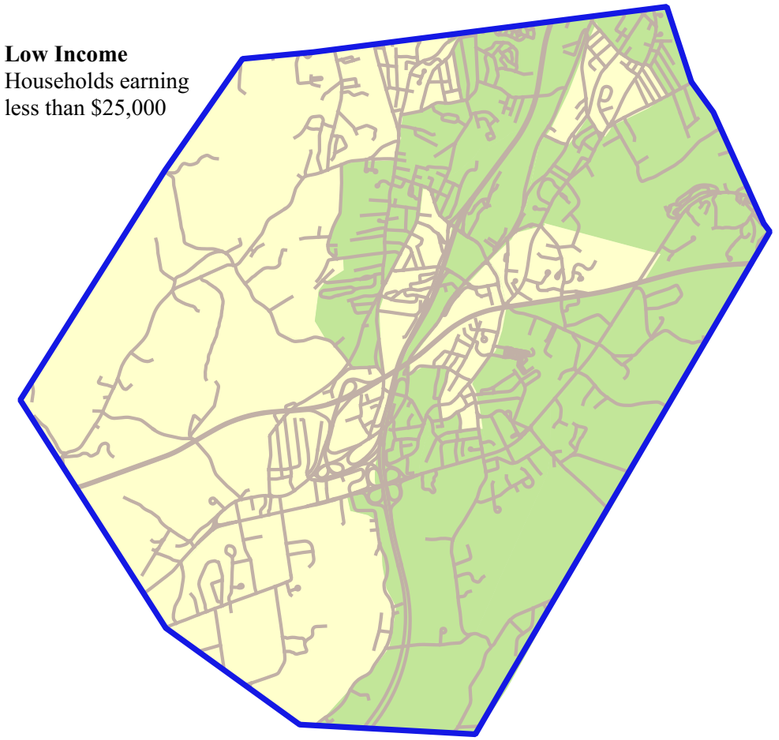
- 0 - 20
- 20 - 40
- 40 - 60
- 60 - 80
- 80 - 100

Source: MassGIS/Census 2000 Jan 2003. Available from the Massachusetts Bureau of Geographic Information (MassGIS). Retrieved Jan 2019.

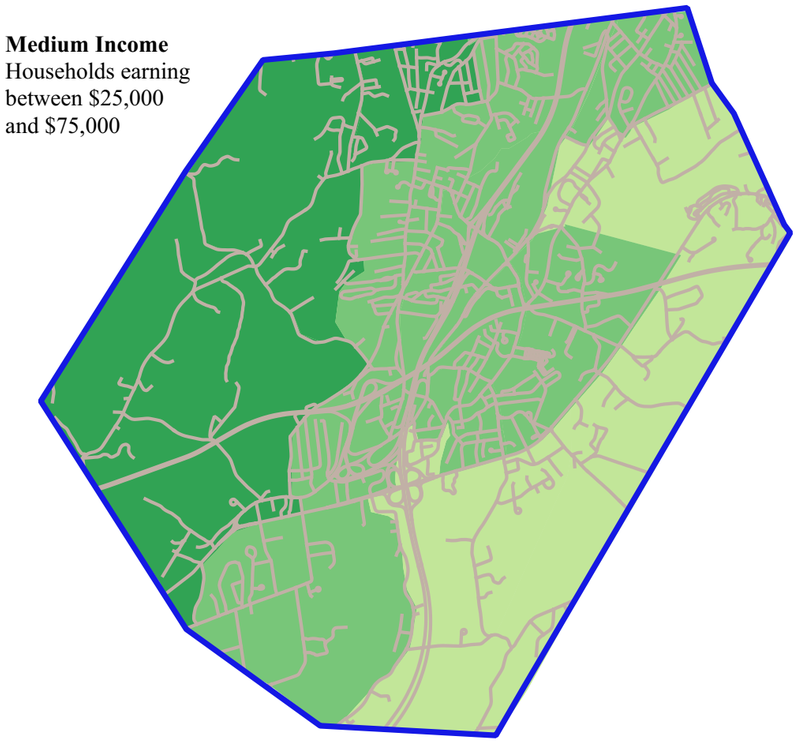
0.5 0 0.5 1 1.5 2 mi

This map was prepared by the Blackstone River Watershed Association through a grant awarded to the Town of Auburn as part of the Massachusetts Executive Office of Energy and Environmental Affairs Municipal Vulnerability Preparedness (MVP) Program.

Low Income
Households earning
less than $25,000



Medium Income
Households earning
between $25,000
and $75,000



High Income
Households earning
greater than $75,000

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Town of Auburn

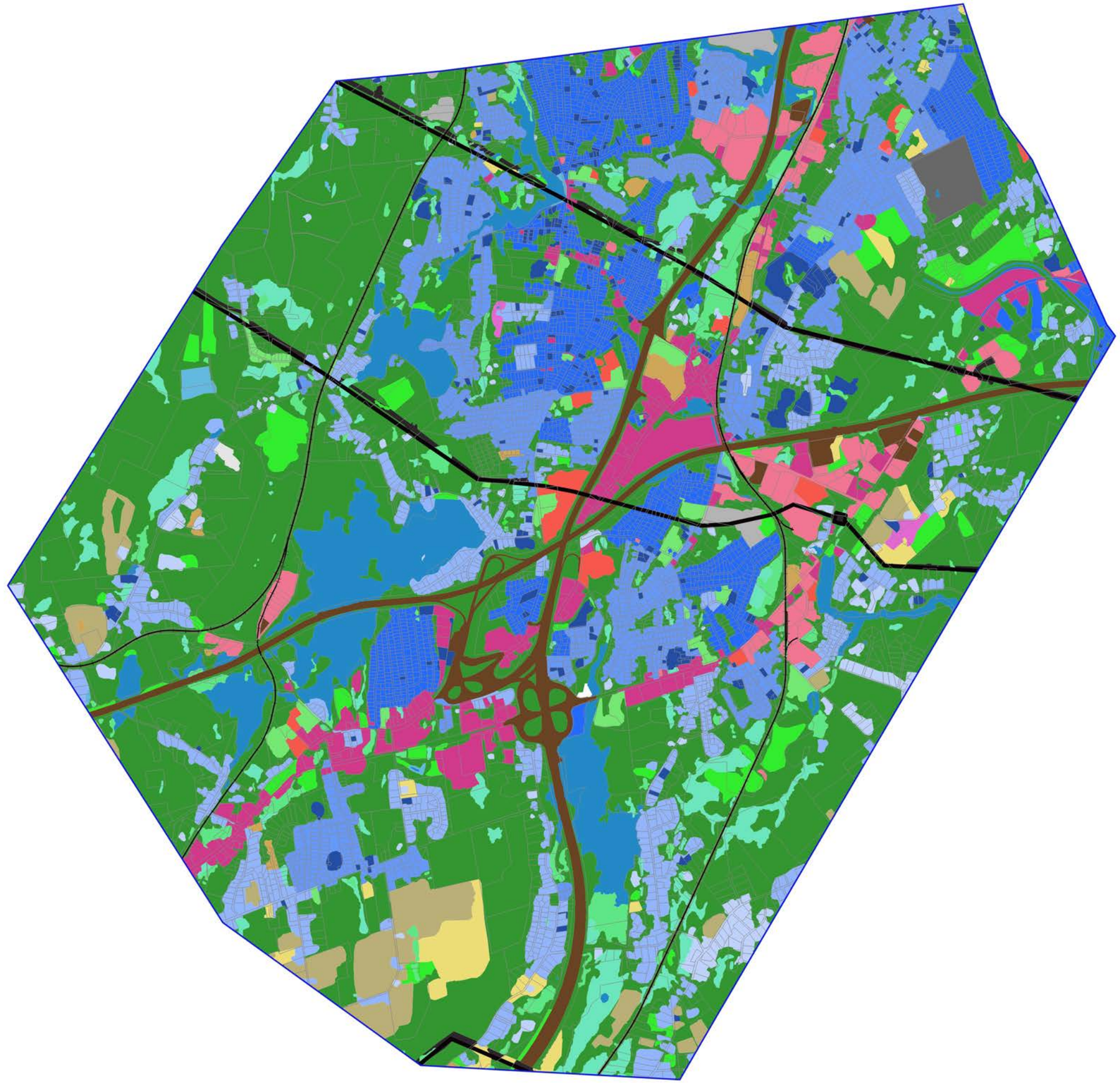
Municipal Vulnerability
Preparedness Program Workshop
February 2019

Land Use

Legend

Infrastructure
- Parcels
- Railroad Tracks
- Transmission Lines

Land Use Categories
- Golf Course
- Brushland/Successional
- Non-Forested Wetland
- Forested Wetland
- Water
- Forest
- Open Land
- Cemetery
- Commercial
- Industrial
- Cropland
- Pasture
- Nursery
- Junkyard
- Transitional
- Very Low Density Resident
- Low Density Residential
- Medium Density Residentia
- High Density Residential
- Multi-Family Residential
- Participation Recreation
- Powerline/Utility
- Transportation
- Urban Public/Institutional



Source: MassGIS June 2009. Available from the Massachusetts Bureau of Geographic Information (MassGIS). Retrieved Jan 2019.

1500 0 1500 3000 4500 6000 ft

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Town of Auburn

Municipal Vulnerability
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February 2019

Important Facilities

Legend

Infrastructure
- Parcels
- Roads
- Railroad Tracks
- Transmission Lines

Municipal Buildings
- Town Hall
- Schools (5)
- Police Station
- Fire Stations
- Department of Public Works

Long Term Care Facilities
- Assisted Living Facility
- Nursing Home

Source: MassGIS/DESE March 2018. Available from the Massachusetts Bureau of Geographic Information (MassGIS). Retrieved Jan 2019.

1500 0 1500 3000 4500 6000 ft

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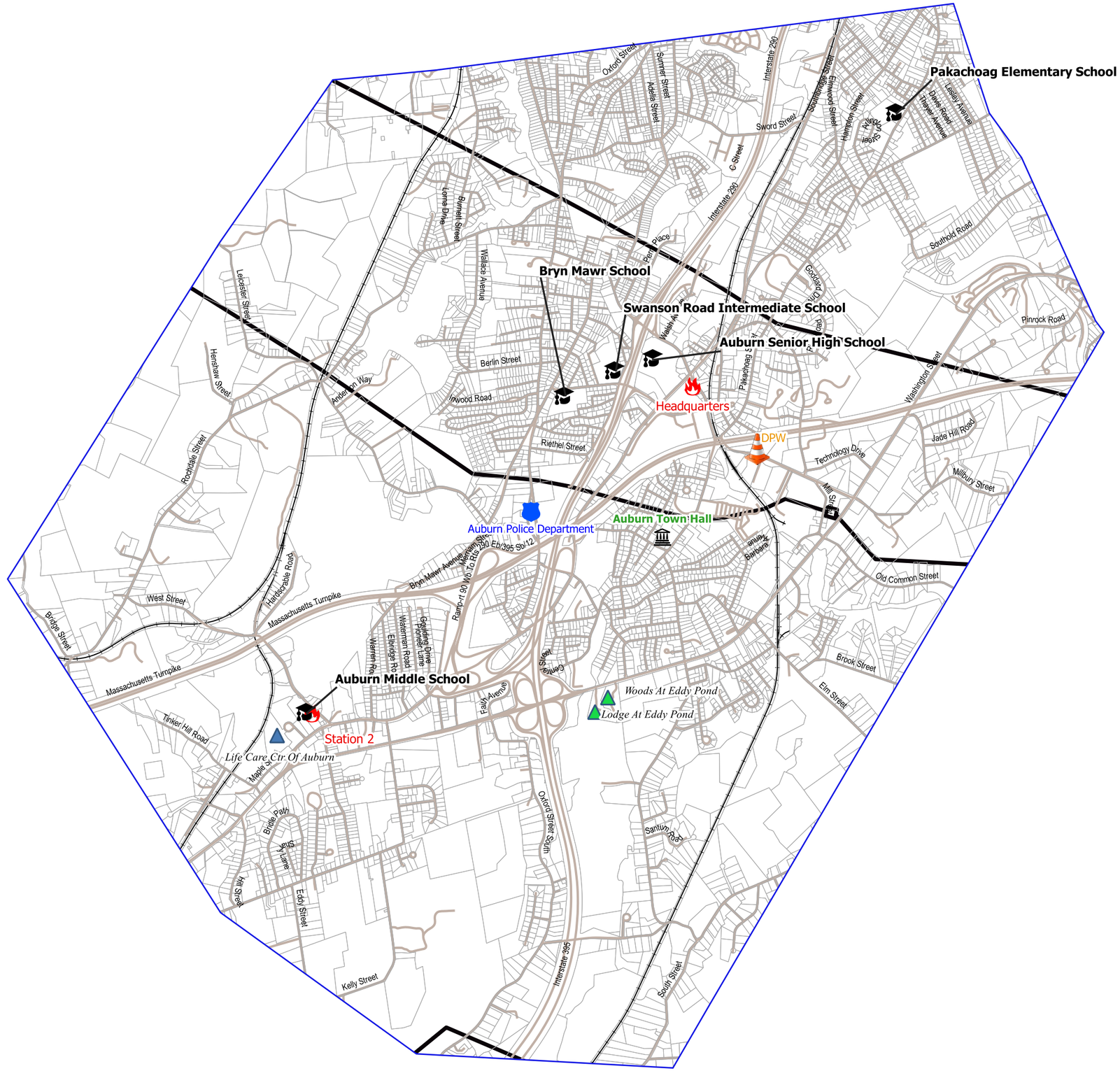

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Town of Auburn

Municipal Vulnerability
Preparedness Program Workshop
February 2019

Open Space

Legend

Infrastructure

- Parcels
- Roads
- Railroad Tracks
- Transmission Lines

Open Space by Category

- Water Department
- Conservation Commission
- Town owned (public works etc.)
- ACOE Flood Control
- State-owned
- School Property
- Auburn School Department
- Auburn Parks and Recreation
- Cemetery
- Other

Source: MassGIS June 2009. Available from the Massachusetts Bureau of Geographic Information (MassGIS). Retrieved Jan 2019.

1500 0 1500 3000 4500 6000 ft

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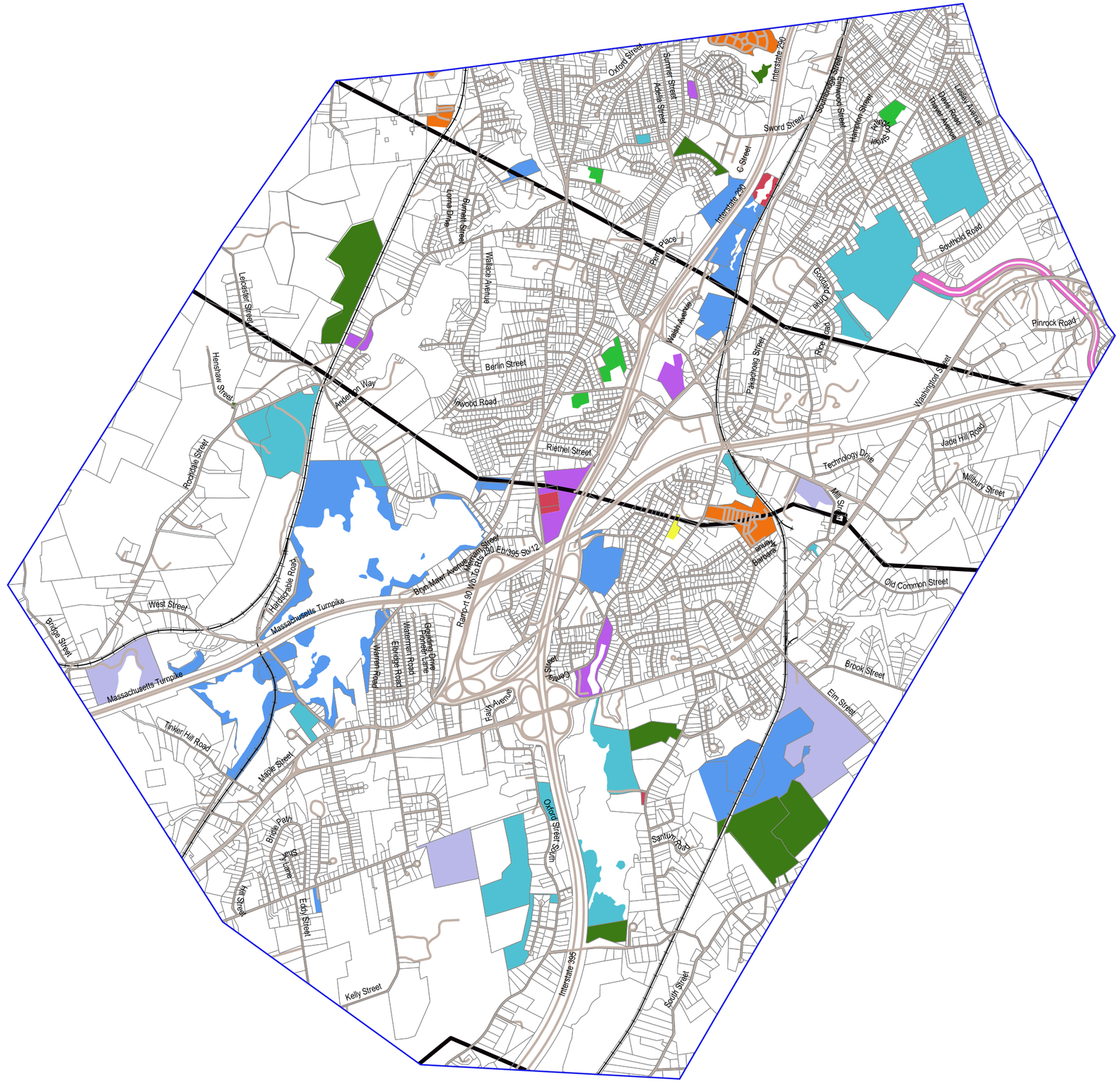

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Town of Auburn

Municipal Vulnerability
Preparedness Program Workshop
February 2019

Public Water Resources

Legend

Infrastructure
- Parcels
- Roads
- Railroad Tracks
- Transmission Lines

Water Supply

Public Water Supply Points
- Community groundwater well
- Non-Transient non-community
- Proposed well
- Transient non-community
- Approved Wellhead Protection Areas
- Interim Wellhead Protection Area
- Zone I Protection Area

Source: Aquifers- MassGIS Jul 2007. PWS- MassGIS Jan 2019. Available from the Massachusetts Bureau of Geographic Information (MassGIS). Retrieved Jan 2019.

1500 0 1500 3000 4500 6000 ft

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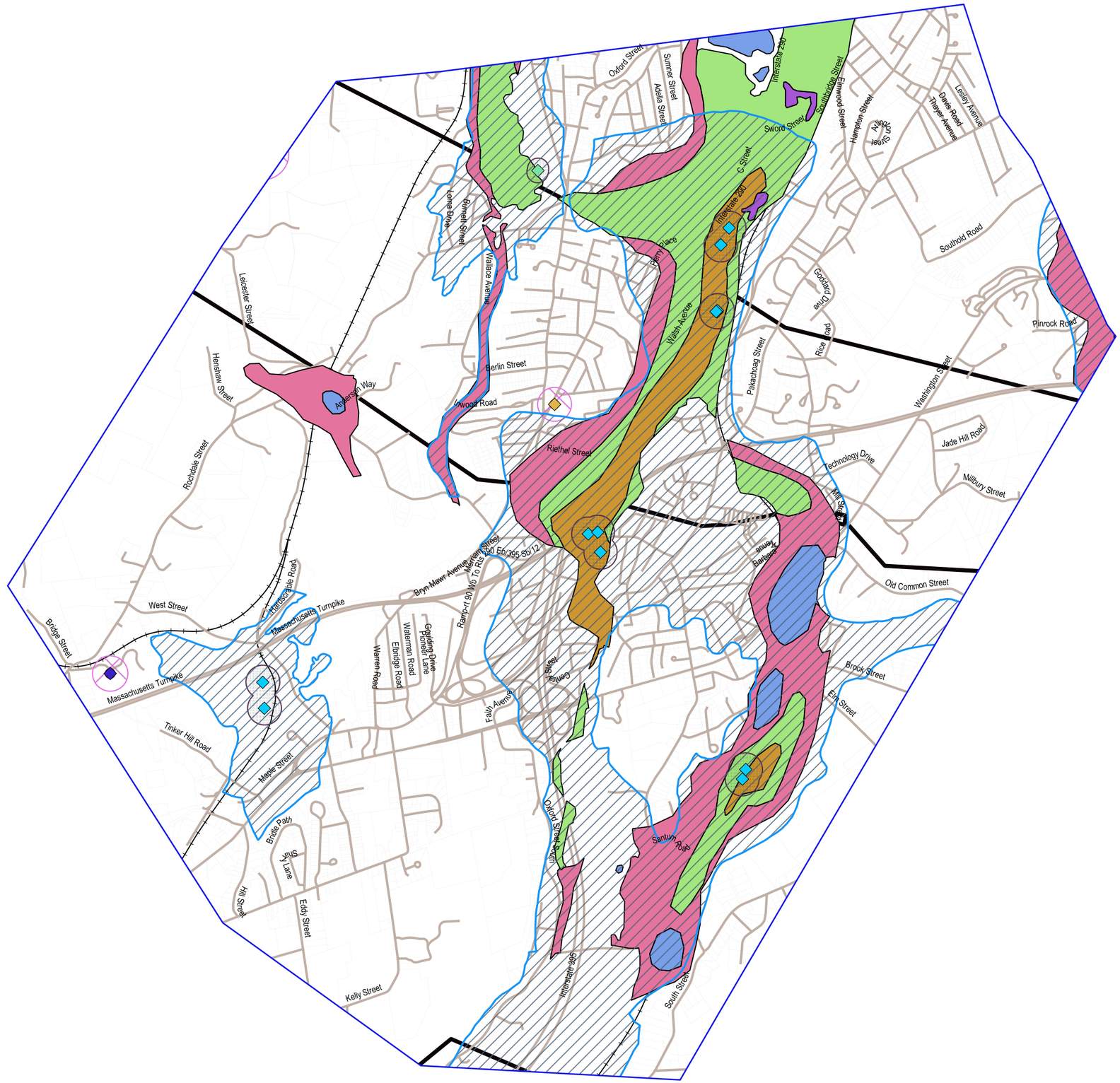

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Town of Auburn

Municipal Vulnerability
Preparedness Program Workshop
February 2019

Surface Water, Wetlands & Rare Widlife Habitats

Legend

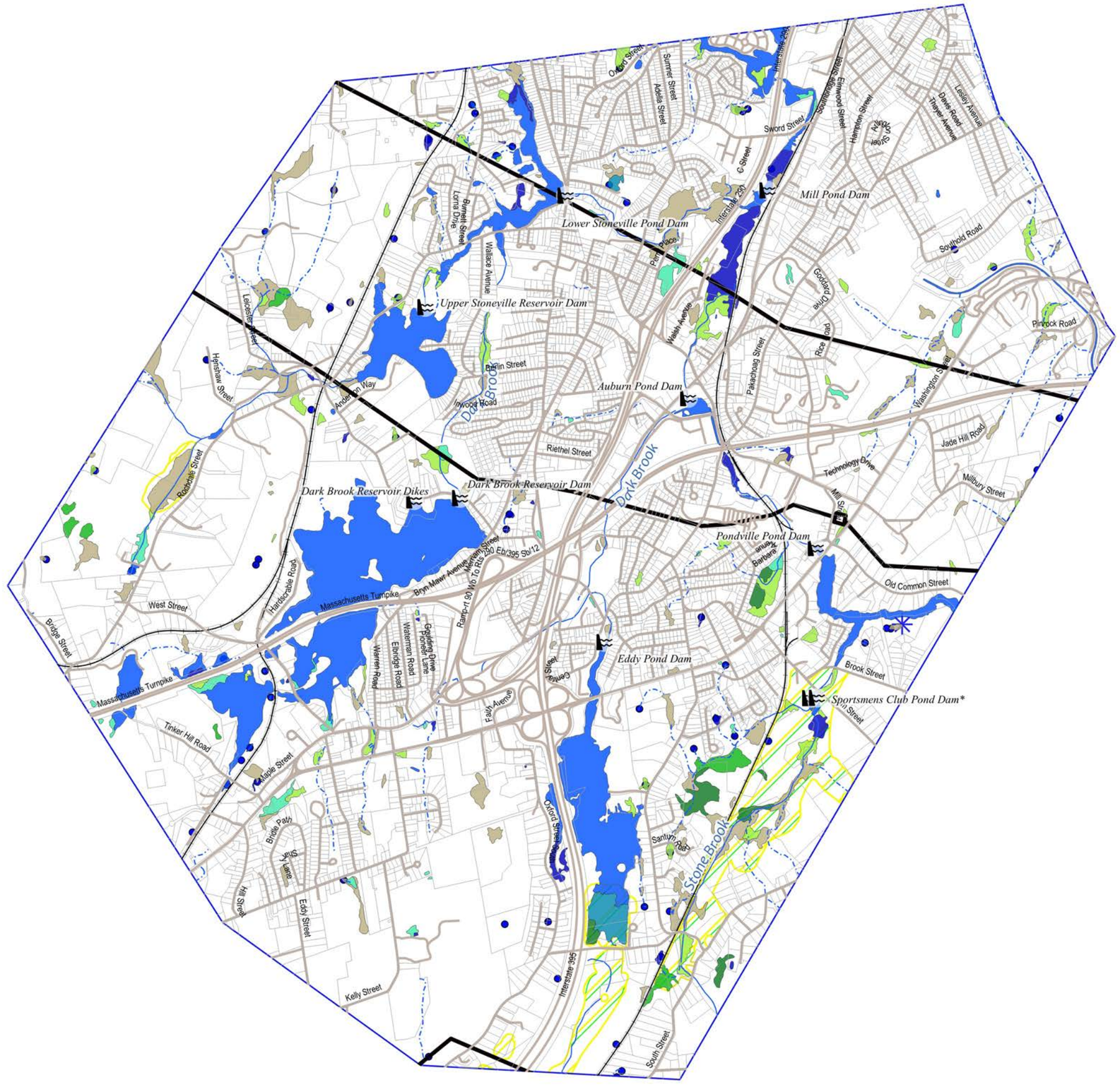
Infrastructure
- Parcels
- Roads
- Railroad Tracks
- Transmission Lines

NHESP
- Potential vernal pool
- Certified vernal pool
- Priority Habitats of Rare Wildlife
- Estimated Habitats of Rare Wildlife

Hydrogeography

Streams
- Stream
- Intermittent Stream

Wetlands
- Open Water
- Deep Marsh
- Shallow Marsh Meadow or Fen
- Bog
- Shrub Swamp
- Wooded Swamp Coniferous
- Wooded Swamp Mixed Trees
- Wooded Swamp Deciduous



Source: MassDEP Hydrography April 2017. NHESP Aug 2017. Available from the Massachusetts Bureau of Geographic Information (MassGIS). Retrieved Jan 2019.

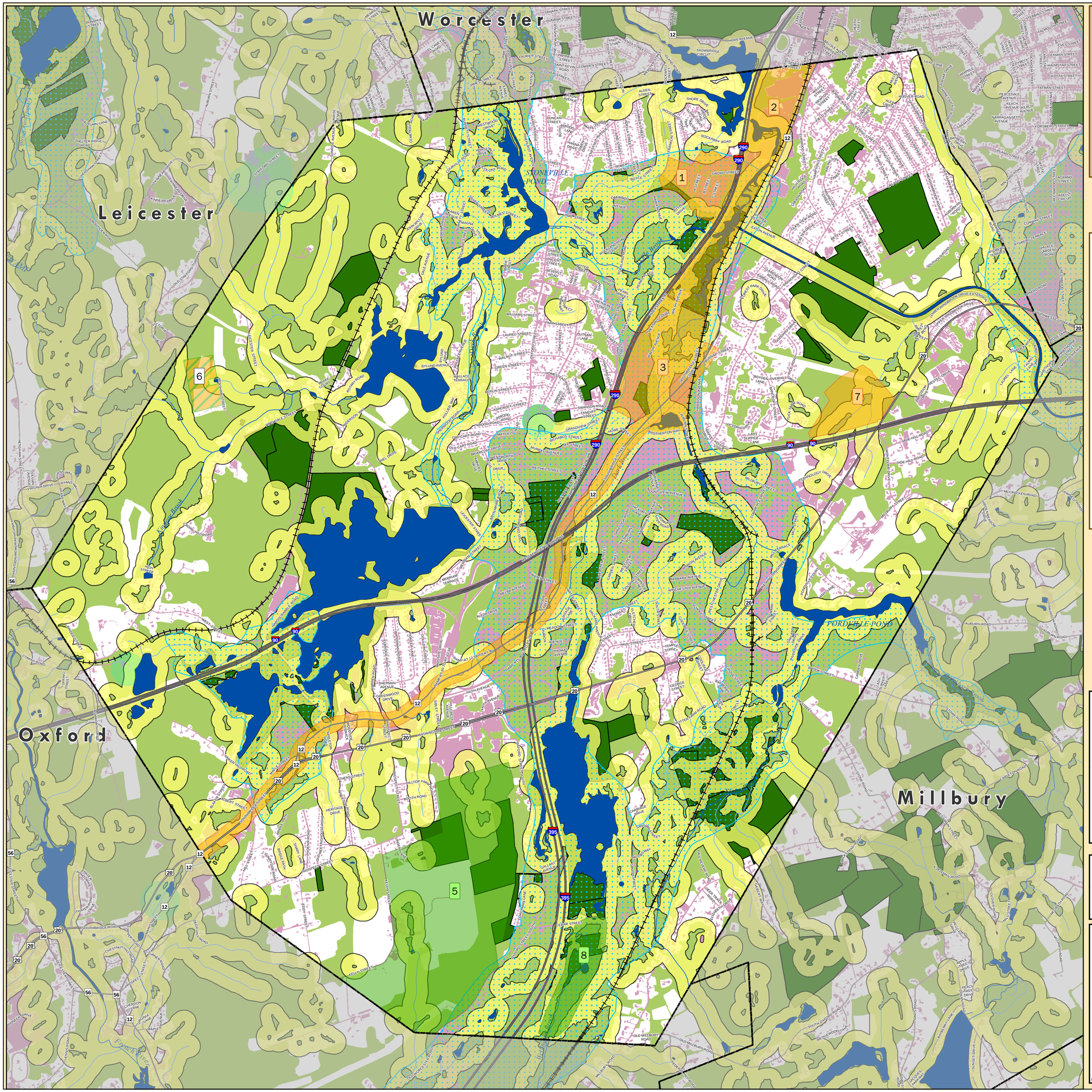
1500 0 1500 3000 4500 6000 ft

This map was prepared by the Blackstone River Watershed Association through a grant awarded to the Town of Auburn as part of the Massachusetts Executive Office of Energy and Environmental Affairs Municipal Vulnerability Preparedness (MVP) Program.

Green Infrastructure & Priority Areas for Development & Protection

AUBURN

Appendix G



Legend

- Municipal Boundaries
- Impervious Surface (2005)
- Green Infrastructure**
- Protected Open Space (March 2016)

Roads

- Interstate
- US Highway
- State Route
- Local

Rail

- Commuter Rail Tracks
- Train Tracks

Priority Preservation & Development Areas*

- Development
- Preservation
- Preservation/ Development

Water Features

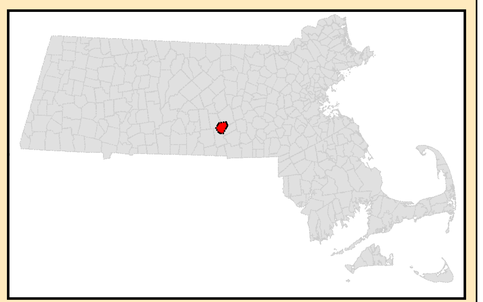
- Water Bodies
- Stream
- Intermittent Stream
- 300ft Area Adjacent to Wetlands & Water Bodies
- DEP Approved Zone II
- Interim Wellhead Protection Areas (IWPA)

** Green Infrastructure includes the following data layers;
- Forest from 2005 MassGIS Land Use data
- MassDEP Wetlands
- FEMA Flood Hazard Data, 100yr
- MassDEP Approved Wellhead Protection Areas (Zone II) and/or MassDEP Interim Wellhead Protection Areas (IWPA)

*For details, see the Central Thirteen Prioritization Project: http://www.cmrpc.org/sites/default/files/Documents/CDAP/Doc_resources/c13/C13_Final_Report_WEBSITE.pdf

N

0 0.2 0.4 0.8 Miles



This project was funded by an agreement (CE96184201) awarded by the Environmental Protection Agency to the New England Interstate Water Pollution Control Commission on behalf of the Narragansett Bay Estuary Program. This map has not undergone the Agency's publications review process and therefore, may not necessarily reflect the views of the Agency and no official endorsement should be inferred. This map and associated data was not created under an approved Quality Assurance Project Plan as described in NEIWPCC's Quality Management Plan. While the information contained is technically sound, any future use of this map should include an evaluation of limitations on its use.

The information depicted on this map is for planning purposes only.
It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.

Produced by:
Central Massachusetts Regional Planning Commission (CMRPC)
2 Washington Square, Union Station, Worcester MA 01604

This project is a partnership of CMRPC, Mass Audubon, Blackstone River Coalition, and Horsley Witten Group, Inc.

Data Sources:
Roads and Train Tracks/Stations: Massachusetts Department of Transportation (MassDOT), the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division, Central Massachusetts Regional Planning Commission (CMRPC)

Date: 7/12/2016

Path: H:\Projects\DR2016\Audubon_Blackstone\EPABlackstone_GIMap2_auburn_36x44.mxd

Community Resilience Building

2/28/19

Blue group

Morning session

!Top hazards!

-storms + impact to people

*loss of power effects some worse than others-like people with wells

-**flooding**

-High wind

-old trees falling

*on private property vs public areas

*coats lots of money for people to take down trees even if they know are diseased

*tree damaged caused by flooding, winds and other storms hurting trees

*assess trees once a years-programs to help them pay for

*Southbridge Street (school, shelter fire department) street very important road and is affected by flooding and other damage

-ice(storm)

-extreme temperatures (ice and heat)

*cold-extreme freezing temperatures

*affects people who can afford heat

>Infrastructural<

Infrastructure 1>state of the art new middle school(public) could be used for shelter

-strength because of top of the art building

-weakness because it's in flood zone

Infrastructure 2>Auburn High School

-strength

-weakness- also vulnerability to flooding

-**Infrastructure 3**> strong transportation network (state owned)

-*strength- lots of exits

*also, active railroads are a strength
*what you can't get through with cars you can help transport resources through railways
Infrastructure 4> Hazmat facilities(public)
*mostly strength well maintained and needs to be continued to be maintained
*possible concerned with it being in floodplain
*active fire department that knows how to handle these potential issues
*rails are federally regulated which could limit there help to disastrous materials
Infrastructure 5> power lines(private)
*obviously power is very important especially in winter
*weakness
*often get taken out and town doesn't have private electric
Infrastructure 6>septic and well(power)
*relates to power outages
*no power means private home owners can’t get water
Infrastructure 7> sewer pump station (public)
*Vulnerability
Infrastructure 8> elderly care facilities\assisted living (public and private)
*more of a weakness than strengths
Infrastructure 9>underground storage tanks (private)
*for oil and mostly gas
*weakness
*incident just happened with one not very well maintained and plow hit it and cause issue
Infrastructure 10>trailer parks (private)
*8-10 in town
*mostly all off route 20 on Worcester Auburn line
*many trailer parks and very large
>Societal<

1>emergency services(public)
*Huge strength

2>good communication between town departments (LEPC) public
*strength
3>medical/hospital care(private)
*Reliant, Saint Vincent, Readymed
*we have accessible medical facilities
4>high elderly population
*people in and out of nursing home
*weakness
5>low income area (1 area)
*younger kids there
*in the flood zone
6>churches and faith-based groups
*good for volunteering
*big strength
*quite a few
*and work well together
*they could help with sheltering and disaster management
7>very good public school system
*no colleges in Auburn
*involved in public assistance
8>community resources and services (public and private)
*Pappas Recreational Complex fields, library, schools, food services
*many food outlets
*at least 2 24/hour gas station
*lots of hotels (puts us in charge of those peoples as well) those people could also be a strength but more a liability

>Environmental<
1>central ma mosquito control program
*strength
2>open space for air support (mostly public)
3>trees (public and private)
*weakness

*not really a specific place, it's all over the town, but more rural areas most susceptible
*Rochdale Street high traffic area
4>surface water(private/public)
*many ponds and rivers, public water supplies and wells
*water district is private, but auburn is very close to those private organizations
*weakness and strength
*strength because of fire control
*having our own water saves money
5>open space active committee(public)
*strength
6>conservation commission (public)
*strength
Moved into infrastructure 11>solar farms being proposed and lots of people with solar panels
*cannot be stored so can't help in environmental disaster when powers down
*lessens the environmental impact
7>

Actions
Afternoon session

>>Infrastructure<<
- 1-flooding concerns,
have an assessment of the dam (Dark Brook) by the water department, test if vulnerability and viability* **high- medium priority, short term
rain guards improvements* **low priority, short term because cheap

need a run though or practice if it's going to be a main shelter* (practice situations) **high priority, ongoing
-2-similar issues as the middle school, flooding concerns
*evaluation so responders know what to do at high school(continued)
*Dark Brook stream behind high school are overgrown, litter and clogged, fine for day to day but not for a bigger disaster (problem could be because it's on private property, so need communication with mall and other private businesses)
improve public and private communication to clean up stream **high priority, short term*
-3- *town officials maintain connection with state officials with all departments* **high priority, already being meet**
-4- *we need to support fire department in training*, need more manpower, need for additional staffing possibly, **high priority, on going**
*inspectional services and fire department work together
-5-most/all power lines above ground, would be a costly process but save money in the end to move them underground
if state could give money to help move power lines underground*, master plan over next 20 years **low priority, long term
*problem with moving lines underground is also need compliance with other users of the poles with cable, private use etc.
^^better off to fix it when it breaks rather than moving everything underground from a coast standpoint
would fix power lines more to help fix issues with dead trees and help cut them down* **high priority, short term
-6- *town wide mapping of septic and wells, would be a long-term program* **medium priority, long term ongoing**
-7- checking with DPW to see what needs to be fixed
Long term updating and fixing high risk stations **medium priority, ongoing**
-8- need to be able to support them see what they need
*they are pretty self-sufficient that we just need to be aware of what strengths and what weaknesses they have
need to partner with them and keep good communications* **medium priority, ongoing
**need to know what their plan is for emergency*

**support them so they can shelter in place* because we can afford to help with transportation
-9- fire department would know conditions and when they need to or can be replaced
--we don't know enough about the protocols
want to make sure plans are set and in place for them* **medium priority, ongoing
**yearly check ups*
**assessment of private facilities with chemical resources*
-10- usually a changing population, temporary people
Often elderly population
*****they are required to get a monthly list of residents
*****need to plan for an event that would destroy that area, where would the people go
******need to build a plan and share it with the people in the mobile homes so they know what to do* **medium priority, short term**
*****don't want to make the mobile home unaffordable, so need cheap way to share the information to the people
*****some people don't even know they live in Auburn
*****population isolated
******owners of trailer parks involved assess population, privately owned* **medium priority**

-11- bylaw just put in place to set laws of where they got and to make sure they meet town requirements
need to have more communication and outreach* **low priority
*good to put solar panels by highway, because no one wants that land for building anyway
*assess additional location for solar panels, already happening

<u>>>Society<<</u>
1-need to support our services
*increase staffing or volunteers just for emergencies
*program with the high school **medium priority, ongoing**

*want people to do training so they feel prepared, and they only come into help when really needed **medium priority, ongoing**
2-well maintained and well attended
3-help prepare them for emergencies **medium priority**, long term
*need a communication plan
*need to use our own resources
4-shelter in place, in public facilities
*educate people on protocols (code read)
*code red system in place but don't know how it's being utilized
*incorporate code red into the census
*support code red **high priority, short term**
*are you okay program for neighbor support
5-include them on programs listed above
*support affordable housing **medium- high priority, ongoing**
6-improve involvement with faith-based groups involvement as a shelter place, outreach efforts **medium priority, short term**
7-schools supported well, need to continue that
8-support their needs
*get a bigger library as a long-term plan to support emergency functions **high priority, long term**
*send elderly groups to library instead of senior center
*emergency evacuation from schools go to library
9-need plan with hotel people during emergencies
*are there already agreements? **medium/low priority, short term**

>>environmental<<
1-continue support, and add other bugs to list **high priority, ongoing**
2-maintain what we have
3- need to talk to DPW about tree program
*with more money need to assess dead and dying trees, risk assessment **high priority, short term**
4-protect them so they can be holding place for water
*need to get ahead of the issue
*enhance ecological management **high priority, ongoing and short term**
4-support water district **high priority, ongoing**

5 and 6-promote so public knows what they are doing, and public knows the agenda of these areas' **low priority, ongoing**

TOP THREE consideration

<increase communications for the are you okay and code red programs
< risk assess the vulnerability of trees and actions to take them (number 1)
<management of waterways for flooding controls and cleaning of other waterways

Green Team Notes

- Concern for wetland research areas -
- More solar developments coming into town (not as much of an issue on wetland areas)
- What can we do for climate change?
- New permit changes -- major detail changes to things being built in the town and checking to see that everything is done well
- How are water areas impaired -- must show that we have reduced impairments
- How are salts and things impacting this?

Hazards (climate type):

- Let's make a list of 3-4 plans
- What hazards have impacted community in the past
- What hazards are impacting community currently
- What might we expect in that 5/10/25 year time frame?
- What is exposed? (Vulnerability)

What hazards do we see?

- ***Silted catch bases***
- To make it better- 8 years ago the town was using a lot of sand treating the roads (6,000 tons) this year we haven't used any sand
- We use a treated salt- magnesium chloride - calibrate trucks - we have a database where the catch basin is used

Action - reduce sand base

- ***Flash floods***
- ***Snow and ice storms***
- ***Drought***
- ***Storm activity*** *(climate* ***change) more Ice and heavy rain events (icing is worst possible Impact)***
- ***Power outages***
- Lot of emphasis is rise in sea level

This is starting to increase (auburn is dependent on town water)
Keeping the supply there when the changes in more run off
Our community is more headwater streams (flash floods are the issue to this)

- ***Wind***
- As we get more invasive species in the area this can weaken the trees which means the trees are falling more due to this

(this past storm took down a lot of pine trees)

- ***Ice storm frequency and duration has increased***
- ***Roadway infrastructure***

List of 4

- **Flooding**

Not as much of roadwork
By Town Pizza has flooded a bit the ball field floods a lot
Houses by this area are very vulnerable
Wet and dry waterproofing ideas to take into consideration

- Sediment due to it
- **Winter storms**
- **Drought**
- **Wind events**

(can include hurricane and tornado warnings)
Many more hurricane and tornado warnings in the past year

Vulnerabilities

- Rockland road and brook street (a few houses water really goes around)
- Auburn Street, Holstrom Court
- High school (main source of sewer pump}
- We do not control the gates (Worcester does)
- Gas main
- Fueling
- Highways and natural gas mains

We need to know where our transmission/gas mains are in the town
We have an interruption

- Pumps and pipes froze, and it almost took out 911 system
- Where are critical facilities where we can put pump stations and generators?
- What can we do about our fueling station when our power goes out and they lose power as well?
- Some gas stations can not fit certain cars and fire truck
- Any gas fire facilities that we are concerned about with natural gas?
  All pump stations (most) are diesel
- Police station

- Rail lines
- Rollovers
- Rail and 3 interstates are all in our town
- AM can be climate related
- Water almost seeps through Eddy Pond not free flowing through culvert (million $$ solution)

Strengths

- Generators
- Portable heaters
- Interstate highways

High wind

- Impacted by fallen trees is dangerous for evacuation
- Rts. 12 and 20
- (most vulnerable) - pond street substation
- Where are critical facilities where we can put pump stations and generators?
- What can we do about our fueling station when our power goes out and they lose power as well?
- Some gas stations can not fit certain cars and fire truck
- Any gas fire facilities that we are concerned about with natural gas?
  All pump stations (most) are diesel
- Pumps and pipes froze, and it almost took out 911 system
- Police station

Societal (hazards):

Vulnerabilities

- Public health impacts
- Increase in disease in ticks and mosquitoes
- We have a higher rate in elders
- Trailer parks
- Assisted living
- Evacuations of trailers and elderly homes
- By elderly if communication go down how will they know?
- Oxygens elderly
- **Strength**
- Shelter plans

Environmental:

Strengths

- Open space plan
- Low impact design guidelines
- Aquatic
- Approved solar bylaws

Weaknesses

- Aquifer (about 10 wells)
- Flood zones will expand because they haven't been mapped
- Climate change will be a part of this
- Business on sword street culvert
- Undersized culvert
- Invasive species (eddy pond) there are aquatic weeds -- we treat ? pond and Eddy Pond and Pondville Pond
- We do not treat Auburn Pond
- Loss of forest culvert
- More mosquito control

Infrastructure:

- Dams all in good conditions
- Most are public (Strength)
- Bridges (swords street needs to be identified)
- Statewide there are a lot of bridges that are concerned

Most important

1. Winter storms
2. High winds
3. Drought
4. flooding

After lunch Topics (what actions will we take)

Infrastructures

- **Rockland road and brook street**

-flash flood problem
-the road floods and you can get around it, but the issue is the houses
-moderate income housing
- in the current 100-year floodplain
-Opportunities for FEMA
- no claims of flood in this area if they are it is moderate

- Sword street (Critical)

-we can get funding but if it needs to be closed it can be closed
ACTION -- monitor and evaluate on time (no immediate action)

- **Route 12 &20**

-if we lose a portion of one of those 2 roads, we will have a major problem
ACTION-- ongoing action just evaluating (not really anything that can happen)

- **Transmission**

-just make sure in the right of way it is difficult
-right way maintenance
-there is right away maintenance trimming on a 5-year cycle
Town needs to make sure that shelters are ready to go and make sure that the red cross is ready with it

- **Fueling**

-ACTION - can the town seek funding to a private gas station (our own)
-town fueling station
-can we get funding for a generator for a private gas station like shell
Short term for a study BUT long term for a build

- **Gas Mains**

-they should operate under their own priorities
-Eversource services
-we need a contact for Eversource
ACTION - we just need to share and ask for communication and info from Eversource

- **Police station**

-old facilities causes flooding
-public safety looking into to make sure everything is okay
-as we replace structures we need to think of structures
-ACTION-+ make buildings more okay to be in/ we are energy efficient-feasibility study under way

- **Rail lines**

-this is a manmade hazard
-share information
-make contacts at table talks
ACTION -+ WORK WITH RAIL COMPANIES

- **Culverts rt 20**

-no funding for it and there is no priority because of it
-state road issues fall in world of politics
-Environmental benefit is that people can't even canoe between 2 bodies of water because of damage

- **Dams**

-all are inspected on a regular basis
-some have maintenance when inspection is due
  - no time frame to fix bridges
  - bridge deck

Societal

- **Public health / tick disease**

-outreach and education
-they do spray

- **Town is aging and elderly population**

-getting a flyer out there using tax bills that you make sure that to have access to communication that we can notify people in an emergency
-make sure there is someone to have around maybe
-meats on wheels people are vulnerable
-know your neighbors and check on them
-there is a system to make sure people in need are okay (the phone call)

- **Trailer parks**

-high winds can damage this
-make a statement where you should tie down your trailer
-anchors need to meet a ton building code that it needs to be tied down

- **Assisted living**

-evacuation plan and coordinate
-communicate with to see if there can be an evacuation plan
-emergency contact needs to be used to tell them we need to evacuate

Environmental

- **Open space**

-we are on top of this it is not really an issue
-continue to update this

- **Invasive ponds**

-look to expand this
Pacifically expand this
-expand the program to other ponds

- **Low impact development**

-do it without a huge local cost
-this is a little broad
- we encourage expansion
-look for a bylaw or through stormwater

- **Forest**

-61B
-property owner

- **Solar farms**

-tweaks to it
-nothing major

- **Mosquito control**

-Ongoing stable

Priority

- **Fueling > high priority**
- **Police station >**
- **Encourage the incorporation of resilience assessment when building**
- **Look at town hall and other buildings as a master plan > high**

- Sword street > high
- Low impact development > medium
- Elderly population > high
- Evacuating senior and elderly > high
- Ventilator people and oxygen > high

Ranking of Presentation

1. Sword street
2. Fueling station
3. Aquifer
4. Evacuation plan
5. Flyer

Short

Long term

On going

Red Group

**~ strength -vulnerability

Infrastructure

Key Points

-/~AHS as shelter
- Town owned
- Generator powered

-Bridges on 290
- all
- State owned

-Turnpike stretch in town
- bridges
- State owned

-Drury Square
- town/state

-Auburn street
- near high school
- Owned by town

-Other minor streets
- Owned by town

-/~Communications tower
- Rochdale St.
- Leicester St.
- Owned by town
- not on statewide network, reliance on auburn communications tower

-Dam off of central St.
- Camp Gleason
- Owned by town

-Sewer pump station in flood zone
- Town owned

-Diversion tunnel operations
- Southbridge St.
- city owned?

-/~Railroad

-Electric power supply distribution

-UBWPAD

Flooding

-primary emergency shelter (AHS) in flood plain

- Resolution: massive sandbag supply (MEMA), staffing, policy, housing animals, security, storage, training

-bridges on 290 could potentially be washed out

- Resolution: maintenance, draining

-Drury Square (other auburn streets) flooding hazard

- Resolution: Proposed zoning bylaw and regs; Maintaining storm water

-Auburn reliance on comm towers

- Resolutions: statewide emergency communications network
- Towers can be reused for emergency

-Damn at Gleason

- Resolution: continue maintenance

-Diversion tunnel causes flooding in Auburn to reduce flooding in Worcester

- Resolution: Better stormwater control going into Dunn's Brook then diversion tunnel; establish response plan to flooding

-Railroads- Communication issues

- Resolution: communication improvements and points
- P&W, CSX

-UBWPAD

- Resolution: I&I; currently in progress

Ice/Snow

-flat roof of AHS (emergency shelter) = snow collapse hazard

- Resolution: monitor and maintain

-Regional aid agreements and mutual aid and CERC

-Asian longhorn beetle area to wood; regional

Heat Events

~ AHS can fit 100s-1000s of people for shelter

- Generators and maintenance; Backup shelters in place; Regional shelters to transport to in necessary

Heavy Wind

Societal

Key points

~transportation

- Buses
- Plan in place
- Accommodation of handicapped
- Contract with WRTA

~Reliant medical

- Auburn mall
- Privately owned

-Senior Population

- Pak. Village, Stoneville, Kateri -Publicly owned
- Multiple housing and care centers
- Lifecare, Brookdale (E&W) -Privately owned

-Low income families

- Pinebrook court, pheasant court
- Publicly Owned

~Senior center

- Generator powered
- Town owned
- Shelter

~Middle school

- Backup shelter
- Powered by generator

-AHS

- Shelter

-School evacuation

- Bryn Mawr
- Pak school
- Middle
- High

~Communication plan

- Dept heads meet at police station (EOC)
- Text, calls, television, social media, email, am radio
- Mobile shelter supplies trailer (supplies excludes food)
    - Regional trailers
    - Sheriff communications trailer
    - Fire/cable trailer
- SEMLEC

Flooding

-Transportation

- WRTA multiple buses and vehicles for evacuation

- Amu-buses
- Finding drivers difficult
- Resolution: Identification of private evacuation plans of key facilities

-Senior population
- Resolutions: Notification and communications in outages and otherwise that cannot access quick tech, system to access medical necessities for elderly and those with disabilities

-Senior center generator only powers half of building
- Resolution: in progress; annual tests; better communications with fire and PD about evac and outages

-Shelters
- Resolution: Backup generators in shelters

-resolution: study being conducted to replace pd and fire buildings
-affordable public housing
- Resolution: more affordable housing development; use of existing energy resources; funds and consultants

Ice/Snow
-Mobile center improvements
- improvement: broadcasting equipment

Heat Events
-Low income families
- Resolution: education on charitable programs to help with heating; low cost programs for snow maintenance help (Auburn Youth and Family Services)

Heavy Wind

Environmental

Key points
-Water supply
- Aquifer

-bodies of water
- Eddy Pond (290)
- Dark brook res (turnpike)
- Surface water near roads

-Well field intersection
- Turnpike and Rt. 290
- Railroads near wellfields
- Rochdale St.
- Privately owned (auburn water district)

-Chemical Ice Control
- Near wells and water supply

-Dunn's Brook
- Drury square
- Flooding

-Pappas park
- Pak hill
- Town owned

-Pak Golf Course
- Upland St.
- Town owned

Flooding

-bridges on 290/ turnpike
- Chemical salts
- High potential exposure
- Resolution: Equipment and distribution to make brines

-stormwater regulation/ surface water regulation
- Resolution: engineers to review plans for regulation of stormwater-proposed

-Pakachoag Hill/ golf course
- Flood prone
- Resolution: management plan in regard to flooding

-Dunn's Brook
- residential development

-large water bodies
- -resolution: invasive species control; stormwater bylaws proposed

Ice/Snow

-bridges on 290/ turnpike
- Chemical salts
- High potential exposure
- Road maintenance used magnesium chloride (danger when filtered into draining)
- Resolution: Equipment and distribution to make brines

Heat Events

-parks

- Resolution: management plans to review protections against species migration

Heavy Wind

Top Priorities

-Equipment to distribute brine/ice control
-Regular review, training, resource identification for communications amongst residents and businesses
-Stormwater initiatives and implementation
    -zoning bylaw
    -regulations for existing stormwater bylaw
    -additional engineers
-Evaluate back-up power for critical town facilities

Facts Unfiled
-4200 seniors above age of 60 in Auburn
-law enforcement council, mutual aid
-Sturbridge tornado, Auburn resources aided
-heat waves (senior center served as shelter)
-magnesium chloride to clear streets
-busy commercial roads on top of wellfields

Thursday, February 28, 2019

Yellow Group

Group members:
Small group coordinator: Ariel Mariano
Shea Brown
Peter Peloquin - Hazard mitigation//Replaced by Eli Goldman
Ken Smith-Water superintendent
Stephen Coleman- fire chief
Joe Fahey- director of facilities, had to leave
Joanna Paquin-
Caleb Moody-

#1 threat to water quality is the oil/fuel spills from motor vehicle accidents that are near wells etc.

Solutions in RED
Priority in BLUE

Top priority hazards

Extreme storms: (wind, snow, ice, etc.)
What is going to affect power most
Flooding:

- Sword Street Industrial park main way crosses over a culvert crosses over 4 pipes all four pipes are missing inches of wall thickness million $$$ project MASS-DOT classify it as a bridge ————-water can be diverted through the diversion channel—effect other properties; if you're cutting off traffic into the industrial park traffic will be taken through residential areas; town owned vulnerability
- Replacement
- HIGH Replaced within one to two months, within 5 years

Water quality:
————> wells before the highways

- Wells between 190 and 290 corridors serve 80% of the population; received grants to design an interconnection with the city of Worcester; several salt contaminated wells highest salt in drinking water in the state; 25% of his source, attacked by salt high risk for contamination of hazards and material of fuels and possible product releases
- Weather related too; two rollovers is two weeks; 50 gallon loss of fuel within zone one of Ken's well ——- largest vulnerability if we lose 25% there will be large amounts of ppl in the community that will be without running water—-when the weather occurs makes it more difficult to contain —-looked for water everywhere in town and the brooks that run along highways, exhausted the chance of new water sources——seven figure project and need a funding source
- Our Impaired waters ——

Infra Features

Contaminated wells:(3)

- Water district owned in various locations, vulnerability

Wells w/ vulnerable Zone 1:

- Various locations, owned by water district, vulnerability ——- shut wells off so they do not suck anything in—-1999 unknown product in the well grant in 99 to map; they updated those to broken extent; not a month goes by where there not an excess of 10 gallons; public safety keep in line w guidelines for salt application, looking for exact areas that the… Church St wells have the highest amount of chloride
- HIGH PRIORITY, SHORT TERM
  - Green gardens in the median reduced total suspended solids - requires land and there's a massive draining system
- Addressing salting
- HIGH PRIORITY
- Short term
- Studies have found low salt application rates has resulted in more application; low salt looks good on paper but is essentially unable to be achieved

State Roads:

- MassDot owned, various locations, vulnerability and strength
- Communication with states and making aware of concerns
- Power Grid:
- Vulnerability and strength, town wide, national grid owned
- Every community has a designated person as a liaison,
- Continue relationship w/ National Grid
- HIGH PRI, SHORT TERM

Low rise, flat-roofed buildings: (zoning)

- Town wide, mixed ownership, vulnerability
- Rewrite zoning by-laws as they're from the 50s and 60s; review committee going through them, consider mid-rise structures
- Assisted living facilities (2), Nursing home (1):
- Wyoma, Pakachoag, Stoneville
- Private owned, various locations, vulnerability
- Continuing communication and make sure plans are up to date
- HIGH PRIORITY ONGOING Public housing (3):
- Various location, town owned, vulnerability and strength

—-culverts, we replace

- Make frequent inspections, make sure plans are up to date

Sewer&Drainage:

- 80% water and sewer, 20% wells and septic
- Town wide, town owned, vulnerability and strength
- Continue maintenance and replacement
- HIGH AND ONGOING Septic systems:
- Various (20%), private owned, vulnerability

★Track the prematurely failing systems

High Hazard Dams: (5)

- Town and water district owned, vulnerability
- Leesville dam-HIGH, Pondville Pond-HIGH, Eddy Pond dam-HIGH, Auburn dam-LOW
- HIGH AND ONGOING Diversion Channel:
- Owned by army Corps of Engineers
- Under Pakachoag Hill, Worcester has control, Worcester can flood neighborhoods @ Holstrom Court, and sewer pump station
- Southbridge Street/ Rt. 12, USA owned, vulnerability/ strength
- Leesville goes under 290
- Continue communications w Worcester
- MEDIUM ONGOING
- Impaired waters: (4)(e coli, TSS, phosphorus)

Societal Features

- Annual daily traffic is 500,000 and 70,000 is commercial truck drivers, ppl directed or find alternate ways if there are accidents and then the local roads are choked up, collisions ——

Traffic; Major highways: (5)

- Town wide, state owned mass-dot, vulnerability/ strength

*

Large Aging Population:(35%)

- Town wide, living at home and in assisted livings/ nursing homes, vulnerability
- Reluctance from elderly to leave their homes ESPECIALLY when concerned about a pet, you have to make the accommodation
- Single family homes because there are small lots and their next generation are living in the homes
- Fire Dept runs ambulance; baby boomers are hitting 65+, strain on local EMS services to try to service the high elderly pop.,
- Starter homes, affordable but easily accessible because of all the roadway systems, influx of post grad first homes, auburn below standard for non-elderly housing, JB and Mary D is going to become 55+ housing and 55 units per building; not many opportunities for apartment housing

*Continue efforts through the council on aging to ensure that there's appropriate programs and continue to ensure that there's adequate resources; add generators to town owned senior housing

*HIGH AND ONGOING

Low housing stock:

- Town wide, private owned, vulnerability

*promote multifamily development

*MED AND ONGOING

Low multifamily housing:

- Town wide private owned, vulnerability

*Promote multifamily development

*Promote mixed use housing

*HIGH AND ONGOING

Communication:

- Town wide, town, strength
  - Development coordination group, developers are getting the same message from all different departments
  - Board of …

*Continue and continue community outreach to see how they want to be reached

*HIGH ONGOING

★Crisis communication:

- town-wide, town owned, strength/ vulnerability
  - Code red message, social media, good relationship with the schools, get the word out about shelters, radio and channel three, community feedback is difficult, every media at their disposal, some ppl say it's not enough but don't have the answer, flyers???, targeted effort

*Keeping the plan updated and relevant and consider technology

*MED ONGOING

Shelters:

- High school is primary, has facilities
  - Potential to be compromised by major flooding event
- Town owned, Auburn Street, strength/vulnerability
- Senior center—secondary potential center, town owned, strength and vulnerability

*Research a secondary site that is more adequate than the senior center; maintenance of the drainage systems to the football field

*MED AND ONGOING

Electronic billboard (2 upcoming)

- Portable billboard and fire station announced the information
- Fireworks, cert program
- *Continue to utilize the assets; work w the business community to leverage those billboards for our use
- MED AND ONGOING

CERT:

- Citizens Emergency Response Team, town owned, strength
  - Regional Emergency Response, town adopted state wide mutual aid law, 7-70 miles away

*Promote, advertise, reach out and advertise to young people in the community

*HIGH AND ONGOING

Mutual Aid Agreements:

*HIGH AND ONGOING

Environmental Features

★Local Aquifer:

- Town-wide, unknown ownership, vulnerability and strength

*improve drainage system along turnpike and I90 as a priority

HIGH AND ONGOING

Impaired Waters:(4), (TSS, e coli, phosphorus)

- Town wide, town owned, vulnerability strength
- Auburn pond, Leesville,

*Review by-laws; create an overlay map

HIGH AND SHORT/ONGOING

Public Parks/Pappas:

- Various, town owned, strength
- LOW AND ONGOING
- *Maintenance

Asian Long horn Beetle:

- Testing, brush and leaf pile within the zones so they're able to rid of their yard waste
- Various owners, vulnerability and strength
- DCR has service foresters that will come and help with forestry management plan

*continue operations to process the yard waste

HIGH AND ONGOING

No muni water:

- West end, vulnerability
- Brush fire hazard

*Work w railroad to ensure that there's room between tracks and brush and continue maintenance

*MEDIUM AND ONGOING

Capped Landfill:

- Rochdale street, town owned, vulnerability
- Public safety comm site

*Continue maintenance and monitoring + increase security, pursue a legislative change for areas reclassification

*HIGH AND ONGOING

Ethanol Train:

- Out of Worcester
- CBX, Geneses owned, railroad, vulnerability

*maintaining towns local emergency plan

*HIGH ONGOING

Eddy, Auburn, Pondville dams:

- Strength and vulnerability, town owned, various location

*Continue plans

*HIGH AND ONGOING

PRIORITIES

1. Crisis comm/public comm
   - Electronic billboards
2. Low housing stock+ need multifamily
   - By law review
   - Multi-use zoning
3. Sword St. culvert
4. Water quality
   - Drainage on state roads
   - Address salt in DDE plan
   - Zoning and regulation changes based on
   - Green infrastructure recommendations-by law change

Appendix I -
Powerpoint Slide
Presentations

Town of Auburn
Hazard Identification
&
Historical Events

Chief Stephen M. Coleman Jr., MPA, CFO

Auburn Fire Rescue Department

Rainfall Events

- October 4-7, 2005 brought Tropical Storm Tammy & a sub-tropical depression merged with a cold front to produce torrential rains over interior New England.
- This 3 day event placed a strain on resources. Such as Fire and DPW with street flooding and pumping basements of both residential and commercial buildings.
- Areas of town most prone to flooding are.
  - Rockland Road at Brook Street
  - Holstrom Court area
  - High School Football field

Wind Damage

- February 25, 2019 (Monday – Tuesday)
- 65-70 mph wind gust for a 12-14 hour period
- Caused significant power outages in town. For some residents the power outages were up to 39 hours.
  - Shelter was activated for several hours
- The on duty fire group responded to 29 calls for emergency service in 24 hours.
  - Places a strain on emergency services including Police, Fire & DPW

Wind Damage cont.

Ice & Snow Events

- December 11 – 14, 2008 we saw the ice storm that crippled central MA for a 4 day period
- At the height of the storm 75% of the town was without power.
  - Shelter was opened for several days
  - Many roads impassable
- FD answered 180 calls during and immediately after the storm

Snow & Ice Events cont.

- On February 3, 2011 we had our first roof collapse due to snow load at Winnelson Plumbing Supply on Southbridge St. that set of a chain of collapses lasting a week and totaled 11 total or partial building collapses of commercial and residential property.

Ice & Snow Events cont.

- Auburn Sports Dome
- Interstate Battery

Snow & Ice Events cont.

- The Blizzard of 2015 is on record as the snowiest storm in Auburn, and the snowiest in a January.
- 36 inches of snow fell between Monday and Tuesday, January 9th & 10th .
- 3 feet of snow blanketed Auburn making us, Hudson & Lunenburg, the highest snow totals in the state.
-

Snow & Ice Events cont.

- The snow continued to pile up over the next month.
- On February 13, 2015 a massive one day operation was coordinated between the AFRD, Auburn Water Department, Auburn DPW and the National Guard to clear almost 300 fire hydrants in a day.

Heat & Cooling Emergencies

- In the Auburn Community when a heat wave or cold snap occurs our public safety officials work closely with the council on aging to staff cooling and warming centers for our citizens.

- Both centers are housed at the Auburn Senior Center, 4 Goddard Drive.

Overall Hazard Identification

Hazard	Probability	Impact
Flooding	Low	Minor
Severe Snow/Ice	Very High	Limited
Severe Thunderstorm	Moderate	Minor
Wind	Moderate	Limited
Tornadoes	Very Low	Limited
Hurricanes	Low	Limited
Brush Fire	Moderate	Minor
Earthquake	Very Low	Minor
Dam Failure	Very Low	Limited
Drought	Very Low	Minor
Extreme Temps	Moderate	Limited

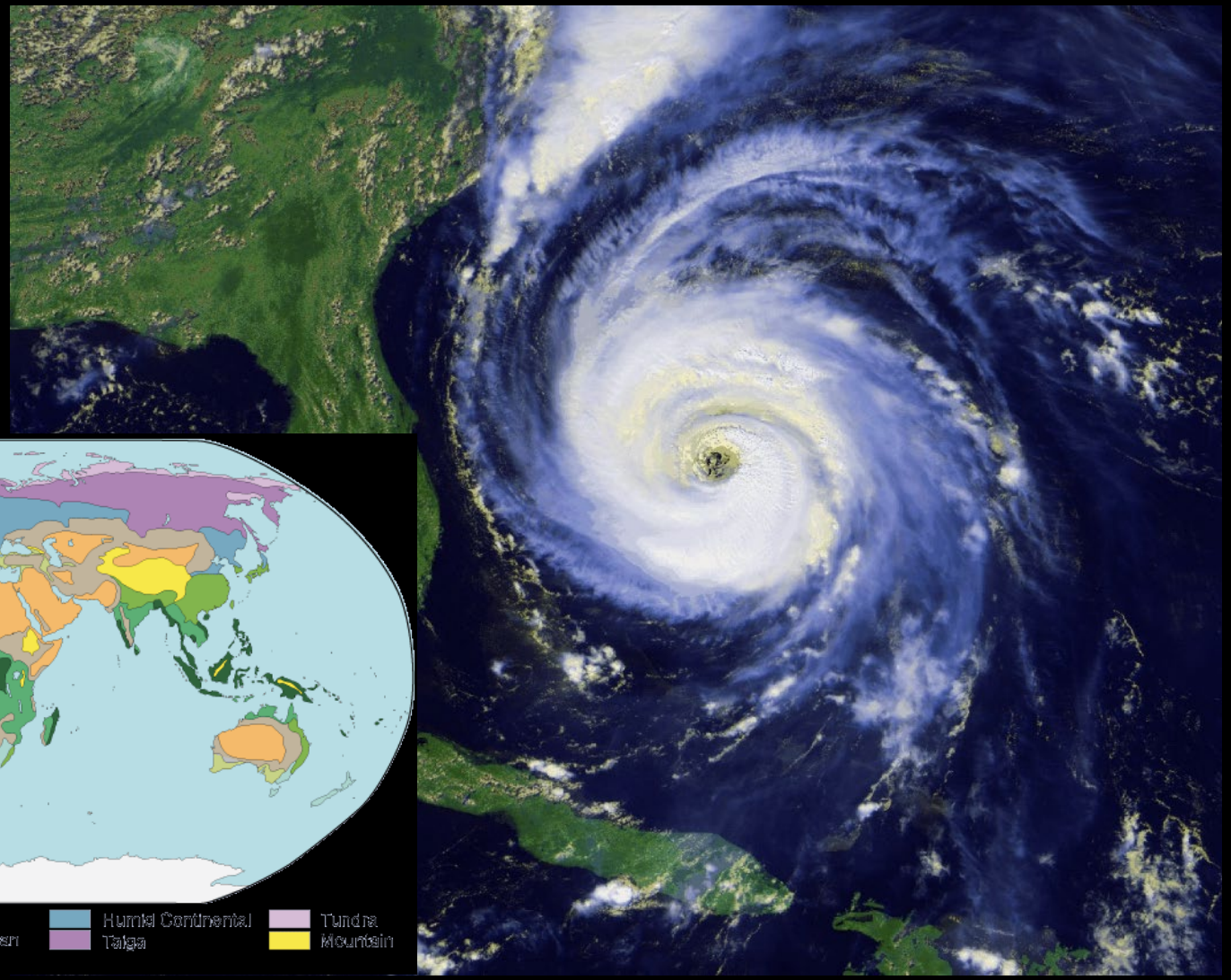
Climate Change in Massachusetts

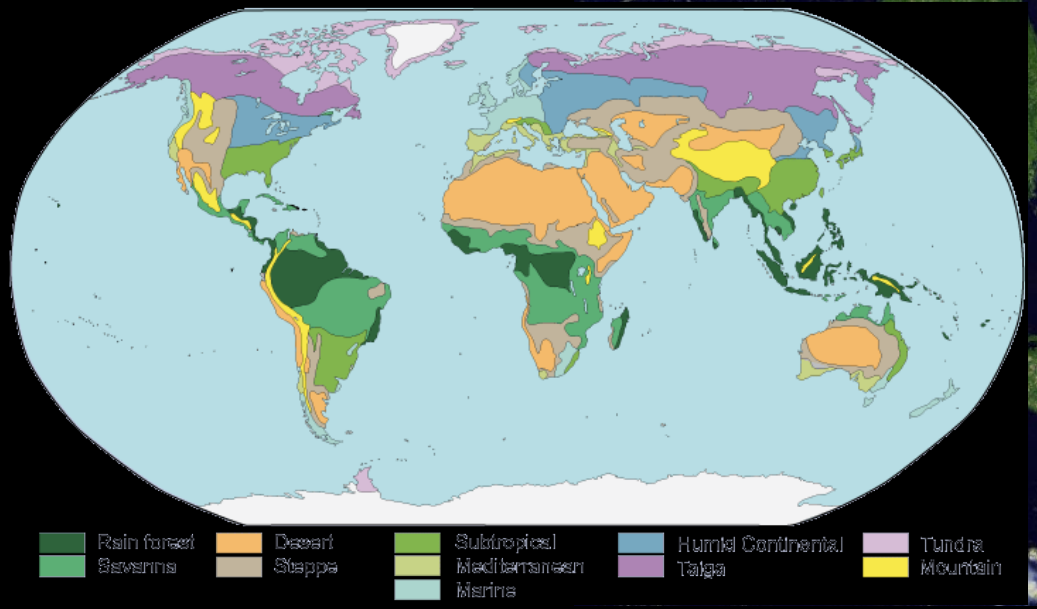
Mass Audubon

Alexandra Vecchio
Climate Change Program Coordinator
avecchio@massaudubon.org

February 28, 2019

Climate vs Weather





Massachusetts Observed Climate Changes

Temperature: 2.9°F Since 1895

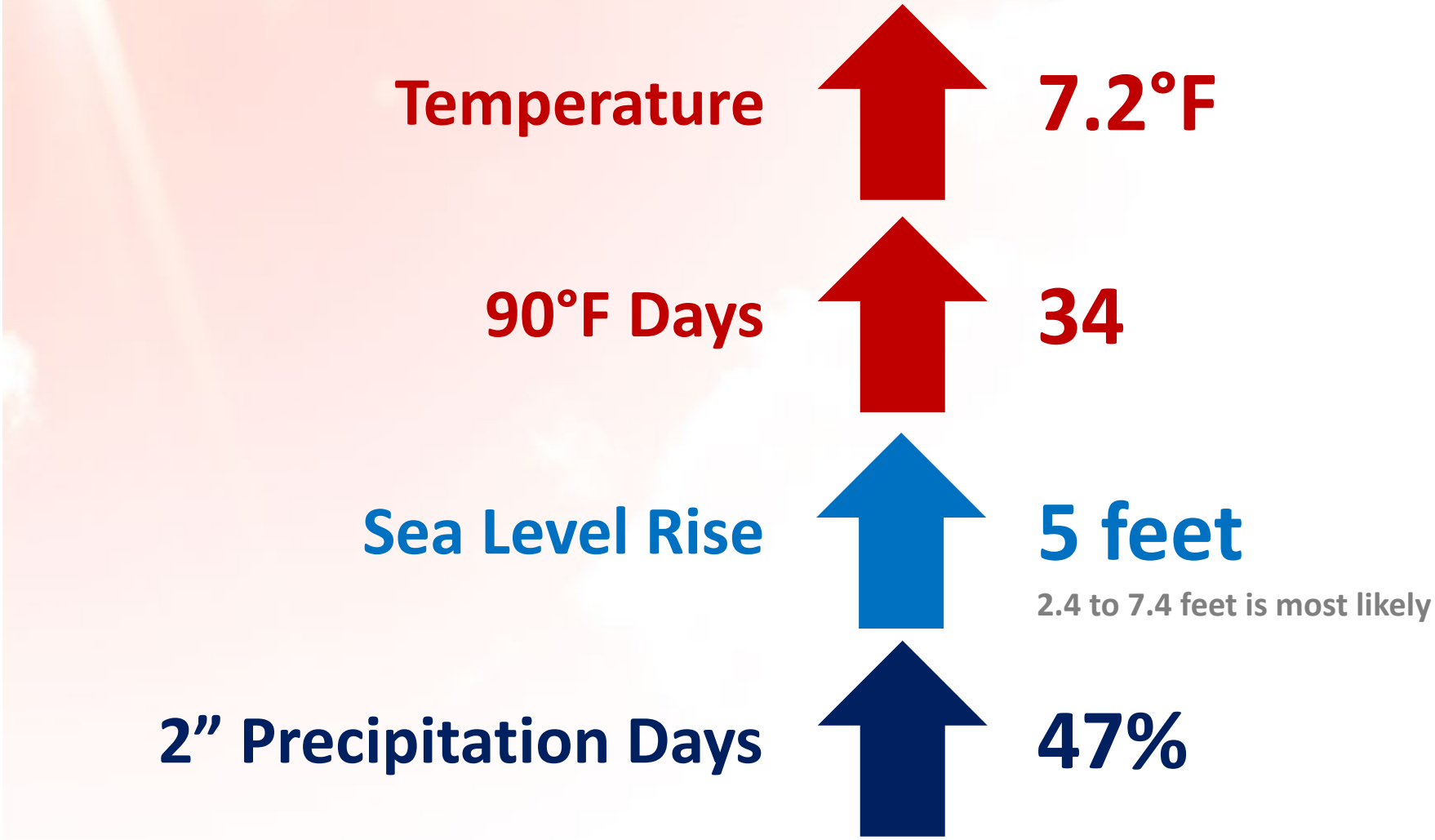
Growing Season: 15 Days Since 1950

Sea Level Rise: 11 inches Since 1922

Strong Storms: 55% Since 1958

Source: Climate Science Special Report, 2017; NOAA NCEI nClimDiv; NOAA Ocean Service

Massachusetts Climate Changes Projected by the 2090s

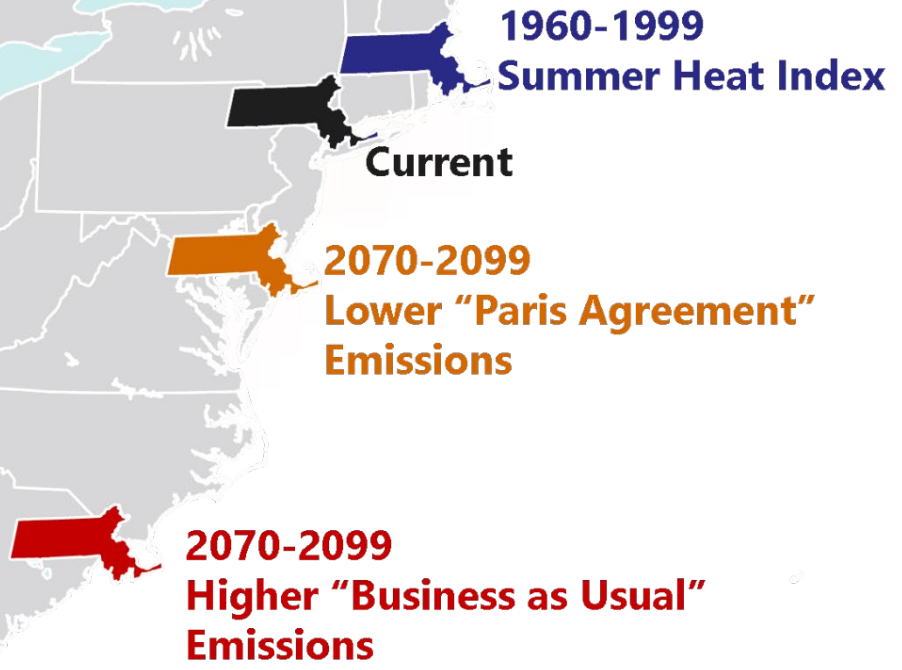


Source: Northeast Climate Science Center,

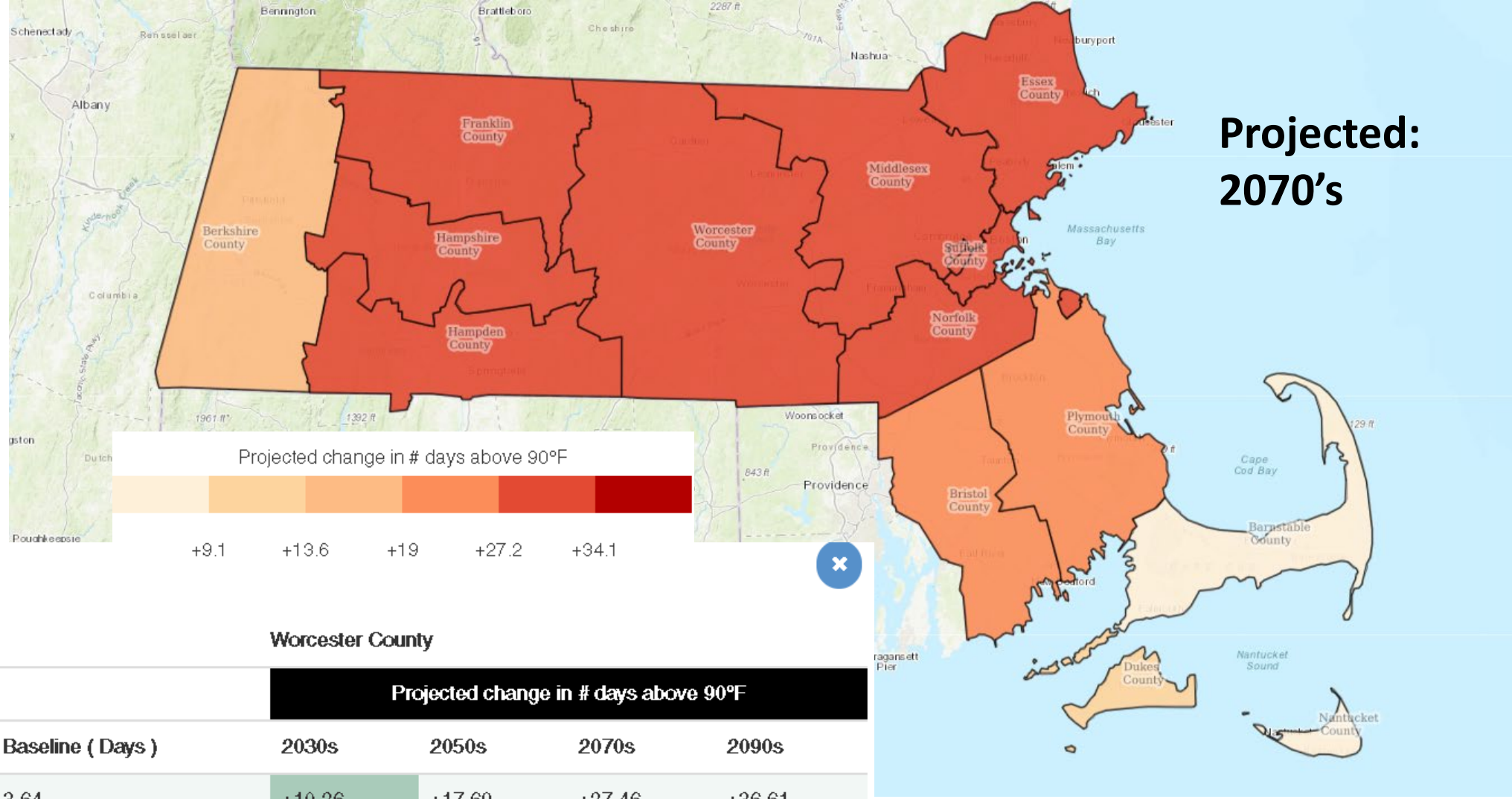
Data Source: CMIP3 downscaled data.
Graphic source: Union of Concerned Scientists.

Migrating Massachusetts

By the end of the century, summers in Massachusetts will "feel" more like summers in the South.



How Summer Temperatures Will Feel Depending on Future Greenhouse Gas Emissions



Projected: 2070's

Location Info

Days > 90 °F (Projected)

Worcester County

		Projected change in # days above 90°F			
Season	**Baseline (Days)**	**2030s**	**2050s**	**2070s**	**2090s**
Annual	3.64	+10.26	+17.69	+27.46	+36.61
Fall	0.14	+0.74	+1.23	+2.42	+3.94
Spring	0.2	+0.33	+0.59	+1.18	+1.83
Summer	3.3	+8.88	+15.84	+23.43	+30.32
Winter	0	0	0	0	0

Source: ResilientMA

Impacts of Increased Temperature

Human Health

- Increase in hospital visits
- Increase in premature deaths
- Increase in ER visits
- Strongest impacts on the most vulnerable populations

Changing Ecosystems

- Increase in tick-related Lyme disease
- Expansion of mosquito habitat
- Increase in invasive species
- Increased water temperature → impacts native species
- Longer growing season

Impacts of Increased Temperature

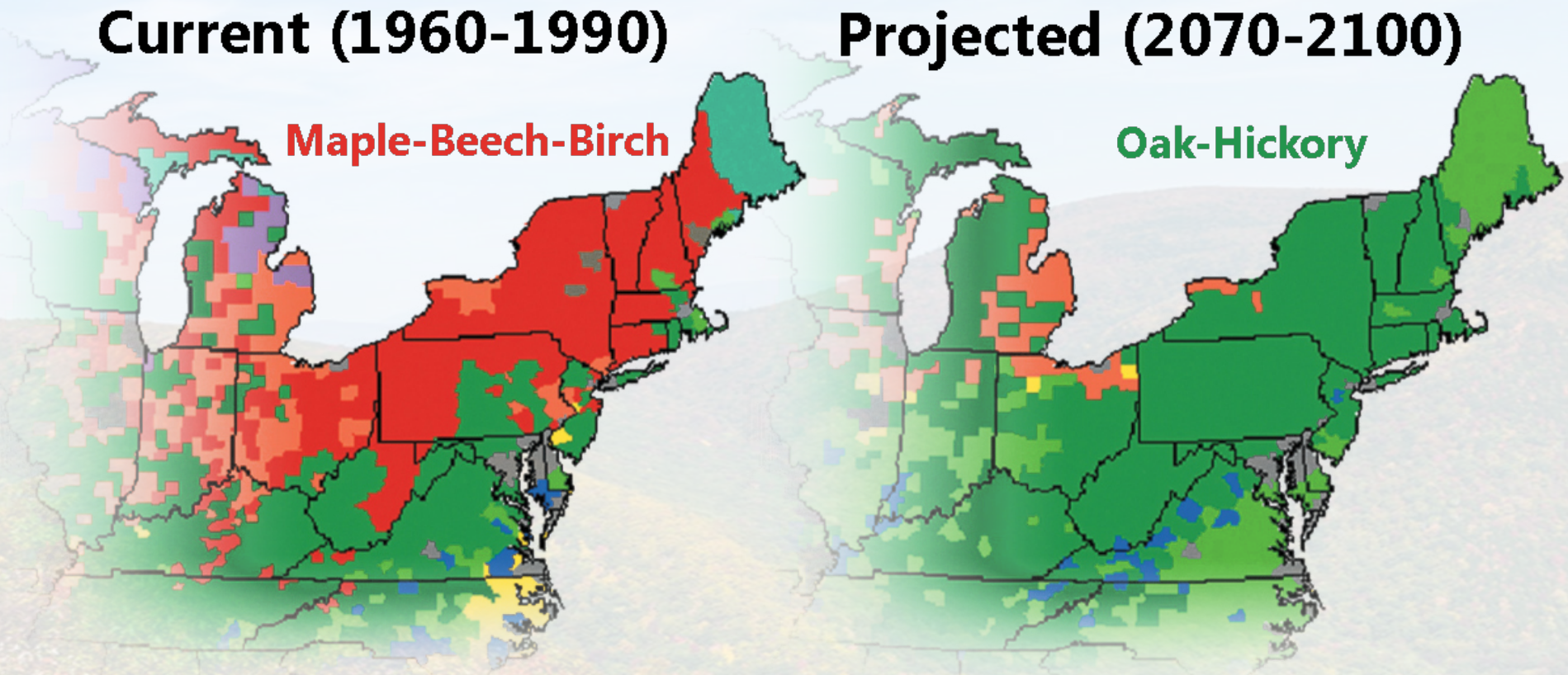
Changing Winter - Spring Transition

- Changes in the time of leaf – out
- Impacts plant productivity, plant-animal interactions & ecosystem processes

Economic

- Loss of tourism business related to snow sports & activities
- Shifts in maple syrup tapping season, time, & duration

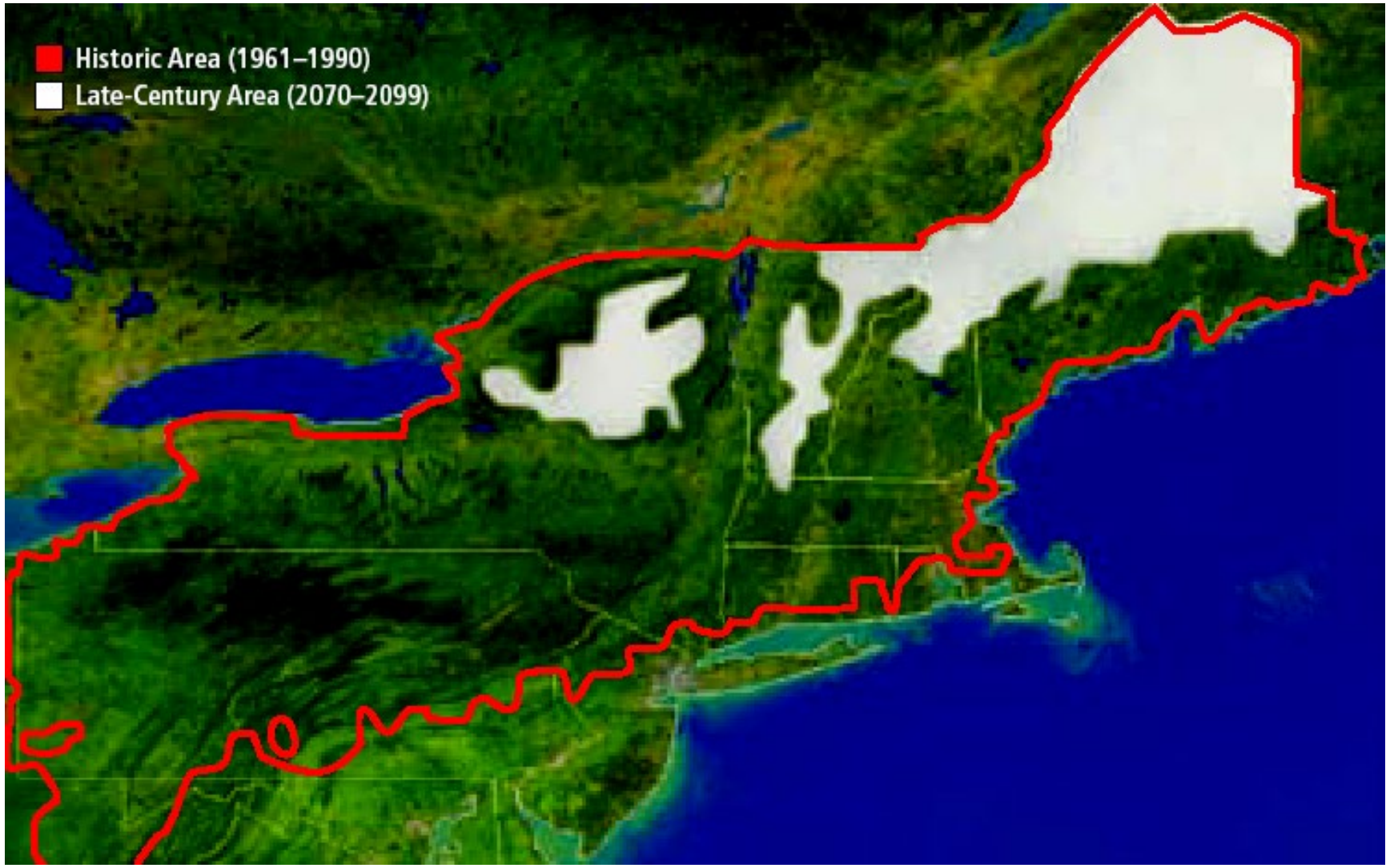
Future Forests



Maple, Beech, Birch → **Oak, Hickory**

Graphic source: USGCRP, 2009

Snow Cover Decreasing



Area projected to have at least 30 days of snow cover per year

Frumhoff, P.C., et al. 2007. *Confronting Climate Change in the U.S. Northeast: Science, Impacts, Solutions*. Synthesis report of the Northeast Climate Impacts Assessment (NECIA). Cambridge, MA: Union of Concerned Scientists

Impact Example: Water Infrastructure

Freeze Vulnerability

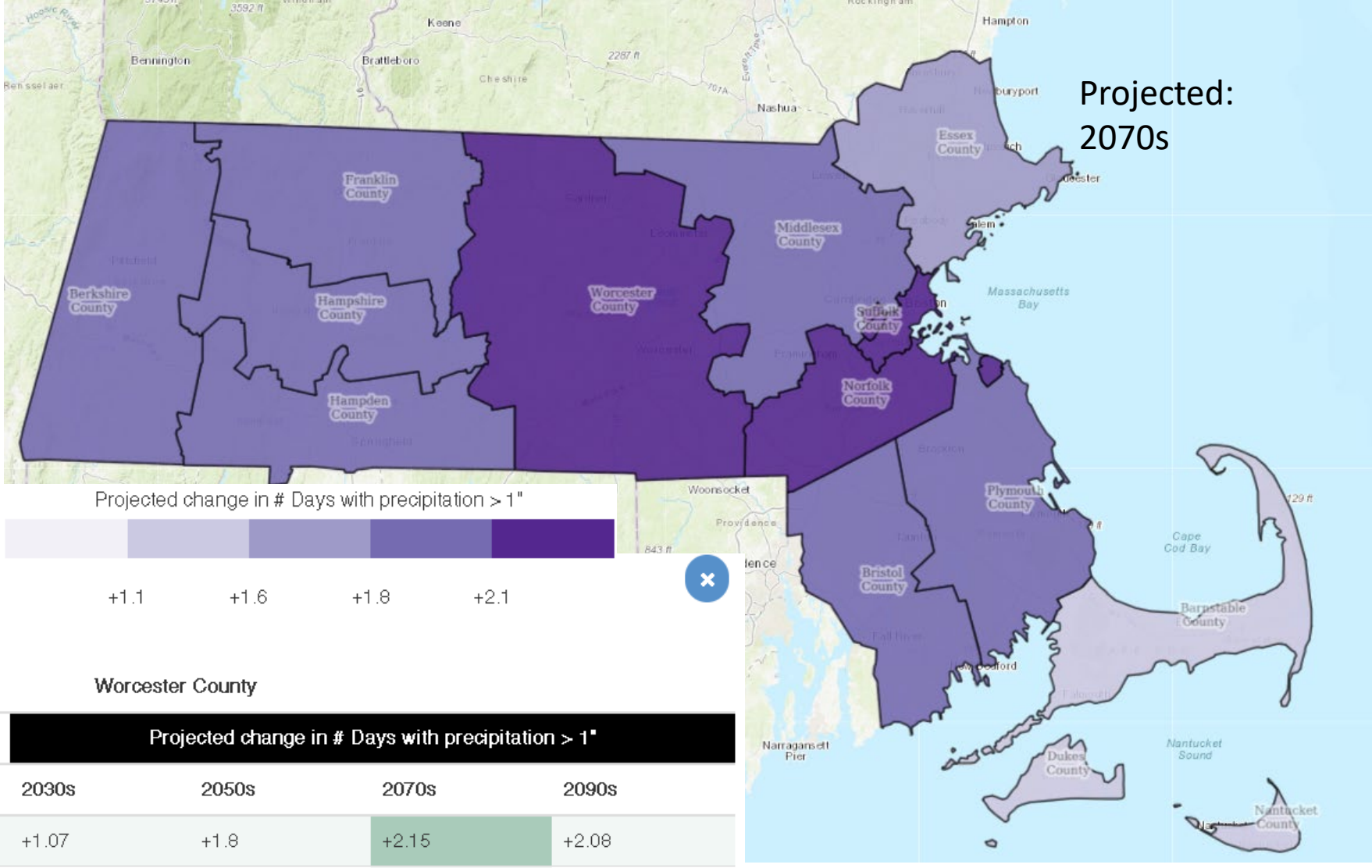
Rising winter temperatures reduce spring snow cover.

+

Risk of spring cold snaps remains relatively stable.

=

Increased subsurface freeze risk



Location Info

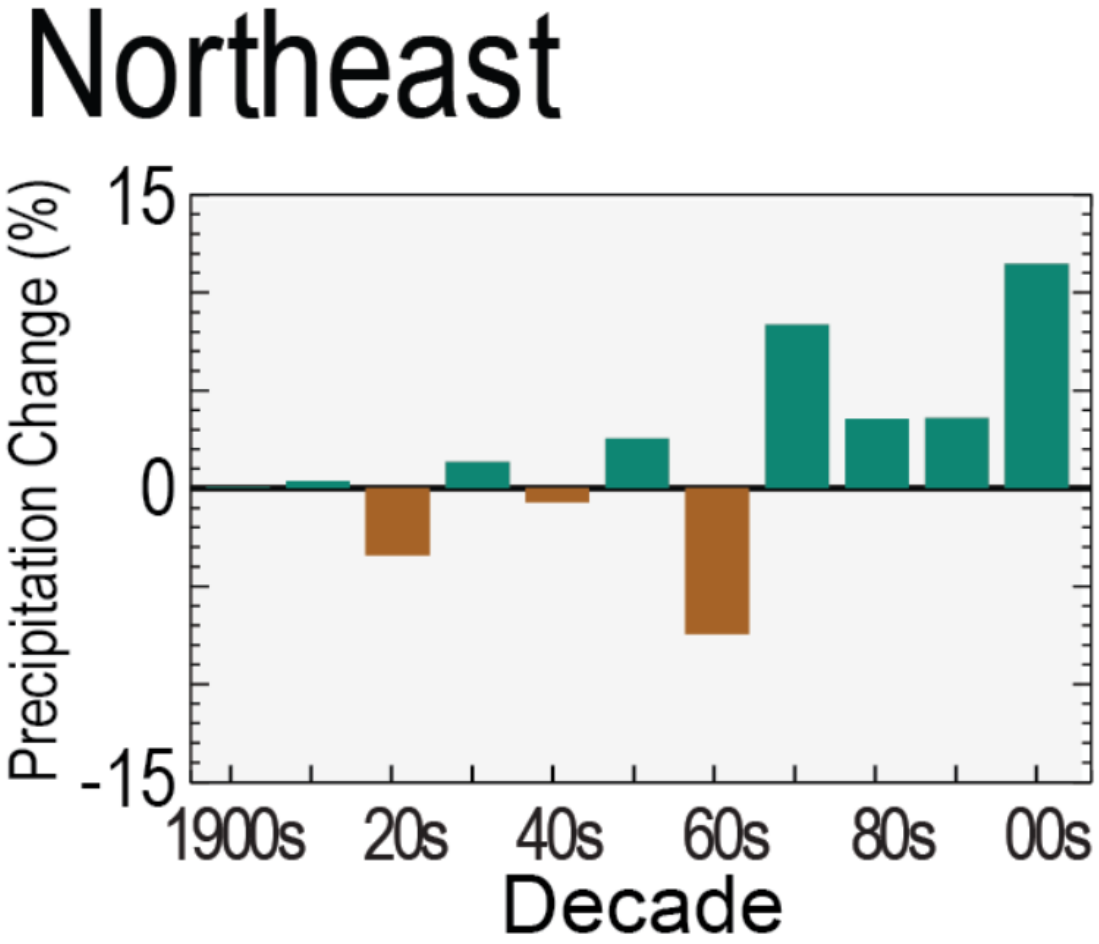
Counties Worcester County

Extreme Precipitation > 1" (Projected)

Worcester County

		Projected change in # Days with precipitation > 1"			
Season	Baseline (days)	2030s	2050s	2070s	2090s
Annual	7.31	+1.07	+1.8	+2.15	+2.08
Fall	2.36	+0.33	+0.42	+0.4	+0.3
Spring	1.54	+0.25	+0.44	+0.61	+0.69
Summer	1.84	+0.28	+0.32	+0.28	+0.23
Winter	1.56	+0.32	+0.54	+0.82	+1.01

Precipitation Projections



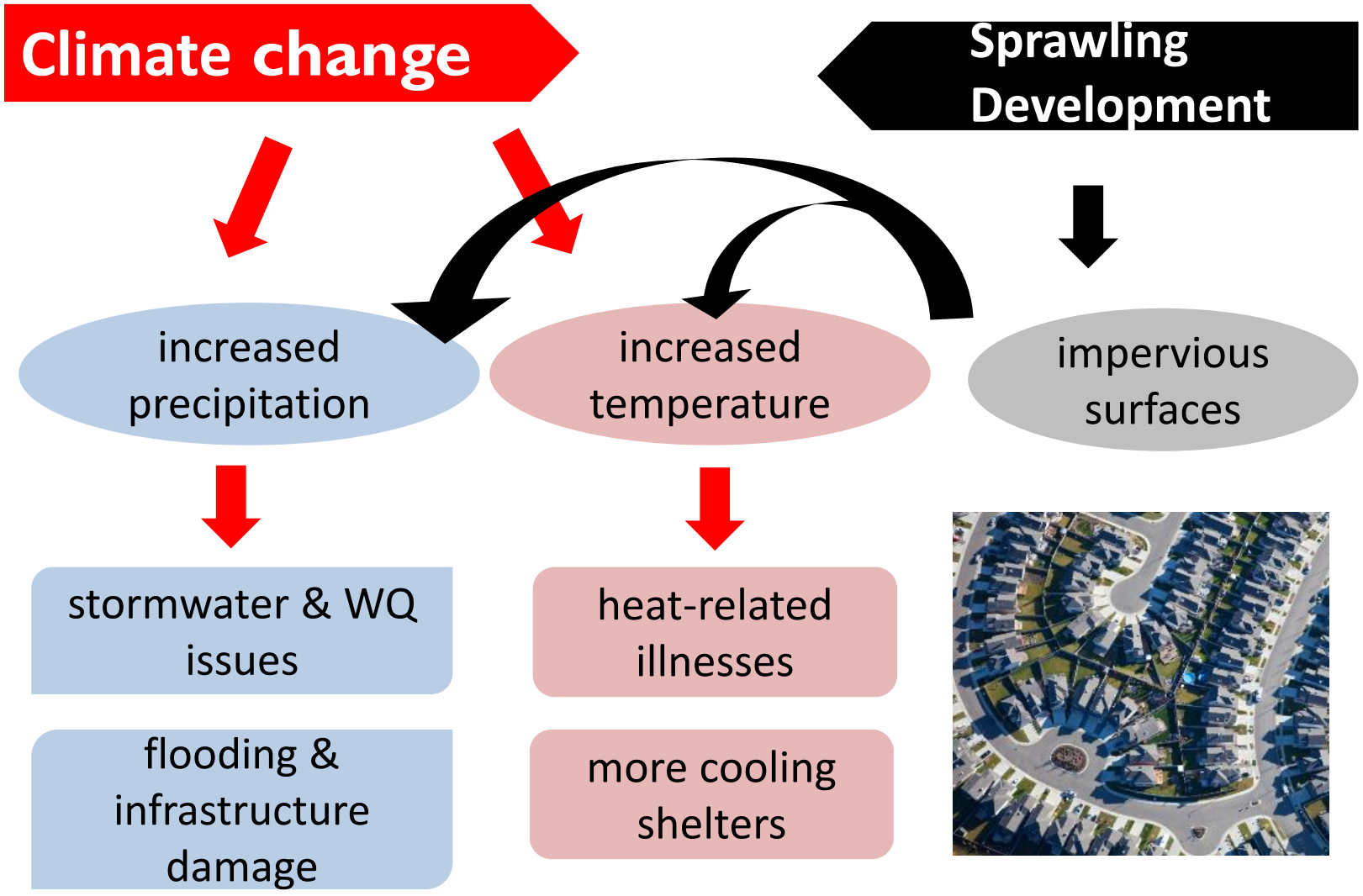
Precipitation is temperature driven → warmer air holds more moisture

- Historical Annual Precipitation = **47.13 Inches**
- Projected Mid-Century = **48.48 - 53.92 Inches**
- Projected End of Century = **48.75 - 55.84 Inches**

Change in 24-hour, 100-year Design Storms (inches)

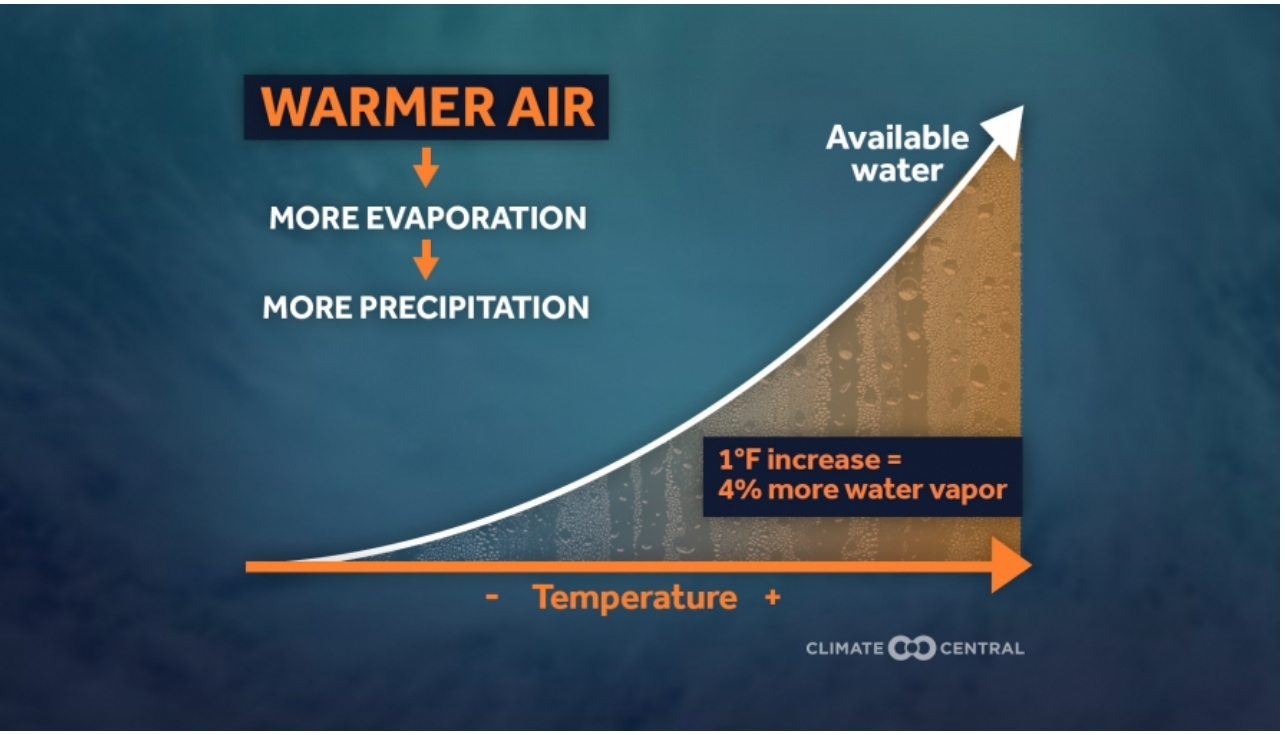
	NOAA TP-40	NOAA Atlas 14	Change
Taunton	6.9”	7.7”	**12%**
Boston	6.6”	7.8”	**18%**
Worcester	6.5”	7.6”	**17%**

NOAA Atlas 14: http://hdsc.nws.noaa.gov/hdsc/pfds/



Source: National Climate Assessment, U.S. Global Change Research program

Effects of Increased Precipitation



- More flooding where it already floods
- Increase number of extreme rainfall events
- Water infrastructure may not be able handle increased flow
- Ground Saturation in areas with impervious surfaces
- Increase in sediment loading

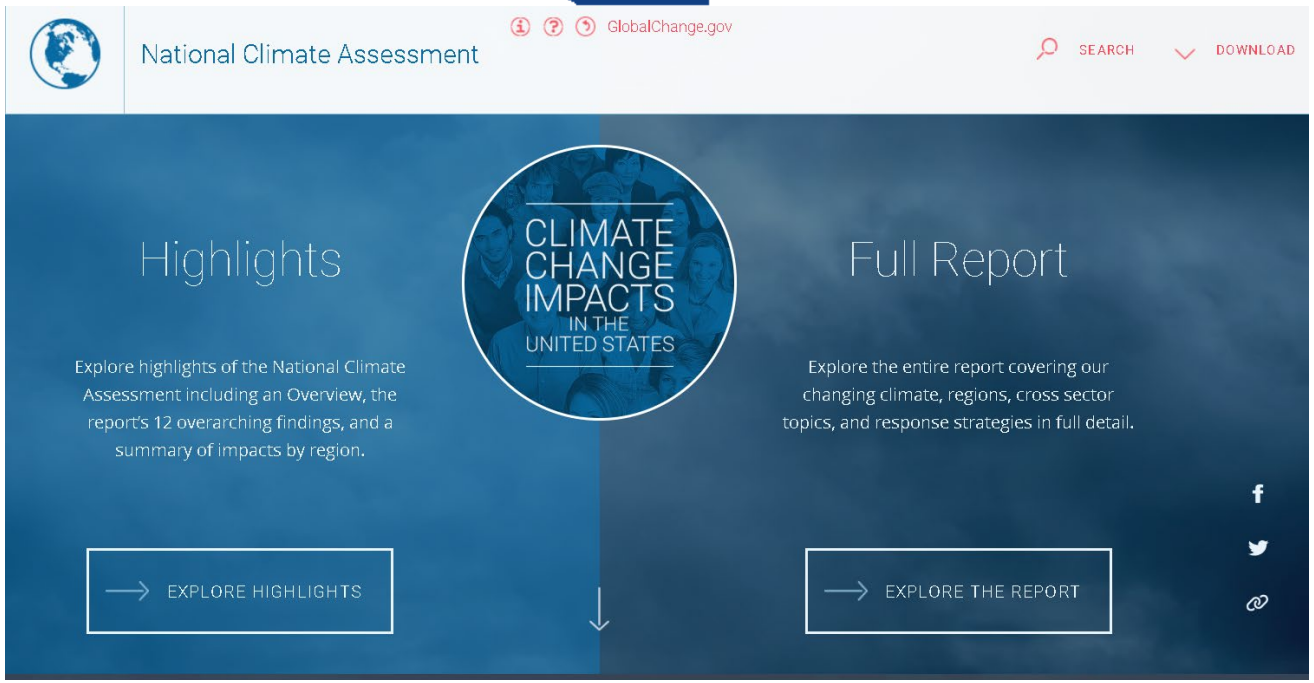
Questions?

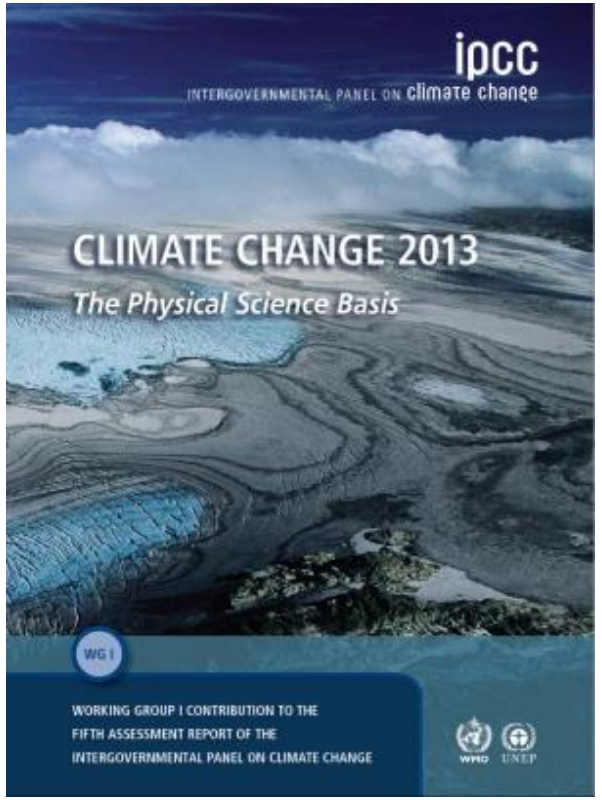
CLIMATE CENTRAL

U.S. Climate Resilience Toolkit

resilient MA

Climate Change Clearinghouse for the Commonwealth





Overview

- Workshop Process

Community Resilience Building
WORKSHOP GUIDE

www.**CommunityResilienceBuilding**.org

Process…

- Current and future hazards?
- What are our strengths & vulnerabilities?
- What can we do about it?

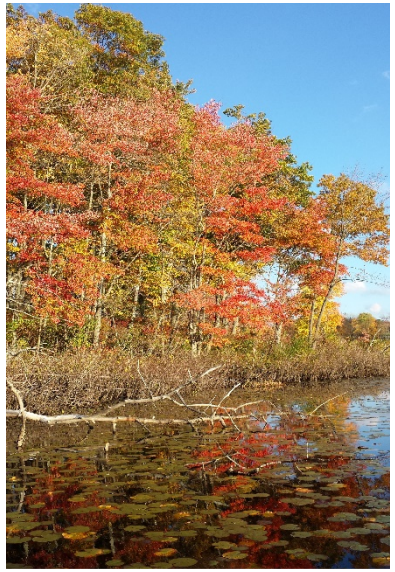
Community Resilience Building

Hazards

Infrastructure

Societal

Environmental



Hazards

COOL PLANET

Infrastructure Vulnerability/Strength

COOL PLANET

Infrastructure

- **What infrastructure/facilities are exposed?**
  - *WWT, nursing homes, schools, hazardous materials, etc…*
- **What makes this infrastructure vulnerable?**
  - *Location, age, building codes, type of housing, etc…*
- **Consequences of this infrastructure vulnerability?**
  - *Lack of access to critical facilities – urgency care, pharmacies*

***POSSIBLE ACTIONS*: What can be done?**

- *Assess housing stock in vulnerable areas?*
- *Prioritize future development in lower-risk areas?*
- *Integrate risks into capital improvement plans?*

Societal Vulnerability/Strengths

Societal

- **Population characteristics in high-risk areas?**
  - *Elderly, low income, special needs, etc…*
- **How will hazards intensify these characteristics?**
  - *Where are areas for improvement in the community?*
- **Strengths of your community?**
  - *Active civic groups, organizations, associations?*

POSSIBLE ACTIONS: What can be done?

- *Improve existing programs (which ones)?*
- *Increase awareness via education/outreach on hazards?*
- *Increase involvement by citizens (on what and with whom)?*

Environmental Vulnerability/Strengths

Environmental

- **Natural resources important to your community and where?**

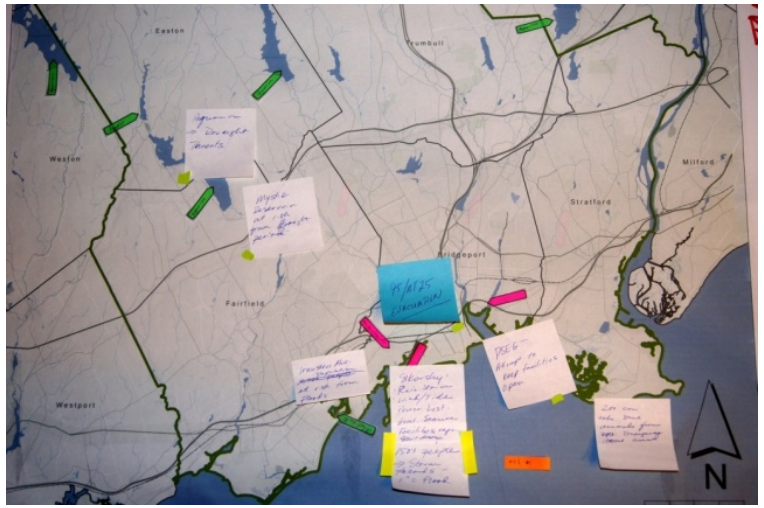
- **Benefits natural resources provide and where?**
  - *Storm buffering, flood protection, erosion control, water quality, recreation, etc…*

- **High risk areas and effects of hazards?**
  - *Impact without and with more natural resources*

POSSIBLE ACTIONS: What can be done?

- *Conserve land located adjacent to flood zones?*
- *Green infrastructure in neighborhoods?*
- *Increase Urban Tree Canopy?*

Base Map Example



Introduce Today's Activities

Elements

- Participatory process for assessing a community's vulnerability/strengths and priority actions
- Risk Matrix and Base Maps

Process and outputs:

- Exercise
- Complete assessment using Risk Matrix/Base Maps
- Discuss summary

Risk Matrix/Base Map

Step #1: List top hazards

Step #2: Vulnerabilities and Strengths

- Infrastructure; Societal; Ecosystem
  - Indicate location and ownership

Step #3: Mark your Base Maps

Step #4: Develop actions

- For each action;
  - **Rank Priority** (High (H), Medium (M) or Low (L))
  - **Urgency** (On-going (O), Short (S) or Long-term (L)).

Report outs

- Each Team reports out on its priority hazards, vulnerabilities, strengths, and Actions.

- Discuss top Actions

Expectations of Participants

- Permission to be active participants
- Your ideas & expertise are needed
- Respect contributions of others
- Be creative and remain optimistic
- Stay on task (as defined by your facilitators)
- Be accountable for your group's discussions

Your Turn!

Nature Based Solutions to Community Challenges

Ariel Maiorano

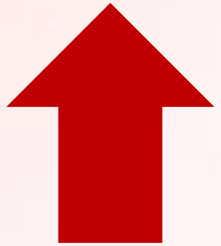
Assistant Coordinator, Shaping the Future of Your Community Program

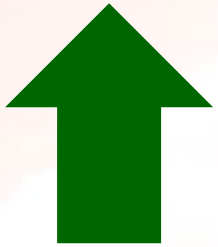
Amaiorano@massaudubon.org

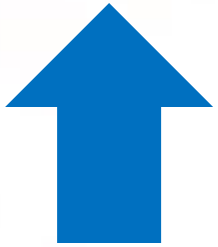
Mass Audubon

Shaping the Future of Your Community

Let's Recap:
MA Observed Climate Changes

Temperature:  **2.9°F**
Since 1895

Growing Season:  **15 Days**
Since 1950

Sea Level Rise:  **11 inches**
Since 1922

Strong Storms:  **55%**
Since 1958

Source: Climate Science Special Report, 2017; NOAA NCEI nClimDiv; NOAA Ocean Service

The best adaptation practice is preserving natural (green) infrastructure.

Nature Based solutions

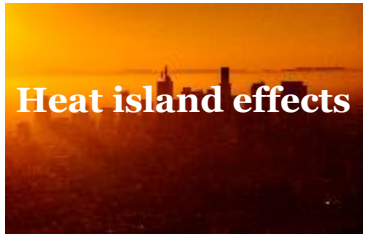
Executive Order 569 Language:
"...strategies that conserve and sustainably employ the natural resources of the Commonwealth to enhance climate adaptation, build resilience and mitigate climate change..."

Nature Based Solutions *use* natural systems, *mimic* natural processes, or *work in tandem with* traditional approaches to address natural hazards like flooding, erosion, drought, and heat islands.

Green Infrastructure

Low Impact Development (LID)

Hazards



Nature-based solutions

Open space preservation

Ecosystem restoration

Low Impact Development

Municipal benefits

Avoided Costs

Enhanced Safety

Environmental Services

Nature based solutions at every scale

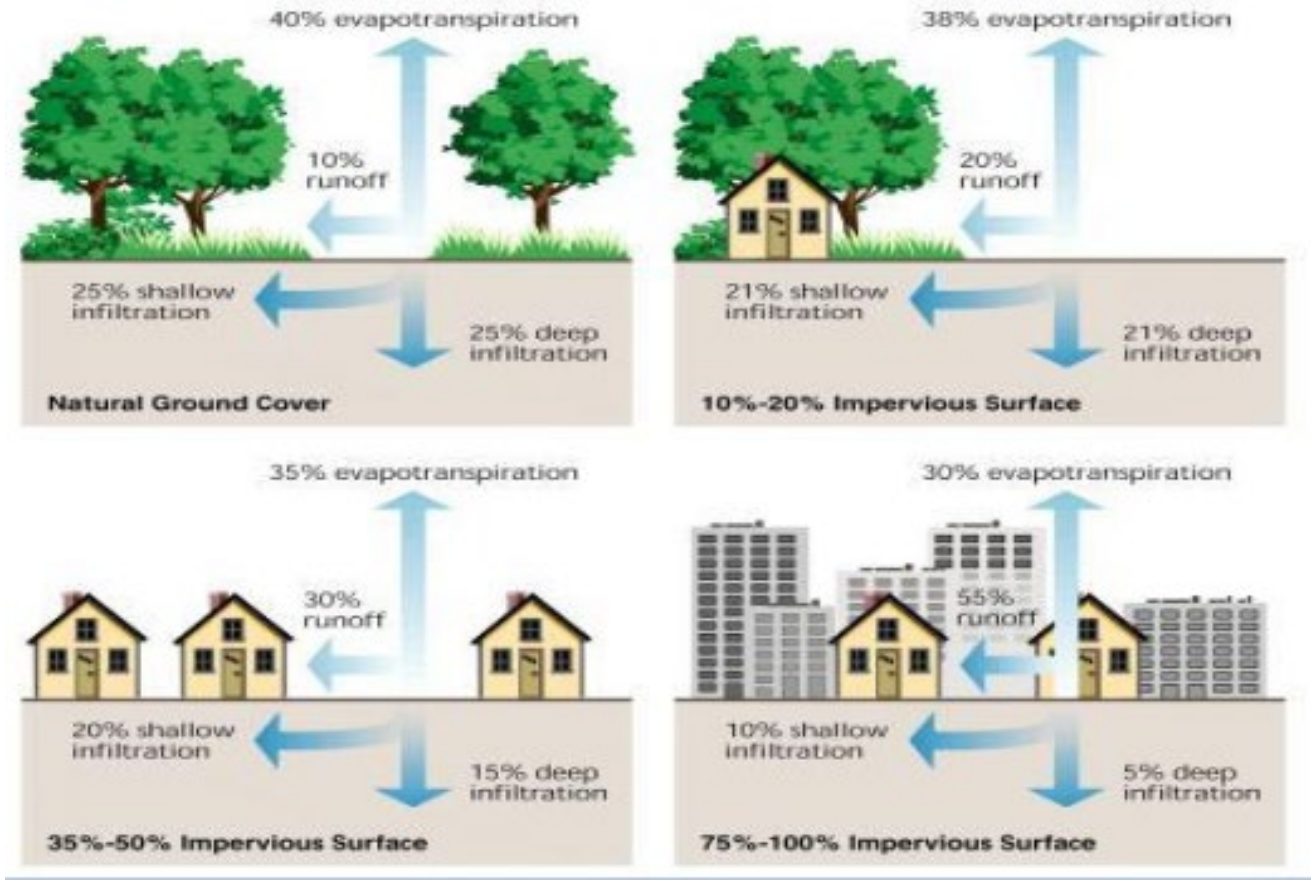
Rural, suburban, or urban

Conserve available open space providing ecosystem services

Integrate concepts into new development at neighborhood scales

Restore resilience in urban areas at site specific scale

The Way We Build Affects Local Water



Benefits of Natural Ground Cover

- More water infiltration where it falls
- Less flooding

Challenges of Impervious Cover

- Less water infiltration
- More flooding

Low Impact Development (LID)

- Uses **water as a resource**, not just a waste product
- Manages stormwater as **close to its source** as possible
- **Preserves** natural landscape by recreating natural features

NBS increase safety.

Whittendon Dam Removal

Taunton, MA

Costs

- Estimated Cost of Dam Repair = $1.9 Million
- Ongoing Cost of Dam maintenance = variable
- 2005 Evacuation Costs = $1.5 Million
- Dam Removal Costs = $440,000

Benefits

- Reduced risk of residential & commercial flooding
- Increased revenue from river based recreation
- Avoided costs of future evacuation and/or repair
- Increased property values
- Water quality benefits

Enhanced Safety **Avoided Costs**

NBS Pay Off
Div. Ecological Restoration

DER aquatic restoration projects produce an average employment demand of **12.5 jobs** and **$1.75 Million** in total economic output from each $1 Million spent, contributing to a growing “restoration economy” in Massachusetts

Massachusetts Department of Fish and Game
Division of Ecological Restoration
Invested in Nature and Community

Photo Credits: SRPEDD

Let's Talk Streets

- Hazard:

- Traditional development

↓

Impervious surfaces

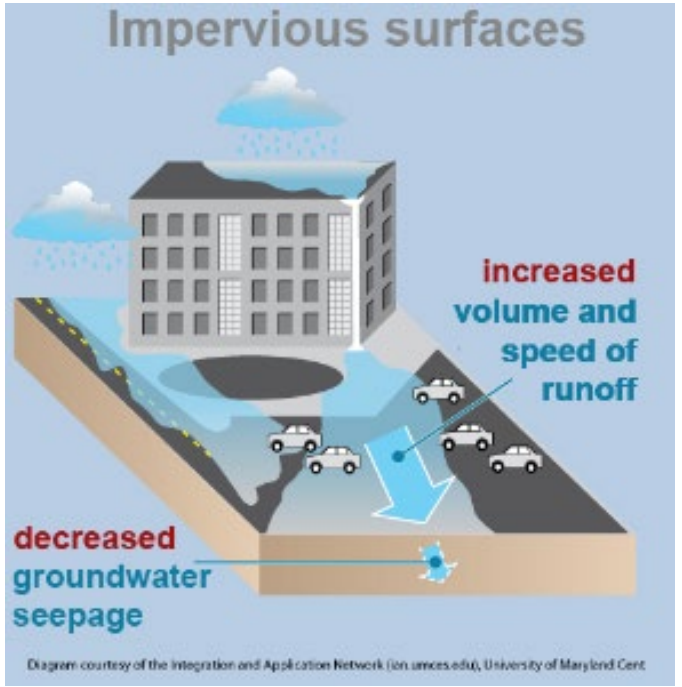
↓

Less surface for stormwater to soak into the ground

→

Infrastructure Challenges

- NBS can come in many different forms
- If the goal = using natural systems for their services it counts!

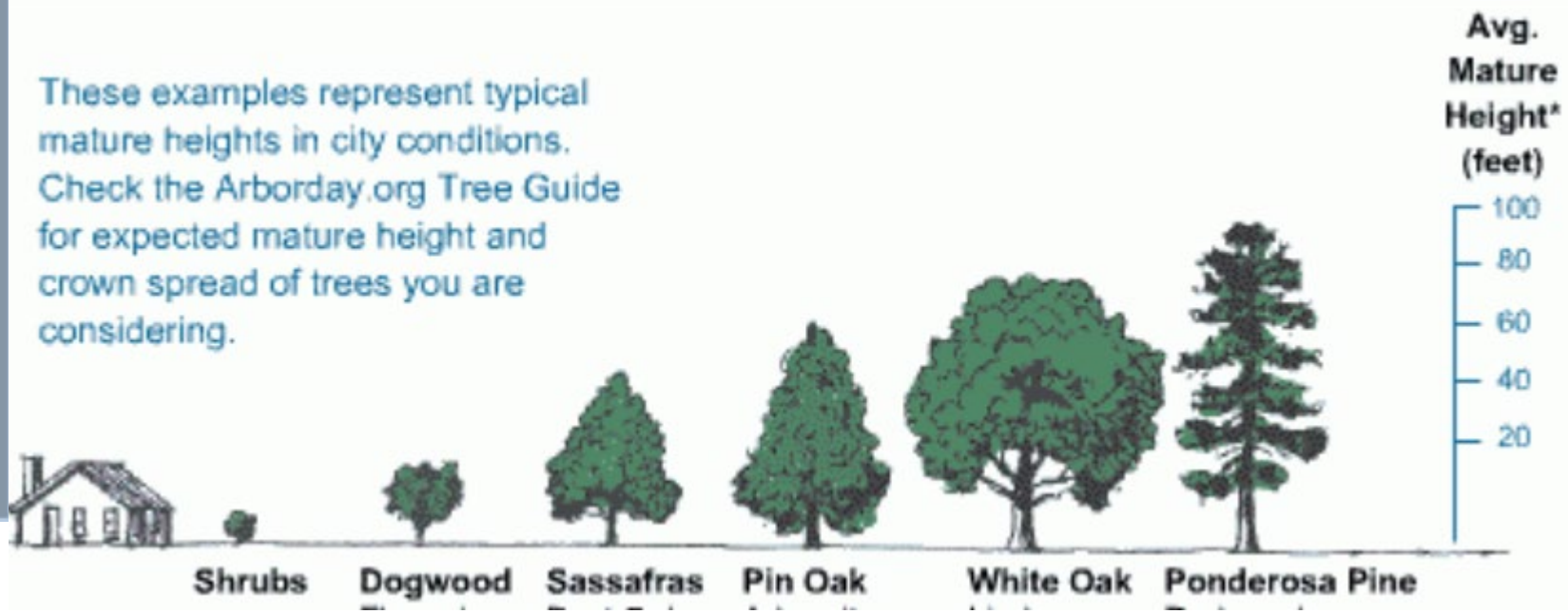


Environmental Challenges

Let's Talk Trees

- Hazard:
- Vegetation is a leading cause of power outages
- Many communities have aging white pine forests

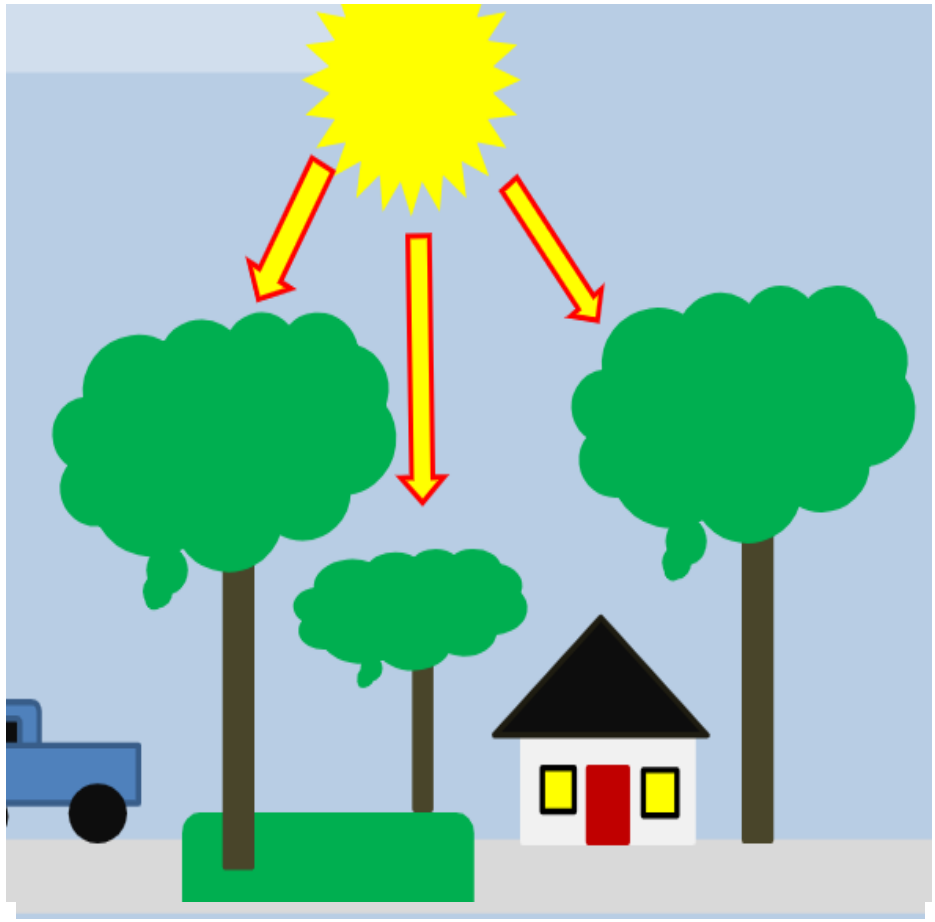
- The right trees in the right places are crucial to making nature work with you
- Consider tree size, location, and proximity to utilities, roads, and buildings



Societal Challenges

Let's Talk People

- Hazard:
- Low-income populations may not be able to afford A/C



- Urban trees can reduce annual cooling costs by about 30%
- Benefits of green space = community wide

Auburn, You're Doing Great!

- Designated Green Community 2012
- Revised De-Icing Program
- Decreased minimum road width
- Sibley Street culvert replacement

5D	Amend Zoning Bylaws to Regulate Impervious Areas	Planning Dept., DPW, and Zoning Board of Appeals	The new zoning bylaw will be implemented in the next permit cycle.	The Aquifer and Watershed Protection Overlay District boundaries were updated in 2008 (Permit Year 6). Current bylaw requires recharging via	Consider potential enhancements to the Aquifer and Watershed Protection Overlay district section of the Zoning Bylaw with focus on
5E Revised	Implement Tree Replacement Program	Tree Warden	Implement Tree Replacement Program in the next permit cycle	Trees were planted within the right-of-way of newly developed and/or reconstructed roadways. In previous years the Town coordinated with National Grid to plant trees along Perry Place and Rice Road, as part of their screening program.	Continue tree preservation efforts, as appropriate.

Certified MVP Communities

Receive Additional Points on Grant Applications

- *$75M in action grants only available to MVP communities*

- Clean Water State Revolving Fund Program (CWSRF)
- Office of Coastal Zone Management (CZM)
- Department of Agricultural Resources (MDAR)
- Executive Office of Energy and Environmental Affairs (EEA)
- Department of Environmental Protection (DEP)
- Mass Environmental Trust (MET)
- LAND & PARC grants

Key Take Aways

- Nature Ba rent for every con
- Think: alt s gray and green infr
- **MVP** is a g applying NBS
- Keep up t

Appendix J - Key Points from Interviews

Seven interviews of Town officials were conducted in December as part of the Auburn Municipal Vulnerability Preparedness Program. Ted Beauvais, Project Lead for the Blackstone River Watershed Association (the Town's MVP contractor), conducted face-to-face interviews and wrote them up. Each interviewee had the opportunity to review and edit the interview. The full interviews are shown below with redundant introductory material removed for clarity.

A number of common themes emerged from the interviews and are listed below:

1) The Town has done a lot of work to prepare for hazards, emergencies and disasters through planning, table top exercises, training and establishing an Emergency Operations Center.
2) Communication, cooperation and teamwork between departments is strong.
3) Mutual aid and regional responses and equipment are arranged and in place.
4) Concerns about flooding in the Drury Square, Auburn High School, Rockland Road, Brook St. and Holstrom Court area. The Worcester Flood Diversion Tunnel protects Webster Square in Worcester but in so doing it causes flooding in the above-mentioned areas of Auburn.
5) In case of emergency the Red Cross is the initial provider of sheltering and assistance with Auburn High School as the primary town-operated shelter. Concerns regarding flooding in the area of the High School as well as long-term sheltering situations were expressed.
6) Aging infrastructure is an issue, particularly the Sword Street culverts, water and sewer systems.
7) Auburn has a large senior population and a number of nursing homes, assisted living and independent living facilities.
8) Concern about summer heat waves and impact on vulnerable populations (esp. seniors).
9) Winter storms happen, and the Town has adequate equipment and contractors to address most storms. Large storms affecting a large area can make it difficult to hire contractors and it also results in employee fatigue and problems with snow storage and snow load on roofs. Concerns about emergency response with major storms.
10) Power outages have happened in the past decade in both summer and winter with major outages from the ice storm in 2008, Irene in August 2011 and Halloween Nor'easter in 2011.
11) Auburn has capital improvement plans, equipment replacement schedules, maintenance plans and does a good job with its equipment and infrastructure.
12) Auburn has cash reserves and is financially strong and well managed.

Questionnaire for the Municipal Vulnerability Preparedness Program

Auburn, MA

There is a clear and present need for municipalities, corporations, organizations, and government agencies to build community resilience and adapt to extreme weather and climate. In response to this documented need, the Massachusetts Executive Office of Energy and Environmental Affairs (EOEA) is implementing Executive Order 569, which establishes an Integrated Climate Strategy for the Commonwealth.

In June 2018, Auburn was awarded an $18,000 grant to use towards the Municipal Vulnerability Preparedness (MVP) program. This grant's objective is to enable Auburn to complete a community resiliency planning process that will examine the town's vulnerabilities, strengths, and identify priority actions to build resilience as the climate changes.

Auburn is working with technical consultants from the Blackstone River Watershed Association (BRWA) to help Auburn become certified as a Municipal Vulnerability Preparedness Program Climate Community by June of 2019. Communities who complete the MVP program become certified as an MVP community and are eligible for follow-up grant funding and other opportunities. Adam Menard is the local project manager for Auburn.

Your opinions and ideas are vital to the success of Auburn's planning process. Your responses to these questions will be tabulated and analyzed to prepare for a town-wide stakeholder workshop that the BRWA will facilitate on February 28, 2019.

The MVP Program has four goals. This questionnaire focuses on the first goal:

- *Understand connections between ongoing community issues and resources, hazards, and local planning and actions in the municipalities.*

The remaining three goals of the MVP Program will be the focus of the workshop and a final report. This report will be developed by the BRWA for the town of Auburn by June 2019.

- Identify and map vulnerabilities and strengths to develop infrastructure, societal, and natural resource risk profiles for the municipalities,
- Develop and prioritize actions and clearly delineated next steps for the municipalities, local organizations, businesses, private citizens, neighborhoods, and community groups, and
- Identify opportunities to advance actions that further reduce the impact of hazards and increase resilience across and within municipalities.

Interview with Joe Fahey

Question 1. Please provide your name, your department or committee, your position, and how many years you have worked (paid or unpaid) with the Town of Auburn.

Joe Fahey, School Facilities Director, 15 years

Question 2. What natural hazards have impacted Auburn in the past? Examples of hazards include floods, hurricanes, blizzards, ice storms, extreme precipitation events, drought, heat waves, and wildfires.

Diversion tunnel to address flooding and impacts on Drury Square. The backup floods Rockland Road, Holstrom Court and High School field and parking when Worcester closes the gates.

Cooling stations at senior center. When HS built, they didn't do AC because it was felt not to be needed. They added dehumidification and it helps. New middle school has dehumidification as well. Elementary schools have heat pumps in each classroom and they can cool the rooms.

Where do you put the water and where do you put the snow? Those are big issues with major rain and snow events.

Question 3. How did these hazards impact your community (where, how often, and in what ways)?

Getting people to a safe place. Schools are shelters. There was a plan for busing the elderly over to the school shelter and it was done successfully 14 years ago. There is a protocol for buses to come in and move people to shelters when weather is bad.

Question 4. What in the community of Auburn is currently exposed to hazards and climate threats? This could include population segments (elderly, young, persons with disabilities, etc.); businesses; infrastructure (roads, bridges, culverts, community buildings, schools, water supplies, neighborhoods, electric distribution system, etc.); and specific natural or environmental resources (forests, farms, wetlands, water resources, wildlife, etc.)? Think about potential impacts 5-30 years from now.

Flooding is the big one. Where are you going to put the people and how do you get them there safely? Trying to shelter and have school at the same time could be a problem but with good coordination between departments (Board of Health and CERT) it is planned for. Shelter uses Board of Health to help. When the emergency event ends and there are some people who don't have a place to go, that is an issue to transition back to school from sheltering. There is a plan for that, probably Red Cross.

All buildings are on town water which is good. Most buildings have generators, but one doesn't have a generator, but it is being installed. Electrical power system is reliable.

Generators are all diesel powered and could run out of fuel after several days.

If generators were natural gas powered at high school, it could be more reliable and may be desirable because current storage is only 1000 gallons.

Pakachoag school has a backup communication tower for the Town.

Question 5. What has Auburn done to plan and prepare for hazards and their impacts? How effective have these efforts been? What else could/should Auburn do?

In last 15 years the Town has been very proactive with BOH and planning for shelters and emergency response. Public may not know the plan. Lots has been accomplished.

Additional education, communication, outreach to let people know about the emergency plan and what to do in case of emergency. Townspeople need to be more proactive and engaged. Public access channel, emergency radio, One-Call is like a reverse 911 and it tells people that shelters are open and cooling center is available.

Question 6. What are the community's strengths (for example, hardened utility lines reduce outages due to ice storms, undersized culvert replaced to reduce flooding at key intersection, improvement to communications systems, critical road reconstructed and elevated, etc.) that can be used to address the impacts of hazards?

Town manager and management team are very strong in Auburn and any issues get worked out. Fire Chief is very good as are others. Town and school are very concerned about safety first. Getting defibrillators in place and people trained. Cohesively work together very well. Departments cooperate well. Safety advisory team with police, fire, building inspector and school leadership and they meet and go over safety in all the buildings and have been doing this for 10-12 years to plan and prepare. They have plans for each building and doors numbered inside and outside. They all worked together as a team and they have developed relationships that make it work.

Teamwork is strong in Auburn.

Other towns don't have these cross-working relationships.

Road infrastructure has improved over the last 15 years and helps with access to buildings.

Interview with Jeff Mitchell

Question 1. Please provide your name, your department or committee, your position, and how many years you have worked (paid or unpaid) with the Town of Auburn.

Jeff Mitchell, Assistant DPW Director, 34 years

Question 2. What natural hazards have impacted Auburn in the past? Examples of hazards include floods, hurricanes, blizzards, ice storms, extreme precipitation events, drought, heat waves, and wildfires.

Flooding of different areas of town. July 2, 2009 12 inches of rain in 5-7 days flooded high school football field and parking lot.

Diversion tunnel in July 2, 2009 Worcester closed the gates and it went over the lip of the diversion bowl and was about a foot deep at the lip. Water went into the tunnel, but it also floods part of Auburn and impacts Rockland Road and back towards the high school and Drury Square. It was close to flooding Drury Square itself. Brook St. and Rockland Rd. get 3-4 feet of water in the yards and flooded basements and people were evacuated with front end loader bucket.

Blizzards are universal and common. They are doing better than they were in 1978 and can handle more snow with fewer problems. Blizzard warnings allows them to preplan with construction companies for heavy equipment, get EOC ready and get shelters ready.

Question 3. How did these hazards impact your community (where, how often, and in what ways)?

People were displaced from certain areas by heavy rains. Sword St. culvert is an issue and could wash out the road and railroad and cause problems for the industrial park, emergency services, rail traffic and homeowners. Back in 2009 there was railroad damage. Damage assessments through FEMA for snow and ice damage. Nothing done for flooding to quantify.

Question 4. What in the community of Auburn is currently exposed to hazards and climate threats? This could include population segments (elderly, young, persons with disabilities, etc.); businesses; infrastructure (roads, bridges, culverts, community buildings, schools, water supplies, neighborhoods, electric distribution system, etc.); and specific natural or environmental resources (forests, farms, wetlands, water resources, wildlife, etc.)? Think about potential impacts 5-30 years from now.

Infrastructure for storm water is a big concern. 50- and 100-year storms are happening about twice a year and more heavy storms overall. In the last 5 to 6 years many stormwater issues have been addressed through maintenance and capital improvements.

Normal wear and tear and aging infrastructure are ongoing issues.

Big concern is the aging sewer infrastructure with infiltration and inflow into the systems, but no overflows yet. High water table makes it worse for infiltration usually in spring and that increases sewer flows from 1.5 to 2 million gpd to 6 million gpd in rainy season. They spent $1.2 million on aggressive I&I program a few years ago and that worked for a while, but the problem has come back. They used CCTV for the I&I and they saw leaks in the lines and smoke testing to showed where it comes out and then found the problem areas and grouted and sealed the joints. The sewer lines are 40-years old and are made from asbestos concrete and the lines and joints deteriorate and start allowing for inflow.

DEP program mandates that I&I be addressed, and they are planning to do more. Longer periods of wet weather, esp. in the spring cause the water table to rise and makes the problem worse.

Question 5. What has Auburn done to plan and prepare for hazards and their impacts? How effective have these efforts been? What else could/should Auburn do?

Less impact in the last 5-6 years with fewer streets flooding because of the repairs made and good maintenance. Still some problem areas when the Worcester flood diversion gates close and it causes flooding of some residences and roads and could be worse with heavier rain events. Worcester monitors the water level at Webster square fire station and at a certain level they manually close one or two gates. Flooding could reach Post office and Fullers in Drury Square in a big storm. Sewer pump stations could be in jeopardy.

Flooding is sporadic and not that often and people displaced temporarily still live there.

Auburn is in pretty good shape. Shelters are prepared for cooling and warming. Auburn High School is in flood zone and secondary site for shelter is the Swanson Road Intermediate School.

JetVac truck – another one is planned for July 2020. Town already has two to clean drainage or sewer lines with high pressure and vacuum capabilities.

The DPW has a schedule of replacement for all equipment. DPW is 6 years old and it combined several departments and got rid of elected dept. heads who are now appointed by town manager as a result of the Town updating its Charter and modernizing its governance structure.

Question 6. What are the community's strengths (for example, hardened utility lines reduce outages due to ice storms, undersized culvert replaced to reduce flooding at key intersection, improvement to communications systems, critical road reconstructed and elevated, etc.) that can be used to address the impacts of hazards?

Auburn is financially strong. Town is much better off than other towns and is building up free cash and it is working very well. Resources are available to do the work and have the right equipment. Snow and ice are now treated with straight salt without the sand and don't have the sand getting into the systems. They used to have to clean the grit from the pump station from using sand on the roads. Stormwater management program is using some new approaches for detention and infiltration. Looking to redo the stormwater management committee and bylaws and regulations and will get the committee back together to review this. NPDES permit is on hold and will be very expensive to implement.

Town water comes from Elm Hill Water District, Auburn Water District, Aquarian, and some direct Worcester customers. Some people are on wells.

Pretty good shape for now. Work until the job is done. Mutual aid agreements are in place but haven't been used by DPW – but are good to have in place.

Interview with Adam Menard

Question 1. Please provide your name, your department or committee, your position, and how many years you have worked (paid or unpaid) with the Town of Auburn.

Adam Menard, Auburn Town Planner, 2 months

Question 2. What natural hazards have impacted Auburn in the past? Examples of hazards include floods, hurricanes, blizzards, ice storms, extreme precipitation events, drought, heat waves, and wildfires.

Ice storm in 2008. Halloween storm 2011. Both were big power outages. Drought of 2016 – water bans.

Question 3. How did these hazards impact your community (where, how often, and in what ways)?

Power outages. Sword St. flooding. Worcester controls the flood control structure in Auburn to protect Webster Square.

Question 4. What in the community of Auburn is currently exposed to hazards and climate threats? This could include population segments (elderly, young, persons with disabilities, etc.); businesses; infrastructure (roads, bridges, culverts, community buildings, schools, water supplies, neighborhoods, electric distribution system, etc.); and specific natural or environmental resources (forests, farms, wetlands, water resources, wildlife, etc.)? Think about potential impacts 5-30 years from now.

South Carolina summers – hot weather – esp. elderly folks. Storms in winter – more ice storms make it harder to keep roads open and power on. Drought in summer. Road salt use.

Question 5. What has Auburn done to plan and prepare for hazards and their impacts? How effective have these efforts been? What else could/should Auburn do?

No low impact design bylaws in Town. Hazard mitigation plan in place. Culverts need to handle storms of increased intensity and amount. Green infrastructure – greening the town. Invasive species – aquatics are a problem. Education and outreach on health related to ticks, mosquitoes, poison ivy.

Question 6. What are the community's strengths (for example, hardened utility lines reduce outages due to ice storms, undersized culvert replaced to reduce flooding at key intersection, improvement to communications systems, critical road reconstructed and elevated, etc.) that can be used to address the impacts of hazards?

Good communication between town departments. Meetings for Economic Development that get everyone together. New public safety complex is being studied. Police station is beyond capacity.

Question 7. What other relevant information do you have that can help Auburn become a certified MVP community?

Transportation from a regional perspective. Evacuees showing up in Auburn from coastal areas. Educate people about sheltering in place and have supplies on hand.

Interview with Bill Coyle

Question 1. Please provide your name, your department or committee, your position, and how many years you have worked (paid or unpaid) with the Town of Auburn.

Bill Coyle, Auburn DPW Director and Town Engineer, 10 years

Question 2. What natural hazards have impacted Auburn in the past? Examples of hazards include floods, hurricanes, blizzards, ice storms, extreme precipitation events, drought, heat waves, and wildfires.

Flooding in Rockland Road area and Brook Street. Flooding in Holstrom Court neighborhood.

Rockland Rd. is in the 100-year floodplain. Oct. 2005 storm was a significant flood. Also, Auburn HS football field floods and has done that a couple of times – causing the artificial turf to float.

Major snow 3 years ago – 3 feet of snow and snow removal crews worked 36 hours straight.

Some areas have been fixed since he was here with new, larger box culverts

Problem is mostly flash floods. Four inches in four hours causes sheet flow down the roads that the drainage system can't handle. Bottoms of sag curve is where flooding occurs on adjacent property.

Four culverts on Sword Street near industrial park – 1 million dollars to replace. Storm diversion gated under Pakachoag Hill and water flows into diversion over to Blackstone River. So hard to make the case for funding for these culverts based on flooding due to the diversion that addresses the issue of big, infrequent floods.

High School is looking to replace the football field and do drainage improvements there.

Question 3. How did these hazards impact your community (where, how often, and in what ways)?

Big snow storm made it hard for 911 responses. DPW monitors the calls to make sure a road is passable for an emergency. School closed. Sidewalks need to be opened and are lower priority than roads and pedestrians walk in roadway – safety issue. Do sidewalks near schools first.

The DPW has backup generators when power goes out. They get vehicle fuel at Shell on Rt. 20 on Millbury St. and they lost power and had to go to Worcester for fuel. Looking at town-owned fueling station for above ground tanks for gas and diesel with backup generator when power goes out.

Flooding is mostly localized and basements flood. Most residents have sump pumps and they are in a flood zone. Not much could be done except to relocate.

Question 4. What in the community of Auburn is currently exposed to hazards and climate threats? This could include population segments (elderly, young, persons with disabilities, etc.); businesses; infrastructure (roads, bridges, culverts, community buildings, schools, water supplies, neighborhoods, electric distribution system, etc.); and specific natural or environmental resources (forests, farms, wetlands, water resources, wildlife, etc.)? Think about potential impacts 5-30 years from now.

Brookdale at Eddy Pond nursing home and senior housing is impacted as is Life Care Center nursing home on Rt. 12. Slows down response time when roads are impassable. One or two houses become an island on Rockland Road when it floods.

In the future same areas that flood will be getting wider spread and worse. Meadowbrook by the Pakachoag Golf Course has more flooding there and a mitigation detention project was installed. More frequent problems and homeowners need to protect property like Briarcliff Road and Bryn Mawr Estates and water comes down the hill to Briarcliff and has a catch basin in the driveway and property is impacted. Bottom of sag curve Town puts curb inlet stone about 4 inches high to handle flow and debris to prevent ponding better than a regular culvert inlet.

Question 5. What has Auburn done to plan and prepare for hazards and their impacts? How effective have these efforts been? What else could/should Auburn do?

There is a local emergency planning committee and they do table top exercises to plan for how to evacuate and respond. Emergency operation center at the police station. It has been effective. Fortunate not to have had a tornado or hurricane. The town hosts a regional trailer for debris removal with chainsaws and debris removal equipment. Mutual aid agreements are in place. They run 34 pieces of plow equipment and 12 are contractors. For big storms it's hard to get contractors for major storms to come in with heavy equipment like front end loaders. Contractors are already committed. So, it takes longer. MEMA calls to check on assistance and brings in equipment from other States.

Question 6. What are the community's strengths (for example, hardened utility lines reduce outages due to ice storms, undersized culvert replaced to reduce flooding at key intersection, improvement to communications systems, critical road reconstructed and elevated, etc.) that can be used to address the impacts of hazards?

On Rochdale St. the Town replaced major culverts there with 10 X 4 concrete box culverts. South St. by Cedar St. they replaced a culvert with a box culvert. Beaver problems – they do dam removal.

Town has good equipment and newer equipment and newer sidewalk plows.

Workforce is pretty good. Lots of work to do and will probably need additional help going forward. $525,000 in town roads program over and above chapter 90 funding. Maintenance load will increase. They do their own crack sealing of roads in town.

Dams are in good condition. Leesville Pond Dam needs some work and they got some $180,000 to repair Leesville Pond Dam. Tree removal and add riprap. They treat ponds for weeds.

Oxford St. South localized drainage issues they will be working there with culverts and basins.

Interview with Julie Jacobson

Question 1. Please provide your name, your department or committee, your position, and how many years you have worked (paid or unpaid) with the Town of Auburn.

Julie Jacobson, Auburn Town Manager, 8 years

Question 2. What natural hazards have impacted Auburn in the past? Examples of hazards include floods, hurricanes, blizzards, ice storms, extreme precipitation events, drought, heat waves, and wildfires.

Hurricanes and tropical storm like Irene caused lots of damage; 2008 ice storm – she wasn't here; January 2011 so much snow that roofs started collapsing from heavy snow. Since then – 4 or 5 designated blizzards, a tropical storm. 3 or 4 summers with 90 plus heat waves with cooling center at senior center opened. Tornado missed Auburn in 2011 but hit nearby towns and the EOC was activated – they did mutual aid providing assistance to those communities affected by the tornado.

Question 3. How did these hazards impact your community (where, how often, and in what ways)?

Impacts have primarily been related to downed trees and limbs, power surges or outages, road flooding. Some incidents have triggered the need to open a shelter. All have had a financial burden on the Town. Heatwaves blow transformers. Traffic lights go down. Senior facilities need to switch to generators. Aging infrastructure in Town can be very costly to repair and replace. Damage to the sewer system, roads, and stormwater is expensive to remediate. Widespread power outages with hurricanes, tropical and winter storms. Lots of trees and branches have already come down from past events. Irene was in August 2011 and sections of Auburn lost power for several days. Fortunately, no heating or cooling issues that time of year. Halloween Nor'easter in October 2011 was a snow event and power outages were reported in more than 50% of the Town. Many crews came in and full restoration of power took 7 days. In January of 2011, the excessive weight of snow and ice caused damage to homes and businesses. Several roofs collapsed, and code enforcement was looking at buildings with flat roofs and they declared buildings off limits until snow could be removed. Skating rink roof was a concern as were schools and the library. Blizzards and snow storms trigger public safety problems as fire hydrants become buried. Following one blizzard, the National Guard was brought in to dig them out. Winter storms have also produced heavy, wet snow that damages trees and limbs, and cause power outages or utility disruption due to downed wires. Slippery road conditions can lead to more car accidents and it is harder to get into a house or driveway

for first responders. Financial impacts from every weather event. Financial and staffing resources needed to handle weather related incidents. Auburn has opened a shelter during some events but prefer to use the regional shelter in accordance with the Commonwealth of Massachusetts's Shelter Plan. With the Halloween Nor'easter the town opened a shelter at the high school. School was closed. Hard to get 24-hour coverage to staff a shelter and there is no mechanism for providing food for those there. There were local restaurants who donated food. Other impacts include culvert backups, ice over roads, flooding of roads, closures of roads that are impassable. Staffing is strained during these events. For example, we may need multiple inspectors during such an event to inspect the safety of buildings but year-round there is less of a need for as many inspectors. Mutual aid can work unless there is widespread problem in which case resources are spread thin and may not be available.

Question 4. What in the community of Auburn is currently exposed to hazards and climate threats? This could include population segments (elderly, young, persons with disabilities, etc.); businesses; infrastructure (roads, bridges, culverts, community buildings, schools, water supplies, neighborhoods, electric distribution system, etc.); and specific natural or environmental resources (forests, farms, wetlands, water resources, wildlife, etc.)? Think about potential impacts 5-30 years from now.

Worry about vulnerable populations – seniors and disabled. Small children. Schools.

Also concerned about impacts on property owners and impacts on homes and business. Will they be able to renovate or repair the damage? Not a lot of programs to help small businesses that they can qualify for. Few programs for homeowners. FEMA doesn't always declare an emergency and even if they do it may not cover the damage.

Dams, wetlands harmed. Impacts on local farmers. Impacts on aging infrastructure, transportation network.

Infrastructure – stormwater, water, sewer. Two water districts in Auburn that operate independently yet still coordinate with town. More intense winter storms with more precipitation – rain, wind, ice or snow. Increase drought and heat in the summer. Level of precipitation intensity seems to be worse and greater impacts. How do you handle it? Transportation – relocating from one part of town to another – what is the mechanism to move people and where do we relocate them to? Crossroads of all the highways, hazmat spills which can be worse with bad weather. Routes 395, 290, 12, 20, Mass Pike all increase exposure to spills esp. in bad weather. The high school and intermediate school are near 290 as is Bryn Mawr school nearby as well also near Mass Pike.

Question 5. What has Auburn done to plan and prepare for hazards and their impacts? How effective have these efforts been? What else could/should Auburn do?

Strengthened emergency planning since 2011. New emer. mgmt. director in 2011 and making sure they are trained, qualified and engaged in the planning process. Successful in getting the right people into that job and getting all the depart. heads to work together for all scenarios. Emergency planning and preparation done for each weather event. Have completed HazMat plan, Haz. Mitigation Plan which are major steps. LEMPC has been rejuvenated since 2011 and they are certified by MEMA and that was major. Those are important building blocks.

Auburn has an agreement with Central Mass DART for animals in case of emergency and have a place for animals so people will evacuate. What is the capacity? The Town's Shelter Plan has a provision for animals and they used it at the high school when we activated a shelter there.

Town administration has completed tabletop exercises. Applied for and received 2-3 grants a year from MEMA and FEMA which provides equipment, training and planning assistance as well as funds our CodeRED system. Julie serves on Central Mass Homeland Security Council and she has the seat representing municipalities. There is regional equipment that is housed here in Auburn as well as equipment in other towns in our service region. Locally, the Town has ensured that we have generators and backup generators for buildings. Two locations for storage of electronic data. Portable heaters have been provided by a Homeland Security grant to provide temporary heat to public safety facilities in the region during power outages to keep the building and equipment operational and to prevent pipes from freezing and causing damage to critical emergency and public safety equipment. The portable heaters can also be used to heat temporary shelter facilities and sheltering operations during emergencies. The heaters can also be used in tents and during outside events in cold weather. In February of 2013, during the extreme cold temperatures with wind chill factors well below zero, sprinkler pipes in the Auburn Police Station burst and water cascaded down the walls and stairwells, through the ceilings, and into several rooms. The flood caused extensive damage to the records room, the prisoner /jail area, and the community/meeting room, among other areas in the police station. The elevator became non-operational and the computer equipment room which stores the million-dollar Emergency 911 system also incurred water damage. They needed heaters and couldn't find them Friday afternoon but with the Homeland Security grant that was awarded they bought four large portable heaters and a trailer that are housed in Auburn but available for the Region.

Through a State regionalization grant with 5 communities, we purchased and share a bucket truck to prune trees and rotate it through the year between the communities for prevention as well as cleanup.

Auburn is part of a stormwater collation of 35 communities initially funded through a State Regionalization Grant. Through the Coalition we educate the public and coordinate efforts to better handle stormwater runoff.

CMRPC – regional evacuation plan with routes in and out of the community is in place.

Meet regularly with local emer. mgmt. committee and all departments participate – health, inspections, police, fire, schools, etc.

Many measures have been taken since 2011.

Each plan needs to be revisited on a regular basis. Contact people need to be kept current, vulnerable populations need to be accurately identified. These plans need to live beyond people who created them – they must be living, continually updated documents because personnel change.

Planning for non-environmental threats also provides additional capacity to deal with environmental impacts. ALICE Training– active shooter or other threats is done in the schools and town hall. Every three years the town hall closes, and they do training for all employees. We also provided ALICE training to board and commission members. Training brings awareness to the Town's ability to effectively respond to a threat. As a result, changes to building design and layout were done as well as installation of glass partitions and locked doors for security. Creating offices with dual emergency exits – ingress and egress concerns. Making offices safer for employees and visitors. Cameras and security systems installed. Emer. mgmt. planning is critical to the community.

Question 6. What are the community's strengths (for example, hardened utility lines reduce outages due to ice storms, undersized culvert replaced to reduce flooding at key intersection, improvement to communications systems, critical road reconstructed and elevated, etc.) that can be used to address the impacts of hazards?

Critical that employees are well trained and educated on practices and policies to follow during emergencies, natural or man-made. Table top exercises. Incident command system. Also critical to have proper equipment. In process of upgrading comm. equip. Getting radios for Central. Mass Law Enforcement Council because their equipment was not interoperative and they are working on that, so the different jurisdictions can all communicate.

Todd Lemon is point on updating Town communications equipment and it is about $1 million.

Plan to update dispatch equipment and processes. New position is communications director who reports to police and fire chiefs jointly and oversees dispatch. Consultant was also hired to evaluate our dispatch equipment and there is a plan to upgrade cameras and comm. Equipment. We have many cameras in dispatch, but it is a lot to manage and monitor. We are assessing how can the dispatch function be improved.

Emer. Response – ensuring there is the right equipment in place through the 5-year capital improvement plan (CIP) and a 20-year plan to update and/or replace all public safety and public works equipment.

Received a grant for an emergency operations trailer as a portable site. Can use it for Independence Day celebration in town as well as other events and emergencies that occur.

Also have a Health Department trailer with equipment to handle emergencies such as cots, medical equipment.

A couple of culverts in need of replacement and are continuing to apply for grants - need to do that for Sword Street. The diversion channel and what Worcester does to activate that has impacts on Auburn that need to be considered.

Critical to properly equip and train all emergency staff and other town employees.

Part of town is Asian Long-horned Beetle (ALB) designated and they must make sure they have a drop off place for the quarantined material. They must handle it safely and in accordance with regulations.

Emergency Operations Center moved from the Planning Board Meeting Room to the Police Station and now the town hall Planning Board meeting room, is our backup EOC.

Trained on WebEx to connect and work from wherever and can coordinate from anywhere – utilize the technology.

Town is strong fiscally and managed conservatively and have increased Free Cash to $12.8 million and increased level of overall reserves to 20%. Financial policies are in place that to protect reserves. Operational budget annually provides additional road funding over and above State Chapter 90 funds and other town assets are used for infrastructure improvements.

Auburn has not taxed to Proposition 2.5 limits and has excess levy –funds in place if needed. 5-year capital improvement program and a CIP fund that we contribute 1/10th of Prop 2 ½ annually for purchases so don't have to carry debt.

Town administration evaluated all municipal facilities on a regular basis to keep the facilities up to date and fixed and in good repair. Developed a 5 Year Facilities Improvement Plan to identify needs, schedule for renovations and repairs, and funding sources.

Interview with Shannon Regan

Question 1. Please provide your name, your department or committee, your position, and how many years you have worked (paid or unpaid) with the Town of Auburn.

Shannon Regan, Economic Development Coordinator, 3 years

Question 2. What natural hazards have impacted Auburn in the past? Examples of hazards include floods, hurricanes, blizzards, ice storms, extreme precipitation events, drought, heat waves, and wildfires.

Ice storms and major snow storms that required sheltering. Some businesses had damage and interruptions. Extreme heat temporary AC shelters. Temperature is dangerous because population is getting older. Language barriers. Difficulty getting people to shelters. Getting employees out of their work areas to home. Wells for water compromised by a truck spill on the Mass Pike. Diversion tunnel and dams. Concerns for businesses and houses.

Question 3. How did these hazards impact your community (where, how often, and in what ways)?

Population is aging. Quite a few assisted living facilities. Language barriers and communication issues with sight or hearing impairments. Communication needs like code red in English only at this time that she is aware of and there may be a need to reach people who speak other languages or the visual and hearing impaired.

Loss of heat or power for periods of time after intense storms. Cost of repairs to homes or businesses after a storm.

Question 4. What in the community of Auburn is currently exposed to hazards and climate threats? This could include population segments (elderly, young, persons with disabilities, etc.); businesses; infrastructure (roads, bridges, culverts, community buildings, schools, water supplies, neighborhoods, electric distribution system, etc.); and specific natural or environmental resources (forests, farms, wetlands, water resources, wildlife, etc.)? Think about potential impacts 5-30 years from now.

Water supply and infrastructure is a need and a risk. Water pressure issues and water quality issues as well – corrosive water? Sword Street industrial park concern with flooding and Stoneville Dam flooding. Elderly – English as second language, people with disabilities. High School fields flooding, and it is also a possible shelter. Power is pretty reliable. Big ice storms cause a problem. The town has some private roads that could be a concern due to emergency access (snowstorms or high precipitation/flooding) and businesses doing incorrect snow storage and keeping ingress/egress open. Key boxes need to have current keys on commercial buildings. Water supply businesses would like to have good pressure and good quality. Lack of natural gas

throughout town…be a good idea to look at expanding that infrastructure. Aging commercial property in town is a concern with storm damage. Retrofitting older properties is tough and costly.

Question 5. What has Auburn done to plan and prepare for hazards and their impacts? How effective have these efforts been? What else could/should Auburn do?

Town Hazard Mitigation plan is done and is a huge step. Emergency trailer, shelters, motor unit for fire and police. EMT's use a motorcycle to get through to assist when roadways are blocked. Very strong municipal team and their work has been very effective in preparing the town for potential threats.

Improvement to make the community more aware of what the policies are. Businesses providing access keys. Know where to go in case of emergency and employees need this information. Education and communication. Reaching the property owner and/or manager on site to communicate in an emergency could be an issue especially with absentee owners.

Taking a look at current and future infrastructure could be a huge step to addressing some needs… Need more diversity in housing stock for different needs to make sure residents are safe in their home setting. Condo complexes and new subdivisions are needed, and the undeveloped land doesn't always have the infrastructure to support these projects. Mary D. Stone School and Bancroft School are going to be redeveloped and these are good opportunities.

More outreach and communication for businesses, employees and citizens about how much the town has already done in regard to emergency planning would be a great effort as well.

Question 6. What are the community's strengths (for example, hardened utility lines reduce outages due to ice storms, undersized culvert replaced to reduce flooding at key intersection, improvement to communications systems, critical road reconstructed and elevated, etc.) that can be used to address the impacts of hazards?

Road access is a strength and there are not a lot of backups once exiting the Mass Pike and there are multiple roadways to get from one part of town to the other.

Personnel and staff are a huge strength in town – fire, police, EMT, town manager, inspectional services…etc.… are all strong. Internet is relatively good. Library internet for the public. The town uses social media, Cod Red, ACTV and mailings for communication so residents have the chance to receive important information. Dispatch is making a lot of improvements as well with communication.

Open space and parks are popular and used like the popular Pappas Recreation Complex. Drury Square – working on making it more walkable and safer.

Continued work on roadway improvements each year. The town has long term plans in place for roadwork and construction. Plowing and snow storm prep is a huge strength through DPW. Capital improvement plan is updated routinely.

Interview with Joe Shenette

Question 1. Please provide your name, your department or committee, your position, and how many years you have worked (paid or unpaid) with the Town of Auburn.

Joe Shenette, Deputy Director of Emergency Management, 30 years

15 years as associate director for Emergency Management, CERT Team (Citizens Emer. Resp. Team) and Local Emergency Planning Committee (LEPC). Three teams rolled into one.

Emer. Mgmt. is the umbrella for getting all the town agencies to work together and EM takes charge for the incident. Citizens (CERT) support anyone who needs them and supplement the normal first responders esp. if a tornado or other big disaster. This works on a neighborhood basis – no paramedic and EMT services from CERT volunteers. Work with police on 4th of July and other big events. CERT team works for BOH on hazard cleanup, flu control, manage the emergency shelters. – They are all trained volunteers.

LEPC – all the operating departments in a town and includes CERT team and develop protocols, table top exercises, Hazardous Waste mitigation plan, working on a generator verification program. Emer. Op. Center is at police station.

Question 2. What natural hazards have impacted Auburn in the past? Examples of hazards include floods, hurricanes, blizzards, ice storms, extreme precipitation events, drought, heat waves, and wildfires.

Late 70's and 80's snow and ice that taxed resources of Highway dept. and all towns were in the same boat and no help available. Access for emergencies became a problem. After three days of no electricity it was a problem. People needed shelter and showers and charging cell phones. Need for emergency shelter and CERT team came in. Loss of power for an extended duration is a killer. Emergency Generator test verification program for municipal generators is in place to make sure they are fully operable and maintained.

AHS is prime shelter and Swanson Road Intermediate School is secondary. Police station as EOC needed work and that was done. Generator verification – EMS handled this.

Comfort stations for heat waves, but Red Cross does shelters.

Senior center handles heat problems for comfort.

50's floods were a problem but that's mitigated. Weather events are a concern.

Question 3. How did these hazards impact your community (where, how often, and in what ways)?

Bus accident in Auburn with 50 non-English speakers and immediately needed shelter and triage to handle this. Pandemic event makes EMS most nervous. Mass shooting events.

Question 4. What in the community of Auburn is currently exposed to hazards and climate threats? This could include population segments (elderly, young, persons with disabilities, etc.); businesses; infrastructure (roads, bridges, culverts, community buildings, schools, water supplies, neighborhoods, electric distribution system, etc.); and specific natural or environmental resources (forests, farms, wetlands, water resources, wild life, etc.)? Think about potential impacts 5-30 years from now.

Senior citizens are common in Auburn. There are a lot of them including Brookdale at Eddy Pond and other facilities. How many rest homes and assisted care should there be in town? – there are a lot of these in Auburn – they require resources. CERT team has a training program to get more people trained in their own neighborhood and train as many as possible. It takes money to do the training and get the word out and get people to come to this.

What businesses could be an asset to emergency response teams? Are there any other unique services available from businesses in town? Are there businesses that would do medical assistance and supplies?

Question 5. What has Auburn done to plan and prepare for hazards and their impacts? How effective have these efforts been? What else could/should Auburn do?

Red Cross does shelters, and they are the first stop. But if Worcester can't handle it then the town does sheltering, but elderly medical care is a problem. But the plan is not for the Town to do the sheltering, rely on Red Cross. The volunteer team will get tired if there is a long-term event.

Additional resources – people and training are both needed. Or agreements with other towns to provide assistance with other towns. AHS has generator but not enough to run AC. Use Senior Center for cooling comfort station.

Question 6. What are the community's strengths (for example, hardened utility lines reduce outages due to ice storms, undersized culvert replaced to reduce flooding at key intersection, improvement to communications systems, critical road reconstructed and elevated, etc.) that can be used to address the impacts of hazards?

Strengths – local emer. planning committee is a plus and they coordinate and identify weaknesses and take action – like having an EOC, emergency plan, shelter plan. Fire Dept. and EMS is stronger than other towns nearby. Police dept. communications infrastructure is good and will be going onto the State Police radio system to be interoperable. They have been able

to get funding and are successful in getting funding based on identifying needs. Highway Dept. has taken over town building maintenance. They are doing work inhouse at a reasonable cost. Good interoperability between departments – but with a tornado and loss of internet and cable and power – the EOC has no way of reaching board of health and inspection services because there needs to be walkie talkie system for senior center, board of health, etc. and too much dependency on cell phones.

Training and building relationships and assessing what assets the private community can furnish in an emergency and develop a MOU to have in place to assist in an emergency.

Priorities that come up by group consensus may not match with the needs of the Town departments. This is a concern with the MVP workshop.

Communications tower has a primary and secondary with backups. But it doesn't reach Board of Health and others – there needs to be better ways to communicate with them during an extended power outage with loss of cell phone service.

Appendix K – Summary of MVP Listening Session and Public Comments
April 8, 2019

Adam Menard opened the meeting at 6PM.
The meeting was live-streamed on Auburn's YouTube channel and recorded for later viewing through the Auburn Cable Access Television site.

Adam explained the MA MVP program, Auburn's objectives for the program, and recognized the Blackstone River Watershed Association facilitators and Auburn High School scribes for the workshop which was held on February 28, 2019.

He summarized the downscaled the Northeast Climate Adaptation Science Center climate projections that were developed for the MVP program and explained the primary climate impacts Auburn is expected to experience.

The "Areas of Concern" identified during the workshop were overviewed and Adam explained that workshop participants discussed the Town's strengths and vulnerabilities, in light of the concerns, for infrastructure, society, and environment. Adam discussed the 3-4 highest priority recommendations in each of these three sectors. He also reviewed the next steps that will be taken in Auburn's effort to become an MVP certified community.

Q1. Why didn't we hear anything about solar. Shouldn't we be looking at solar solutions?
A. This program is really about planning ahead to adjust to climate change; Auburn does think that solar energy is good to do.
Discussion: Auburn is in the planning stages of putting in electric vehicle charging stations.

Municipal Vulnerability Preparedness (MVP)

Listening Session

Town of Auburn

Adam Menard

Town Planner

April 8, 2019

MVP Grant Program

- Starting point to begin the process of planning for climate resiliency
- Auburn to be certified as an MVP community and will be eligible for follow-up grant funding and other opportunities to assist in implementing strategies
- Based on Community Resilience Building as developed by Adam Welchel of the Nature Conservancy

MVP Planning Grant Objectives

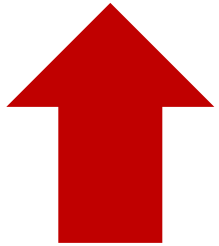
- Define extreme weather, natural and climate-related hazards
- Identify existing and future vulnerabilities and strengths
- Develop and prioritize actions for the community and broader stakeholder networks
- Identify opportunities for the community to advance actions to reduce risks and build resilience

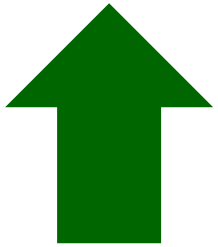
MVP Workshop

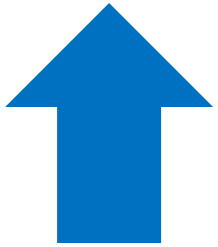
Northeast Climate Science Center UMass Amherst

- Climate Models are from the IPCC Fifth Assessment Report
- The Historical Data 1971-2000
- Medium and High Emission Scenarios were Chosen
- Medium Scenario Assumes Emissions Peak at Mid-Century
- High Scenario Assumes a Continuing Emission Trajectory

Massachusetts Observed Climate Changes

Temperature:  **2.9°F** Since 1895

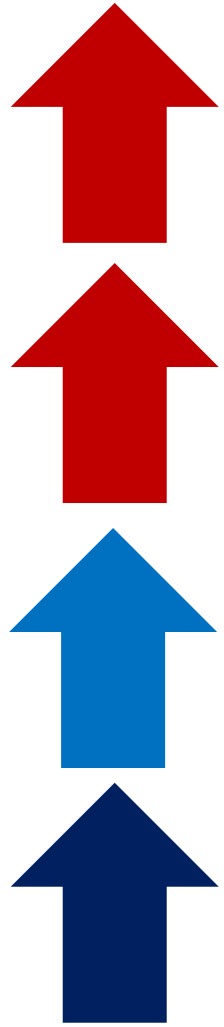
Growing Season:  **15 Days** Since 1950

Sea Level Rise:  **11 inches** Since 1922

Strong Storms:  **55%** Since 1958

Sources: NOAA nClimDiv climate division dataset and the Third National Climate Assessment.

Massachusetts Climate Changes Projected by the 2090s



Temperature 7.2°F

90°F Days 34

Sea Level Rise 5 feet

2.4 to 7.4 feet is most likely

2” Precipitation Days 47%

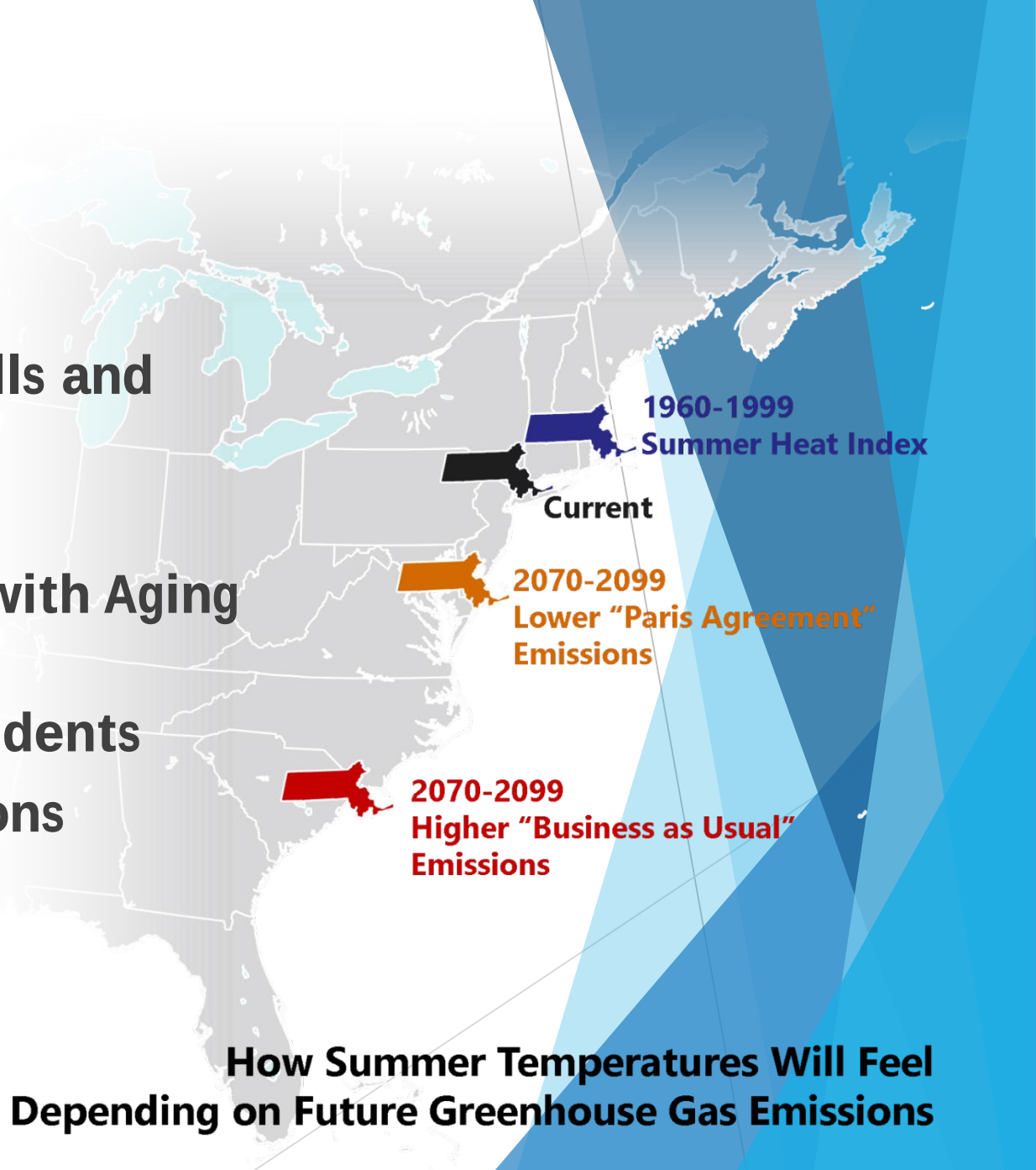
Source: Northeast Climate Science Center,

Build Resiliency

- Flooding & Extreme Precipitation
- Snow & Ice Storms
- Heat & Drought
- High Winds

Areas of Concern

- Vulnerable Drinking Water Supply Wells and Aquifer
- Flood-prone Areas and Infrastructure
- Major Interstate and State Highways with Aging Structures and Complex Intersections
- Dispersed Elderly and Vulnerable Residents
- Active Freight Rail Lines and Operations



How Summer Temperatures Will Feel Depending on Future Greenhouse Gas Emissions

Strengths – Weaknesses - Priorities

- Infrastructure
- Societal
- Environmental

Infrastructure

- Sword Street Culverts
- Build a Town-owned Fueling Station
- Evaluate Back-up Power Systems at Critical Town Facilities
- Assess Vulnerability of the Power Transmission

Societal

- Review of Evacuation Planning and Housing Bylaws
- Improve Communication
- Mixed Use and Nature-Based Green Infrastructure Approaches

Environmental

- Protect and Improve Water Quality and Quantity
- Update Aquifer Bylaws
- Stormwater Regulations, Enforcement

Next Steps

- Submit final report to EOEEA
- Annual report to ensure that resilience is a community priority by incorporating MVP results into local comprehensive planning, grant applications, budgets, capital projects, and policies
- Seek grant funding
- Implement policy and bylaw changes
- Update existing plans

Questions

resilient MA

Climate Change Clearinghouse for the Commonwealth

NE CASC

Northeast Climate Adaptation Science Center