LOCAL HAZARD MITIGATION PLAN (LHMP) AND MUNICIPAL VULNERABILITY PREPAREDNESS (MVP) PLAN

October 2021

Town of Ashburnham, MA

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TABLE OF CONTENTS

1 OVERVIEW 6
1.1 LHMP and MVP Plan Introduction 6
1.2 Planning process 7
1.2.1 Ashburnham's Participation in Regional Planning 7
1.2.2 The Local Hazard Mitigation Planning/MVP Core Team 8
1.2.3 Public Meetings 8
1.2.4 Municipal Vulnerability Preparedness Plan 8
1.2.5 Local Hazard Mitigation Plan 9
2 REGIONAL AND COMMUNITY PROFILE 11
2.1 Regional Profile 11
2.1.1 Populations 11
2.1.2 Employment 11
2.1.3 Transportation 12
2.1.4 Water Resources 14
2.2 Community Profile 14
2.2.1 Current Strengths and Assets 15
2.2.2 Land use 16
2.2.3 Critical Facilities 16
2.2.4 Future land use and Facilities 19
3 COMMUNITY RESILIENCE BUILDING WORKSHOP/SUMMARY OF FINDINGS 20
4 TOP HAZARDS AND VULNERABLE AREAS 22
4.1 Top Hazards 22
4.2 Top Vulnerabilities to the Impacts of Climate Change 23
5 OVERVIEW OF ALL HAZARDS AND VULNERABILITY 26
5.1 Overview of Hazards and Impacts 26
5.2 Heavy Rain 28
5.3 Bridges 30
5.4 Snow Melt 31
5.5 Dam Failures 33
5.6 Ice Jams 35
5.7 Beavers 36
5.8 Coastal Storms 37
5.9 Hurricanes/ Tropical Storms 37
5.10 Tornados 39

5.11 High Winds 41
5.12 Severe Thunderstorms 42
5.13 Winter Storms 43
5.14 Wildfires 45
5.15 Drought 46
5.16 Extreme Temperatures 51
5.17 Earthquakes 55
5.18 Landslides 57
6 CRITICAL INFRASTRUCTURE AND VULNERABILITIES 59
6.1 Critical Infrastructure in Hazard Areas 59
6.1.1 Introduction to HAZUS-MH 59
6.1.2 Estimated Damages from Flooding 60
6.1.3 Estimated Damages from Hurricanes 61
6.1.4 Estimated Damages from Earthquakes 62
6.2 Future Development in Hazard Areas 63
7 EXISTING MITIGATION MEASURES AND CONCERNS/CHALLENGES 64
7.1 Existing Mitigation Measures 64
7.2 Specific Categories of Concerns and Challenges 69
8 HAZARD MITIGATION GOALS AND OBJECTIVES 71
8.1 Approach and Methodology 71
8.2 Top Recommendations and Strategies to Improve Resilience 71
9 POTENTIAL HAZARD MITIGATION MEASURES 73
9.1 Process for Setting Priorities for Mitigation Measures 73
9.2 Introduction to Potential Hazard Mitigation Measures (Table 23) 73
10 REGIONAL AND INTERCOMMUNITY CONSIDERATIONS 82
10.1 Regional, State and Federal Partners 83
10.2 Inter-Community Considerations 83
10.3 Regional Issues 83
11 PLAN ADOPTION, IMPLEMENTATION AND MAINTENANCE 84
11.1 Plan Adoption 84
11.2 Plan Implementation 84
11.3 Plan Maintenance 84
11.4 Integration of the Plans with other Planning Initiatives 84
12 LIST OF REFERENCES 86

Figure 1 Community Characterization Survey Word Cloud 22
Figure 2 Climate Change Hazards In Massachusetts.....23
Figure 3: NOAA Average Annual Precipitation Data for Worcester County, MA 29
Figure 4: Annual Total Precipitation projections, Worcester County. 30
Figure 5: NOAA data for Annual Snowfall 32
Figure 6: 2016 Drought in Massachusetts.....48
Figure 7: 2020 Drought in Massachusetts.....49
Figure 8: Droughts experienced in Massachusetts (2000-2020).....49
Figure 9: Annual Consecutive dry days, Worcester County.....51
Figure 10: Worcester county, January average temperatures (1980-2020) 52
Figure 11: Worcester county, January minimum temperatures (1980-2020) 52
Figure 12: Worcester county, July average temperatures (1980-2020) 53
Figure 13: Worcester county, July Maximum temperatures (1980-2020).....53
Figure 14: Annual Maximum Temperature Projections for Worcester County 54
Figure 15: 2015 Regional Plan, Earthquake figure. 57

Table 1:Hazard Risks Summary.....11
Table 2: Employment by Sector 12
Table 3: Land Use.....16
Table 4: Critical Facilities 18
Table 5: Hazard Risks Summary.....27
Table 6: Disaster and Emergency Declarations for Worcester County 27
Table 7: Dams in Ashburnham, MA.....34
Table 8: Saffir-Simpson Hurricane Scale.....38
Table 9: Hurricanes/Tropical Storms 39
Table 10: Enhanced Fujita Tornado Scale 40
Table 11: Thunderstorm Events (1996-2020).....42
Table 12: Snowfall scale 44
Table 13: Snow Related Disasters (1996 to 2020) 44
Table 14: Wildfire record (2009-2020).....46
Table 15: Palmer Drought Severity Index (PDSI) 47
Table 16: Richter Magnitude Scale 55
Table 17: Earthquakes (1978-2020).....56
Table 18: Critical Infrastructure within the 100-year Flood Plain.....59
Table 19: Hurricane Estimated Damages.....62
Table 20: Earthquake Estimated Damages.....63
Table 21: Ashburnham's Existing Mitigation Measures 64
Table 22: Status of Mitigation Measures from the 2015 Regional Hazard Mitigation plan.....67
Table 23: Potential Mitigation Measures.....74

Appendices

A - Hazard Mapping

B - Plan Adoption Documentation

C - Planning Documentation

1. Introductory Slide Show
2. Workshop Agenda
3. Reference Figures
4. Base Figure
5. Workshop Group Matrices
6. Survey Results
7. Prioritized Actions
8. Invitation List
9. Invitation Letter
10. Public Listening Session Agendas
11. Public Listening Session Comments and Attendance

1 OVERVIEW

The Massachusetts Executive Office of Energy and Environmental Affairs' (EOEEA) Municipal Vulnerability Preparedness (MVP) grant program created in 2017 as part of Governor Baker's Executive Order 569 provides support for cities and towns in Massachusetts to identify climate hazards, assess vulnerabilities, and develop action plans to improve resilience to climate change. The program provides MVP Planning Grants to assist municipalities in preparing for the impacts of climate change through participation in a Community Resilience Building (CRB) Workshop and development of a climate change action plan. Communities that complete the MVP Planning Grant process become designated as an MVP Community and are eligible for MVP Action Grant funding to implement the priority climate change adaptation actions identified through the planning process.

The Ashburnham Local Hazard Mitigation Plan (LHMP) is an updated version of the Montachusett Region Natural Hazard Mitigation Plan 2015 Update prepared by the Montachusett Regional Planning Commission (MRPC). The 2015 Regional Hazard Mitigation Plan, which addressed all 22 communities (plus Devens) in the Montachusett Region was funded by the Federal Emergency Management Agency (FEMA), the Massachusetts Emergency Management Agency (MEMA) and the MRPC. This plan was created to reduce the loss of or damage to life, property, infrastructure, and natural and economic resources from natural disasters in the Montachusett Region.

The 2021 LHMP and the Municipal Vulnerability Preparedness (MVP) Plan has been prepared for the Town of Ashburnham by Pare Corporation (Pare), under the direction of the Town. This report was funded by the Town pursuant to a Municipal Vulnerability Preparedness (MVP) planning grant issued to the Town by the MA Executive Office of Energy and Environmental Affairs (EOEEA), the purpose of which was 1) to assess the Town's vulnerability to and prepare for climate change impacts, 2) build community resilience, and 3) receive designation from the EOEEA as a Climate Change Municipal Vulnerability Preparedness (MVP) program municipality.

Credits

Project Manager:	Marshall Dennis
Technical Consultant:	Pare Corporation

Town of Ashburnham:

EMA Director and Fire Chief:	Chief Robert Plant
Police Department:	Lieutenant Chris Conrad
Town Administrator:	Brian Doheny
Department of Public Works:	Randy Williams
Conservation Commission:	Marshall Dennis

1.1 LHMP and MVP Plan Introduction

Planning Requirements under the Federal Disaster Mitigation Act

The Federal Disaster Mitigation Act, passed in 2000, requires that after November 1, 2004, all municipalities that wish to continue to be eligible to receive FEMA funding for hazard mitigation

grants must adopt a local hazard mitigation plan. This planning requirement does not affect disaster assistance funding.

In 2008, Massachusetts took a regional approach and has encouraged the regional planning agencies to apply for grants to prepare plans for groups of communities. The MRPC received a grant from FEMA under the Pre-Disaster Mitigation (PDM) Program to assist the Town of Ashburnham and twenty-one other communities to develop a regional multiple-hazard mitigation plan in 2008 and then the updated plan in 2015. The 2015 regional plan was used to create the Ashburnham Local Hazard Mitigation Plan (LHMP) And Municipal Vulnerability Preparedness (MVP) Plan prepared under the EOEEA grant, which meets the requirements of the Disaster Mitigation Act.

What is Hazard Mitigation?

Natural hazard mitigation planning is the process of determining how to reduce or eliminate the loss of life and property damage resulting from natural hazards such as floods, earthquakes, and hurricanes. Hazard mitigation means to permanently reduce or alleviate the loss of life, injury and property damage resulting from natural hazards through long-term strategies. These long-term strategies include planning, policy changes, programs, projects, and other activities.

What is Climate Adaptation?

Climate adaptation planning is the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. This process considers natural hazards that impact the community, and how they will increase in intensity and frequency due to climate change. Climate adaptation implements strategies that allow a community to adapt to these changes and increase resilience to the impacts of more severe natural hazards. Long-term strategies for climate adaptation are like those of hazard mitigation, with consideration of the projected future changes.

This plan encompasses the results of a multi-step planning process to prepare Ashburnham for both hazard mitigation through the LHMP and climate adaptation through the MVP. This included community outreach to incorporate the input of Ashburnham's community members in all phases of plan development, such as identification of risks and vulnerabilities as well as goal setting and action development. The planning process was managed through a partnership among the EOEEA, MEMA and FEMA.

1.2 Planning process

1.2.1 Ashburnham's Participation in Regional Planning

Since the MRPC's creation in 1968, Ashburnham has participated in numerous MRPC planning-related programs, most recently with respect to updates to sections of the Town's Master Plan and revisions to the Town's Zoning Bylaws.

With specific respect to the 2015 HMP Update, Town and MRPC representatives met on multiple occasions between 2012 and 2014 to discuss and document existing local hazards, potential hazard mitigation measures, and hazard mitigation implementation strategies. Collectively, the information, actions and strategies generated during these meetings served as

the basis for the 2015 HMP Update. However, in the 2021 update, regional input was collected through the CRB Workshop.

1.2.2 The Local Hazard Mitigation Planning/MVP Core Team

Team Members

The local Hazard Mitigation Planning/MVP Core Team consisted of the following members, referred to as the "Core Team":

- Chief Robert Plant, EMA Director and Fire Chief
- Lieutenant Chris Conrad, Police Department
- Brian Doheny, Town Administrator
- Randy Williams, Department of Public Works
- Marshall Dennis, Conservation Commission (MVP Leader)

Team Meetings

The Core Team met in January and February 2021 to outline the primary goals and objectives for the MVP process and discuss the MVP's integration with the LHMP and Town planning efforts. Also addressed at these meetings was the format for the CRB workshop, which is an integral component of the LHMP/MVP planning process involving such community stakeholders as state and local government agencies, local business and academic institutions, and non-profit organizations, among others. As described in the CRB Workshop Guide, the workshop's central objectives are to:

- Define extreme weather, natural hazards, 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.

1.2.3 Public Meetings

The MVP two-part virtual CRB Workshop was held on February 25, 2021, and March 3, 2021, from 8:30 AM-12:30 PM via Zoom. After the workshops, two public listening sessions were held on April 22, 2021, and May 25, 2021, at 5 PM to review the summary of findings from the CRB workshop, and then to review the Ashburnham Local Hazard Mitigation Plan (LHMP) and Municipal Vulnerability Preparedness (MVP) Plan as indicated in the next section.

1.2.4 Municipal Vulnerability Preparedness Plan

As noted above, the MVP two-part virtual CRB Workshop was held on February 25, 2021, and March 3, 2021, from 8:30 AM-12:30 PM via Zoom. With the assistance of Pare Corporation, a certified MVP Provider, the Town prepared for the workshop by developing a list of attendees, compiling community background resources, and mapping data, and setting an agenda that meets the goals of the program. A total of 24 community stakeholders including the Core Team participated in the CRB Workshop (see full list of Attendees below and the invitee list at the end of this document), divided into four breakout groups. Pare Corporation provided one facilitator and one scribe for each group, which were also supplied with PDF reference map package (see

Attachments). After an introductory presentation by Pare Corporation, Hillary King (EOEEA, MVP Central Regional Coordinator), and the Town Administrator, the breakout groups began discussing the main objectives of the workshop. Attendees included the Core Team listed above along with the following participants:

- Sarah Culgin – Building Commissioner/Zoning Enforcement Officer
- Chris Picone - Conservation Commission/Rail Trail Committee
- Christine Martellio - Overlook Middle School/Principal
- Anna Wilkins - North County Land Trust
- Steve Douglas - Sunset Lake (Far Hills Association)
- Rick Metcalf - Nashoba Associated Boards of Health
- Robert Francis - Crocker Pond Properties, Inc.
- Adam Gromelski – MRTA/Assistant Administrator
- Janet Robbins - Council on Aging
- Roger Hoyt - Planning Board
- Fred Sellars - Sunset Lake (Far Hills Association)
- Gary Howland - Ashburnham Conservation Trust
- Rachel Freedman - Flo Chemical Corporation
- Adam Testagrossa - Veolia Water North America
- Ed Vitone - Library Trustee
- Randy Bertin - Cushing Academy/Head of School
- Lorraine DeSouza - Ashburnham Conservation Trust
- Karen Chapman - Montachusett Regional Planning Commission
- David Uminski - Oakmont Regional High School/Principal

Neighboring communities along with regional organizations were invited as participants and given the chance to provide input to affect the plan's content. Examples of regional organization and neighboring communities invited to participate include: Chief Mike Bussell - Ashby MVP leader, Nick Erickson - Fitchburg MVP Leader, Lyndsy Butler - Gardner MVP Leader, Joshua Hall -Westminster MVP Leader, Karen Chapman – Montachusett Regional Planning Commission and Adam Gromelski – MRTA. Please see Appendix C for full invitation list for the MVP and LHMP process.

1.2.5 Local Hazard Mitigation Plan

In accordance with the LHMP program guidelines, a completed draft of the LHMP for Ashburnham was completed after the April 22, 2021, Public Listening Session for the MVP Summary of Findings Review. The stakeholders listed above represent the parties involved in discussing hazards in the town of Ashburnham.

The LHMP includes regional resources such as the 2018 State Hazard Mitigation and Climate Adaptation Plan, FEMA flood insurance studies and published data on historical hazards. Local resources such as the 2017 updates to the Town's Master Plan, the 2021 Comprehensive Emergency Management Plan, and input from the Core Team were also included. Regional and local data was used for Section 5 and local resources listed above were used for Sections 3 and 8 to create the LHMP draft report. Please see Section 11 for more references.

The draft LHMP report was presented to the Core Team members for review and comment. The draft LHMP then was presented at a public listening session on May 25th, 2021, for Town residents and stakeholders to comment on the plan. Participants of the meeting were given a

survey to provide additional written feedback to be incorporated into the plan. Anyone who was not able to attend the public listening session was also provided a video link posted on the Town's website to watch the public listening session and use the survey link to provide any additional feedback. Once all final comments were incorporated, the LHMP was finalized on June 8, 2021.

After the LHMP is adopted by the town officially, implementation strategies can commence. To continue plan updates and public participation in the plan, the town of Ashburnham's website will be updated with information to notify members of the community of grants received and mitigation projects being implemented.

- End of Section -

2 REGIONAL AND COMMUNITY PROFILE

2.1 Regional Profile

The following information for Ashburnham and the Montachusett Region primarily was derived from the MRPC 2015 Regional Plan and represents community/regional profiles at the time of the 2015 HMP Update. Information related to the region below is not necessarily specific to Ashburnham, however the regional networks described are an important contextual component of Ashburnham and its relationship to the Region.

2.1.1 Populations

The 2010 Census recorded 236,475 residents in the Montachusett Region, a 3.7% increase in population from the year 2000. Since 1960, the Region's population has continued to grow, as indicated by Table 1 below. Most communities have seen population increases in recent years. In fact, just three communities in the Region experienced a decrease in population between the years 2000 and 2010: Gardner, Townsend, and Leominster. Communities that experienced the largest percentage increase in population since 2000 were Templeton (17.9%), Shirley (13.1%), Hubbardston (12.1%) and Groton (11.5%). Prior to the Devens Restructure in the 1990's, Devens military population was divided among the communities of Ayer, Harvard and Shirley. Devens is no longer an active military installation with any significant military population.

TABLE 1:HAZARD RISKS SUMMARY

Community	1960	1970	1980	1990	2000	2010	'80-90' % Changes	'90-00'% Changes	00-10% Changes
Ashburnham	2,758	3,484	4,075	5,433	5,546	6,081	33.3%	2.1%	9.6%
Regional	182,077	199,296	202,557	223,865	228,005	236,475	10.5%	1.8%	3.7%

Source: U.S. Census Bureau & Massachusetts 2010 Population and Housing Unit Counts, US Department of Commerce, Economics and Statistics Administration

2.1.2 Employment

The Montachusett Region continues to undergo diversification of its economy. Following National and State trends for decades, there has been an ongoing trend in the reduction in the number of manufacturing jobs and an increase in jobs in the service sector. In addition, there have been local and Regional efforts to boost tourism in the Region. New types of manufacturing jobs are anticipated to be created in relation to markets yet to emerge with products related to electronics, biotechnology, and nanotechnology. The types of service sector jobs that are increasing are in the health care and hospitality sectors.

TABLE 2: EMPLOYMENT BY SECTOR

Community	Agriculture / Forestry / Fishing / Mining	Construction	Manufacturing	Waste Management	Retail	Transportation / Warehouse / Utilities	Information	Finance / Insurance / Real Estate	Professional Scientific	Education / Healthcare / Social	Arts / Entertainment / Recreation / Food	Other	Public Admin	Total By Community
Ashburnham	15	278	461	85	231	79	67	319	347	883	255	92	241	3353
Percentage Employed by Sector	0.4	8.3	13.7	2.5	6.8	2.3	1.9	9.5	10.3	26.3	7.6	2.7	7.2	-

Source: American Community Survey, 2014

Table 2 above depicts the number employed by sector - there are existing clusters of business in the Region. While the area once benefited from furniture and paper manufacturing, these sectors have given way to the emerging polymers, plastics, metals fabrication, and food processing facilities supported by a business services cluster (e.g., finance, insurance, and real estate). Education, healthcare, and social services account for the most jobs in the Region, at 24.6%. The Region is experiencing dramatic declines in manufacturing, a sector that has been important to the Region's history and economy, which currently only accounts for 15.9% of all jobs in the Montachusett Region. In 1990, manufacturing jobs accounted for 29.4% of all jobs, and 24.4% in 2000. *(1990 & 2000 U.S. Census)*

The Region is experiencing an increase in jobs in finance, insurance, and real estate (5.7%, up from 5.0% in 2000, and 4.5% in 1990). Agriculture, forestry, fishing, and mining accounted for the fewest number of jobs in the Region, coming in a just 0.7%; Information technology is second lowest at 2.2%.

2.1.3 Transportation

The Montachusett Region is served by several State-numbered routes that provide accessible links to all of the Region's communities. Of greatest importance to the area is Route 2, running east-west throughout the entire Region. This is one of two limited access east-west highways in the state and parallels the Massachusetts Turnpike in the center of the Commonwealth. This roadway provides the area with a direct link to I-495 and Boston in the east, and a connection in the west to I-91 and the western half of the State. Consequently, this highway is a major thoroughfare for the State as well as for the Region. Additionally, during an emergency, Route 2 would function as a major evacuation route. The Region's major urban communities (Fitchburg, Leominster, and Gardner) all border Route 2. The section of Route 2 from Phillipston to Athol in the MRCP Region was part of an ongoing Safety Improvement Study to improve the highway between Phillipston and Greenfield. Resulting improvements in the two communities included construction of climbing lanes, on and off ramp improvements, a truck weigh station in Athol and the installation of an innovative centerline treatment called "Qwick Kurb" along approximately 13 miles of Route 2 in Phillipston and Athol.

The completion of I-190 in the early 1980's added a second major limited access highway to the Region. This roadway provides direct access to Worcester, I-290 and the Massachusetts

Turnpike. This highway has helped to reduce through traffic volumes on Route 12 by providing easier access to the Worcester area.

A second new limited access roadway was added to the Region's highway network with the completion of the Route 140 Bypass in Gardner, Westminster, and Winchendon. Also constructed in the early 1980's as an alternative to the existing Route 140 layout, the Route 140 Bypass has enhanced traffic flow and alleviated some of the excess through traffic in Gardner city center. The MRPC and Central MA Regional Planning Commission (CMRPC) have worked with the communities of Sterling, Princeton, and Westminster on a Route 140 South Corridor Profile which has addressed safety concerns and made recommendations for improvements along the roadway from Route 2 south to I-190. A similar effort was undertaken by the MRPC along Route 140 North from Route 2 in Westminster north through Gardner and into Winchendon to Route 12. The Route 140 North Corridor Profile also identified potential improvements to address safety and access concerns in the three communities. Based upon information contained within this Corridor Profile, several safety improvements were implemented in Winchendon to Route 140 from the Gardner city line north to Teel Road. Also, near Route 12, a new roundabout was designed/constructed by MassDOT at the Exit 6 on/off ramps of I-190 in Sterling.

In Lunenburg, the two major roadways are Route 2A (Massachusetts Avenue) and Route 13 (Chase Road, Massachusetts Avenue and Electric Avenue). Route 2A is functionally classified as a Principal Arterial and is a major east/west road through both the town of Lunenburg and the Region as a whole. This road is under MassDOT jurisdiction through the Town and the pavement condition varies from good to fair condition throughout. Route 13 is a north/south Principal Arterial originating in the City of Leominster towards the south through Lunenburg and the Town of Townsend in the north. Route 13 is almost completely Town jurisdiction throughout Lunenburg except for a short 0.1-mile section shared with Massachusetts Avenue (Route 2A) that is under MassDOT jurisdiction. Major improvements to Route 13 in North Leominster are expected to start in 2016 that will greatly improve congestion issues that users from Lunenburg attempting to access Route 2 and other commercial areas currently experience during AM and PM rush hours.

Public Transportation

While there is no fixed route bus service in Ashburnham, the Region receives a wide array of public transportation services. At the forefront of the Region’s public transportation is the Montachusett Regional Transit Authority (MART), which administers the local bus systems. The Town and MART provide service in Ashburnham through the Council on Aging that employs a paid coordinator funded jointly.

MART offers fixed route, demand response and special employment transportation services to the communities of Fitchburg, Leominster, and Gardner. Limited intercity bus services are also available in Winchendon, Templeton, Phillipston, Athol and Orange. Many communities have transportation service for the elderly and disabled.

The Massachusetts Bay Transportation Authority (MBTA), based in Boston, provides commuter rail service to the Region. Four commuter rail stations are located in the Montachusett Region. Ashburnham is located approximately equidistantly between two commuter rail lines, the Fitchburg Rail Line which runs to North Station in Boston, and the Worcester/Framingham Rail Line which runs to South Station in Boston. The closest Fitchburg line commuter rail station to Ashburnham is in Fitchburg. The closest Worcester/Framingham line commuter rail station to Ashburnham is in Worcester.

Air Transportation

Within the Montachusett Region, there are three general aviation airports. Fitchburg Municipal Airport is located between the cities of Fitchburg and Leominster and the Gardner Airport in Templeton is located near the Gardner city line. Both are publicly owned. The third airport is Sterling Airport in Sterling, which is owned by a private corporation. All three airports are open to the public. The largest of the airports by far is the Fitchburg Municipal Airport. The airport sits on 335 acres and is classified as a General Aviation, General Utility Stage II airport by the National Plan of Integrated Airport Systems (NPIAS). This indicates that the airport can serve all small airplanes and accommodate some larger aircraft with a wingspan of less than 79 feet. Averages of 170 flights per day are handled on its two- runway system.

Freight

Within the Montachusett Region, three major freight rail carriers operate: CSX Transportation, Pan Am Railways and the Providence & Worcester Railroad. In the Region, rail operators own a total of 148.7 track miles that imports and exports industrial products.

2.1.4 Water Resources

The Montachusett Region contains 1,181 lakes and ponds totaling 22,678 acres. The Region also has 4,277 wetlands, totaling 36,903 acres. The Region encompasses parts of four watersheds: Millers, Nashua, Merrimack, and Chicopee. The majority of the Region's communities are located in the Nashua River Watershed, followed by six communities in the Millers River Watershed, three in the Chicopee Watershed and a small portion of Ayer and Groton in the Merrimack River Watershed. Each watershed contains many smaller rivers and brooks with their own unique values, functions, and uses.

Based on the Town's Open Space & Recreation Plan 2014 Update (published in 2017), twenty lakes and ponds, and numerous streams, brooks, wetlands, bogs, and vernal pools make up the water resources in Ashburnham. The headwaters for three watersheds begin within Ashburnham Town Limits – the Nashua, Millers, and Souhegan. Lincoln Pond, which sequentially flows into Lake Winnekeag, Phillips Brook, and the North Nashua River forms the headwaters of the Nashua Watershed. Lake Wampanoag is also within the Nashua Watershed and flows south to the Whitman River and then to the North Nashua River, which ultimately flows into the Merrimack River in Nashua, New Hampshire. The Millers Watershed begins with waters that drain from Wallace Pond, Lake Watatic, Sunset Lake, and Lower and Upper Naukeag Lakes, which flow west into the Millers River, whose confluence with the Connecticut River occurs adjacent to the French King Bridge in the Towns of Erving and Montague. The Souhegan Watershed contains Stodge Meadow Pond, Marble Pond, Billy Ward Pond, and Little Watatic Pond, which all flow north into the Souhegan River, then into the Merrimack River in Merrimack, New Hampshire, which empties into the Atlantic Ocean. Collectively, these watersheds drain 2,200 square miles and travel through sixty-seven towns in Massachusetts and eleven in New Hampshire.

2.2 Community Profile

The Town of Ashburnham is in North Central Massachusetts, bordered by Rindge and New Ipswich, New Hampshire on the north, Winchendon on the west, Gardner on the southeast, Westminster on the south, and Fitchburg and Ashby on the east. Ashburnham is 9 miles northwest

of Fitchburg, 31 miles north of Worcester, 55 miles northwest of Boston, and 200 miles from New York City.

The Town of Ashburnham covers an area of 38.40 square miles and has a resident population of 6,348, according to the 2019 US Census. The population density is 158 people per square mile. There are 2,031 housing units in the town with an average household size of 2.98. The median age of residents is 37.

The Town of Ashburnham is a typical New England community. Forests, wetlands, rolling hills and farmland characterize the landscape. It is known as "The Town of Many Lakes." The Town has over 20 lakes, eight of significant size. These lakes draw vacationers and part-time residents from all parts of the Northeast. During a summer weekend, the population of the town can double. Incorporated in 1765, the town grew from a farming settlement into a mill town noted for furniture manufacturing by the mid 1800's. In addition to its natural beauty, Ashburnham is the home of a prestigious preparatory school, Cushing Academy, which draws 400 students from all over the world. The largest employer in the town is Cushing Academy.

2.2.1 Current Strengths and Assets

During the CRB workshop, the Town collectively identified its resources, strengths, assets, and capabilities. This information guided the framework in determining what resilience measures should be implemented to adapt and mitigate risk against town vulnerabilities and to preserve the Town's existing strengths. These strengths provide protection against natural hazards and climate change impacts but could become vulnerabilities if not properly maintained. The following are strengths that were identified for infrastructural, societal, and environmental features during the CRB workshop.

Infrastructural

Community members collectively identified infrastructure resources, strengths, assets, and capabilities. This included Oakmont Regional High school for not only providing the resources for education to the youth of Ashburnham but also due to the high school being the emergency shelter for community members and the alternate Emergency Operations Center for emergency management. Other town buildings were listed as assets during emergency management such as the town hall, the senior center and the police and fire stations, which all have resources they can provide to the public. The community also voiced private firms that provide jobs to the area which are critical facilities within the community, which included Cushing Academy and Flo Chemical. Critical utility infrastructure was also mentioned that strengthens the community such as the Ashburnham/Winchendon Water Filtration Plant and the Ashburnham Municipal Light Plant. All these infrastructure assets provide various resources to Ashburnham's community and were highlighted as important strengths to maintain during the workshop.

Societal

Community members also identified societal resources, strengths, assets, and capabilities that enhance Ashburnham's community. This included town facilities that were listed as assets for cultivating Ashburnham's sense of community. Buildings such as the public school system and the public library, which have resources they can provide to the public. These facilities are strengths that are particularly useful in reaching and assisting vulnerable populations. Vulnerable populations are residents whose everyday stressors make it harder to adapt and recover when hazards occur. In Ashburnham, children, the elderly, disabled residents, and low-income

residents are considered vulnerable. Community members voiced that Ashburnham is a small, tight knit community where neighbors check in on other neighbors and the community enjoys the outdoors. This sense of community was also stated as a societal strength.

Environmental

The participating Ashburnham community members collectively identified environmental resources, strengths, assets, and capabilities that enhance the community. This included natural features that were listed as assets for cultivating Ashburnham's sense of community. Public Trail systems, protected forests, open space programs, wetland, and land conservation available to the public were discussed as irreplaceable assets to the Town. Community members feel the Ashburnham community enjoys the outdoors and regards the many different lakes and water features in town to be assets that need continued protection in the future.

2.2.2 Land use

The most recent land use statistics available from the State are based on aerial photography collected in 2016. Table 3 shows the acreage and percentage of land in 20 categories. The highest percentage land use is forest at 74% of the total area. (See Appendix A for mapping.)

TABLE 3: LAND USE

Land Use	Percentage
Evergreen Forest	42%
Deciduous Forest	32%
Forested Wetlands	6%
Water	6%
Non forested wetlands	4%
Developed Open Space	3%
Grassland	2%
Pasture/Hay	1%
Right of Way	1%
Residential – Single Family	1%
Shrub	<1%
Cultivated	<1%
Bare Land	<1%
Industrial	<1%
Other impervious	<1%
Commercial	<1%
Aquatic Bed	<1%
Residential -Others	<1%
Residential – Multi Family	<1%
Mixed Use -Other	<1%

2.2.3 Critical Facilities

In general usage, the term "critical facilities" is used to describe all manmade structures or other improvements that, because of their function, size, service area, or uniqueness, have the potential to cause serious bodily harm, extensive property damage, or disruption of vital socioeconomic activities if they are destroyed, damaged, or if their functionality is impaired.

Critical facilities commonly include all public and private facilities that a community considers essential for the delivery of vital services and for the protection of the community. They usually

include emergency response facilities (fire stations, police stations, rescue squads, and emergency operation centers), custodial facilities (jails and other detention centers, long-term care facilities, hospitals, and other health care facilities), schools, emergency shelters, utilities (water supply, wastewater treatment facilities, and power), communications facilities, and any other assets determined by the community to be of critical importance for the protection of the health and safety of the population. The adverse effects of damaged critical facilities can extend far beyond direct physical damage. Disruption of health care, fire, and police services can impair search and rescue, emergency medical care, and even access to damaged areas.

The number and nature of critical facilities in a community can differ greatly from one jurisdiction to another, and usually comprise both public and private facilities. In this sense, each community needs to determine the relative importance of the publicly and privately owned facilities that deliver vital services, provide important functions, and protect special populations. Source: Federal Emergency Management Administration, Risk Management Series, Design Guide for Improving Critical Facility Safety from Flooding and High Winds, FEMA 543, January 2007.

A list of the critical facilities within the community is shown in Table 4. This data was obtained from the community's 2021 Comprehensive Emergency Management Plan (CEMP). The data was then reviewed by the Emergency Management Director. These facilities were digitized into GIS and used for determining vulnerability to the various hazards. A Map of Critical Facilities for the Town of Ashburnham can be found in Appendix A, Map 1.

TABLE 4: CRITICAL FACILITIES

Feature Type	Name	Address
City/Town Halls	Ashburnham Town Hall	32 Main Street
Public Water Supply	Camp Wellville Inc.	Stowell Road
	Upper Naukeag Reservoir	Lake Road
	Camp Split Rock/Boy Scouts	Stowell Road
	Camp Winnekeag Put Camp	Ashby Road
	Camp Collier/Boy Scout	Camp Collier Road
DPW Facilities	Ashburnham Highway Department	19 Central Street
Early Education Childcare Facilities	Neighbor Schools	5 Westwood Avenue; 12 Chapel Street; 61 Gardner Road
	Dion, Shelby	15 Cheshire Pond Road
	O'Brien, Kate	429 Ashby Road
	Hamilton, Judy M.	3 Cross Street
	Rittberg, Wendy	13 South School Street
	Blossoming Buds Preschool & Daycare	33 Main Street
Elderly Housing	Ashley Court Apartments	27 South School Street
Electric Substations	Ashburnham Municipal	48 Turnpike Road
Emergency Shelters (Alternate EOC)	Oakmont Regional High School	9 Oakmont Drive
End of Life Facilities	Fairbanks Cemetery	37 Winchendon Road
	Saint Dennis Cemetery	Kelton Road
	New Cemetery	Old Nims Road
	Meetinghouse Hill (old) Cemetery	Hastings Road
Emergency Operations Centers (EOC)	Ashburnham Police/Fire Station	99 Central Street
HazMat Sites	Krista Shell (Release of #2 Fuel Oil)	357 Rindge Turnpike
	Activity & Use Limitations (Gardner Road)	4 & 6 Gardner Road
	Activity & Use Limitations (Lakeshore Drive)	Lakeshore Drive (Map 57, Parcels 1 & 1A)
	Flo Chemical	20 Puffer Street
	Solar Farm	Murray Road
Other Critical Facilities	American Tower Corporation Cell Tower	87 Byfield Road
	Roy Bros. Oil & Propane Tank Farm	Gardner Hill Road
	Cell Tower #1	Central Street
	Cell Tower #2	Kallinen Road
	Sba Properties, LLC (Tower #MA05251-S)	10 Forristall Road

Feature Type	Name	Address
Other Government Buildings	Ashburnham Highway Department	17 Central Street
	Ashburnham Municipal Light Plant	24 Williams Road
	Stevens Memorial Library	20 Memorial Drive
	Ashburnham Water Tank #1	Cushing Street
	Ashburnham Post Office	123 Central Street
	Ashburnham Water Tank #2	Gardner Hill Road
	Ashburnham Communication Towers	Meeting House Hill
Police	Ashburnham Police Station	99 Central Street
School	Briggs Elementary School	96 Williams Road
	Overlook Middle School	10 Oakmont Drive
	Oakmont Regional High School	9 Oakmont Avenue
	Cushing Academy	39 School Street
Potable Water Treatment Plants	Ashburnham/Winchendon Water Filtration Plant	204 Lake Road

TABLE 4 *(CONTINUED)*

2.2.4 Future land use and Facilities

The Town is continuing their efforts to maintain sound land use planning and planning for future development. Proper planning can ensure both the successful preservation of land uses important to the Town, as well as future growth and development. The primary town agency responsible for regulating development in the town is the Planning Board. In addition, MRPC which is the regional planning authority for Ashburnham, works with all agencies that regulate development in its region and provide support is planning document updates. Presently, new residential development continues at a steady pace. From a municipal perspective, the only new development anticipated is the relocation of the existing DPW facility to a vacant site at the northeast corner of Williams and Platt Roads.

- End of Section -

3 COMMUNITY RESILIENCE BUILDING WORKSHOP/SUMMARY OF FINDINGS

The Town of Ashburnham has taken an important first step toward building societal, environmental, and infrastructure resilience within their community by participating in the MVP program executed through the EOEEA. An MVP Planning Grant from the EOEEA was awarded to the Town, allowing Ashburnham to complete the planning steps required to earn designation as an "MVP Community" and begin the process of updating their Local Hazard Mitigation Plan (LHMP). This approach to municipal resilience and climate adaptation planning allows Ashburnham to undertake a comprehensive planning process that employs local knowledge to identify natural and weather-related hazards, recognize the community's strengths and vulnerabilities, and prioritize actions to help mitigate damages and prepare them for the future. This successful MVP Planning effort results in a list of clear actions that can be incorporated into the Town's Comprehensive Plan and the LHMP and work toward implementing to improve community resilience, thus reducing disaster recovery time and cost for the Town, the region, and the Commonwealth.

Marshall Dennis, the MVP Project Manager and Chair of the Conservation Commission for Ashburnham, initiated the MVP planning process by assembling a Core Team to help lead the effort within the community. The Core Team met in January 2021 and in February 2021 to outline the primary goals and objectives for the MVP process, discuss the MVP's integration with the LHMP and Town planning efforts, and plan for the workshops. With the assistance of Pare Corporation, a certified MVP Provider, the Town prepared for the Community Resilience Building workshops by developing a list of attendees, compiling community background resources, and mapping data, and setting an agenda that meets the goals of the program. The workshop followed the CRB framework, guiding each of the breakout groups through the following steps in the planning process in the Session #1 to identify:

- Past, current, and future impacts from natural hazards
- Infrastructural vulnerabilities and strengths
- Societal vulnerabilities and strengths
- Environmental vulnerabilities and strengths
- Highest-priority hazards for Ashburnham

The workshop followed the CRB framework, guiding each of the breakout groups through the following steps in the planning process in the Session #2 to identify and prioritize:

- Infrastructural actions to increase resilience
- Societal actions to increase resilience
- Environmental actions to increase resilience
- Highest-priority actions for Ashburnham

A Summary of Findings for the workshop is transcribed in the following pages, and outlines the thoughts, comments, and dialogue of the stakeholders that participated in the workshop. These findings were presented to the Town for public comment. A comprehensive list of action items can be found in the following sections. At the conclusion of the CRB Workshop, the top five priorities for increasing community resilience were identified by workshop participants:

I. Electric grid protection and upgrades
II. Communication Improvements
III. Dam and flood management
IV. Water and Sewer infrastructure protection and updates
V. Water quality protection programs and education

The MVP process will allow the Town of Ashburnham to identify actions that can help address each of these priorities and incorporate them into the Town's long-term planning. This document outlines the process by which these priorities were identified, and which actions can be taken by the Town. The findings of the MVP workshop are to be integrated into the LHMP, creating a comprehensive planning document to guide the hazard mitigation and climate adaptation planning efforts within the Town of Ashburnham.

- End of Section -

4 TOP HAZARDS AND VULNERABLE AREAS

4.1 Top Hazards

Top hazards for the community of Ashburnham were identified through an iterative process and input from a variety of community sources. Firstly, as part of the Community Hazard Survey that was distributed to workshop invitees, respondents answered five questions about past and future hazards impacting Ashburnham. From the 21 responses collected, Pare created a poll to have participants vote on the highest-priority hazards during the first workshop. The survey answers were compiled and presented in a word cloud to identify themes that emerged from the respondents to understand how the poll was created. Then each participant voted for which hazards they thought were the most important by selecting their top four. The results were tallied, reviewed, and discussed in an open forum consisting of all workshop participants. The group discussed multiple recent impacts that these different natural hazards have had upon the Town of Ashburnham, as well as the potential for increased vulnerability due to climate change. The group came to a consensus and identified four hazards as being the highest priority: **Flooding**, **Ice Storms, Extreme Weather** and **Droughts**.

FIGURE 1 COMMUNITY CHARACTERIZATION SURVEY WORD CLOUD

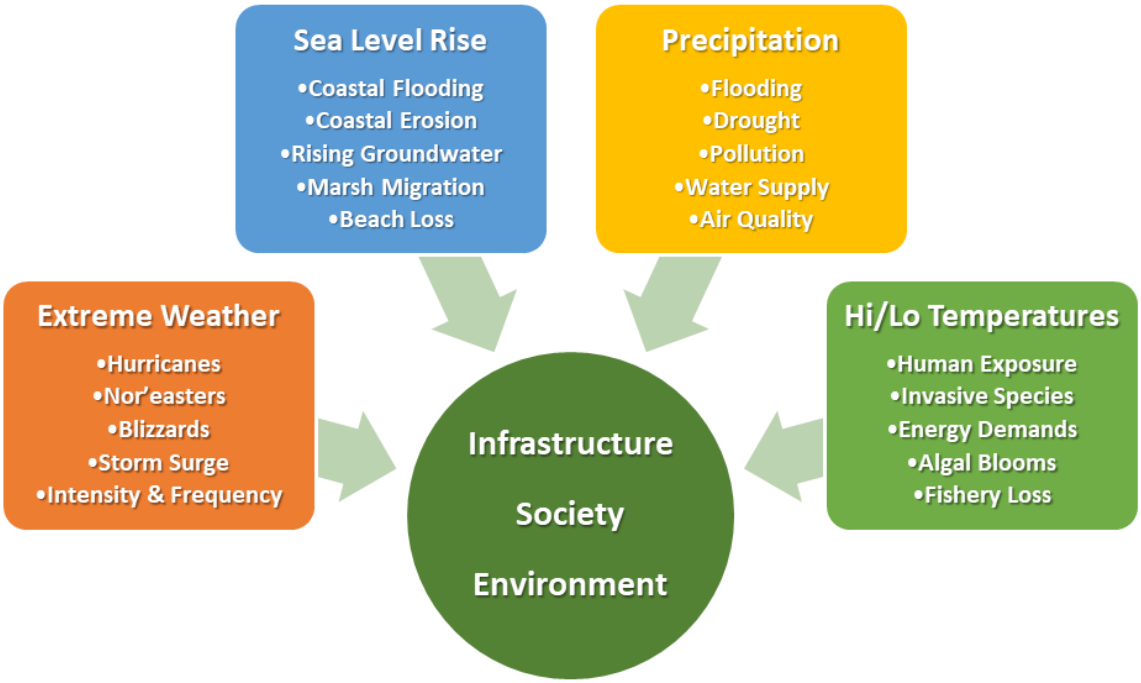


FIGURE 2 CLIMATE CHANGE HAZARDS IN MASSACHUSETTS
(Source: Massachusetts State Hazard Mitigation & Climate Adaptation Plan)

- **Flooding**: Flooding events have the potential to damage and interrupt the functioning of critical infrastructure, damage residential properties and have permanent effects of the Town for years to come. Major flooding concerns which may impact stormwater management include the failure of dams and culverts located in Town due to increased precipitation and higher intensity storms.
- **Ice Storms**: Ice storm events have the potential to damage forests, interrupt transportation networks, communication networks and utilities. Historically the Town has seen that ice storms have had the biggest impact on their community and left populations vulnerable.
- **Extreme Weather Events**: Extreme weather events have the potential to interrupt the functioning of critical infrastructure including transportation networks, communication, and utilities. The frequency and intensity of extreme weather events is projected to keep increasing across New England.
- **Drought (Lowering of the Water Table)**: Drought conditions present an increased risk of wildfires, impacts the Town's water supply, and can put vulnerable populations at risk of exposure.

4.2 Top Vulnerabilities to the Impacts of Climate Change

During the CRB workshop, each group discussed vulnerabilities in each of the categories being addressed: infrastructure, society, and environment. Although there were vulnerabilities and strengths identified in each category by each group, there are primary areas of concern that became evident during the discussion of the past impacts from natural hazards. These areas of concern, as identified by workshop participants, during public listening sessions, and by the Core Team, are:

Infrastructure

- *Department of Public Works (DPW):* The Department of Public Works is one of the first responders to natural hazards in the town of Ashburnham. However, the existing DPW building is old and structurally unstable. In fact, an Article on the June 22nd Special Town Meeting Warrant seeks the approval to transfer $100,000 to the Public Works Building for the purposes of repairing or replacing a load bearing beam in the highway barn, including but not limited to leasing space or temporary structures. These vulnerabilities limit the resources the DPW can provide towards hazard mitigation.

  Further, it is important to note that the DPW is instrumental in the maintenance, repair and replacement of water/sewer and stormwater facilities, as well as facilitating access for AMLP staff to maintain/repair/replace the Town's electrical services. As such, the relocation and upgrade of the existing DPW facility, as referenced above, as well as the 'in-house' availability of machinery/equipment to perform the DPW's requisite tasks, is critical to mitigating the Town's vulnerabilities in response to climate change.

- *Dams, Culverts and Stormwater Management*: Some dams throughout Town are in a degraded condition primarily because of drainage concerns and aging infrastructure. Culverts and the drainage network throughout Town are inadequate and lack the capacity to convey stormwater, resulting in flooding during heavy rain events, and erosion of roadways. Areas of concern are potential flooding due to an inadequate size of the culvert beneath Williams Road at South Main Street and the flooding of the Sewer Pump Stations on Puffer Road and Westminster Street, and flooding of structures within the 100-year flood plain.

- *Water and Sewer Infrastructure:* Portions of the Town are serviced by a water and sewer infrastructure system. Besides Ashburnham, the Town also provides drinking water to Winchendon. Sewage is pumped to the City of Gardner wastewater treatment plant.

- *Ashburnham Municipal Light Plant (AMLP):* The Town has its own electric company that services the area. This provides benefits to the Town, but also may increase Town vulnerabilities during power outrages or failing systems due to it being the only provider. Due to the AMLP having a limited number of staff and equipment, the AMLP depends on the Ashburnham's DPW during hazard events to ensure that roadways are clear from trees, debris, and snow.

Society

- *Communication*: Large areas of the community of Ashburnham are rural, and many residential properties do not have reliable cell phone service, internet connections or cable. The lack of reliable communication networks makes these residences more vulnerable during emergency situations.

Environment

- *Lakes and Wetlands:* Lakes and wetlands are valuable assets to the community that attract many residents to the area. Lakes and wetlands are some of Ashburnham's

greatest strengths due to their aesthetic value and stormwater management capabilities. The Town considers them an essential environmental resource that should be protected.

- *Land Conservation:* Land conservation and open space are valuable assets to the community as they provide for 'green' carbon storage (i.e., the storage of carbon taken from the atmosphere by plants through the process of photosynthesis) and serve as a location for recreational activities and wildlife habit. The Town considers conservation land to be an essential environmental resource, and they propose to implement best land management practices to preserve the Town's character and maintain these resources.

- End of Section -

5 OVERVIEW OF ALL HAZARDS AND VULNERABILITY

5.1 Overview of Hazards and Impacts

The Massachusetts State Hazard Mitigation and Climate Adaptation Plan (SHMCAP) provides an in-depth overview of natural hazards and climate change impacts in Massachusetts. The SHMCAP indicates that Massachusetts is subject to the following natural hazards (listed in order of frequency); floods, heavy rainstorms, nor'easters, coastal erosion, hurricanes, tornadoes, urban and wildfires, drought, and earthquakes. The plan also identifies significant impacts due to climate change in the form of precipitation, sea level rise, rising temperatures, and extreme weather. The State plan can be viewed online at: https://resilientma.org/shmcap-portal

Table 5 summarizes the hazard risks for Ashburnham. Throughout this section the natural hazards are discussed, including Location, Extent, Previous Occurrences, Probability of Future Events, Impact, and Vulnerability.

Definitions associated with Probability of Future Events are as follows:

- Highly likely: 90 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.
- Possible: 10 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.
- Unlikely: Less than 10 percent probability of occurrence in the next year or a recurrence interval of greater than 11 years.

Definitions associated with Impact are as follows:

- Catastrophic: Immediate onset or extended duration of event, resulting in catastrophic damage and uninhabitable conditions.
- Critical: Fast speed of onset or long duration of event resulting in devastating damage and loss of services for weeks or months.
- Limited: Moderate speed of onset or moderate duration of event, resulting in some damage.
- Negligible: Slow speed of onset or short duration of event resulting in little to no damage.

Table 6 lists those Federal disaster and emergency declarations for Worcester County.

TABLE 5: HAZARD RISKS SUMMARY

Hazard	Probability	Impact
Heavy Rain	Highly Likely	Limited
Bridges	N/A	N/A
Snow Melt	Possible	Limited
Dam Failure	Possible	Catastrophic
Ice Jams	Unlikely	Limited
Beavers	Highly Likely	Limited
Coastal Storms	N/A	N/A
Hurricane/Tropical Storms	Possible	Catastrophic
Tornados	Possible	Critical
High Winds	Possible	Limited
Severe Thunderstorm	Possible	Limited
Winter Storms	Highly Likely	Critical
Climate Change	-	-
Wildfires	Possible	Catastrophic
Drought	Possible	Critical
Extreme Temperatures	Possible	Critical
Earthquakes	Possible	Catastrophic
Land slides	Unlikely	Catastrophic

Table 6: Disaster and Emergency Declarations for Worcester County

ID Number	Type	Date
3438	COVID -19 Pandemic	March 2020
4496	COVID -19 Pandemic	March 2020
4379	Severe Winter Storm and Snowstorm	March 2018
4214	Severe Winter Storm, Snowstorm, and Flooding	January 2015
4110	Severe Winter Storm, Snowstorm, and Flooding	February 2013
3362	Explosions (Terrorist Attack)	April 2013
4097	Hurricane (Sandy)	October 2012
4051	Severe Storm and Snowstorm	October 2011
3330	Hurricane (Irene)	August 2011
1994	Severe Storms and Tornadoes	June 2011
1959	Severe Winter Storm and Snowstorm	January 2011
3315	Hurricane (Earl)	September 2010
1895	Severe Storms and Flooding	March 2010
1813	Severe Winter Storm and Flooding	December 2008
1701	Severe Storms and Inland and Coastal Flooding	April 2007
1642	Severe Storms, Flooding	May 2006
1614	Severe Storms, Flooding	October 2005
3252	Hurricane (Katrina)	August 2005
3201	Snow	January 2005
1512	Flooding	April 2004
3191	Snowstorm	December 2003
3175	Snowstorm	February 2003
3165	Blizzard	March 2001
1364	Severe Storms, Flooding	March 2001
1224	Heavy Rain, Flooding	June 1998
1142	Severe Storms, Flooding	October 1996
1090	Blizzard	January 1996

ID Number	Type	Date
3103	Blizzard	March 1993
920	Severe Coastal Storm	October 1991
914	Hurricane (Bob)	August 1991

TABLE 6 *(CONTINUED)*

5.2 Heavy Rain

Hazard Description

Flooding can be defined as a rising and overflowing of a body of water onto normally dry land. Floods can be slow or fast rising but generally develop over a period of days. A high percentage of impervious surfaces and high groundwater levels do not allow heavy rain to be absorbed back into the ground. Basement, roadway, and infrastructure flooding can result in significant damages due to poor or insufficient storm water drainage. This not only causes flooding but also prevents groundwater recharge and can threaten water quality, which can affect public drinking water supplies. Floods are among the most frequent and costly natural disasters in terms of human hardship and economic loss.

Location

Heavy rainfall events have caused areas of flooding in the past. This information can be found on Ashburnham's 2015 Local Hazard Map which is located in Appendix A, Map 9. See Stormwater Map in Appendix A, Map 6 for FEMA floodplain data for the town of Ashburnham.

Extent

Based on data gathered from the National Climatic Data Center, the yearly precipitation total for Worcester County has been gradually rising over the last 33 years (see Figure 3, below). In fact, three of the years since 1980 with the highest inches of rainfall have occurred most recently: 2008 (62"), 2011 (64") and 2018 (63"). This may in the future change flood pattern limits and extents of flooding in new areas.

Previous Occurrences

Historic data for Worcester County, MA from the National Oceanic and Atmospheric Administration (NOAA).

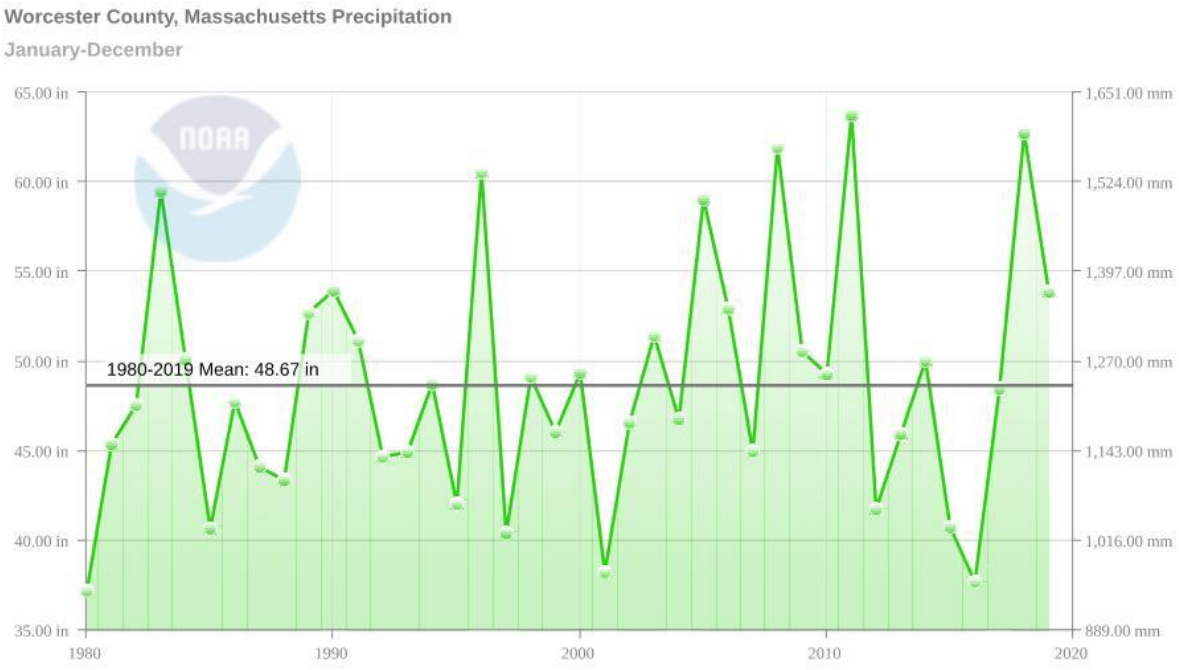


FIGURE 3: NOAA AVERAGE ANNUAL PRECIPITATION DATA FOR WORCESTER COUNTY, MA
(Source: https://www.ncdc.noaa.gov/cag/)

Probability of Future Events

With the increase in yearly precipitation the Montachusett Region is experiencing, Ashburnham is highly likely to experience increased amounts of heavy rain which can lead to flooding and damage to dams.

Impact

Heavy rain is estimated to have limited impact on Ashburnham. However, with the threat of dam hazards being catastrophic within the community and heavy rain being a major contributing factor to flooding which can impact the dams, the compound effect of these hazards combined may impact the town further.

Climate Change Vulnerability

Efforts to flood proof or relocate existing development within the floodplain, along with efforts to prohibit or limit new development, will decrease the potential for damage and losses in the future. Due to Climate Change, extreme weather events becoming more frequent and intense, particularly in the Northeast region of the country. Regionally, New England has experienced the greatest increase in frequency of extreme weather events, therefore requiring communities like Ashburnham to adapt to Climate Change, which can make these communities increasingly more vulnerable. The figure below displays climate change projections indicating more frequent precipitation in the Worcester County area in the future.

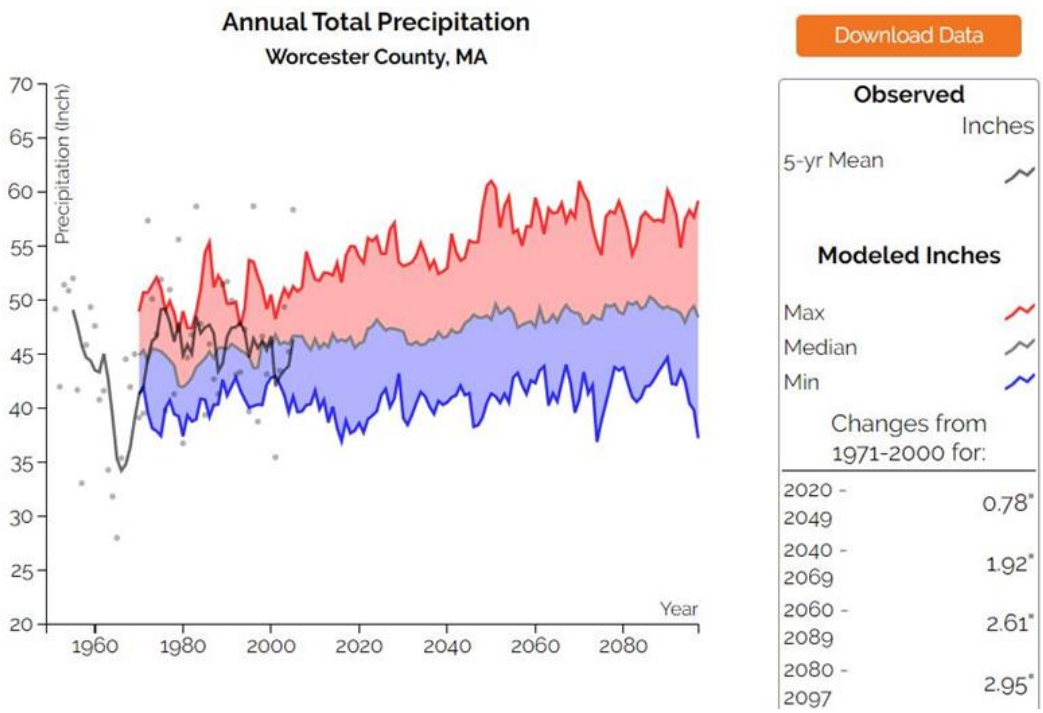


FIGURE 4: ANNUAL TOTAL PRECIPITATION PROJECTIONS, WORCESTER COUNTY.
(Source: ResileintMA.org)

5.3 Bridges

Hazard Description

Typically, bridges with an AASHTO (American Association of State Highway and Transportation Officials) rating below 50 are considered structurally deficient. However, some bridges may be considered structurally deficient due to deterioration to one or more of its major components. Bridges are a regional concern due to the multitude of bridges within the regional area with specific concerns for bridges crossing waterways.

Location

There are 15 bridges identified in Ashburnham per the MassDOT Bridge Web Application. Out of the 15 bridges, only 3 are classified as structurally deficient as of October 6, 2019. The bridges are located at the following locations: Two short span bridges on Old Ashby Road at the inlet of Ward Pond and the outlet of Little Watatic Pond, and one short span bridge on Sherbert Road at the outlet of Sunset Lake. These bridges are owned by the Town.

Vulnerability

Transportation infrastructure is a regional concern and may affect the Town of Ashburnham traffic patterns in the future. The three bridges stated above should be assessed to understand how traffic patterns may affect the Town in the future when repair work is in construction.

5.4 Snow Melt

Hazard Description

Snow melt has the potential to cause flooding in Ashburnham. This can be a serious problem for areas that have received large amounts of snow throughout the winter season. When temperatures rapidly increase, so does the rate at which snow melts; frozen soil also increases the risk of flood as water from melting snow is not able to seep into the ground.

Snowmelt flooding occurs when the major source of water involved in a flood is caused by melting snow. Unlike rainfall that can reach the soil almost immediately, the snowpack can store the water for an extended amount of time until temperatures rise above freezing and the snow melts. This frozen storage delays the arrival of water to the soil for days, weeks, or even months. Once it begins to melt and does reach the soil, water from snowmelt behaves much as it would if it had come from rain instead of snow by either infiltrating into the soil, running off, or both. Flooding can occur when there is more water than the soil can absorb or can be contained in storage capacities in the soil, rivers, lakes, and reservoirs.

Location

Snow melt events have caused areas of flooding in the past. This information can be found on Ashburnham's 2015 Local Hazard Map which is located in Appendix A, Map 9. See Stormwater Map in Appendix A, Map 6 for FEMA floodplain data for the Town of Ashburnham.

Extent

Due to the snow covering the extent of the town, when the snow melts, a delayed flooding will occur downgradient affecting the areas of concern for flooding as indicated in the Ashburnham 2015 Local Hazard Map in Appendix A, Map 9.

Previous Occurrences

Winter snow can cause flooding during times when temperatures can increase quickly/substantially particularly in the spring which has resulted in numerous previous occurrences. The winter of 1935-1936 was one of the worst cases of snow melt/ flooding. As of early March, that winter it was estimated that the snowpacks in New England averaged about 7.5 inches of water (in Southern New England, snow water equivalents of 3.5 inches were normal). A warm, moisture-laden front moved into and stalled over New England resulting in increased temperatures as well as heavy rainfall. The combination of heavy rain and melting snow resulted in severe flooding.

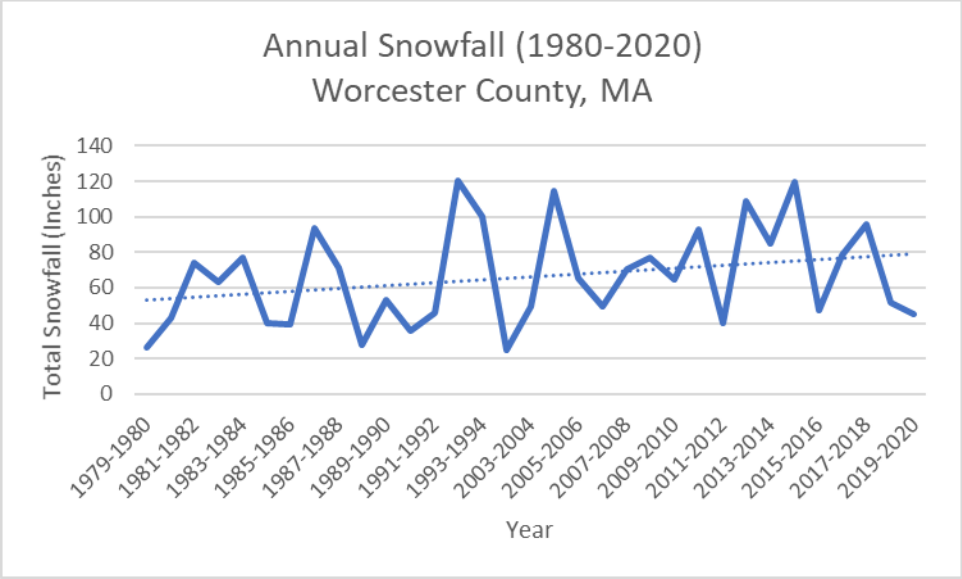


FIGURE 5: NOAA DATA FOR ANNUAL SNOWFALL
(Source: https://w2.weather.gov/climate/xmacis.php?wfo=box)

Probability of Future Events

With the climatic conditions that occur in the Montachusett Region that impact Ashburnham each year, including an average of seven severe winter storms per year, it is probable that snow melt will certainly continue in future years. This can cause flooding during times when temperatures can increase quickly/substantially, particularly in the spring. Probability of future events falls under the definition of probability as possible.

Impact

Snow melt is estimated to have limited impact on Ashburnham. However, with the threat of dam hazards being catastrophic within the community and snow smelt being a contributor to flooding which can impact the dams, the compound effect of these hazards combined may impact the town further.

Climate Change Vulnerability

The Town of Ashburnham is vulnerable to snow melt; heavy snow fall followed by a sudden transition to warmer temperatures increase the chance of flooding from snowmelt, potentially causing flood related damage to homes and businesses, roads, and buildings, particularly within the floodplain. There is evidence suggesting that Nor'easters along the Atlantic coast are increasing in frequency and intensity due to Climate Change. Future Nor'easters may become more concentrated during the coldest winter months when atmospheric temperatures are still low enough to result in snowfall rather than rain. Climate projections indicate that Climate Change will result in more precipitation during the winter in the Northeast. This trend may result in more frequent and/or more severe winter storms.

5.5 Dam Failures

Hazard Description

Dam Failure is an uncontrolled release of water impounded by a dam. The Massachusetts Office of Dam Safety reports that the Region's dams, like the other parts of New England infrastructure, are an aging infrastructure that is expensive to repair. Routine maintenance is necessary to control the growth of trees and keep the area clear so defects can be detected. In addition to aging, the Region's dams are often doing work beyond their original design. The increase in impervious surfaces leads to increased flows in some streams and rivers and thus greater demands are placed on the dams.

Dam failures may cause loss of life and property damage downstream, but they may also degrade the environment. Many dams act as a holding area for contaminated sediments. With a dam failure, these sediments are released and can threaten wildlife and the ecology of the river system. An associated cost of dam failures is the potential for such destruction to affect fish ladders or culverts for directing water.

Dam failures are potentially the worst of flood events. Typically, a dam failure is the result of neglect, poor design, or structural damage caused by a major event such as an earthquake. When a dam fails, huge volumes of water are often released, causing widespread destruction and potential loss of life. Floods due to dam failures have occurred in New England in the past.

Extent

Dam hazards are classified by the Department of Conservation and Recreation using the criteria below. The classification requires dam owners to follow proper protocol. As displayed in the table below many of the dams located in Ashburnham are not owned by the Town. This requires outreach to the dam owners to allow Ashburnham to be up to date on any construction or maintenance plans for the dams.

Hazard Potential Classification

- High Hazard - Refers to dams located where failure will likely cause loss of life and serious damage to home(s), industrial or commercial facilities, important public utilities, main highway(s), or railroad(s).
- Significant Hazard - Refers to dams located where failure may cause loss of life and damage home(s), industrial or commercial facilities, secondary highway(s) or railroad(s) or cause interruption of use or service of relatively important facilities.
- Low Hazard - Refers to dams located where failure may cause minimal property damage to others. Loss of life is not expected.

Location

Ashburnham is responsible for 10 dams located within the Town. Some dams are classified as High and Significant Hazard and are required to be inspected. The table below displays the 24 dams located in Ashburnham, along with the classification and last inspections dates provided by the Massachusetts Department of Conservation and Recreation.

TABLE 7: DAMS IN ASHBURNHAM, MA

Dam Name	Hazard Potential	Owner	Last Inspection Date	Last Inspection Status
Lower Naukeag Lake Dam	High Hazard	Public	1/29/2018	Fair
Winnekeag Lake Dam	High Hazard	Private		
Lake Wampanoag Dam	High Hazard	Private		
Sunset Lake Dam	Low Hazard	Private		
Marble Pond Dam	Low Hazard	Private		
Stodge Meadow Pond Dam	Low Hazard	Private		
Lake Wampanoag North Dike	Low Hazard	Public		
Swimming Pool Dam	Non-jurisdiction	Private	N/A	N/A
Farm Pond Dam	Non-jurisdiction	Private	N/A	N/A
Old Saw Mill Pond Dam	Non-jurisdiction	Private	N/A	N/A
Lathe Mill Pond Dam	Non-jurisdiction	Private	N/A	N/A
Ward Pond Dam	Non-jurisdiction	Public	N/A	N/A
Jack Wickman Pond Dam	Non-jurisdiction	Private	N/A	N/A
Swimming Pool Dam	Non-jurisdiction	Public	N/A	N/A
Old Tannery Road Pond Dam	Non-jurisdiction	Public	N/A	N/A
Old Foster Road Mill Dam	Non-jurisdiction	Public	N/A	N/A
Lake Wampanoag Little Dike	Non-jurisdiction	Private	N/A	N/A
Lake Wampanoag Northeast Dike	Non-jurisdiction	Private	N/A	N/A
High Street Dam	Non-jurisdiction	Public	N/A	N/A
Lake Watatic Dam	Significant Hazard	Public	10/27/2015	Fair
Upper Naukeag Lake Dam	Significant Hazard	Public	10/27/2015	Satisfactory
Factory Village Pond Dam	Significant Hazard	Private		
Whitney Pond Dam	Significant Hazard	Public	01/29/2018	Poor
Wallace Pond Dam	Significant Hazard	Private		

Source: DCR - Office of Dam Safety

Previous Occurrences

There are no recorded dam failures in the Town of Ashburnham, and overall, there has been a low occurrence of dam failures in the Montachusett Region. However, many of the dams within the Region are more than 100 years old, meaning the possibility of dam failure is conceivable.

Probability of Future Events

Future occurrences of dam failure fall under the definition of probability as possible. Based on the table above, 3 dams in Ashburnham are High Hazard and 5 are Significant Hazard. Non-jurisdictional dams are defined as being less than 6 feet high and store less than 15 acre-feet of water. Due to increase in intensity of storms due to climate change, dam inspections and maintenance should be conducted frequently.

Impact

Since 3 dams are classified as High Hazard and 5 are classified as Significant Hazards, it is estimated that the impact resulting from the failure any one of these dams on the Town of Ashburnham is catastrophic.

Vulnerability

High Hazard dams must be inspected annually, Significant Hazard dams must be inspected every five years, and Low Hazard dams every 10 years. Owners of dams are responsible for having their dam inspected. MGL Chapter 253 and 302 CMR 10.00 requires that dam owners prepare, maintain and update Emergency Action Plans for all High Hazard Potential dams and certain Significant Hazard Potential dams.

Non-jurisdictional dams are not regulated by the Office of Dam Safety or under their jurisdiction. Typically, these dams are under 6 feet in height and/or under 15 acre-feet in storage and do not have an assigned 'Hazard Code'. Dams owned and regulated by the Federal Government are also typically non-jurisdictional but do have an assigned Hazard Code. Ashburnham should be aware of any vulnerabilities associated with these hazards and coordinate with the proper authorities to continue to be updated on dam conditions and any construction plans.

5.6 Ice Jams

Hazard Description

Ice jams occur in the winter or early spring when normally flowing water begins to freeze. There are two types of ice jams: A freeze-up and a breakup jam. A freeze-up jam forms in the early winter as ice formation begins. This type of jam can act as a dam and begin to back up the flowing water behind it. The second type, a breakup jam forms because of the breakup of ice cover, causing large pieces of ice to move downstream potentially acting as a dam, impacting culverts and bridge abutments.

Location

Historically Ashburnham has had no damage from ice jams in the past from 1913-2020.

Probability of Future Events

Ashburnham’s probability for damage from ice jams is unlikely. However, with the climatic conditions that occur in the Montachusett Region, ice jams may continue causing damage to bridges and roads and dams within the floodplain. To minimize ice jam damage, special consideration should be made during reconstruction of any bridges or dams which tend to be where ice jams are more likely to occur.

Impact

Since historically no ice jams have occurred, it is estimated that the impact on the Town of Ashburnham is limited.

Vulnerability

Ashburnham is not very vulnerable to ice jams due to historically not being recorded. However, heavy snow falls and frigid temperatures throughout the Northeast increase the chance of flooding from snowmelt and ice jams. When river ice piles up at shallow areas, bends and islands it blocks the flow of water and may cause flooding of nearby homes and businesses. Ice jams that become lodged within the abutment of bridges can threaten the integrity of the structures. Heavy equipment, such as cranes with wrecking balls may have to be used to break up ice jams to reduce potential property and structural damages and losses.

5.7 Beavers

Hazard Description

In local communities surrounding Ashburnham, beavers have been a concern. Beavers are a regional hazard and have been discussed by many communities. It takes a great deal of time and expense to control their activities. This hazard relates directly to other hazards such as rainstorms, hurricanes, floods, and winter related storms.

Location

In Ashburnham there are many different areas around town where beavers have caused issues. To see the various locations of historic beaver activity within Ashburnham, see the Ashburnham 2015 Local Hazard Plan in Appendix A, Map 9. Most recently, beavers have posed potential flooding-related threats to some area roadways, such as the Rindge Turnpike, Old Ashby Road, and Marble Road. No roadway flooding, however, has occurred to date.

Extent

It was stated at all the Montachusett Region individual Hazard and Vulnerability Sessions leading up to the in 2015 HMP Update, as well as during the recent 2021 CRB workshop, that beavers continue to present a significant problem affecting many communities and waterways. This can cause waterway and flood patterns to be altered in the adjacent communities, which may further affect Ashburnham.

Previous Occurrences

The beaver is a valuable component of Massachusetts' fauna. Beavers have played an active role in New England's ecology for thousands of years. Beavers are natural “engineers” of the land, they are agents of change, creating wetlands out of uplands and streams, and providing habitat for a variety of plants and animals. However, not long ago the beaver was absent from the Montachusett Region. In fact, it was locally extinct from the late 1700s to the early 1900s. Intensive unregulated hunting and trapping, combined with deforestation to clear land for agriculture, led to the disappearance of beaver habitat and the beaver. In the early 1900's, forested habitat started to recover when many farmers abandoned their farms to take jobs in cities or to start new farms in the more fertile Midwestern United States. With the forests able to retake the landscape, the beaver was able to return, and an important component of the Montachusett

Region's native ecosystems was restored. However, beavers returned to a landscape that had been substantially altered by people.

Probability of Future Events

Beaver activity will most certainly continue to persist throughout the Montachusett Region, as the factors that have allowed them to expand their range (increase in suitable habitat, wetland protection, and a decrease in hunting and trapping) are expected to remain constant over the next decade. Probability of future events falls under the definition of probability as highly likely.

Impact

While beaver activity will continue in the future, it is controllable via dam removal and/or water level control techniques. Consequently, the beaver impact on the Town of Ashburnham is limited.

Vulnerability

When beavers in the Montachusett Region build their dams in areas where there is increased residential development, roads, or agricultural use of the land, the flooding that results can cause serious public and private property damage, often threatening homes, septic systems, low-lying roadways, and other public infrastructure. The state and local governments have responded to this crisis with a complex regulatory process. The process places the highest priority on protecting in- ground septic systems and road networks. Most of the regulatory process has been developed to respond to threats to the public health and safety.

5.8 Coastal Storms

Hazard Description

Coastal storms have not been addressed in this plan since Ashburnham does not have any coastline and is over 30 miles from the nearest coast.

5.9 Hurricanes/ Tropical Storms

Hazard Description

Both hurricanes and tropical storms can produce substantial damage from storm surge, waves, erosion, and intense winds in coastal areas. While this type of coastal storm surge has been the number one cause of hurricane related deaths in the past, more people have died from inland flooding associated with tropical systems in the last 30 years. Since the 1970s, inland flooding has been responsible for more than half of all deaths associated with tropical cyclones in the United States. Inland flooding from hurricanes can occur hundreds of miles from the seacoast. Communities in the Montachusett Region and the Town of Ashburnham would not normally be affected by the strongest hurricane winds.

Hurricanes

A hurricane is a type of tropical cyclone; an organized rotating weather system that develops in the tropics. Tropical cyclones are classified as follows:

- Tropical depression: An organized system of persistent clouds and thunderstorms with a low-level circulation and maximum sustained winds of 39 mph or less.

- Tropical storm: An organized system of strong thunderstorms with a well-defined circulation and maximum sustained winds of 39-73 mph.

Tropical depressions and tropical storms, while generally less dangerous than hurricanes, can be deadly. The winds of tropical depressions and tropical storms are usually not the greatest threat. Heavy rains, flooding and severe weather, such as tornadoes, create the most concerning problems associated with tropical storms and depressions.

- Hurricane: An intense tropical weather system with a well-defined circulation and maximum sustained winds of 74 mph or higher. The typical hurricane moves at an average speed of approximately 12 miles per hour. While in the lower latitudes, hurricanes tend to move from east to west. However, when a storm drifts further north, the westerly flow at the mid-latitudes tends to cause the storm to curve toward the north and east. When this occurs, the storm may accelerate its forward speed. This explains why some of the strongest hurricanes have reached New England.

Extent

Hurricanes can occur along the East Coast of the United States anytime in the period between June and November. Hurricane intensity and the potential property damage posed by a hurricane are rated from 1 to 5 according the Saffir-Simpson Hurricane Scale

TABLE 8: SAFFIR-SIMPSON HURRICANE SCALE

Category	Wind Speed
Tropical Storm	39–73 mph (63–117 km/h)
1	74–95 mph (119–153 km/h)
2	96–110 mph (154–177 km/h)
3	111–130 mph (178–209 km/h)
4	131–155 mph (210–249 km/h)
5	≥156 mph (≥250 km/h)

Source - National Weather Service, National Hurricane Center

Previous Occurrences

Only one storm has directly traveled through the Town of Ashburnham (see Table 9). The hurricane was downgraded to extratropical storm by the time it reached Ashburnham. Prior to being downgraded, the storm windspeeds reached a maximum of 90 MPH, defining the storm as a Category 2 hurricane.

TABLE 9: HURRICANES/TROPICAL STORMS

Date	Type	Name	Wind Speed
09/1934	Tropical depression	N/A	90 MPH

Source: NOAA Hurricane Track

The National Oceanic and Atmospheric Administration (NOAA) has been keeping records of hurricanes since 1858. From 1858 to 2020 Worcester county has had six tropical storms, and 15 hurricanes pass directly through the Region.

Probability of Future Events

Based upon past storm events and the geographic location of Ashburnham, the area will continue to be impacted by tropical storms and hurricanes. Moreover, it is speculated by many that future occurrences have the potential to be more severe because of climate change. Probability of future events fall under the definition of possible for Ashburnham.

Impact

The high winds and heavy rainfall associated with hurricanes and tropical storms could have impacts on the Town of Ashburnham that would be catastrophic due to the limited resources for addressing infrastructure disruptions and tree damage.

Vulnerability

According to NOAA, the tropical storm season lasts from June 1 to November 30, and an average of 10 tropical storms develop along the eastern seaboard each year. On average, five of these 10 become hurricanes capable of traveling northward towards New England which could expose Ashburnham to the risk of high winds and heavy rainfall.

5.10 Tornados

Hazard Description

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud with whirling winds travelling up to 300 miles per hour. These events are spawned by thunderstorms and occasionally by hurricanes and may occur singularly or in groups. Tornadoes can occur at any time of the year, although they are rare outside of the warmer seasons.

Extent

The peak months of "Tornado Season” occurs in the Northeast from May through September. August is the month of greatest tornado frequency. Most tornadoes are likely to occur during the mid-afternoon and evening hours (3-6 PM). However, they can occur at any time, often with little or no warning. Tornados are rated based on the Enhanced Fujita Tornado Scale as shown on the table below.

TABLE 10: ENHANCED FUJITA TORNADO SCALE

EF-SCALE NUMBER	INTENSITY PHRASE	WIND SPEED	DAMAGE
EF0	Gale tornado	< 73 mph	Light Damage- Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
EF1	Moderate tornado	73-112 mph	Moderate Damage- Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
EF2	Significant tornado	113-157 mph	Considerable Damage- Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	Severe tornado	158-206 mph	Severe Damage- Roofs and some walls torn off well- constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
EF4	Devastating tornado	207-260 mph	Devastating Damage- Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown, and large missiles generated.
EF5	Incredible tornado	261-318 mph	Incredible Damage- Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly more than 100 meters (109 yds.); trees debarked; incredible phenomena will occur.

Source: NOAA

Previous Occurrences

The National Climatic Data Center reports data on tornado events since 1950. Worcester County is where the majority of significant tornadoes in Massachusetts have occurred. Since 1950, there have been 15 tornadoes in the Montachusett Region, the most recent of which occurred in 2015. Ashburnham has only experienced one tornado within the Town. However, there is no record on recent or historic tornadoes in the Town of Ashburnham.

Probability of Future Events

From 1950 to 2015 there has been, on average, one tornado every 4.3 years within the Montachusett Region. With 9 of the 15 tornadoes being classified as a relatively weak F0 or F1 tornado, the remaining 6 tornadoes are classified as major F2 or higher tornadoes and can be expected approximately every 11 years. Probability of future events fall under the definition of probability as Possible.

Impact

The high winds and destructive nature this risk could have impacts on the Town of Ashburnham that would be critical.

Vulnerability

Although the Town of Ashburnham has only experienced one tornado within the town, the Montachusett Region has experienced several tornado occurrences between 1950 and 2015 indicating that the Region has good potential in terms of spawning tornadoes. In fact, Worcester County has been an area of the State where a majority of significant tornadoes in Massachusetts have occurred.

5.11 High Winds

Hazard Description

High winds could be defined as air moving (sometimes with considerable force) from an area of high pressure to an area of low pressure. A High Wind Warning is a warning for sustained surface winds greater than 40 mph (64 kph) lasting more than one hour or winds over 58 mph (93 kph) over land that are either predicted or occurring for an unspecified period of time. When wind speed increases, pressure against an object increases at a disproportionate rate. For example, a 25- mph wind causes about 1.6 pounds of pressure per square inch. When the wind speed increases to 75 mph, the force on that object increases to 450 pounds per square inch. At a wind speed of 125 mph, the force increases to 1,250 pounds per square inch. Wind-related hazards that can occur in the Town of Ashburnham include a variety of atmospheric related and winter related hazards described in this plan.

Previous Occurrences

Wind-related hazards that can occur in the Town of Ashburnham include hurricanes (tropical storms), and tornadoes, severe thunderstorms, Nor'easters, and Blizzards and high wind warnings accompany these events. Earlier occurrences of these events have been previously documented in this report.

Probability of Future Events

High winds accompany hurricanes (tropical storms), tornadoes, severe thunderstorms, Nor'easters, and Blizzards. The probability of future high wind events falls under the definition of probability as possible.

Impact

Due to the destruction high winds can cause the impacts to the Town of Ashburnham would be limited.

Climate Change Vulnerability

Since high winds accompany hurricanes (tropical storms), tornadoes, severe thunderstorms, Nor'easters, and Blizzards, the Town of Ashburnham and all communities within the region are very vulnerable to high winds. Climate change will likely increase the number of extreme weather events and wind speed severity. This would result in greater losses due to increased flooding, associated building damages and business interruption impacts.

5.12 Severe Thunderstorms

Hazard Description

Massachusetts is regularly susceptible to flooding from severe rainstorms and thunderstorms throughout the warmer months. A thunderstorm is a rain shower, often intense, that produces lightning and thunder. According to National Oceanic and Atmospheric Administration, a thunderstorm is classified as "severe" when it contains one or more of the following: Hail measuring three-quarter inch or greater, wind gusts in excess of 50 knots (57.5 mph), and/or tornadoes.

Previous Occurrences

The table below indicates that from 1996 to 2020 there were 4 severe storms in Ashburnham. The Montachusett Region averages 9.37 storms per year. Examining the thunderstorms indicates that 151 thunderstorms events occurred in Worcester County over the 24-year period.

TABLE 11: THUNDERSTORM EVENTS (1996-2020)

Thunderstorm Date	Wind Speeds (knots)
06/02/2000	50 kts. East
09/08/2007	50 kts. East
06/24/2010	50 kts. East
07/07/2014	50 kts. East
02/25/2016	50 kts. East
07/18/2016	50 kts. East

Source: https://www.ncdc.noaa.gov/stormevents

Probability of Future Events

Thunderstorms will undoubtedly continue to affect all municipalities of the Montachusett Region, including Ashburnham. Thunderstorms are more likely to occur between May and August. Over the past 24 years, the communities of Lunenburg, Athol, Leominster, and Fitchburg have more occurrences than other MRPC Municipalities. Probability of future events in Ashburnham fall under the definition of probability as possible.

Impact

Due to the high winds and hail that can cause damage, the impacts on Ashburnham would be limited.

Vulnerability

Three basic ingredients are required for a thunderstorm to form: moisture, rising unstable air (air that keeps rising when disturbed), and a lifting mechanism to provide the disturbance. These ingredients have the ability to originate throughout the Montachusett Region and the Town of Ashburnham. Severe storms can affect every community. Communities that stand out as having the highest number of thunderstorm events include Athol, Leominster, and Lunenburg. Hail has the potential to be a part of a thunderstorm and communities with the highest number of hail events include Gardner, Lunenburg, and Townsend. No relationship could be determined between the community's location in the Region and the number of severe storm events.

5.13 Winter Storms

Hazard Description

Hazards associated with heavy snow, Nor'easters, blizzards, and ice storms can be similar in many ways and therefore have been categorized under Winter Storms, although these hazard events are separately distinguished under Probability of Future of Events. A Winter Storm Warning is a statement made by the National Weather Service which means a winter storm is occurring or is about to occur in the area, usually within 36 hours. Generally, a Winter Storm Warning is issued if between 4 inches (10 cm) to 7 inches (18 cm) or more of snow or usually 3 inches (7.6 cm) or more of snow with a large accumulation of ice is forecast. In the Southern United States, where severe winter weather is much less common and any snow is a more significant event, warning criteria are lower; as low as 1 inch (2.5 cm) in the southernmost areas (thus, as you go from south to north the necessary accumulations get higher). A warning can also be issued during high impact events of lesser amounts, usually early or very late in the season when trees have leaves and damage can result. Winter Storm Warnings are issued when winds are less than 35mph; if the storm has winds above this wind speed, it becomes a Blizzard Warning. Usually, a large accumulation of ice alone with little to no snow will result in an Ice Storm Warning, or in the case of light freezing rain, a Winter Weather Advisory, a Freezing Rain Advisory, or Drizzle Advisory.

Winter weather in Massachusetts and southern New England can be described as unpredictable. Days of frigid, arctic air and below freezing temperatures may be followed by days of mild temperatures in the 40-to-50-degree Fahrenheit range. Heavy snow, Nor'easters and ice storms are relatively common. MEMA monitors the NWS alerting systems during periods when winter storms are expected and serves as the primary coordinating arm in the State-wide management of all types of winter storms. The local community is responsible for the basic management of winter storm response. When local resources for winter storm management are exhausted, assistance can be requested through MEMA's Area Office.

Extent

The Northeast Snowfall Impact Scale (NESIS) developed by Paul Koki of The Weather Channel and Louis Cellini of the National Weather Service (Koki and Cellini, 2004) characterizes and ranks high impact northeast snowstorms. These storms have large areas of 10-inch snowfall accumulations and greater. NESIS has five categories: Extreme, Crippling, Major, Significant, and Notable. NESIS scores are a function of the area affected by the snowstorm, the amount of snow, and the number of people living in the path of the storm. The largest NESIS values result from

storms producing heavy snowfall over large areas that include major metropolitan centers. The NESIS categories are as follows:

TABLE 12: SNOWFALL SCALE

Category	NESIS	Value Description
1	1 - 2.499	Notable
2	2.5 - 3.99	Significant
3	4.0 - 5.99	Major
4	6 – 9.99	Crippling
5	10.0 +	Extreme

Source: Massachusetts State Hazard Plan

Previous Occurrences

As can be seen in the Table below, there have been 12 winter storms related Federally declared disasters during the time frame of 1996 through 2020 (see Table 13). One of the most significant for Worcester County occurred on December 11, 2008, when a winter storm brought significant sleet and a heavy layer of ice which resulted in downed trees and power lines, blocked roads, and large-scale power outages, causing the Governor to declare a State of Emergency. Within the Montachusett Region, there were over 43,264 households and businesses without power. The storm response resulted in heavy controversy over the slow return of electrical power; it was not until approximately December 24th when power was essentially restored to all of the Montachusett Region, with utility workers from several States called in to provide essential repair services. A rare October snowstorm in 2011 also had a significant impact on the Montachusett Region, with many households and businesses losing power for several days as tree limbs with leaves that were still green downed power lines and blocked roads. Ice storms in particular have had major impacts on Ashburnham, such as the 2008 Ice storm and the 2013 ice storm.

TABLE 13: SNOW RELATED DISASTERS (1996 TO 2020)

Disaster Name (Date of Event)	Disaster # (Type of Assistance)
January Blizzard (January 1996)	FEMA-1090-EM (Public)
March Blizzard (March 2001)	FEMA-3165-EM (Public)
February Blizzard (February 17-18, 2003)	FEMA-3175-EM (Public)
December Blizzard (December 6-7, 2003)	FEMA-3191-EM (Public)
January Blizzard (January 22-23, 2005)	FEMA-3201-EM (Public)
April Nor'easter (April 15-25, 2007)	FEMA-1701-DR-MA (Public)
December Ice Storm (December 11, 2008)	FEMA-1813-DR-MA (Public)
January Snowstorm (January 11-12, 2011)	FEMA-1959-DR (Public)
October Snowstorm (October 29-30, 2011)	FEMA-4051-DR (Public)
February Blizzard (February 8-9, 2013)	FEMA-4110-DR (Public)
January Severe Winter Storm (January 26 – 29, 2015)	FEMA-4214-DR (Public)
March Sever Winter Storm (March 13 -March 14, 2018)	FEMA -4379-DR(Public)

Source: FEMA Declared Disasters

Probability of Future Events

Probability of future blizzards, Nor'easters and severe winter storms is highly likely for the Town of Ashburnham due to the nature of the New England climate, which can cause impactful ice storms and heavy snowfall amounts.

It is also interesting to note that, like rainfall, there has been a gradual increase in the amount of snowfall since 1980 in Worcester County as depicted in Figure 5.

Impact

Due to the hazardous road conditions, power outages and freezing conditions that can cause damage, the impacts on the town of Ashburnham would be critical.

Vulnerability

The Town of Ashburnham has high likelihood of winter storms and heavy snow. It is also typical for the Montachusett Region to receive an ice storm when cold air in the valley is "overridden" by milder, moist air from the Atlantic. Freezing rain causes dangerous travelling conditions. Bridges and overpasses, which typically freeze quicker than other surfaces, are particularly hazardous to drivers. Power outages are also common in an ice storm. The weight of the ice formed by freezing rain often causes downed power lines and tree limbs, leaving thousands in the affected area without electricity.

5.14 Wildfires

Hazard Description

A wildfire can be defined as a naturally occurring, highly destructive, uncontrollable fire. Risk of wildfires has the potential to be significant in the Montachusett Region and the Town of Ashburnham because of the many heavily wooded areas. Wildfire risk to developed areas is lower, given the existing fire protection service and facilities. However, new construction in heavily wooded areas could be threatened if vegetation is not managed properly.

Location

Wildfires or bushfires in the Town of Ashburnham can occur in the forest areas with large amounts of overgrowth. Most wildfires in Ashburnham are one acre or less and usually a result of permitted brush burning or a recreational fire. Larger fires have been reported along the railroad tracks due to poor management of waste materials and old ties left by railroad maintenance.

Extent

The wildfires within the Montachusett Region area are common due to the overgrowth in forest areas and are most likely to occur during dry weather months. Regionally, the cities of Fitchburg and Leominster have the highest number of wildfires.

Previous Occurrences

TABLE 14: WILDFIRE RECORD (2009-2020)

Community	# of Fires	# of Acres Burned	# of Acres Per Fire
Ashburnham	13	16.2	1.2
Regional Total	1,117	1,809.2	-

Source: Massachusetts Fire Incident Reporting System (MFIRS)

Probability of Future Events

Fires within the Montachusett Region are highly dependent on moisture and underbrush. When the Region is in a drought, the chance of fire increases. Substantial tree logging occurs in Ashburnham and surrounding communities which leaves behind brush, stumps, and debris. During the devastating December 2008 Ice Storm, this brought down many trees and tree limbs throughout the entire Region. Moreover, many property owners may not understand the need to clear areas around properties to prevent losses. Some municipalities also are likely to have difficulty dealing with wildfires due to the lack of appropriate equipment and personnel. Probability of future events within the town of Ashburnham fall under the definition of probability as possible.

Impact

Due to the intense nature of wildland fires, the impacts on the town of Ashburnham would be catastrophic.

Vulnerability

Wildfires are influenced by three major factors: weather, topography, and fuel. These three factors can combine in different ways to produce different levels of wildfire threat. Weather, in particular long periods of drought but also lightning strikes and high winds influence the behavior of wildfires. Fire hazard is generally higher in the spring and fall when there are dry and windy conditions. Topography is a factor as steep slopes and gullies can act as a chimney for fires and the presence or lack of fuel – low shrubs and branches, wood, roofs, wood piles, etc. – can shape the resulting fire. The presence of railroads in a community can also increase susceptibility to wildfires. Trains can emit sparks, heat, and hot materials that can ignite nearby fuels. Possible sources of flame and/or heat include exhaust fumes, hot brake metal, and overheated wheel bearings. Railroad crews cutting, grinding, and welding track are also a source of some railroad fires.

5.15 Drought

Hazard Description

Drought is a temporary irregularity and differs from aridity since the latter is restricted to low rainfall Regions and is a permanent feature of climate. Drought occurs in virtually all climatic zones, yet its characteristics vary significantly from one Region to another, since it is relative to the normal precipitation in that Region. The American Meteorology Society defines drought as a period of abnormally dry weather sufficiently long enough to cause a serious hydrological imbalance.

Location

The Town of Ashburnham does not have one specific area where drought is common. However, regionally drought is an issue due to the effect it has on the aquifers located in Westminster and extends into Ashburnham along the Whitman River and Phillips Brook.

Extent

The National Climatic Data Center uses the Palmer Drought Severity Index (PDSI) to compute drought conditions. Beyond its role as a factor leading to wildfire, drought also has impacts on public safety for all firefighting activity, agricultural production, and economic vitality of large users such as golf courses or industrial processes.

TABLE 15: PALMER DROUGHT SEVERITY INDEX (PDSI)

Category	Description
D0	Abnormally Dry
D1	Moderate Drought
D2	Severe Drought
D3	Extreme Drought
D4	Exceptional Drought

Source: U.S Drought Monitor

Previous Occurrences

The Commonwealth of Massachusetts is often considered a “water-rich” state. Under normal conditions, Regions across the State annually receive between 40 and 50 inches of precipitation. However, Massachusetts can experience extended periods of dry weather, from single season events to multi-year events similar to the extended drought experienced in the mid-1960s. Historically, most droughts in Massachusetts have started with dry winters, rather than a dry summer.

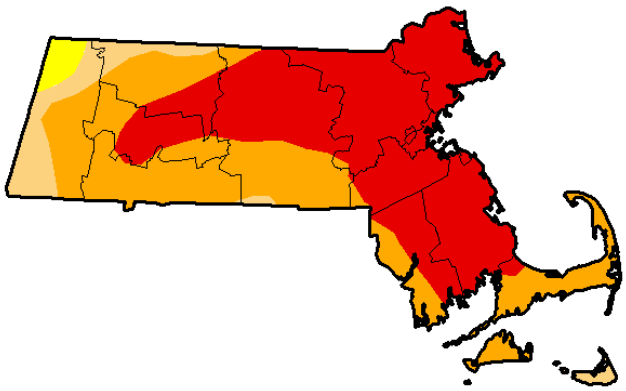
Further, viable aquifers in Ashburnham essentially are non-existent due to the predominance of surficial deposits consisting of glacial till. Consequently, Town-wide water use restrictions are imposed during most summer months, regardless of the Region’s drought status.

Notable times of water stress were experienced in the Region during the 1960’s and more recently in the years 1999, 2000, and 2002. According to the Massachusetts Department of Conservation and Recreation, the Central Drought Region, of which the Montachusett Region is part, experiences 50 months of drought emergency per 100 years historically.

The U.S. Drought Monitor started in 2000. Most recently, the longest duration of drought (D1-D4) in Massachusetts lasted 48 weeks beginning on June 07, 2016 and ending on May 2, 2017. The most intense period of drought occurred the week of September 13, 2016, where D3 affected 52.13% of Massachusetts land.

U.S. Drought Monitor

Massachusetts



October 4, 2016

(Released Thursday, Oct. 6, 2016)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0	D1	D2	D3	D4
Current	0.00	1.85	8.20	37.82	52.13	0.00
Last Week 9/27/2016	0.00	1.85	8.20	37.82	52.13	0.00
3 Months Ago 7/5/2016	0.70	44.31	25.34	29.65	0.00	0.00
Start of Calendar Year 12/29/2015	22.85	50.81	26.34	0.00	0.00	0.00
Start of Water Year 9/27/2016	0.00	1.85	8.20	37.82	52.13	0.00
One Year Ago 10/6/2015	22.34	63.85	13.81	0.00	0.00	0.00

Intensity:

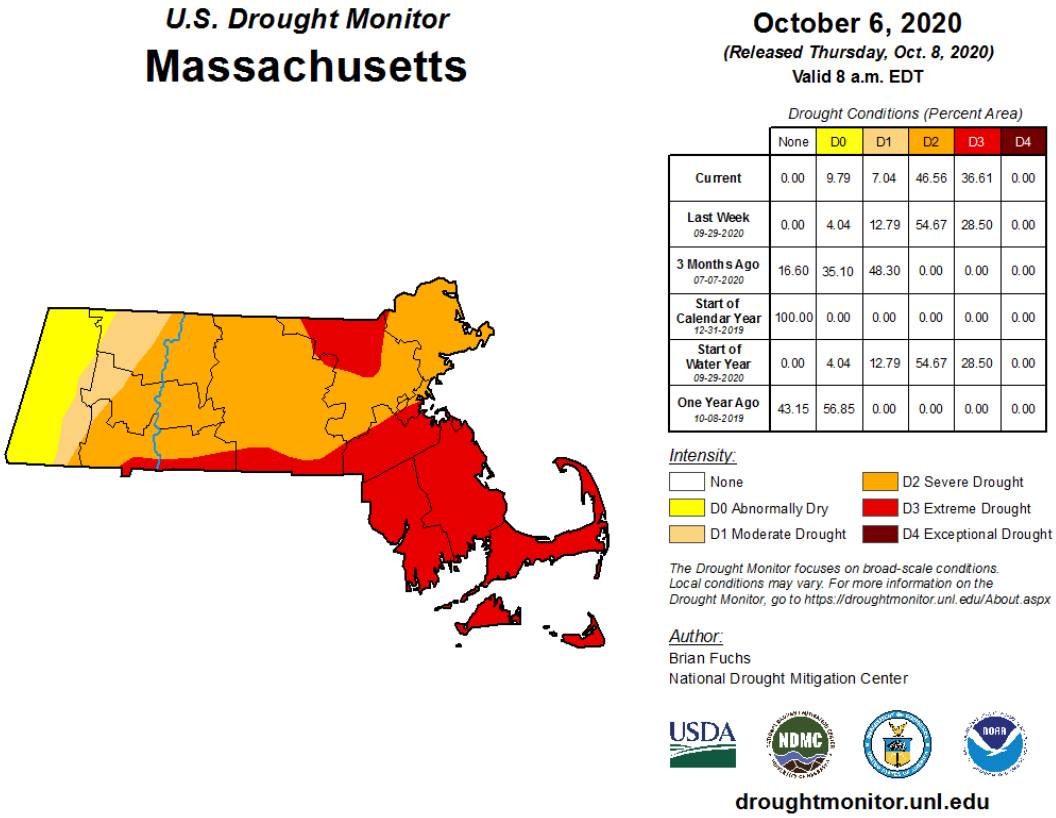
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Brian Fuchs
National Drought Mitigation Center

http://droughtmonitor.unl.edu/

FIGURE 6: 2016 DROUGHT IN MASSACHUSETTS



	None	D0	D1	D2	D3	D4
Current	0.00	9.79	7.04	46.56	36.61	0.00
Last Week 09-29-2020	0.00	4.04	12.79	54.67	28.50	0.00
3 Months Ago 07-07-2020	16.60	35.10	48.30	0.00	0.00	0.00
Start of Calendar Year 12-31-2019	100.00	0.00	0.00	0.00	0.00	0.00
Start of Water Year 09-29-2020	0.00	4.04	12.79	54.67	28.50	0.00
One Year Ago 10-08-2019	43.15	56.85	0.00	0.00	0.00	0.00

FIGURE 7: 2020 DROUGHT IN MASSACHUSETTS

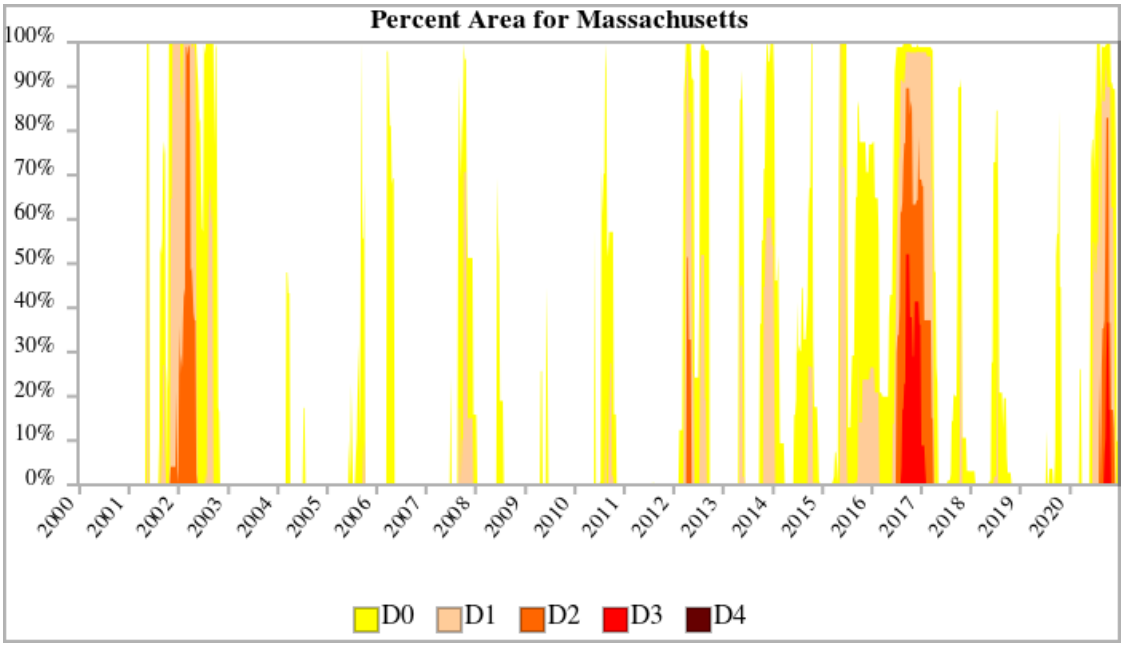


FIGURE 8: DROUGHTS EXPERIENCED IN MASSACHUSETTS (2000-2020)
Source: Droughtmonitor.unl.edu

Probability of Future Events

The probability of future events falls under the definition of probability as possible for the Town of Ashburnham. Droughts will continue to occur over time in the region as also evidenced in figured above. It will require vigilance to ensure that sufficient water supplies are available for human consumption and for maintaining base stream flow to support agriculture and aquatic wildlife.

According to the Massachusetts Drought Management Plan, “Municipal governments are critically important to managing drought situations and assessing the impact of drought situations.” To protect water supplies, local communities must carefully maintain and protect existing reservoirs and groundwater supplies, continue efforts to limit unnecessary water use through conservation measures, and control storm water runoff. Limiting or prohibiting new storm water discharges into municipal drainage systems and encouraging or requiring that storm water be contained on-site for groundwater recharge will help to maintain stream flow in drought conditions. Local water suppliers are also encouraged to develop Drought Plans that include drought indicators and drought triggers. Following the plan may lead to the institution of voluntary or mandatory water use restriction policies.

Impact

Due to the depletion of water resources and unpredictable extents that drought can have on a community, the impacts on the Town of Ashburnham would be critical due to the effects on the wells and freshwater resources.

Climate Change Vulnerability

The figures above indicate that, historically, periods of drought can occur in the Montachusett Region, even though Massachusetts in considered a “water-rich state”. This is a particular concern for the Town of Ashburnham as drought seasons are expected to become more common with climate change, as shown in the projections below.

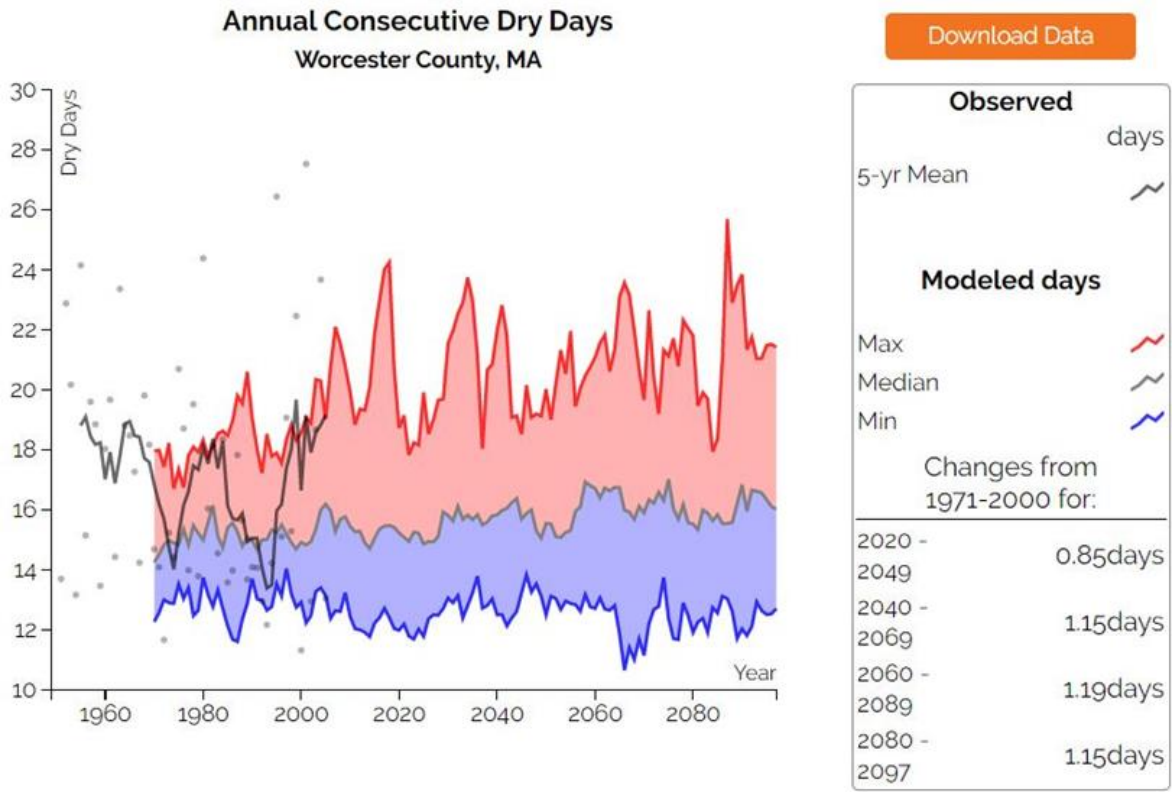


FIGURE 9: ANNUAL CONSECUTIVE DRY DAYS, WORCESTER COUNTY.
(Source: ResilientMA.org)

Due to climate change, drought conditions will be more prevalent due to increasing air temperatures and changes in precipitation. The figure above shows projection for 2080 of a maximum number of 17 consecutive days and a minimum number of 12 consecutive dry days.

5.16 Extreme Temperatures

Hazard Description

There is no universal definition for extreme temperatures. The term is relative to the usual weather in the region based on climatic averages. Extreme heat is usually defined as a period of 3 or more consecutive days above 90 °F. But more generally a prolonged period of excessively hot weather, which may be accompanied by high humidity. Extreme cold is relative to the normal climatic lows in a region. Temperatures that drop decidedly below normal and wind speeds that increase above average can cause harmful wind-chill factors. The wind chill is the apparent temperature felt on exposed skin due to the combination of air temperature and wind speed.

Previous Occurrences

The Town of Ashburnham has four distinct seasons. The seasons have several defining factors, but temperature is the most important. The figure below shows the temperatures for July

and January for Worcester County from 1980-2020. July is historically known for being the hottest month for Massachusetts and January is historically known for being the coldest month in Massachusetts.

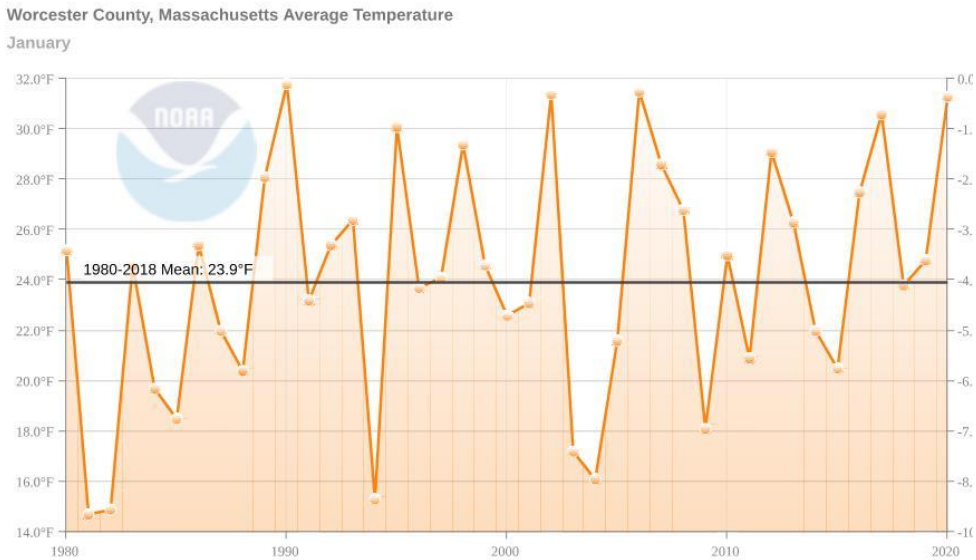


FIGURE 10: WORCESTER COUNTY, JANUARY AVERAGE TEMPERATURES (1980-2020)
(Source: https://www.ncdc.noaa.gov/cag

The figure above demonstrates January average temperatures for Worcester County from 1980-2020.

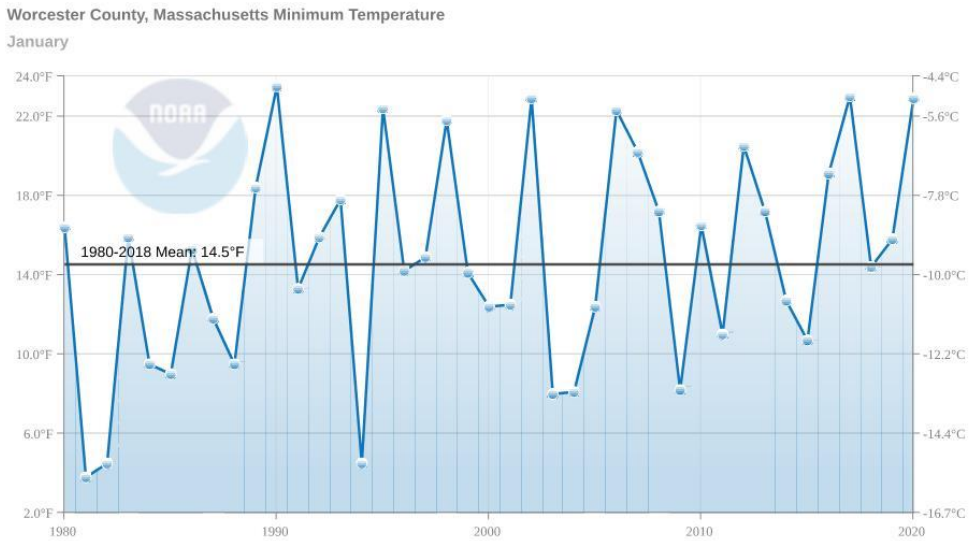


FIGURE 11: WORCESTER COUNTY, JANUARY MINIMUM TEMPERATURES (1980-2020)
(Source: https://www.ncdc.noaa.gov/cag)

The figure above demonstrates January minimum temperatures for Worcester County from 1980-2020, which shows the coldest days in Worcester County on record.

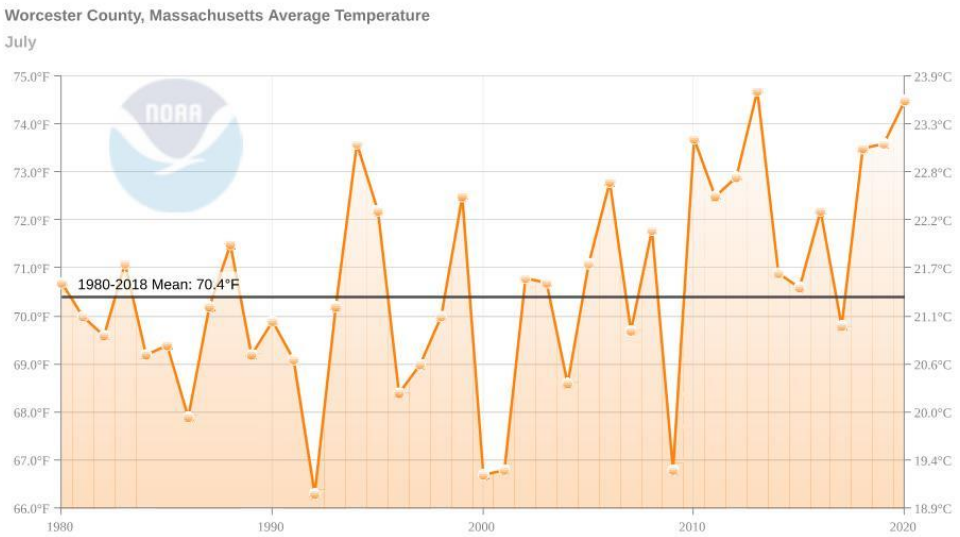


FIGURE 12: WORCESTER COUNTY, JULY AVERAGE TEMPERATURES (1980-2020)
(Source: https://www.ncdc.noaa.gov/cag)

The figure above demonstrates July average temperatures for Worcester County from 1980-2020.

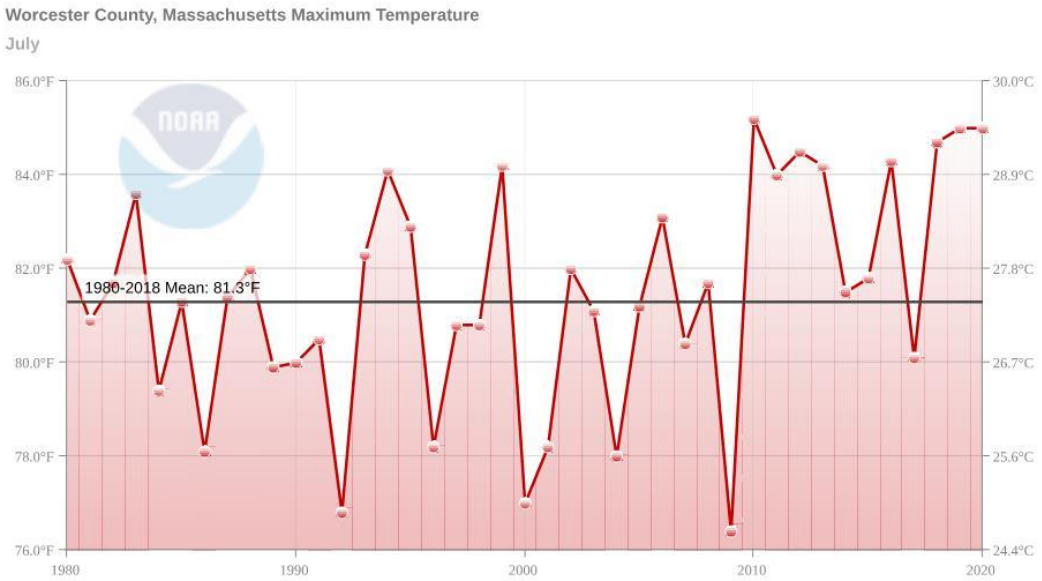


FIGURE 13: WORCESTER COUNTY, JULY MAXIMUM TEMPERATURES (1980-2020)
(Source: https://www.ncdc.noaa.gov/cag)

The figure above demonstrates July maximum temperatures for Worcester County from 1980-2020, which shows the hottest days in Worcester County on record.

Probability of Future Events

Extreme temperatures in Ashburnham fall under the definition of probability as possible. The vast majority of summers in Worcester County experience high temperatures around 85°F. In the winter, temperatures drop below normal each year. With the climatic conditions that occur in Worcester County, extreme temperatures will continue into the future for Ashburnham.

Impact

Due to the variable nature of extreme temperatures, the impact of these conditions on the Town of Ashburnham is critical due to increasing demand for groundwater resources, which the majority of residents are dependent for potable water.

Climate Change Vulnerability

The Climate change projections figure below indicates that Worcester County is highly vulnerable to extreme temperatures changes in the future. The town of Ashburnham should consider extreme temperature during natural hazard planning in order to have an increase in adequate water supplies and cooling centers within Town.

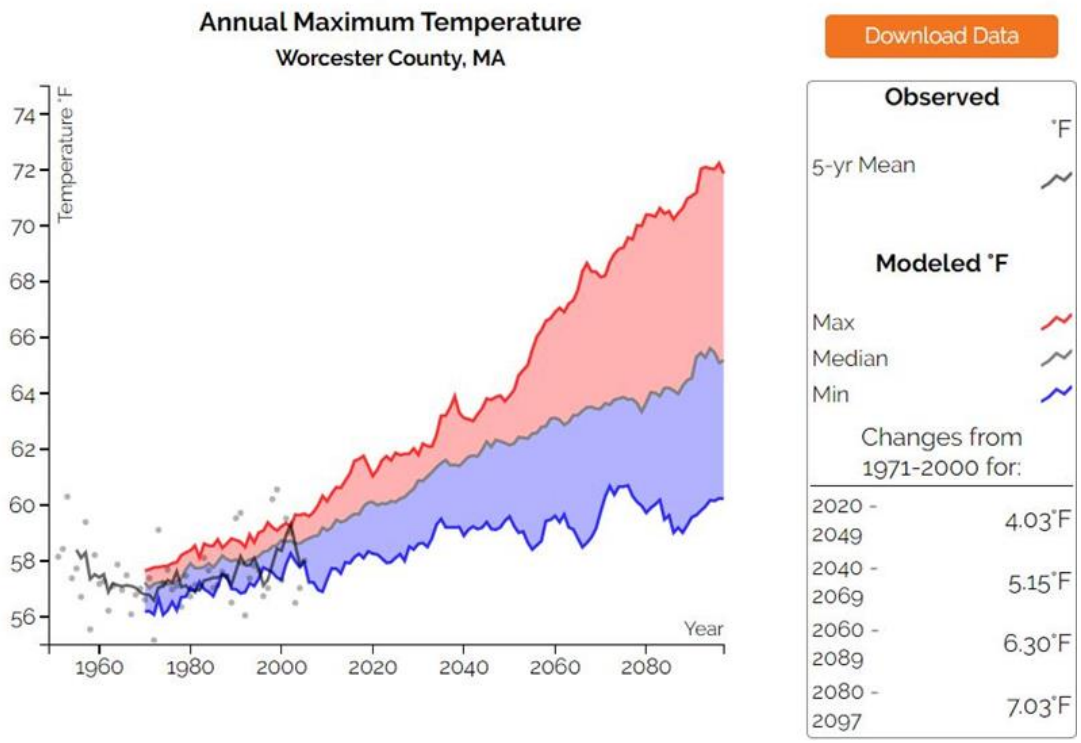


FIGURE 14: ANNUAL MAXIMUM TEMPERATURE PROJECTIONS FOR WORCESTER COUNTY
(Source: resilientMA.org)

According to records for historic data, Worcester County is highly vulnerable to extreme temperatures ranging from 85˚ F to 4˚ F. However, sub-zero temperatures in winter and summer temperatures in excess of 95º are well known to Town residents. Extreme cold is a dangerous situation that can result in health emergencies for susceptible people, such as those without

shelter or who are stranded, or who live in homes that are poorly insulated or without heat. Extreme Heat can also be dangerous, and people should be aware of who is at the greatest risk and what actions can be taken to prevent a heat-related illness or death. At greater risk are the elderly, children, and people with certain medical conditions, such as heart disease. However, even young and healthy individuals can succumb to high heat if they participate in strenuous physical activities during hot weather. Some behaviors also put people at greater risk: drinking alcohol; taking part in strenuous outdoor physical activities in hot weather; and taking medications that impair the body's ability to regulate its temperature or that inhibit perspiration.

5.17 Earthquakes

Hazard Description

An earthquake, which is considered a "non-climate influenced" hazard, is the sudden release of strain vibration, sometimes violent, of the earth's surface that follows a release of energy in the earth's crust. New England's earthquakes appear to be the result of the cracking of the surface due to the compression and buckling of the North Atlantic Plate, and also due to isostatic rebound following the retreat of the glaciers that once covered the northern United States.

Extent

Earthquakes are measured by the following standard for extent and intensity. The other geologic hazards listed do not have standard means of classification.

TABLE 16: RICHTER MAGNITUDE SCALE

Magnitude	Earthquake Effects
2.5 or less	Not felt or felt mildly near the epicenter but can be recorded in seismographs.
2.5 to 5.4	Often felt, but only causes minor damage
5.5 to 6.0	Slight damage to buildings and other structures
6.1 to 6.9	May cause lot of damage in very populated areas
7.0 to 7.9	Major earthquake, serious damage
>8.0	Great earthquake, can destroy communities near the epicenter.

Source: New England Seismic Network and USGS Earthquake GIS

Previous Occurrences

The Montachusett Region has been affected by relatively small earthquake events between 1978 and 2020. However, Ashburnham has not experienced an earthquake. The table below shows the locations of earthquake occurrences during this time period. There have been 12 earthquake events that have had their center in the Montachusett Region between 1978 and 2020. The earthquakes ranged from 0.6 to 2.4 on the Richter Scale.

TABLE 17: EARTHQUAKES (1978-2020)

Location	Date	Magnitude
Stow, Massachusetts	02-18-2019	1.1
Gardner, Massachusetts	02-29-2019	1.6
Gardner, Massachusetts	12-22-2018	2.2
Gardner, Massachusetts	12-21-2018	1.4
Templeton, Massachusetts	12-21-2018	2.1
Londonderry, New Hampshire	09-21-2018	1.9
Harvard, Massachusetts	11-27-2017	1.6
Acton, Massachusetts	02-21-2016	1.3
Quabbin Reservoir	09-20-1996	2.2
Barre, Massachusetts	10-02-1994	2.4
Littleton, Massachusetts	07-13-1993	1.6
Northeast of Quabbin Reservoir	02-09-1983	2.0
Athol, Massachusetts	11-9-1982	2.3

Source: New England Seismic Network and USGS Earthquake GIS

Probability of Future Events

Based on the historic occurrences, the fault line that runs through the town of Ashburnham, and the limited severity of potential events, the probability of future events for earthquakes falls under the definition of probability as possible for Ashburnham.

Impact

Due to the aging infrastructure and the amount of High and Significant Hazard dams within the area, the earthquake-related impacts on the town of Ashburnham would be catastrophic.

Vulnerability

The map below shows the Peak Ground Acceleration (PGA) zones for the Montachusett Region. PGA represents a model showing the probability that ground motion will reach a certain level. The model shows peak horizontal ground acceleration (the fastest measured change in speed, for a particle at ground level that is moving horizontally due to an earthquake) with a 2% probability of exceeding this percentage in 50 years. Essentially, PGA is a measurement that compares the shaking of the ground with the force of gravity. While the likelihood of a powerful earthquake in the Region is low, the impact of an earthquake is high because of how old the buildings are and because few structures have been built to withstand earthquakes. The Town of Ashburnham is in the 4%g range of the PGA zones, and a fault line can be seen running through the east side of the Town.

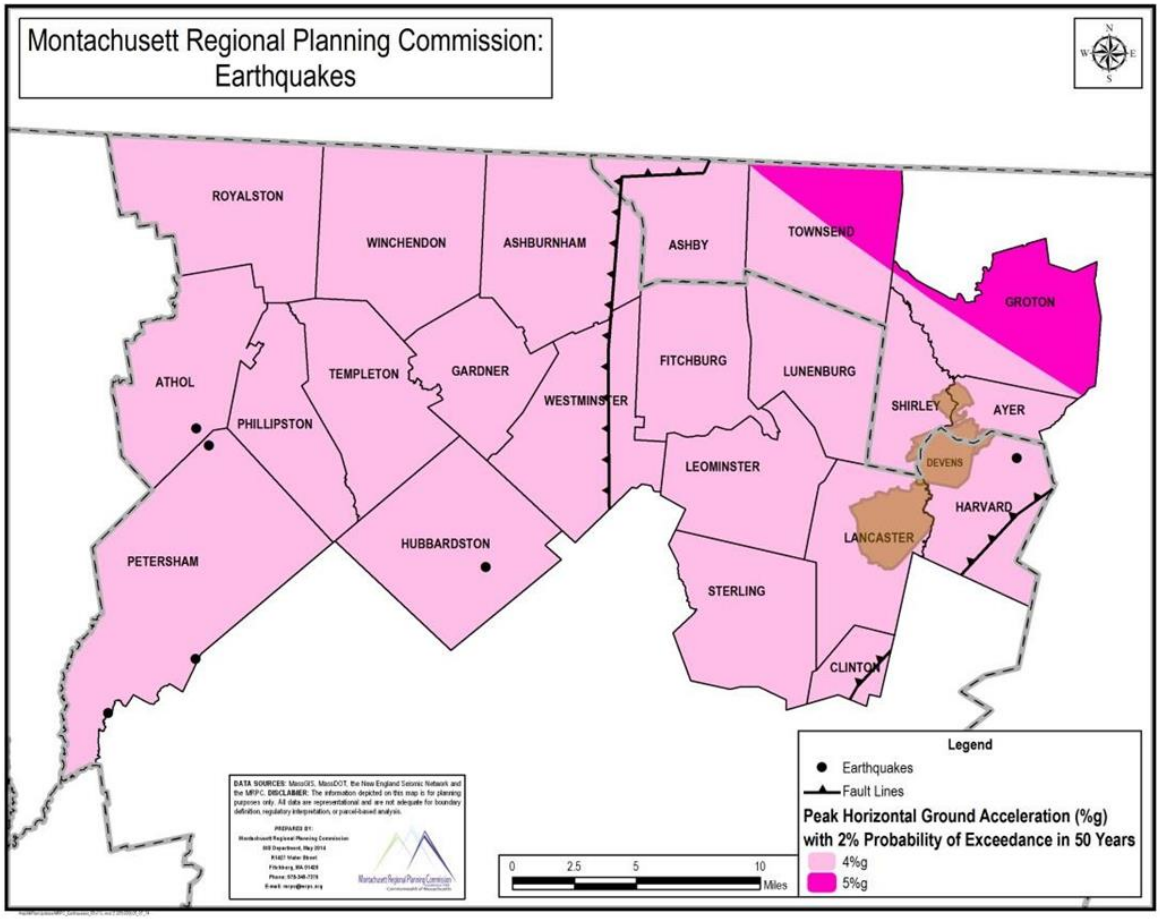


FIGURE 15: 2015 REGIONAL PLAN, EARTHQUAKE FIGURE.
Source: Montachusett Region Planning Commission

5.18 Landslides

Hazard Description

Landslides include a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows.

Location

The data for landslides in Ashburnham is very limited therefore there are no reports for the Town of Ashburnham of landslide occurrence as this time.

Previous Occurrences

The data for landslides in the Montachusett Region is very limited and there is nothing that can be presented in this report for the Region or the Town of Ashburnham at this time.

Probability of Future Events

The data for landslides in the Montachusett Region it is very limited and therefore the probability of future is unlikely for the Town of Ashburnham.

Impact

Due to the aging infrastructure and the amount of significant hazard dams within the area the impacts on the Town of Ashburnham would be catastrophic.

Vulnerability

Landslide occurrences in this region have little evidence. Due to this the effects of a landslide on the Town of Ashburnham are difficult to predict. However, since buildings in the Region are not constructed with earthquakes and landslides in mind as a building factor, landslides could inflict damages if occurred.

- End of Section -

6 CRITICAL INFRASTRUCTURE AND VULNERABILITIES

6.1 Critical Infrastructure in Hazard Areas

Critical infrastructure includes facilities that are important for disaster response and evacuation (such as emergency operations centers, fire stations, hospitals, etc.) and facilities where additional assistance might be needed during an emergency (such as nursing homes, elderly housing, day care centers, etc.). It also includes facilities that might pose a particular risk during a natural disaster such as a sewage treatment plant or chemical facility. These facilities are listed in Table 18, and some are shown in Appendix A, Map 8. The purpose of mapping the natural hazards and critical infrastructure is to present an overview of hazards in the community and how they relate to critical infrastructure.

TABLE 18: CRITICAL INFRASTRUCTURE WITHIN THE 100-YEAR FLOOD PLAIN

Feature Type	Name	Address
100 -year Floodplain Zone A	Ashburnham/Winchendon Water Filtration Plant	204 Lake Road
100 -year Floodplain Zone AE	Flo Chemical	20 Puffer Street
100 -year Floodplain Zone AE	Early Childhood Care – Larsen	53 Westminster Street

6.1.1 Introduction to HAZUS-MH

The purpose of the vulnerability assessment is to estimate the extent of potential damages from natural hazards of varying types and intensities. A vulnerability assessment and estimation of damages was performed for hurricanes, earthquakes, and flooding. The methodology used for hurricanes and earthquakes was the HAZUS-MH software. The methodology for flooding was developed specifically to address the issue in many of the communities where flooding was not solely related to location within a floodplain.

HAZUS-MH (multiple-hazards) is a computer program developed by FEMA to estimate losses due to a variety of natural hazards. The following overview of HAZUS-MH is taken from the FEMA website. For more information on the HAZUS-MH software, go to http://www.fema.gov/plan/prevent/hazus/index.shtm.

"HAZUS-MH is a nationally applicable standardized methodology and software program that contains models for estimating potential losses from earthquakes, floods, and hurricane winds. HAZUS-MH was developed by the Federal Emergency Management Agency (FEMA) under contract with the National Institute of Building Sciences (NIBS). Loss estimates produced by HAZUS-MH are based on current scientific and engineering knowledge of the effects of hurricane winds, floods, and earthquakes. Estimating losses is essential to decision-making at all levels of government, providing a basis for developing and evaluating mitigation plans and policies as well as emergency preparedness, response and recovery planning."

"HAZUS-MH uses state-of-the-art geographic information system (GIS) software to map and display hazard data and the results of damage and economic loss estimates for buildings and infrastructure. It also allows users to estimate the impacts of hurricane winds, floods and earthquakes on populations."

There are three modules included with the HAZUS-MH software: hurricane wind, flooding, and earthquakes. There are also three levels at which HAZUS-MH can be run. Level 1 uses national baseline data and is the quickest way to begin the risk assessment process. The analysis that follows was completed using Level 1 data."

"Level 1 relies upon default data on building types, utilities, transportation, etc. from national databases as well as census data. While the databases include a wealth of information, it does not capture all relevant information. In fact, the HAZUS training manual notes that the default data is "subject to a great deal of uncertainty."

However, for the purposes of this plan, the analysis is useful. This plan is attempting to generally indicate the possible extent of damages due to certain types of natural disasters and to allow for a comparison between different types of disasters. Therefore, this analysis should be considered a starting point for understanding potential damages from the hazards. If interested, communities can build a more accurate database and further test disaster scenarios.

6.1.2 Estimated Damages from Flooding

An analysis of the Flood Insurance Rate Map (FIRM) flood hazard area maps indicates that there is a total of 6,355 acres of 100-year floodplain within Ashburnham. This amounts to 25.8% of the total town. Based on additional analysis, 917 acres (14.4%) of the floodplain are developed. Currently there are 174 structures in the floodplain which is about 6.4% of the total structures in the community. Excluding dams and bridges, there only is a portion of one (1) critical facility within the 100-year flood zone.

Since the initiation of the National Flood Insurance Program (NFIP), two flood insurance claims in the Town of Ashburnham have been made totaling $5,198.83 in payments. According to (NFIP) data; there are no repetitive loss properties in Ashburnham. Statistics from the NFIP BureauNet indicate there are 20 flood insurance policies in force in the town of Ashburnham.

The town supports floodplain management activities in an effort to meet compliance of the National Floodplain Insurance Program. These efforts include:

- Implementing the MA Wetlands Protection Act and the town's Wetland's Protection Bylaw regulating development and activity within the wetlands buffer zone and regulating stormwater and other point source discharge.

- Implementing the Town Flood Plain District Bylaw regulating development in the floodplain district.

- Maintain the Town's Low Impact Development Bylaw which establishes minimum requirements and procedures to control the adverse effects of increased post-development stormwater runoff and nonpoint source pollution associated with new development and redevelopment.

- Continued maintenance of municipal stormwater drainage system which includes regular cleaning of catch basins, storm drains and culverts.

- Continued maintenance of public water bodies to reduce flooding caused by erosion and water displacement.

- Enforcement of the Open Space Residential Bylaw which mitigates possible flooding events by designating protected open space within a development which in turn treats stormwater runoff through the means of natural infiltration.

The Town is continuing to work with MEMA and FEMA for the Flood Insurance Map updates which are estimated to be released by FEMA in 2024. This update would allow for a more accurate floodplain representation within the Town's limits.

Flooding potential has also been reported by Town Officials due to insufficient stormwater infrastructure near Williams Road by the sewer pump station, and insufficient stormwater infrastructure located at East Rindge Road, Tuckerman Road and Sherbert Road.

HAZUS-MH was not used to estimate flood damages in Ashburnham due to depth grid information being unavailable for the area. In Ashburnham, much of the flooding is due to deficiencies in the drainage system. In lieu of using HAZUS, a methodology was used to give a rough approximation of flood damages.

HAZUS uses an average value of $366,527 per structure for the building replacement value. Accordingly, this was used to calculate the total building replacement value within the FEMA floodplain which totals to $63,775,698.

However, consistent with the FEMA Local Mitigation Planning guide, the flood-related damage calculations were done for a low estimate of 10% building damages and a high estimate of 50%. Based on this approach, the range of estimates for flood damages is $6,377,569 - $31,887,849.

6.1.3 Estimated Damages from Hurricanes

For the purposes of this plan, a 100-year and 500-year storm recurrence interval was chosen to illustrate damages. These models were completed present a "worst case scenario" that would help planners and emergency personnel evaluate the impacts of storms that might be more likely in the future. This is due to extreme weather projections demonstrating a trend in more intense and frequent storms. The table below demonstrates the estimated damages for hurricanes.

TABLE 19: HURRICANE ESTIMATED DAMAGES

	100 Year	500 Year
Building Characteristics		
Estimated total number of buildings	2,712	2,712
Estimated total building replacement value (2014 $)	994,020,000	994,020,000
Building Damages		
# of buildings sustaining slight damage	9	159
# of buildings sustaining moderate damage	0	9
# of buildings sustaining extensive damage	0	0
# of buildings completely damaged	0	0
Population Needs		
# of households displaced	0	3
# of people seeking public shelter	0	2
Debris		
Building debris generated (tons)	50	389
# of truckloads to clear debris (@ 25 tons/truck)	2	16
Value of Damages (dollars)		
Total property damage	3,068,580	13,536,180
Total losses due to business interruption	2,420	238,510

Source: FEMA - HAZUS-MH

6.1.4 Estimated Damages from Earthquakes

In order to assess damages from earthquakes, the HAZUS-MH earthquake module was used. For more information, see the description of the HAZUS-MH software above. The HAZUS earthquake module allows users to define several different types of earthquakes and to input a number of different parameters. The module is more useful in locations where there is a great deal of data available on earthquakes. In New England, defining the parameters of a potential earthquake is much more difficult because there is little historical data. The earthquake module does offer the user the opportunity to select several historical earthquakes that occurred in Massachusetts. For the purposes of this plan a magnitude of 5.0 Earthquake was used.

TABLE 20: EARTHQUAKE ESTIMATED DAMAGES

	Magnitude 5.0
Building Characteristics	
Estimated total number of buildings	2,712
Estimated total building replacement value (2014 $)	994,020,000
Building Damages	
# of buildings sustaining slight damage	803
# of buildings sustaining moderate damage	421
# of buildings sustaining extensive damage	113
# of buildings completely damaged	27
Population Needs	
# of households displaced	28
# of people seeking public shelter	15
Debris	
Building debris generated (tons)	7,040
# of truckloads to clear debris (@ 25 tons/truck)	282
Value of Damages (dollars)	
Total property damage	114,410,000
Total losses due to business interruption	12,585,100

Source : FEMA- HAZUS-MH

6.2 Future Development in Hazard Areas

No development presently is proposed or anticipated to occur within areas subject to flooding during 100-year storm events. Developments within the Hazard Areas located in Appendix A have been developed since before 2015. If a development proposes work within the 100-year flood plain, the developer is required to go to the Planning Board for review of the reports and receive recommendations from the Conservation Commission as required by the Wetland Protection Act. This review is to ensure that impacts on the land and mitigation strategies are proposed and have rough proportionality to the impacts. However, there are no such projects in review nor have there been any inquiries of future work. Development within these hazard prone areas may the increased risks and vulnerabilities related to future development include housing demands and the projected increase in population due to inland migration. Increased development will lead to an increase in impervious surfaces, which will result in more stormwater runoff and, potentially, increased flooding. This can lead to stormwater infrastructure requiring increased capacity, and more water quality treatment areas within Town. Although future development in hazard areas is not proposed at this time, these mitigation concerns should be revaluated in future LHMP updates.

- End of Section -

7 EXISTING MITIGATION MEASURES AND CONCERNS/CHALLENGES

7.1 Existing Mitigation Measures

The original inventory of hazard mitigation actions which the Montachusett communities developed for the 2015 Montachusett Region Hazard Mitigation Plan was reviewed and updated by Pare and the Core Team. The following table depicts the updated inventory of what is currently being done to mitigate hazards by listing the programs and activities already in place. It includes a description of the protection measure, who is responsible, and improvements and changes that may be needed. This inventory was used to identify gaps in existing protections that were then addressed through the development of the proposed mitigation measures.

TABLE 21: ASHBURNHAM'S EXISTING MITIGATION MEASURES

Type of Existing Protection	Description	Area Covered	Implementation Resources and Funding*	Improvements or Changes Needed
Flood Related Hazards				
Storm water management standards	Federal regulation under the NPDES Permit Program, State regulation under varied water resource-based statutes and regulations, and State/municipal regulation under the Wetlands Protection Act to regulate storm	Town-Wide	Enforced by both the Ashburnham Conservation Commission (Wetlands Protection Act) staffed by the Town's Conservation Agent and Ashburnham Planning Board (Subdivision Control Law, Site Plan Review and LID Bylaw)	No improvement or changes needed
Wetlands Protection Act (State)	State law regulating development, and activity within wetland resource areas and associated resource buffer zones	Wetland resource areas and 100-foot buffer relative to Bank and Bordering Vegetated Wetlands	Enforced by the Ashburnham Conservation Commission staffed by the Town's Conservation Agent	No improvement or changes needed
Wetlands Protection General Bylaw (local)	Local bylaw supplementing the Wetlands Protection Act	Wetland resource areas and 100-foot buffer relative to Bank and Isolated/Bordering Vegetated Wetlands	Enforced by the Ashburnham Conservation Commission staffed by the Town's Conservation Agent	No improvement or changes needed

Type of Existing Protection	Description	Area Covered	Implementation Resources and Funding*	Improvements or Changes Needed
100 Year Flood Zone	Federal law requiring new and substantially improved residential structures in floodplain to be constructed above 100- year	100-year floodplain as shown on Flood Insurance Rate Map dated June 15, 1984	Enforced by the Building Commissioner/Zoning Enforcement Officer and Conservation Commission staffed by the Town's Conservation Agent	Flood Insurance Rate Maps need to be updated
Zoning Bylaw/Flood Plain District Regulations	Regulations enhancing Federal/State laws and regulating any development in the flood plain district	100-year floodplain as shown on Flood Insurance Rate Map dated June 15, 1984	Enforced by the Building Commissioner/Zoning Enforcement Officer and Conservation Commission staffed by the Town's Conservation Agent	Flood Insurance Rate Maps need to be updated
Low Impact Development	Local General Bylaw	Town – Wide	Enforced by Planning Board	General Bylaw and enforcement remain in effect; Permitting thresholds and procedures need to be revised
Maintenance of municipal storm water drainage system	Regular cleaning of catch basins, storm drains, and culverts	Town – Wide	Directed by the Department of Public Works staff.	Maintenance continues but additional staff and equipment are needed to address this task in a timelier manner
Maintenance of public water bodies (ponds, streams, brooks, wetlands)	Periodic cleaning of waterways is undertaken, i.e., trash/debris removal	Town-Wide	Directed by the Department of Public Works staff with guidance from Conservation Commission staffed by the Town's Conservation Agent	Maintenance continues; need to review/ implement regulations regarding beaver dam removal

TABLE 21 (CONTINUED)

Wind-Related Hazards				
State Building Code	State Law related to all aspects of development, including floor and roof design loads, and snow, wind, and earthquake design factors	Town-Wide	Enforced by Building Commissioner/Zoning Enforcement Officer	Enforcement continues; Need to update Zoning Bylaws to reflect current State Code
Tree Maintenance and Removal	Regular inspection and tree maintenance to cut branches and/or remove trees threatening power lines, overhead utilities, and general public safety utilities	Town-Wide	Municipal Light Plant and Department of Public Works staff	Tree maintenance/removal continues but additional staff are needed to address this task in a timelier manner
Winter Storm Related Hazards				
Clearing Snow from Major Arterial Routes	Ensure access to emergency services	Town-Wide	Department of Public Works staff	Snow clearing continues but additional staff and equipment are needed to address this task in a timelier manner

TABLE 21 (CONTINUED)

Since the 2015 HMP Update, the Town has implemented other hazard mitigation measures. In 2013, for example, the Ashburnham Municipal Light Plant (AMLP) cooperated with the construction of a 20-acre solar field, and in 2017 receiving a grant toward the installation of a 3MW/5MWH Lithium-ion Energy Storage Facility. In addition, the AMLP instituted an aggressive annual tree and brush cutting program to lessen storm impacts and have upgraded equipment. These improvements are ongoing to ensure the community remains ‘connected’ during hazard events.

The Town’s warning system during natural hazards includes a local cable channel, a reverse 911 system, Town Website and Social media page, loudspeaker, and door to door communication. Equipment that is current on inventory at the EOC includes a diesel Auto-Switch Generator, 60 days’ worth of fuel, radio communication for the DPW channel, the Fire Department channel, and Police channel, two media briefing rooms and two sleeping areas. Currently no equipment is designated at the alternate EOC. In cases where Emergency transport in necessary for community members, Ashburnham School buses will be used for emergency transportation to the Oakmont High School Shelter. During incidents of extreme temperatures, the Senior Center and Library will remain open as a cooling or heating center for community members.

The following list also includes various other mitigation measures completed over the years since the 2015 Regional Hazard Mitigation Plan:

- Completed or ongoing mitigation measures from previous regional plans.
- Regular cleaning of catch basins, storm drains, and culverts.
- Periodic cleaning of waterways, i.e., trash/debris removal.
- Clearing Snow from Major Arterial Routes.

TABLE 22: STATUS OF MITIGATION MEASURES FROM THE 2015 REGIONAL HAZARD MITIGATION PLAN

Mitigation Measure	2021 Status Update (Completed, In Progress, On Hold, Not Applicable)	Included in 2021 Plan and Priority
Work with Neighboring Communities to Establish a Community Emergency Response Team (CERT)	In progress- 2021 CEMP update.	No.
Develop and Distribute an Educational Pamphlet on Fire Safety and Prevention (SAFE PROGRAM) and (SENIOR SAFE) that includes information on wildfire prevention.	In progress - 2021 Comprehensive Emergency Management Plan (CEMP) update.	Yes, included in Table 23 as a low priority.
Collect, Update, and Disseminate Information on Local Radio/TV Stations to educate the public and alert them of emergency information and instructions related to all-natural hazards.	In progress - 2021 Comprehensive Emergency Management Plan (CEMP) update.	Yes, included in Table 23 as a high priority.
Develop a Mitigation Plan to provide access to Water, Information, Shelter and Food Stores to People in Remote Locations of the town in the Event of a Severe Winter Storm.	In progress - 2021 Comprehensive Emergency Management Plan (CEMP) update.	Yes, included in Table 23 as a high priority.
Identify all structures throughout the town that need to be Elevated above the Base-Flood Elevation	In progress - Ashburnham is currently working with FEMA for updated flood maps to be produced.	Yes, included in Section 6.
Prepare a Priority List for the Replacement of Undersized Culverts throughout the town	On Hold – Limited funding available.	Yes, included in Table 23 as a high priority.
Update Insurance Flood Rate Maps	In progress - Ashburnham is currently working with FEMA for updated flood maps to be produced.	No.
Explore options to encourage property owners to engage in Hazard mitigation efforts	Completed - MVP workshop and public listening sessions.	No.
Continue participation in the National Flood Insurance Program	Completed.	No.
Enforce state building codes related to design loads to include wind effects generated from atmospheric related hazards.	Completed.	No.

Mitigation Measure	2021 Status Update (Completed, In Progress, On Hold, Not Applicable)	Included in 2021 Plan and Priority
Identify areas with potential for brush fires. Continue brush clearing to provide access for emergency services. Regularly inspect and cut branches threatening power lines and overhead utilities.	Continued progress through the Fire Department.	No.
Fire Station to hold open houses and allow public to visit and see equipment and educate the public on wildfire mitigation. Distribute educational pamphlet on fire safety and prevention (the SAFE Program).	In progress through current emergency education programs.	Yes, included in Table 23 as a low priority.
Expand residential parking bans to enable snow removal from all streets.	Completed.	No.
Identify shelters and publicize locations to mitigate the effects of all hazards on the general population.	In progress - 2021 Comprehensive Emergency Management Plan (CEMP) update.	No.
Utilize interactive mapping application prepared by MRPC/CMRPC to update critical infrastructure and simulate real time evacuation scenarios to mitigate hazards to the public.	In progress - 2021 Comprehensive Emergency Management Plan (CEMP) update.	No.
Install "beaver diverters" and water control devices to Mitigate flooding caused by beaver dams.	On Hold – Limited funding available.	Yes, included in Table 23 as a high priority.
Hire trapper for removal of beavers to mitigate flooding caused by beaver dams.	Not Applicable.	In Table 23 as a high priority, new beaver mitigation measure was determined.
Purchase and distribute educational materials at public facilities and events regarding protection from natural hazards	In progress through current emergency education programs.	Yes, included in Table 23 as a low priority.
Implement recommendations regarding natural hazard mitigation in existing planning documents including the implementation element of the master plan, five-year action plan of the open space and recreation plan and the emergency evacuation plan	In progress - 2021 Comprehensive Emergency Management Plan (CEMP), Master Plan update.	No.

TABLE 22 (CONTINUED)

As the Town moves forward into the next five-year plan implementation period, identifying and incorporating hazard mitigation into the Town's decision-making process will be a high priority.

Limited staffing and financial resources are the biggest challenges the Town faces in implementing the mitigations measure identified in this plan. This plan is intended to assist the Town in prioritizing the proposed measures, which will assist in allocating available grant or funding sources.

7.2 Specific Categories of Concerns and Challenges

The following outlines the thoughts, comments, and dialogue of the stakeholders that participated in the CRB workshop, the public listening session, and the Core Team. These specific categories of concerns and challenges became the principle focal points of discussion when assessing the Town. The initial findings from the CRB workshop were presented to the Town for public comment on April 22, 2021, and May 25, 2021.

During the public listening session on April 22, 2021, some community members believed that the AMLP electric grid should be a top priority concern, while others believed that such other priorities as dams, water and sewer services, and water quality should be much higher on the priority list. Dams were a particular topic of discussion, with some community members advocating that dams in Town should be the highest priority rather than electric infrastructure, particularly since Ashburnham has many high hazard and significant hazard dams, plus many non-jurisdictional dams which increase the likelihood of flooding. Also, potential losses of life and property are exacerbated by the fact that many dam Emergency Action Plans (EAP) either are outdated or absent. Storm water management is also a problem due to flooding.

During the public listening session on May 25, 2021, the assignment of a top priority to the AMLP again was addressed by those who considered the DPW facility and equipment needs a priority action. Over the past 20 years, the DPW has experienced equipment failure and has overgrown its outdated facilities making operation and maintenance requirements in Town difficult to execute during normal operations, and particularly hazard events. Many community members explained that the DPW is one of the first responders during hazard events and that the AMLP relies on the DPW to maintain roadway accessibility to access damaged power lines.

A comprehensive list of action items can be found in the following sections. However, the information below identifies the top priority items and how they will mitigate natural hazards and help the community adapt for climate change.

Infrastructural

- *Operation/Maintenance facility and equipment upgrades:* Due to the Department of Public Works being one of the first responders to natural hazards in the Town of Ashburnham, this requires the proper equipment to salt roads effectively during ice storms, maintain and implement plans to upgrade insufficient stormwater infrastructure to prevent flooding, and have the staff and storage capabilities to remove storm debris and trees during extreme weather events while also assisting the AMLP.
- *Dam and flood management:* Dams throughout Town are in a degraded condition primarily because of the increase in the rain intensity during storm and more frequent extreme weather, which has worn the existing infrastructure. Culverts and the drainage network throughout Town are inadequate resulting in flooding during heavy rain events, and erosion of roadways.
- *Water and Sewer infrastructure protection and updates:* Portions of the Town are serviced by a water and sewer infrastructure system. Future climate change conditions that threaten the water infrastructure include the increase in consecutive dry days leading to more intense periods of drought than previously on record. This diminishes the water supply within the reservoir. Sewer infrastructure is also vulnerable due to one of the sewer pump stations being located within the 100-year

floodplain. This location creates operation issues due to consistent flooding potentially requiring pump station upgrades.

- *Electric grid protection and upgrades:* The Town has its own electric company that services the area. This provides benefits to the Town, but also may increase Town vulnerabilities during power outrages due to extreme weather frequency increases and the severity of ice storms within the region. Due to the AMLP having a limited number of staff and equipment, the AMLP depends on with the Ashburnham's DPW during hazard events to ensure that roadways are clear from trees, debris, and snow. Increasing support for the DPW will also assist the AMLP in responding to natural hazards that effect the electric grid.

Societal

- *Communication Improvements:* Large areas of the community of Ashburnham are rural, and many residential properties do not have reliable cell phone service, internet connections or cable. This makes community members vulnerable during flood events, extremer weather and ice storms due to them having difficulty accessing information for emergency response announcements or to ask for assistance during natural hazards. With the frequency of extreme weather increasing due to climate change, establishing better connections to resources was an important priority to community members.

Environmental

- *Water quality protection programs and education:* Lakes and wetlands are valuable assets to the community that attract many residents to the area. The Town considers them an essential environmental resource that should be protected.

- End of Section -

8 HAZARD MITIGATION GOALS AND OBJECTIVES

8.1 Approach and Methodology

The last portion of the CRB workshop engaged all stakeholders in a discussion of the actions and priorities identified by each of the four breakout groups. Each of the groups identified three actions as their highest priorities to increase community resilience in Ashburnham. As part of the overall discussion, the actions listed by each group were sorted initially into four categories and color coded to aid in the identification of themes. The actions presented by each group varied in breadth and scope but seemed to fall within five major categories originally. The categories and action items were then reevaluated at the public listening session and with the Core Team to determine the final priorities resulting in six major categories being created.

8.2 Top Recommendations and Strategies to Improve Resilience

Top recommendations to increase resilience were identified by workshop participants, by attendees at the public listening sessions and the Core Team which are presented in the following categories:

I. Operation/Maintenance Facility and Equipment Upgrades

- Onboard design team to discuss feasibility and design of a new DPW facility in an upland location.
- Take inventory of equipment used for operation and maintenance during hazards events, to determine equipment replacement needs.
- Purchase new equipment which will allow for more efficient road clearing, road salting, tree maintenance and culvert maintenance to reduce flood events.
- Plans for future staff increase to preform operation more efficiently and assist the AMLP during natural hazards.

II. Dam and Flood Management

- Conduct dam inspections and continue updates to the EAPs for the dams that require it.
- Proceed with culvert and storm water management improvements and beaver management strategy plans.
- Initiate a Dam Management annual meeting where owners can discuss facility assessment schedules and needs with the Town.
- Create an assessment plan to determine which dams should be considered for rehabilitation or removal.
- Implement the dam removal or rehabilitation design plans.

III. Water and Sewer Infrastructure Protection and Updates

- Begin a Water and Sewer Systems vulnerability assessment.
- Plan for water system transmission main line protection.
- Continue efforts with the Montachusett Regional Planning Commission to create GIS maps of all infrastructure systems to map resources and take inventory.
- Upgrade the sewer pumpstation within the 100-year floodplain to be more resilient.

IV. Electric Grid Protection and Upgrades

- Create alternative plan for power supply design which may include underground utility plans to protect distribution lines from extreme weather.
- Plan to purchase backup generators to place at public locations to ensure undisrupted electric services to residents during extreme weather.
- Identify vulnerabilities to the Town power supply. Use this research to design improvements to fortify the power grid and reduce unnecessary redundancy.

V. Communication Improvements

- Develop plan to understand the magnitude of deficiencies in the Town communication network in relation to emergency management.
- Create a unified communication network for those who have limited access to communication services.
- Publish a newsletter/physical newspaper to inform residents lacking digital communication of current events and emergency situations. Implement a local radio station for weekly updates or emergency information.
- Upgrade emergency management equipment for fire and police departments which would include enhanced radio communications and cellular-service repeaters.

VI. Water Quality Protection Programs and Education

- Create a Town position to be on charge of Water/ Wetland/Conservation Protection.
- Create Town programs for water quality, public education, and protection programs for preventative measures.

- End of Section -

9 POTENTIAL HAZARD MITIGATION MEASURES

What is hazard mitigation?

Hazard mitigation means to permanently reduce or alleviate the losses of life, injuries and property resulting from natural and human-made hazards through long-term strategies. These long-term strategies include planning, policy changes, programs, projects, and other activities. FEMA currently has four mitigation grant programs: The Hazards Mitigation Grant Program (HGMP), the Pre-Disaster Mitigation program (PDM), the Flood Mitigation Assistance (FMA) program and the Building Resilient Infrastructure and Communities (BRIC). The three websites listed below provide additional information on these four programs.

http://www.fema.gov/government/grant/hmgp/index.shtm

http://www.fema.gov/government/grant/pdm/index.shtm

https://www.mass.gov/service-details/building-resilient-infrastructure-and-communities-bric-flood-mitigation-assistance-fma-grant-programs

9.1 Process for Setting Priorities for Mitigation Measures

The decision on priorities for the 2021 LHMP Update was determined during the MVP workshop. The method used was to reach consensus through discussion, using the CRB framework recommended by the MVP program, rather than taking a vote. Priority setting was based on local knowledge of the hazard areas, cost information, climate change projections, and an assessment of benefits. The original goals that were endorsed by the 2015 regional hazard mitigation plan have been updated to provide adaptation and mitigation goals that are consistent with climate change and natural hazard risks. However, some of the original goals have been incorporated into the goals listed above along with new priorities. Outstanding goals such as floodplain management, emergency management planning and natural hazard education are still important priorities for the Town. However due to climate change impacts continuing to limit the Town's natural resources and the increased frequency of natural hazards the goals below reflect updated high priorities for the town. The updated potential hazard mitigation and climate adaptation measures are outlined in the following section.

9.2 Introduction to Potential Hazard Mitigation Measures (Table 23)

Description of the Mitigation Measure – The description of each mitigation measure is brief and cost information is given only if cost data were already available from the community. The cost data represent a point in time and would need to be adjusted for inflation and for any changes or refinements in the design of a mitigation measure.

Priority – The designation of high, medium, or low priority was done at the meeting of the Local Multiple Hazard Community Planning Team meeting. The designations reflect discussion and a consensus developed at the meeting but could change as conditions in the community change.

Implementation Responsibility – The designation of implementation responsibility was done by Ashburnham based on a general knowledge of what each municipal department is responsible for. It is likely that most mitigation measures will require that several departments work together and assigning staff is the sole responsibility of the governing body of each community.

Time Frame – The time frame was based on a combination of the priority for that measure, the complexity of the measure and whether the measure is conceptual, in design, or already designed and awaiting funding. Because the time frame for this plan is five years, the timing for all mitigation measures has been kept within this framework. The identification of a likely time frame is not meant to constrain a community from taking advantage of funding opportunities as they arise. Strategies are grouped by 1–2-year timeframe, 3–5-year timeframe, and ongoing items.

Estimated Cost - The column represents the estimated cost that the mitigation measure would have to implement into the Town of Ashburnham. Estimated cost for the mitigation measure includes the following classifications: Low – less than $50,000, Medium – between $50,000 – $100,000, High – over $100,000. The column also analyzes the cost compared to the benefits. This includes quantitative benefits along with qualitative benefits which helped distinguish the differences between each mitigation measure.

Potential Funding Sources – This column attempts to identify the most likely sources of funding for a specific measure. The information on potential funding sources in this table is preliminary and varies depending on several factors. These factors include whether a mitigation measure has been studied, evaluated, or designed or is still in the conceptual stages. MEMA and DCR assisted MAPC in reviewing the potential eligibility for hazard mitigation funding. Each grant program and agency have specific eligibility requirements that would need to be taken into consideration. In most instances, the measure will require several different funding sources. Identification of a potential funding source in this table does not guarantee that a project will be eligible for or selected for funding. Upon adoption of this plan, the local committee responsible for its implementation should begin to explore the funding sources in more detail.

TABLE 23: POTENTIAL MITIGATION MEASURES

Hazard Area	Mitigation Measure(s)	Implementation Responsibility	Time Frame	Estimated Cost	Potential Funding Sources
Higher Priority – Infrastructural					
Higher Priority – DPW Facility and Equipment Upgrades					
All Hazards	Determine feasibility and design of a new DPW facility in an upland location.	Select Board, DPW	3-5 years	Cost: High Benefit: Improved DPW operational efficiency and services to residents	Ashburnham, MEMA, MVP Action Grants
All Hazards	Take inventory of equipment used for operation and maintenance during hazards events, to determine equipment replacement needs.	Select Board, DPW	1-2 years	Cost: low Benefit: Improved DPW operational efficiency and services to residents	Ashburnham
All Hazards	Purchase new equipment which will	Select Board, DPW	1-2 years	Cost: Medium	Ashburnham, MEMA

Hazard Area	Mitigation Measure(s)	Implementation Responsibility	Time Frame	Estimated Cost	Potential Funding Sources
	allow for more efficient road clearing, road salting, tree maintenance and culvert maintenance to reduce flood events.			Benefit: Improved DPW operational efficiency and services to residents	
All Hazards	Plan for future staff increase to preform operations more efficiently and assist the AMLP during natural hazards.	Select Board, DPW	1-2 years	Cost: Medium Benefit: Improved DPW operational efficiency and services to residents	Ashburnham
Higher Priority - Dams and Culverts Infrastructure					
All Hazards	Improve emergency response procedures, Emergency Action Plans (EAPs)	DPW, Town Emergency Responders, Dam owners	1-2 years	Cost: Low Benefit: Improved public safety	Ashburnham, MEMA, MVP Action Grants
Heavy Rain	Consider removal and rehabilitation needs for each dam	Select Board, DPW, Dam Owners	1-2 years	Cost: High Benefit: Improved public safety and enhanced quality of environment	Ashburnham, MEMA, EOEEA Dam & Seawall Repair/Removal Program, MVP Action Grants
Higher Priority - Utility Maintenance Infrastructure					
All Hazards	Design of new DPW facilities	Select Board, DPW	3-5 years	Cost: High Benefit: Improved DPW operational efficiency and services to residents	Ashburnham, MEMA, MVP Action Grants
High Winds/ Ice/ snow	Develop program to address vegetation maintenance along utility corridors	DPW; Local and Regional Utility Providers	1-2 years	Cost: Medium Benefit: Reduced frequency of utility repairs and improved service to residents	Ashburnham, Local and Regional Utility Providers
All Hazards	Enhance GIS capabilities, and improve utility/hazard area mapping and monitoring	DPW, Town Emergency Responders, MRPC	1-2 years	Cost: Low Benefit: Reduction in Town staff time; improved analytical capability	Ashburnham, MEMA, MVP Action Grants

TABLE 23 (CONTINUED)

Higher Priority - Cushing Academy/Ashburnham School System Infrastructure					
All Hazards	Coordinate emergency response plans between Town and private/public schools	Fire Department and School Officials	1-2 years	Cost: Low Benefit: Improved public safety	Ashburnham
All Hazards	Implement plans to use school facilities as emergency shelters	Fire Department and School Officials	1-2 years	Cost: Low Benefit: Improved public safety	Ashburnham
Higher Priority - Water Supply and Distribution Infrastructure					
All Hazards	Upgrade facilities	Select Board, DPW, Water Commission, Ashburnham-Winchendon Joint Water Filtration Plant	1-2 years	Cost: High Benefit: Improved service and public safety	Ashburnham
Drought	Develop drought contingency plan; engage in water conservation education outreach	Select Board, DPW, Water Commission, Ashburnham-Winchendon Joint Water Filtration Plant	1-2 years	Cost: Low Benefit: Improved resilience & public safety	Ashburnham, DCR, MEMA, MVP Action Grant
Drought/Extreme Heat	Improve water storage options	Select Board, DPW, Water Commission	3-5 years	Cost: High Benefit: Improved water storage capability and availability	Ashburnham
Higher Priority - Wastewater Treatment Infrastructure					
All Hazards	Evaluate Westminster Street pump station vulnerabilities	Select Board, DPW, Sewer Commission	1-2 years	Cost: Low Benefit: Improved public safety & service to customers	Ashburnham, MVP Action Grants
All Hazards	Replace outdated or failing equipment	Select Board, DPW, Sewer Commission	1-2 years	Cost: High Benefit: Improved resiliency and service to customers	Ashburnham
Higher Priority - Electrical System Infrastructure					
High winds/Ice/Snow	Consider moving utility lines underground at strategic locations	AMLP	3-5 years	Cost: High Benefit: Improved resiliency and public safety	Ashburnham
High winds /ice/snow/floods	Convert to micro-gridded Town power supply	AMLP	3-5 years	Cost: High Benefit: Improved resiliency and public safety	Ashburnham

TABLE 23 (CONTINUED)

All Hazards	Explore solar potential	Select Board, AMLP	1-2 years	Cost: Low Benefit: Enhanced reliability	Ashburnham, MVP Action Grants
Higher Priority – Societal					
Higher Priority – Transportation Societal Improvements					
All Hazards	Improve transportation capabilities during emergency situations for evacuation and transport to shelters	DPW, Fire Department	1-2 years	Cost: High Benefit: Improved public safety	Ashburnham, MEMA
All Hazards	Coordinate with intermunicipal or private entities to pool resources	Town-wide, MRPC	1-2 years	Cost: Low Benefit: Improved resilience & efficiency	Ashburnham, MRPC
All Hazards	Improve transportation services for vulnerable population, such as transport of the elderly to shelters during hazard events	DPW & Senior Center Staff	3-5 years	Cost: Medium Benefit: Improved public safety	Ashburnham, MVP Action Grant
Higher Priority – Communication Improvements					
All Hazards	Establish local resource(s) to assist with emergency communications	Town Staff, EM Dispatchers	1-2 years	Cost: Medium Benefit: Improved public safety	Ashburnham, MEMA
All Hazards	Improve areas with poor cell coverage and/or internet access	Police Department, MRPC, Local Phone/Internet Providers	1-2 years	Cost: Low Benefit: Improved service and public safety	Ashburnham, MEMA, Local Phone/Internet Providers
All Hazards	Improve infrastructure/add more cell towers or repeaters	Police Department, MRPC, Local Phone/Internet Providers	3-5 years	Cost: High Benefit: Improved service and public safety	Ashburnham, MEMA, Local phone/internet providers
Higher Priority – Emergency Education					
All Hazards	Prepare outreach materials for public education on emergency procedures	Police/Fire Departments	1-2 years	Cost: Low Benefit: Increased awareness and improved public safety	Ashburnham
Higher Priority – Elderly Population					
All Hazards	Fortify Senior Center with emergency support/backup systems	Police/Fire Departments, Senior Center Staff	3-5 years	Cost: Medium Benefit: Increased resiliency	Ashburnham

TABLE 23 (CONTINUED)

All Hazards	Create database of vulnerable people-at-risk for first responders	Police/Fire Departments, Senior Center Staff	1-2 years	Cost: Low Benefit: Improved public safety	Ashburnham
Higher Priority – Future Development/Residential "Sprawl"					
All Hazards	Ensure zoning bylaws are appropriate and enforced	Zoning Enforcement Officer, Planning Board	ongoing	Cost: Low Benefit: Maintains consistency	Ashburnham
All Hazards	Encourage strategic, environmentally friendly growth	Zoning Enforcement Officer, Planning Board	ongoing	Cost: Low Benefit: Improved community environment	Ashburnham
Higher Priority – Emergency Shelters					
All Hazards	Identify vulnerable and protected areas; increase awareness of availability of shelters	Police/Fire Departments	1-2 years	Cost: Low Benefit: Improved resilience & public safety	Ashburnham
All Hazards	Create plans for supplying shelters with food, water, equipment, etc.	Police/Fire Departments	1-2 years	Cost: Low Benefit: Improved public safety	Ashburnham
Higher Priority – Environmental					
Higher Priority – Land Conservation					
All Hazards	Maintain current conservation land	Conservation Commission, DCR	ongoing	Cost: Low Benefit: Maintains environment quality	Ashburnham, Conservation Commission
All Hazards	Review current regulations and encourage practices that promote conservation	Conservation Commission, DCR	1-2 years	Cost: Low Benefit: Improves environment quality	Ashburnham
Higher Priority - Water Quality					
Flooding/Heavy rains	Fund more intensive water-quality monitoring and pro-active testing protocol	DPW, Conservation Commission, DCR	1-2 years	Cost: Low Benefit: Improved water quality	Ashburnham, MassDEP
Flooding/Heavy Rains	Utilize public volunteer sampling of lakes and local water bodies	DPW, Conservation Commission, Town Residents	1-2 years	Cost: Low Benefit: Improved water quality & public safety	Ashburnham

TABLE 23 (CONTINUED)

Flooding/Heavy Rains	Monitor algal blooms and harmful cyanobacteria	DPW, Conservation Commission, lake residents, MassDEP	ongoing	Cost: Low Benefit: Improved public health	Ashburnham, MassDEP
Flooding/Heavy rains	Make efforts to reduce agricultural and stormwater runoff into water bodies	DPW, Conservation Commission, DCR	1-2 years	Cost: Medium Benefit: Improved water & environmental quality	Ashburnham, MVP Action Grants
Higher Priority - Invasive Species					
Increased temperatures	Increase public awareness of invasive species; promote proper identification	Conservation Commission	1-2 years	Cost: Low Benefit: Improved environmental stability	Ashburnham; DCR
Increased temperatures	Improve species management and eradication procedures	Conservation Commission	3-5 years	Cost: Low Benefit: Improved environmental stability & vegetative/wildlife diversity	Ashburnham; DCR
Higher Priority - Beavers and Wildlife					
Flooding/Heavy rains	Implement beaver control strategy	Board of Health, Conservation Commission	1-2 years	Cost: Low Benefit: Improved public safety	Ashburnham
Flooding/heavy rains	Identify beaver-prone areas and install control measures	DPW, Board of Health, Conservation Commission	3-5 years	Cost: Low Benefit: improved public safety	Ashburnham, MVP Action Grant
All Hazards	Protect crucial wildlife habitat	Conservation Commission, DCR	ongoing	Cost: Low Benefit: Enhanced environmental quality	Ashburnham; DCR
Moderate Priority– Infrastructural					
Moderate Priority - Private Well Water Supply					
Drought/extreme heat	Improve water conservation practice outreach	DPW, Water Commission	1-2 years	Cost: Low Benefit: Improved resiliency	Ashburnham
Drought/Extreme heat	Ensure compliance with Town well regulations & new well construction to conserve water	DPW, Water Commission, Board of Health	1-2 years	Cost: Low Benefit: Improved resiliency	Ashburnham
Moderate Priority - Roads and Bridges					
Flooding/extreme rainfall	Ensure bridges are designed to maximize the conveyance of storm-related precipitation/runoff	DPW, MRPC, Mass DOT	3-5 years	Cost: High Benefit: Improved public safety	Ashburnham, MassDOT

TABLE 23 (CONTINUED)

All Hazards	Continue to maintain roads and bridges	DPW, Mass DOT	Ongoing	Cost: Medium Benefit: Improved public safety	Ashburnham, MassDOT
All Hazards	Improve condition of private roads	DPW	3-5 years	Cost: Medium Benefit: Improved public safety	Ashburnham
Moderate Priority– Societal					
Moderate Priority - Town Library					
All Hazards	Add back-up power source;	Fire/Police Departments	3-5 years	Cost: Medium-High Benefit: Improve resiliency and public safety	Ashburnham, MEMA
All Hazards	Leverage existing communication network for emergency notifications	Fire/Police Department	1-2 years	Cost: Low Benefit: Improve public safety	Ashburnham
Moderate Priority - Public/Mental Health					
All Hazards	Fortify existing facilities and networks to ensure continued care during emergencies	Fire/Police Department	3-5 years	Cost: Low Benefit: Increased resiliency and improved public safety	Ashburnham
All Hazards	Assistance to seniors during emergencies	Fire/Police Department	1-2 years	Cost: Low Benefit: Increased resiliency and improved public safety	Ashburnham, MEMA
Moderate Priority– Environmental					
Moderate Priority - Wetlands					
Flooding/Extreme rainfall	Limit development in wetland resource areas	Conservation Commission, Planning Board,	ongoing	Cost: Low Benefit: Improved public safety and enhanced environmental quality	Ashburnham
Flooding/Extreme Rainfall	Consider hiring full-time planner/conservation agent	Select Board, Town Administrator, Planning Board, Conservation Commission	1-2 years	Cost: Medium Benefit: Enhanced environmental quality	Ashburnham
Moderate Priority - ATV Trail Destruction					
Environmental degradation	Install gates at trailheads to discourage ATV use	DPW, Conservation Commission	1-2 years	Cost: Low Benefit: Enhanced environmental quality	Ashburnham

TABLE 23 (CONTINUED)

Low Priority – Infrastructural					
Low Priority - Roy Brothers Storage (Oil and Propane) & Flo Chemical (Ethanol)					
Flooding/All hazards	Work with owner to review protocols and identify flood concerns	Town & Company Staff	1-2 years	Cost: Low Benefit: improved public safety	Ashburnham, companies
Flooding	Reduce flood/contamination risk	Town & Company Staff	1-2 years	Cost: Low Benefit: Improved public safety	Ashburnham; companies
Low Priority - Second Fire Station					
All Hazards	Evaluate need for second fire station in North Ashburnham/lakes area	Fire Department	1-2 years	Cost: Low Benefit: Improved public safety	Ashburnham
All Hazards	Determine if second fire station is feasible in terms of staffing, funding, etc.	Fire Department	3-5 years	Cost: Low Benefit: improved public safety	Ashburnham
Low Priority - Private Septic Systems					
Flooding	Review building codes to reduce contamination caused by septic systems during flood events	Building Commissioner / Zoning Enforcement Officer, Board of Health	1-2 years	Cost: Low Benefit: Improved public safety	Ashburnham
Flooding/extreme rainfall	Increase public outreach and education about septic tank non-point pollution	Building Commissioner / Zoning Enforcement Officer, Board of Health	1-2 years	Cost: Low Benefit: Improved public safety & environmental quality	Ashburnham
Low Priority – Societal					
Low Priority - Generator Back Feed Education					
All Hazards	Develop and distribute educational materials	Fire Department	1-2 years	Cost: Low Benefit: Improved public safety	Ashburnham
All Hazards	Coordinate with local industry to implement back feed prevention	Fire Department and local utilities providers	1-2 years	Cost: Low Benefit: Improved public safety	Ashburnham
All Hazards	Consider legislation requiring back feed protection	Select Board, Fire Department, Planning Board, Zoning Enforcement Officer	1-2 years	Cost: Low Benefit: Improved public safety	Ashburnham
Low Priority - Neighborly Support					
All Hazards	Select gathering locations for community engagement	Town staff	1-2 years	Cost: Low Benefit: Improved public safety & resilience	Ashburnham

TABLE 23 (CONTINUED)

All Hazards	Improve Town-wide communication by improving interpersonal relationships	Town staff & residents	1-2 years	Cost: Low Benefit: Improved public safety & resilience	Ashburnham
Low Priority - Child Care Centers					
All Hazards	Identify vulnerable facilities and encourage their preparation of emergency response plans	Town & childcare facility staff	1-2 years	Cost: Low Benefit: Improved public safety	Ashburnham
Low Priority – Environmental					
Low Priority - Wildfires					
Drought/Extreme heat/wildfires	Continue fire safety education through existing programs	Fire Department	ongoing	Cost: Low Benefit: Improved public safety	Ashburnham
All Hazards	Ensure firefighter access to all areas of Town	Fire Department	1-2 years	Cost: Low Benefit: improved public safety	Ashburnham
Low Priority - Agriculture					
All Hazards	Identify vulnerable facilities	Agricultural Commission	1-2 years	Cost: Low Benefit: improve resilience and environment quality	Ashburnham
All Hazards	Increase awareness of assistance programs	Agricultural Commission	1-2 years	Cost: Low Benefit: improve resilience and environment quality	Ashburnham
Low Priority - Forestry					
All Hazards	Review and enforce existing forest management plans	Open Space and Recreation Committee	1-2 years	Cost: Low Benefit: Improved resilience and environment quality	Ashburnham
All Hazards	Explore Town-wide stakeholder groups to determine best-practices in forest management	Open Space and Recreation Committee	1-2 years	Cost: Low Benefit: Improved resilience and environment quality	Ashburnham
Drought/Extreme Heat	Consult with DCR to enhance protections to wetland resources associated with Forest Cutting Plans implemented pursuant to MGL Chapter 132, The Forest Cutting Practices Act.	Conservation Commission, Open Space and Recreation Committee	3-5 years	Cost: Low Benefit: Maintenance of wetland resource ecological services	Ashburnham

TABLE 23 (CONTINUED)

10 REGIONAL AND INTERCOMMUNITY CONSIDERATIONS

Some hazard mitigation issues are strictly local: The problem originates primarily within the municipality and can be solved at the municipal level. The Town of Ashburnham has taken steps to implement the findings of the 2016 Montachusett Regional Hazard Mitigation Plan into the following policy, programmatic areas, and plans: Town's Master Plan, the Comprehensive Emergency Management Plan, Zoning and General Bylaws or other planning documents the Town has created through various municipal departments, boards, and commissions, etc. Many of the potential mitigation measures mentioned above for future goals will require the Town of Ashburnham to integrate the LHMP mitigation measures into their Town legislature such as updating the Town's Master Plan, the Comprehensive Emergency Management Plan, Zoning Bylaws, or other planning documents the Town has created through their Planning Board or Fire Department. However, there also are intercommunity issues that involve cooperation between two or more municipalities. This intercommunity collaboration is crucial for resource management and emergency assistance. A third level of mitigation exists, as well, involving a regional, State, or Federal agency.

10.1 Regional, State and Federal Partners

As noted in Section 2.2.1, Ashburnham has participated in numerous planning-related programs in conjunction with the MRPC, most recently with respect to updates to sections of the Town's Master Plan and revisions to the Town's Zoning Bylaws.

With specific respect to the 2015 HMP Update, Town and MRPC representatives met on multiple occasions between 2012 and 2014 to discuss and document existing local hazards, potential hazard mitigation measures, and hazard mitigation implementation strategies. Collectively, the information, actions and strategies generated during these meetings served as the basis for the 2015 HMP Update.

Further, Ashburnham continues to coordinate its operation of the potable water treatment facility on Lake Road with the MA Department of Environmental Protection (DEP). The Town also continues to work with the MA Office of Dam Safety to ensure compliance of municipally owned dams with State guidelines and with FEMA to update local flood maps.

Each of these cooperative efforts serves to enhance existing hazard mitigation measures.

10.2 Inter-Community Considerations

The Town of Ashburnham's Core Team did not identify specific intercommunity considerations during the planning process. Generally, however, the Town continues to coordinate with the Town of Winchendon relative to the maintenance and future safety of their joint water supply (i.e. Upper Naukeag Lake) and the infrastructure servicing each community, as well as with the City of Gardner relative to the City's treatment of Ashburnham-generated sewage. Clearly, the uninterrupted operation of these utilities is critical to hazard mitigation planning.

10.3 Regional Issues

- Maintenance and drainage from State highways
- Inspection and maintenance of dams
- Coordinated response to water resources protection.

- End of Section -

11 PLAN ADOPTION, IMPLEMENTATION AND MAINTENANCE

11.1 Plan Adoption

Once finalized, the Local Hazard Mitigation & Climate Adaptation Plan will be considered for adoption by the Select Board. Language to this effect is provided in Appendix B.

11.2 Plan Implementation

Implementation of this plan primarily will be the responsibility of the Ashburnham Fire Department, Emergency Management Director (EMD). However, it will be the responsibility of all Town boards, commissions, committees, and staff to review their actions in the context of the LHMP, and to ensure that such actions are consistent with and foster the goals/objectives of the LHMP. The plan will be monitored by the Emergency Management Director who will review the plan annually at the beginning of the year with the MVP Core Team to create a plan for the mitigation measures to be accomplished that year by identifying which grant~~s~~ applications will be completed for specific mitigation measures. The EMD will also review the progress quarterly and provide updates to town officials.

11.3 Plan Maintenance

The MVP Core Team, who was responsible for completing the current MVP planning process, will take the lead in maintenance of the LHMP. The Core Team will update this plan in accordance with MEMA, FEMA, and MVP program requirements. The MVP Core Team will meet annually to take inventory of progress for the MVP annual yearly report. At the first meeting, the MVP Core Team will create set criteria for evaluating the plan's progress. This will ensure the plan maintains visibility and that the next plan update commences in advance of the plan's expiration, which will occur in five-years. However, other municipal boards, commissions, committees, and staff also will be involved in the LHMP update process. One year prior to the expiration the MVP Core Team may decide to undertake the plan update themselves or hire another consultant to assist with the process. When the MVP Core Team decides to update the plan, the team will need to review the current disaster mitigation plan guidelines for any changes. The updated plan will have a focus on expanding public engagement.

11.4 Integration of the Plans with other Planning Initiatives

Upon approval of the 2021 Update Plan by MEMA, each local board, commission, committee, etc. will provide all implementing departments and interested parties with a copy of the plan and will initiate a discussion regarding how the plan can be integrated into each group's on-going work. At a minimum, the plan will be reviewed and discussed with:

Fire Department
Department of Public Works
Ashburnham Municipal Light Plant

Building Department
Planning Board
Conservation Commission
Board of Health
Zoning Board of Appeals
Water and Sewer Commission

Other coordinating groups include large institutions, Chambers of Commerce, land conservation organizations and watershed groups. The plan will also be posted on the Town's website, along with a mechanism for citizen feedback, such as an e-mail address to which comments may be forwarded.

In addition, the plan will be reviewed with applicable state agencies such as MEMA, DCR, and regional agencies.

- End of Section -

12 LIST OF REFERENCES

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Suggested Citation:

Town of Ashburnham. 2021. Local Hazard Mitigation Plan (LHMP) And Municipal Vulnerability Preparedness (MVP) Plan. Prepared by Pare Corporation, Foxborough, MA.

- End of Section -

APPENDIX A: Hazard Mapping

A series of maps was developed using available GIS data to supplement discussions within the plan. Some of the data came from the MassGIS. Due to the various sources for the data and varying levels of accuracy, the identification of an area as being in one of the hazard categories must be considered as a general classification that should always be supplemented with more local knowledge. The documentation for some of the hazard maps was incomplete as well and the Local Hazard map was created in the 2015 Montachusett Regional Hazard Mitigation Plan.

Map 1: Facilities and Landmarks – This map shows critical facilities and landmarks located within the Town.

Map 2: Land Use – This map shows the 2016 data for land use. The map includes twenty different land use and development categories and the percent of Town land that occupies each.

Map 3: Transportation – This map shows major roadways along with Annual Average Daily Traffic data to display common areas of congestions.

Map 4: Open Space – This map shows protected open space by owner displaying State and Locally owned land.

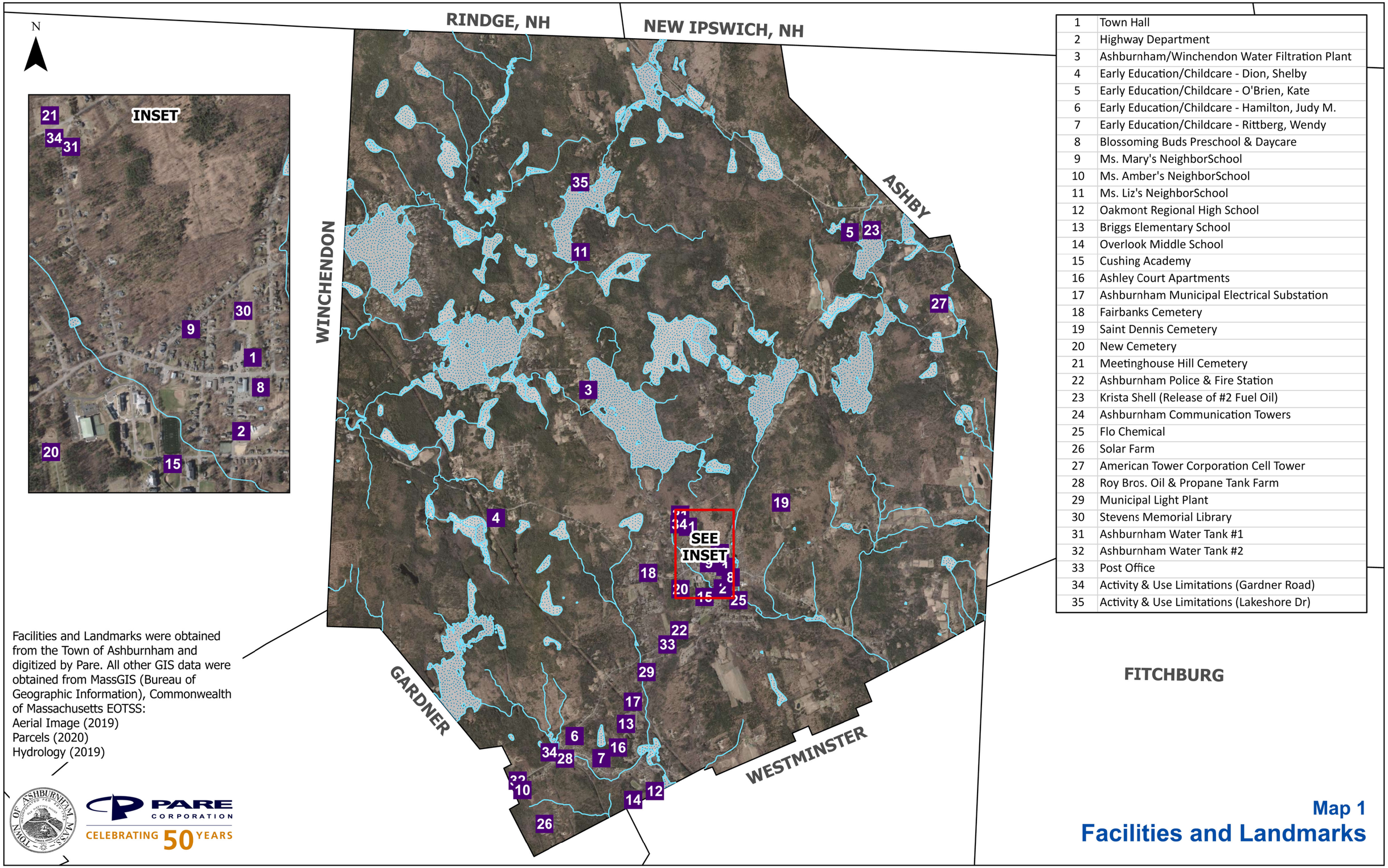
Map 5: Hydrology – This map shows the location of dams, drainage subbasin, waterways and Mass DEP wetlands.

Map 6: Stormwater – The map of flood zones for more information, refer to https://docs.digital.mass.gov/dataset/massgis-data-fema-q3-flood-zones-paper-firms. The definitions of the flood zones are described in detail at https://www.fema.gov/glossary/flood-zones. The flood zone map also shows stormwater outfalls, drainpipes, and culvert.

Map 7: Curve Numbers – This map shows surface covers throughout town. This shows the relationship between impervious surfaces and pervious surfaces.

Map 8: Critical Facilities Relative to Hazard Areas – This map shows the intersection of critical facilities with respect to hazard areas which includes flood zones, the stormwater outfalls, drainpipes, and culvert.

Map 9: Local Hazard Mitigation Map 2015 - This is a two-part map that was created after a meeting that discussed hazards that affect each community and the identification of specific problem areas in the community that need to be addressed. This included the identification of new hazards that were determined to pose a threat or community vulnerability which are detailed in Ashburnham's Local Hazards. The entire community is equally at risk to the following hazards: heavy rain, snow melt, ice jams, high winds, hurricanes, tornados, nor'easters, heavy snow, ice storms, blizzards, drought, extreme temperatures, earthquakes, and landslides.

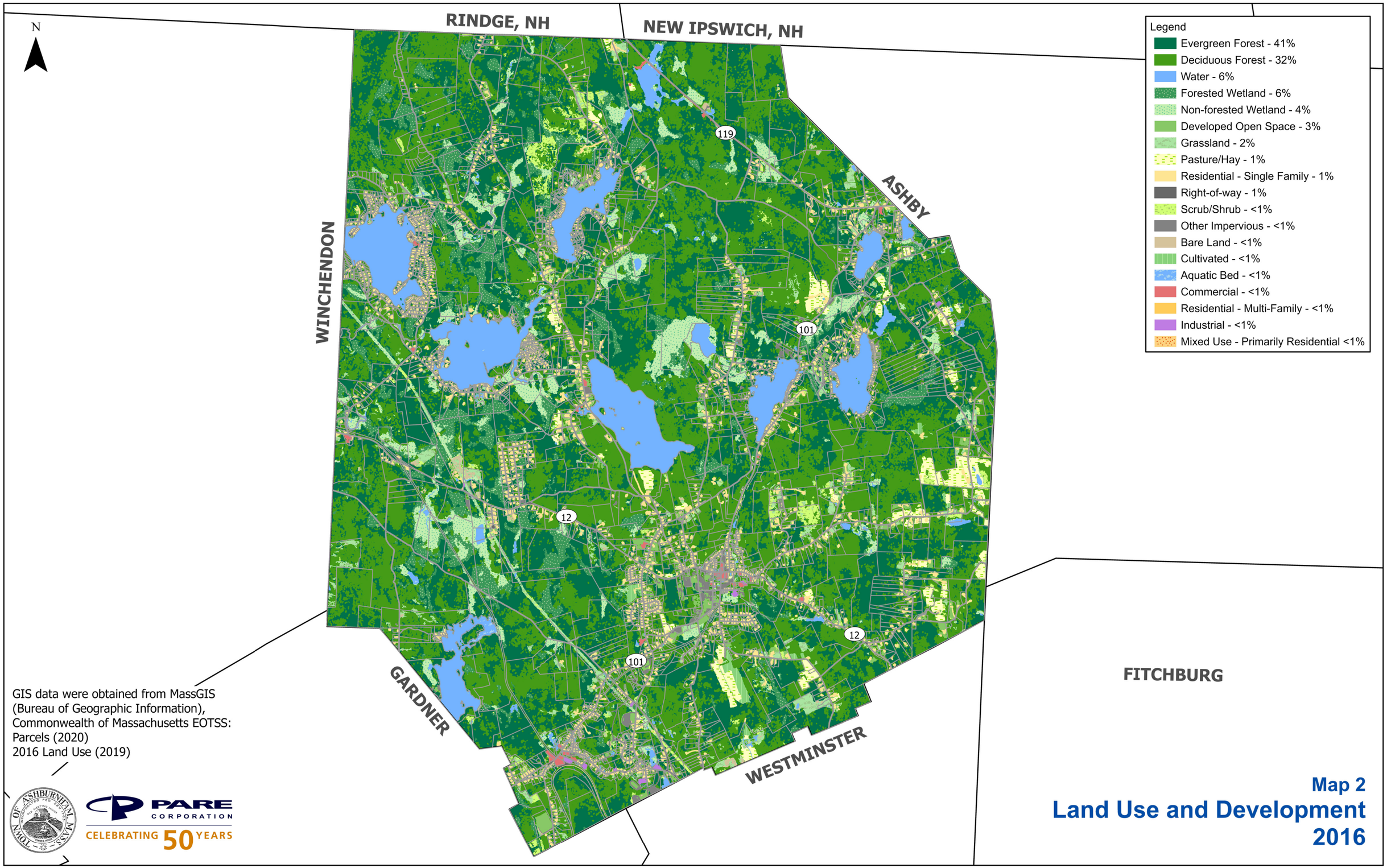


1	Town Hall
2	Highway Department
3	Ashburnham/Winchendon Water Filtration Plant
4	Early Education/Childcare - Dion, Shelby
5	Early Education/Childcare - O'Brien, Kate
6	Early Education/Childcare - Hamilton, Judy M.
7	Early Education/Childcare - Rittberg, Wendy
8	Blossoming Buds Preschool & Daycare
9	Ms. Mary's NeighborSchool
10	Ms. Amber's NeighborSchool
11	Ms. Liz's NeighborSchool
12	Oakmont Regional High School
13	Briggs Elementary School
14	Overlook Middle School
15	Cushing Academy
16	Ashley Court Apartments
17	Ashburnham Municipal Electrical Substation
18	Fairbanks Cemetery
19	Saint Dennis Cemetery
20	New Cemetery
21	Meetinghouse Hill Cemetery
22	Ashburnham Police & Fire Station
23	Krista Shell (Release of #2 Fuel Oil)
24	Ashburnham Communication Towers
25	Flo Chemical
26	Solar Farm
27	American Tower Corporation Cell Tower
28	Roy Bros. Oil & Propane Tank Farm
29	Municipal Light Plant
30	Stevens Memorial Library
31	Ashburnham Water Tank #1
32	Ashburnham Water Tank #2
33	Post Office
34	Activity & Use Limitations (Gardner Road)
35	Activity & Use Limitations (Lakeshore Dr)

Facilities and Landmarks were obtained from the Town of Ashburnham and digitized by Pare. All other GIS data were obtained from MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS:
Aerial Image (2019)
Parcels (2020)
Hydrology (2019)

PARE CORPORATION
CELEBRATING 50 YEARS

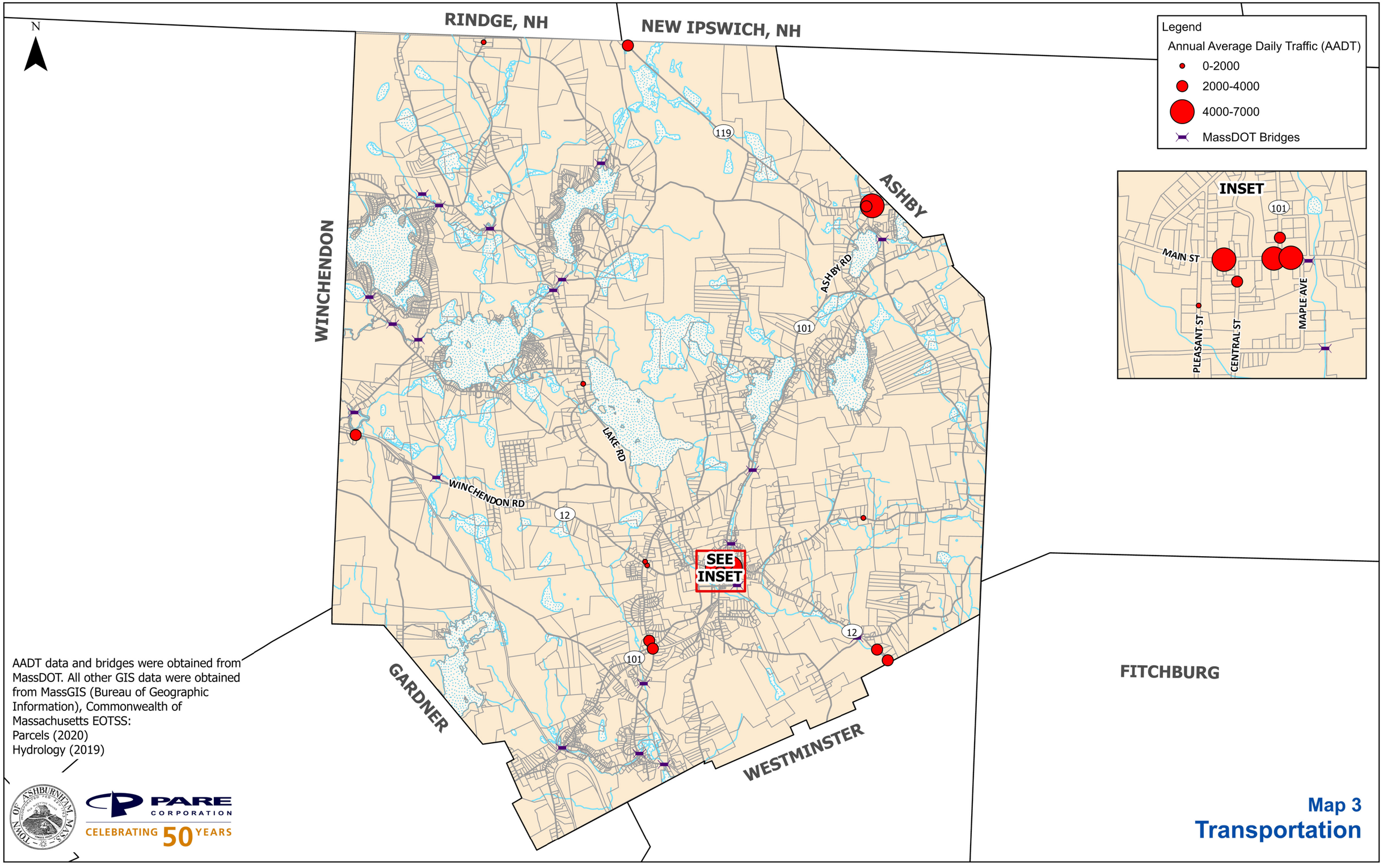
Map 1
Facilities and Landmarks



GIS data were obtained from MassGIS
(Bureau of Geographic Information),
Commonwealth of Massachusetts EOTSS:
Parcels (2020)
2016 Land Use (2019)

PARE CORPORATION
CELEBRATING 50 YEARS

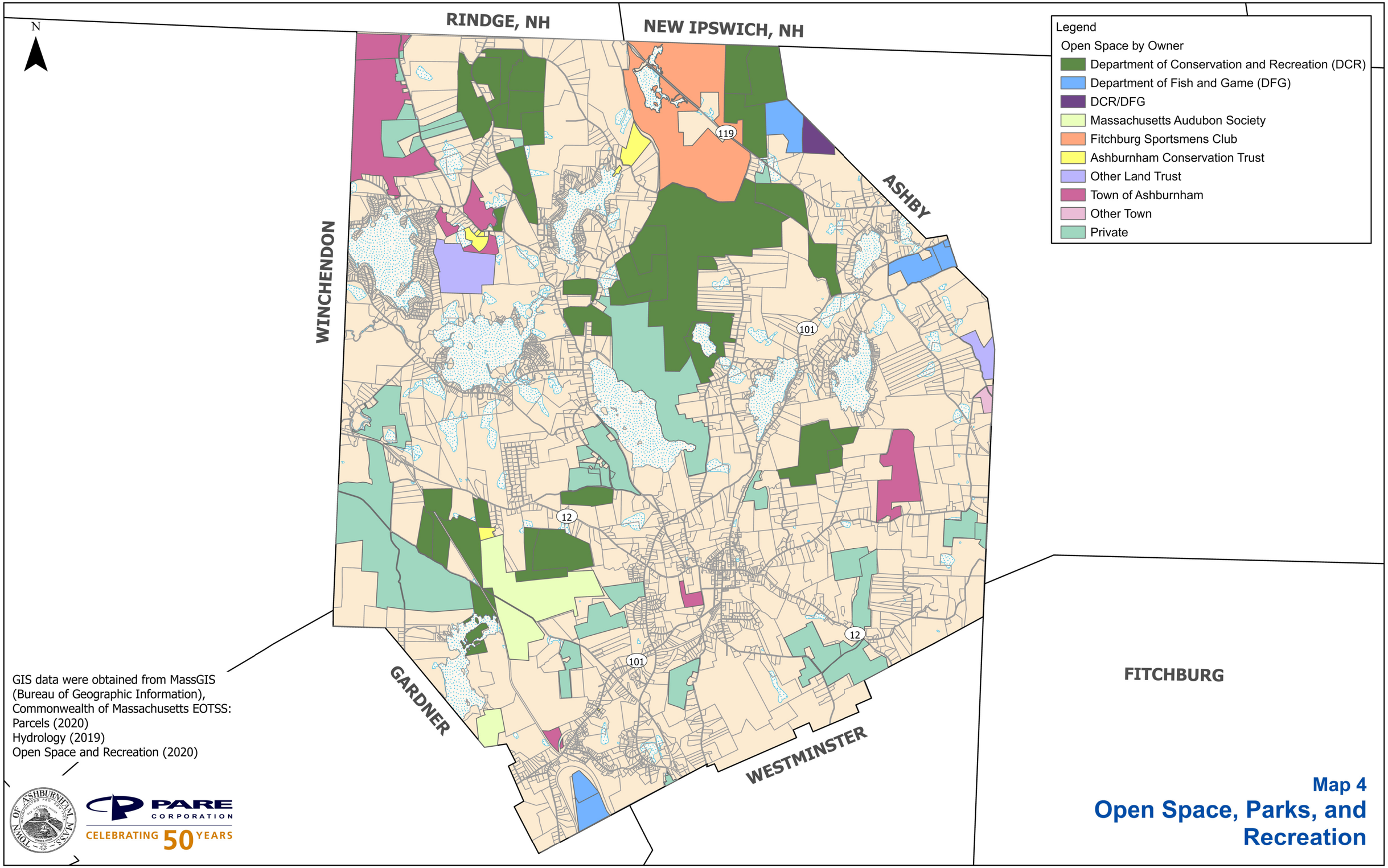
Map 2
Land Use and Development 2016



AADT data and bridges were obtained from MassDOT. All other GIS data were obtained from MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS:
Parcels (2020)
Hydrology (2019)

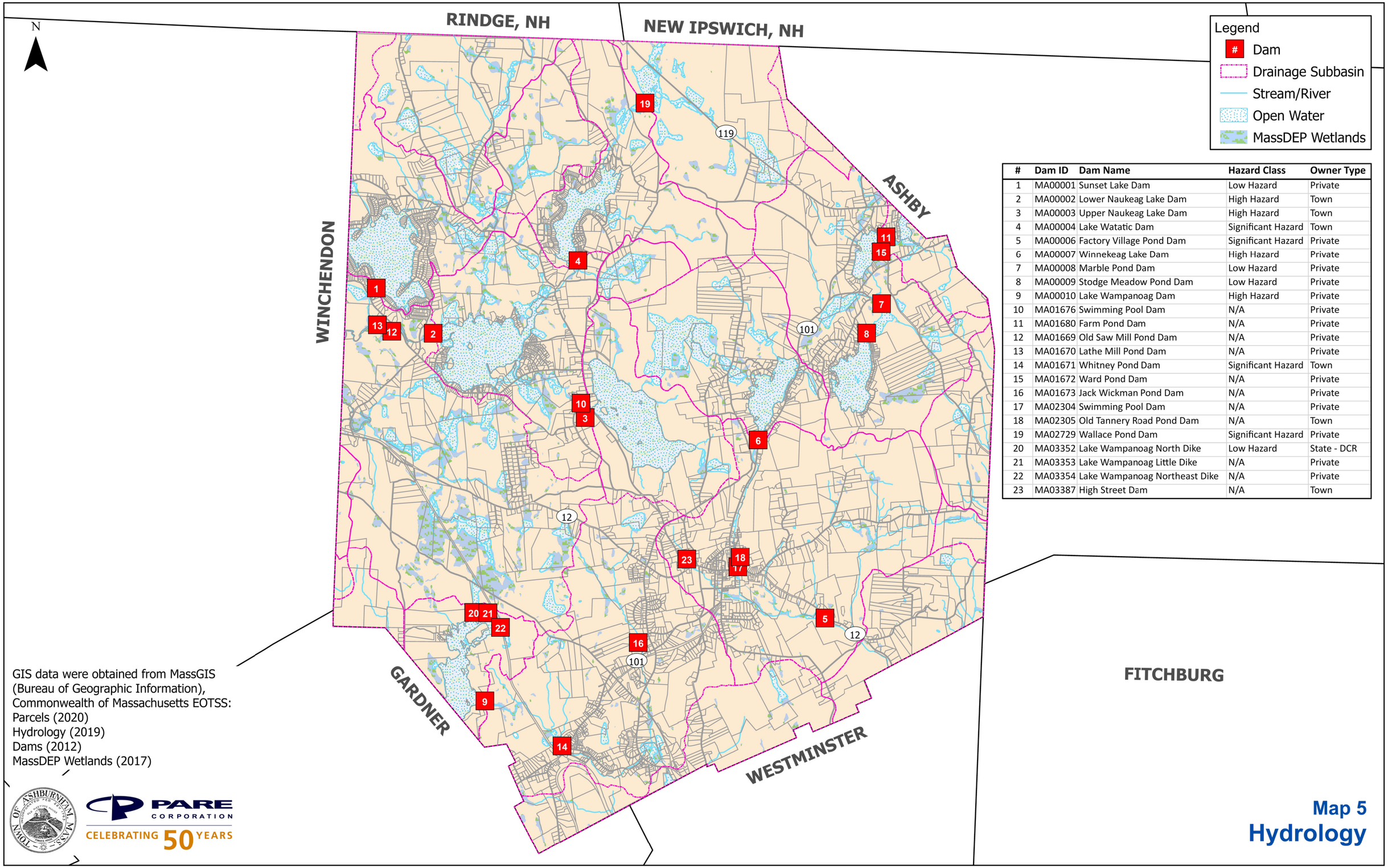
PARE CORPORATION
CELEBRATING 50 YEARS

Map 3
Transportation



Map 4

Open Space, Parks, and Recreation

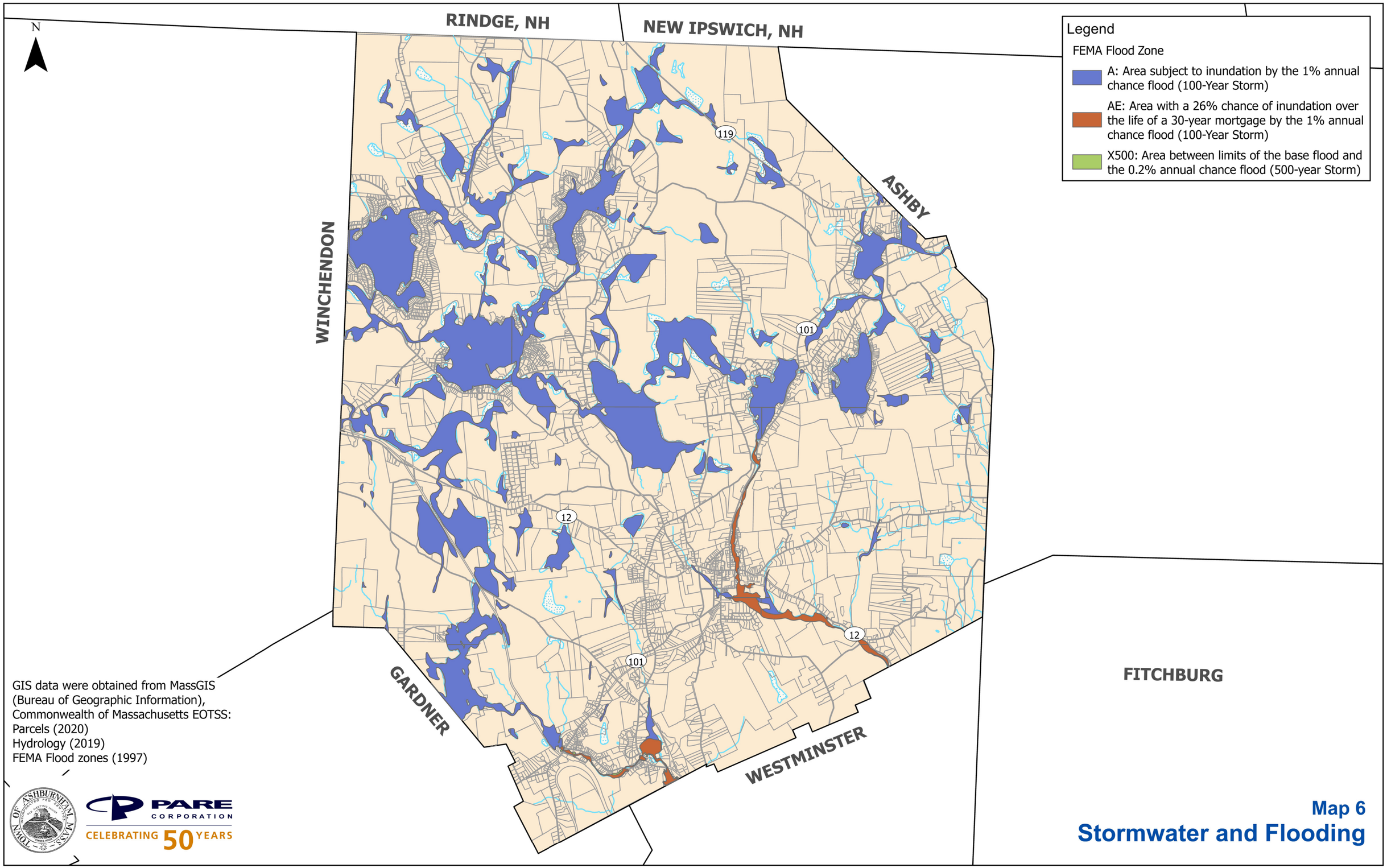


#	Dam ID	Dam Name	Hazard Class	Owner Type
1	MA00001	Sunset Lake Dam	Low Hazard	Private
2	MA00002	Lower Naukeag Lake Dam	High Hazard	Town
3	MA00003	Upper Naukeag Lake Dam	High Hazard	Town
4	MA00004	Lake Watatic Dam	Significant Hazard	Town
5	MA00006	Factory Village Pond Dam	Significant Hazard	Private
6	MA00007	Winnekeag Lake Dam	High Hazard	Private
7	MA00008	Marble Pond Dam	Low Hazard	Private
8	MA00009	Stodge Meadow Pond Dam	Low Hazard	Private
9	MA00010	Lake Wampanoag Dam	High Hazard	Private
10	MA01676	Swimming Pool Dam	N/A	Private
11	MA01680	Farm Pond Dam	N/A	Private
12	MA01669	Old Saw Mill Pond Dam	N/A	Private
13	MA01670	Lathe Mill Pond Dam	N/A	Private
14	MA01671	Whitney Pond Dam	Significant Hazard	Town
15	MA01672	Ward Pond Dam	N/A	Private
16	MA01673	Jack Wickman Pond Dam	N/A	Private
17	MA02304	Swimming Pool Dam	N/A	Private
18	MA02305	Old Tannery Road Pond Dam	N/A	Town
19	MA02729	Wallace Pond Dam	Significant Hazard	Private
20	MA03352	Lake Wampanoag North Dike	Low Hazard	State - DCR
21	MA03353	Lake Wampanoag Little Dike	N/A	Private
22	MA03354	Lake Wampanoag Northeast Dike	N/A	Private
23	MA03387	High Street Dam	N/A	Town

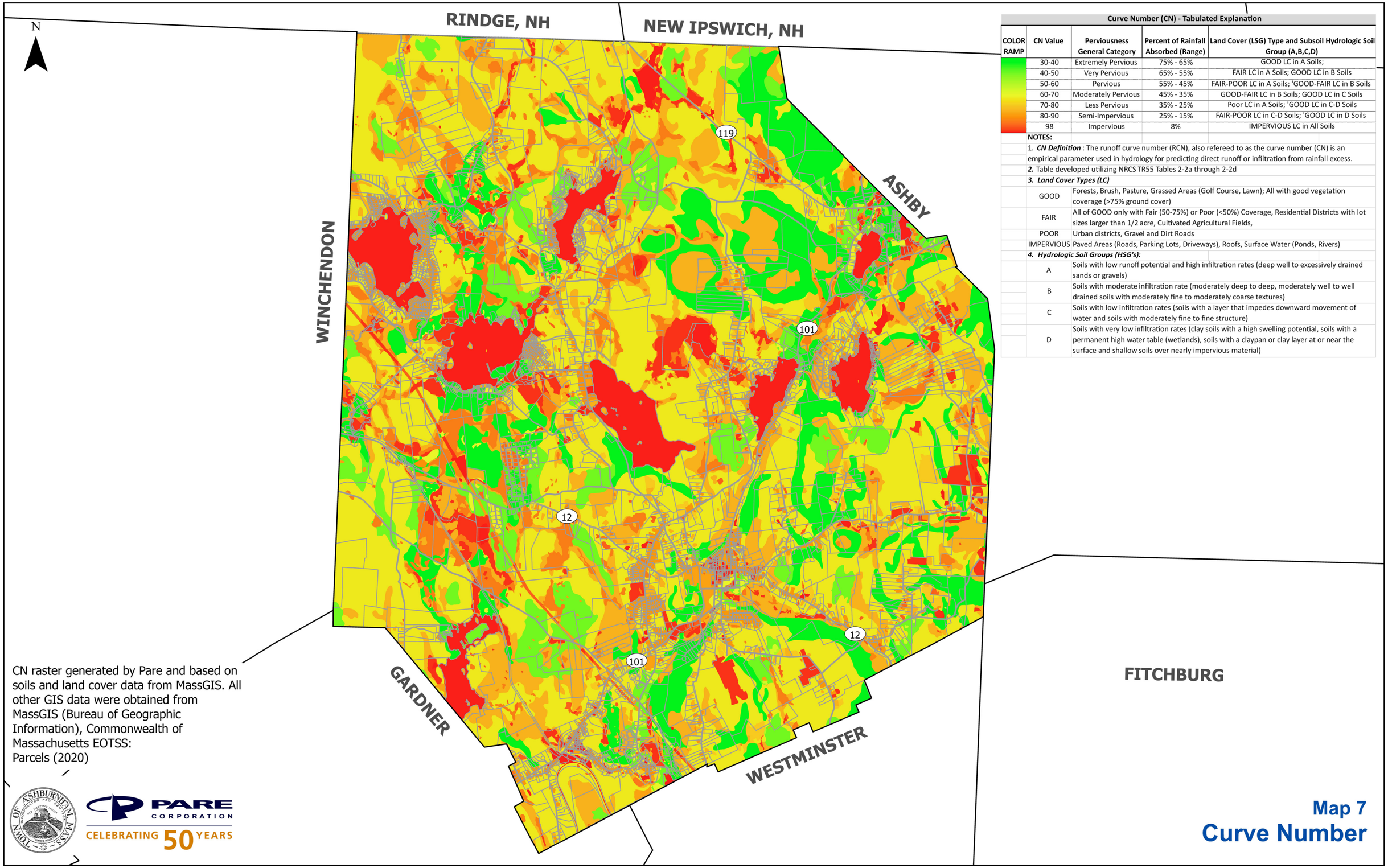
GIS data were obtained from MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS:
Parcels (2020)
Hydrology (2019)
Dams (2012)
MassDEP Wetlands (2017)

PARE CORPORATION
CELEBRATING 50 YEARS

Map 5
Hydrology



Map 6
Stormwater and Flooding



Curve Number (CN) - Tabulated Explanation

COLOR RAMP	CN Value	Perviousness General Category	Percent of Rainfall Absorbed (Range)	Land Cover (LSG) Type and Subsoil Hydrologic Soil Group (A,B,C,D)
	30-40	Extremely Pervious	75% - 65%	GOOD LC in A Soils;
	40-50	Very Pervious	65% - 55%	FAIR LC in A Soils; GOOD LC in B Soils
	50-60	Pervious	55% - 45%	FAIR-POOR LC in A Soils; 'GOOD-FAIR LC in B Soils
	60-70	Moderately Pervious	45% - 35%	GOOD-FAIR LC in B Soils; GOOD LC in C Soils
	70-80	Less Pervious	35% - 25%	Poor LC in A Soils; 'GOOD LC in C-D Soils
	80-90	Semi-Impervious	25% - 15%	FAIR-POOR LC in C-D Soils; 'GOOD LC in D Soils
	98	Impervious	8%	IMPERVIOUS LC in All Soils

NOTES:

1. ***CN Definition*** : The runoff curve number (RCN), also refereed to as the curve number (CN) is an empirical parameter used in hydrology for predicting direct runoff or infiltration from rainfall excess.

2. Table developed utilizing NRCS TR55 Tables 2-2a through 2-2d

3. Land Cover Types (LC)

GOOD	Forests, Brush, Pasture, Grassed Areas (Golf Course, Lawn); All with good vegetation coverage (>75% ground cover)
FAIR	All of GOOD only with Fair (50-75%) or Poor (<50%) Coverage, Residential Districts with lot sizes larger than 1/2 acre, Cultivated Agricultural Fields,
POOR	Urban districts, Gravel and Dirt Roads
IMPERVIOUS	Paved Areas (Roads, Parking Lots, Driveways), Roofs, Surface Water (Ponds, Rivers)

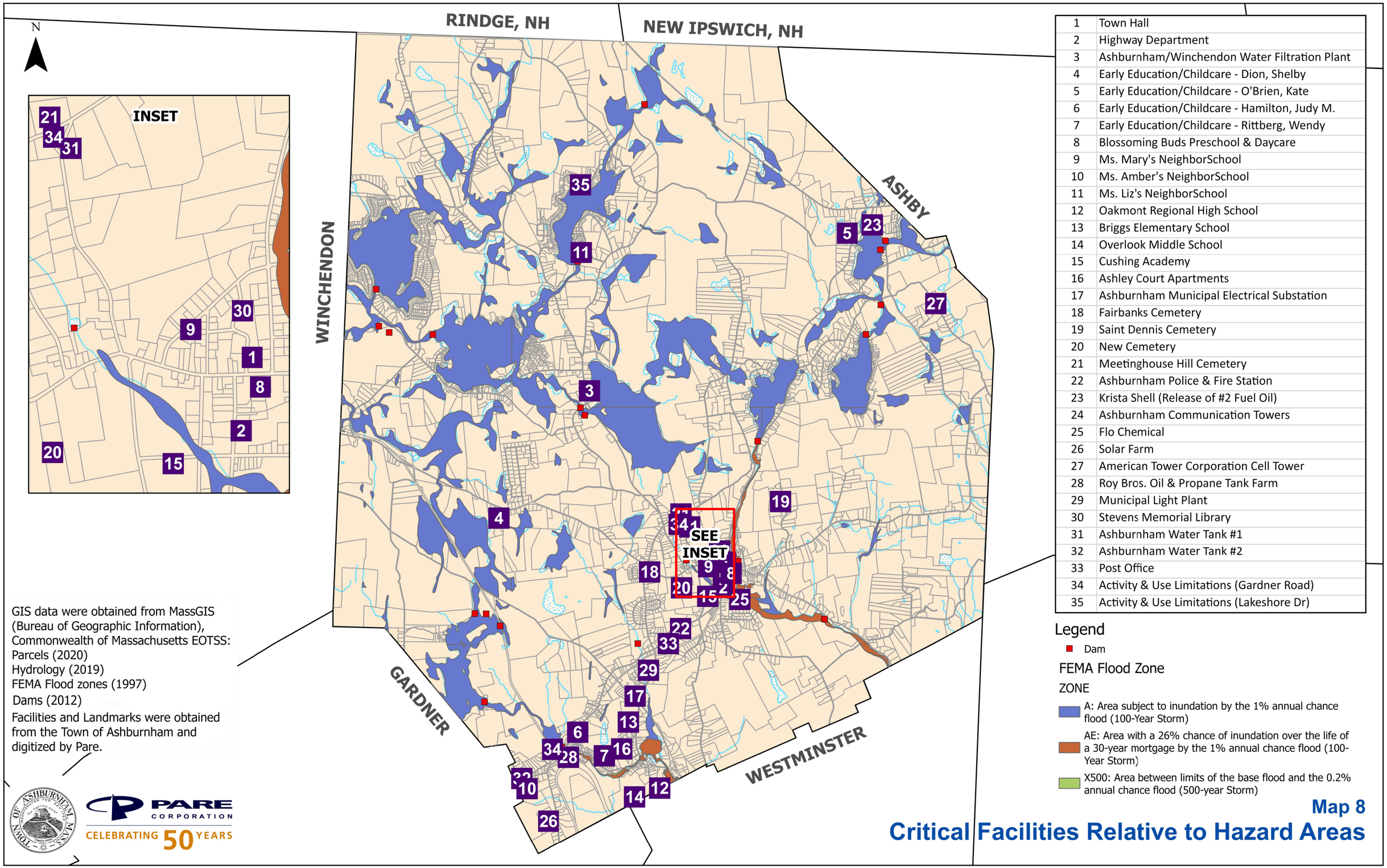
4. Hydrologic Soil Groups (HSG's):

A	Soils with low runoff potential and high infiltration rates (deep well to excessively drained sands or gravels)
B	Soils with moderate infiltration rate (moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures)
C	Soils with low infiltration rates (soils with a layer that impedes downward movement of water and soils with moderately fine to fine structure)
D	Soils with very low infiltration rates (clay soils with a high swelling potential, soils with a permanent high water table (wetlands), soils with a claypan or clay layer at or near the surface and shallow soils over nearly impervious material)

CN raster generated by Pare and based on soils and land cover data from MassGIS. All other GIS data were obtained from MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS: Parcels (2020)

PARE CORPORATION
CELEBRATING 50 YEARS

Map 7
Curve Number



GIS data were obtained from MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS:
Parcels (2020)
Hydrology (2019)
FEMA Flood zones (1997)
Dams (2012)
Facilities and Landmarks were obtained from the Town of Ashburnham and digitized by Pare.

1	Town Hall
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3	Ashburnham/Winchendon Water Filtration Plant
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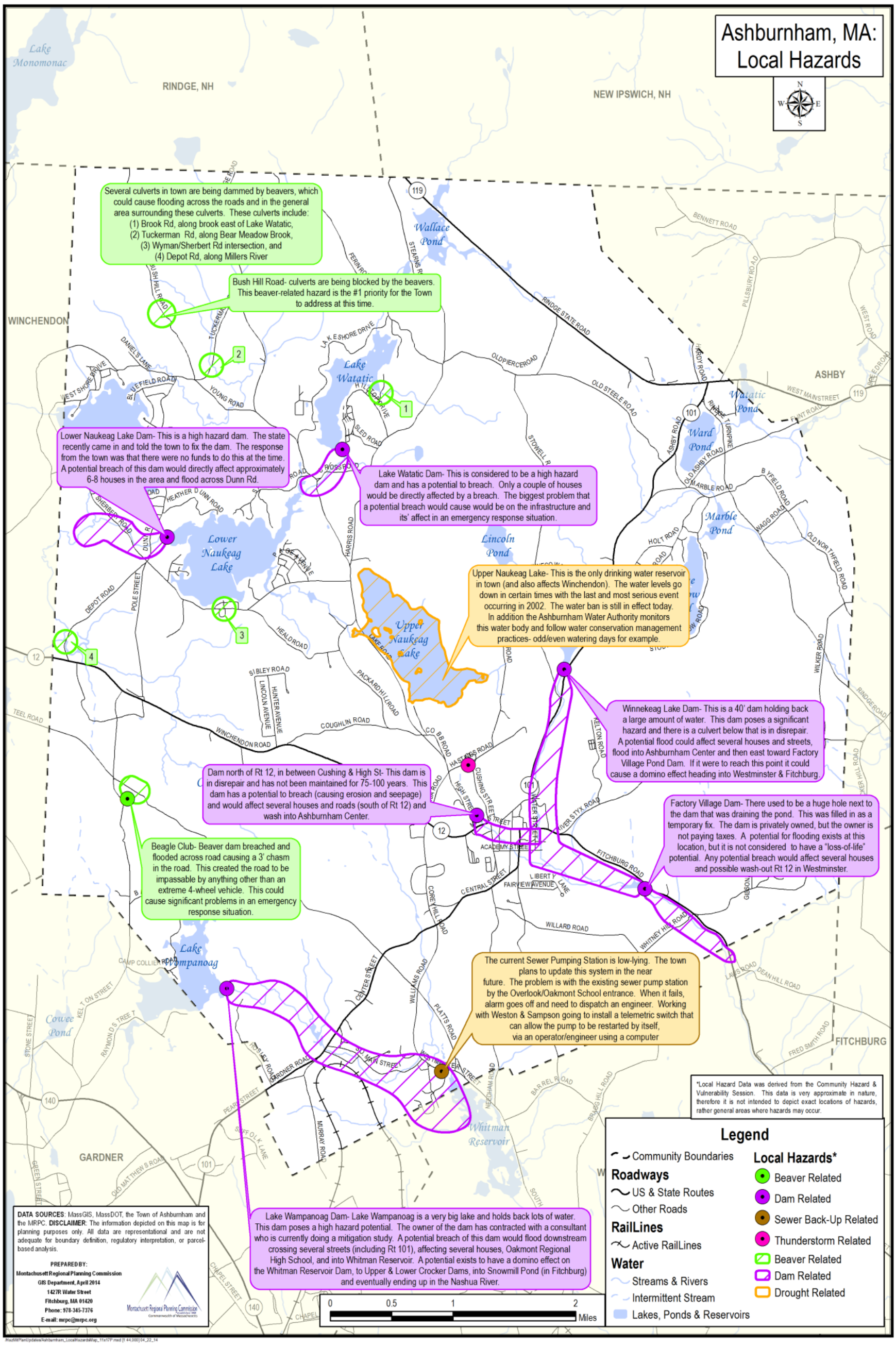
24	Ashburnham Communication Towers
25	Flo Chemical
26	Solar Farm
27	American Tower Corporation Cell Tower
28	Roy Bros. Oil & Propane Tank Farm
29	Municipal Light Plant
30	Stevens Memorial Library
31	Ashburnham Water Tank #1
32	Ashburnham Water Tank #2
33	Post Office
34	Activity & Use Limitations (Gardner Road)
35	Activity & Use Limitations (Lakeshore Dr)

Map 8
Critical Facilities Relative to Hazard Areas


Ashburnham, MA: Local Hazards
RINDGE, NH
NEW IPSWICH, NH
WINCHENDON
ASHBY
GARDNER
FITCHBURG
Several culverts in town are being dammed by beavers, which could cause flooding across the roads and in the general area surrounding these culverts. These culverts include:
(1) Brook Rd, along brook east of Lake Watatic,
(2) Tuckerman Rd, along Bear Meadow Brook,
(3) Wyman/Sherbert Rd intersection, and
(4) Depot Rd, along Millers River
Bush Hill Road- culverts are being blocked by the beavers. This beaver-related hazard is the #1 priority for the Town to address at this time.
Lower Naukeag Lake Dam- This is a high hazard dam. The state recently came in and told the town to fix the dam. The response from the town was that there were no funds to do this at the time. A potential breach of this dam would directly affect approximately 6-8 houses in the area and flood across Dunn Rd.
Lake Watatic Dam- This is considered to be a high hazard dam and has a potential to breach. Only a couple of houses would be directly affected by a breach. The biggest problem that a potential breach would cause would be on the infrastructure and its' affect in an emergency response situation.
Upper Naukeag Lake- This is the only drinking water reservoir in town (and also affects Winchendon). The water levels go down in certain times with the last and most serious event occurring in 2002. The water ban is still in effect today. In addition the Ashburnham Water Authority monitors this water body and follow water conservation management practices- odd/even watering days for example.
Winnekeag Lake Dam- This is a 40' dam holding back a large amount of water. This dam poses a significant hazard and there is a culvert below that is in disrepair. A potential flood could affect several houses and streets, flood into Ashburnham Center and then east toward Factory Village Pond Dam. If it were to reach this point it could cause a domino effect heading into Westminster & Fitchburg.
Dam north of Rt 12, in between Cushing & High St- This dam is in disrepair and has not been maintained for 75-100 years. This dam has a potential to breach (causing erosion and seepage) and would affect several houses and roads (south of Rt 12) and wash into Ashburnham Center.
Factory Village Dam- There used to be a huge hole next to the dam that was draining the pond. This was filled in as a temporary fix. The dam is privately owned, but the owner is not paying taxes. A potential for flooding exists at this location, but it is not considered to have a "loss-of-life" potential. Any potential breach would affect several houses and possible wash-out Rt 12 in Westminster.
Beagle Club- Beaver dam breached and flooded across road causing a 3' chasm in the road. This created the road to be impassable by anything other than an extreme 4-wheel vehicle. This could cause significant problems in an emergency response situation.
The current Sewer Pumping Station is low-lying. The town plans to update this system in the near future. The problem is with the existing sewer pump station by the Overlook/Oakmont School entrance. When it fails, alarm goes off and need to dispatch an engineer. Working with Weston & Sampson going to install a telemetric switch that can allow the pump to be restarted by itself, via an operator/engineer using a computer
Lake Wampanoag Dam- Lake Wampanoag is a very big lake and holds back lots of water. This dam poses a high hazard potential. The owner of the dam has contracted with a consultant who is currently doing a mitigation study. A potential breach of this dam would flood downstream crossing several streets (including Rt 101), affecting several houses, Oakmont Regional High School, and into Whitman Reservoir. A potential exists to have a domino effect on the Whitman Reservoir Dam, to Upper & Lower Crocker Dams, into Snowmill Pond (in Fitchburg) and eventually ending up in the Nashua River.
Lake Monomonac
Wallace Pond
Lake Watatic
Watatic Pond
Ward Pond
Marble Pond
Lincoln Pond
Lower Naukeag Lake
Upper Naukeag Lake
Lake Wampanoag
Cowee Pond
Whitman Reservoir
*Local Hazard Data was derived from the Community Hazard & Vulnerability Session. This data is very approximate in nature, therefore it is not intended to depict exact locations of hazards, rather general areas where hazards may occur.
Legend
Community Boundaries
Roadways
US & State Routes
Other Roads
RailLines
Active RailLines
Water
Streams & Rivers
Intermittent Stream
Lakes, Ponds & Reservoirs
Local Hazards*
Beaver Related
Dam Related
Sewer Back-Up Related
Thunderstorm Related
Beaver Related
Dam Related
Drought Related
0 0.5 1 2 Miles
DATA SOURCES: MassGIS, MassDOT, the Town of Ashburnham and the MRPC. DISCLAIMER: The information depicted on this map is for planning purposes only. All data are representational and are not adequate for boundary definition, regulatory interpretation, or parcel-based analysis.
PREPARED BY:
Montachusett Regional Planning Commission
GIS Department, April 2014
1427R Water Street
Fitchburg, MA 01420
Phone: 978-345-7376
E-mail: mrpc@mrpc.org

Map 9

APPENDIX B: DOCUMENTATION OF PLAN ADOPTION

Board of Selectmen
Extension 0
Town Administrator
Extension 0
Town Accountant
Extension 1, Option 3
Town Clerk
Extension 3
Tax Collector
Extension 1, Option 2
Treasurer
Extension 1, Option 1
Board of Assessors
Extension 2
Land Use Office
Extension 6
Planning Board
Extension 4, Option 1
Conservation Commission
Extension 4, Option 2

TOWN OF ASHBURNHAM

Town Hall, 32 Main Street

Ashburnham, Massachusetts 01430

Animal Control
Board of Health
Building Commission
Conservation Commission
Council on Aging
Cultural Council
Electrical Inspector
Gas & Plumbing Inspector
Historical Commission
Municipal Planning
Parks & Recreation
Planning Board
Zoning Board of Appeals

PHONE: (978)-827-4100
FAX: (978) 827-4105

WHEREAS, the Town of Ashburnham established a Committee to prepare the Town of Ashburnham's Local Hazard Mitigation (LHMP) And Municipal Vulnerability Preparedness (MVP) Plan;

WHEREAS, the Town of Ashburnham's Local Hazard Mitigation (LHMP) And Municipal Vulnerability Preparedness (MVP) Plan contains several potential future projects to mitigate potential impacts from natural hazards in the Town of Ashburnham;

WHEREAS, duly-noticed public meetings were held by the Town of Ashburnham on April 22, 2021 and May 25, 2021;

WHEREAS, the Town of Ashburnham authorizes responsible municipal departments and/or agencies to execute their responsibilities as demonstrated in the Plan; and

WHEREAS, per Section 2 of the Town Charter, "[T]the executive powers of the town shall be vested in the board of selectmen [aka Select Board] and it shall serve as the chief policy making agency of the town. The board of selectmen shall continue to have and to exercise all of the powers and duties vested in boards of selectmen by the laws of the commonwealth or by vote of town meeting, except as otherwise provided in this charter."

NOW, THEREFORE BE IT RESOLVED that, pursuant to an affirmative vote of attendees at the Special Town Meeting held DAY MONTH 2021, the Town of Ashburnham, acting through its Select Board, hereby adopts the Town of Ashburnham's Local Hazard Mitigation (LHMP)

Board of Selectmen
Extension 0
Town Administrator
Extension 0
Town Accountant
Extension 1, Option 3
Town Clerk
Extension 3
Tax Collector
Extension 1, Option 2
Treasurer
Extension 1, Option 1
Board of Assessors
Extension 2
Land Use Office
Extension 6
Planning Board
Extension 4, Option 1
Conservation Commission
Extension 4, Option 2

TOWN OF ASHBURNHAM

Town Hall, 32 Main Street

Ashburnham, Massachusetts 01430

Animal Control
Board of Health
Building Commission
Conservation Commission
Council on Aging
Cultural Council
Electrical Inspector
Gas & Plumbing Inspector
Historical Commission
Municipal Planning
Parks & Recreation
Planning Board
Zoning Board of Appeals

PHONE: (978)-827-4100
FAX: (978) 827-4105

Update And Municipal Vulnerability Preparedness (MVP) Plan 2021, in accordance with M.G.L. 40 §4 or the charter and bylaws of the Town of Ashburnham.

ADOPTED AND SIGNED this Date _____

_____

Bill Johnson, Select Board Chair

_____

Rosemarie Eldridge Meissner, Select Board Clerk

_____

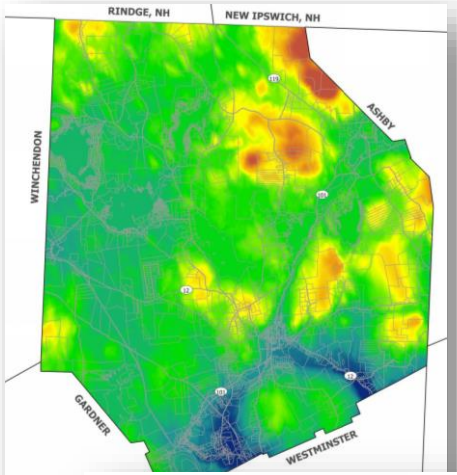
Leo Janssens, Select Board Member

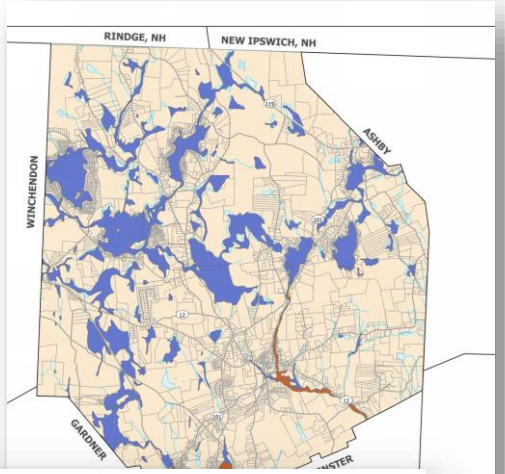
APPENDIX C: Planning Documentation

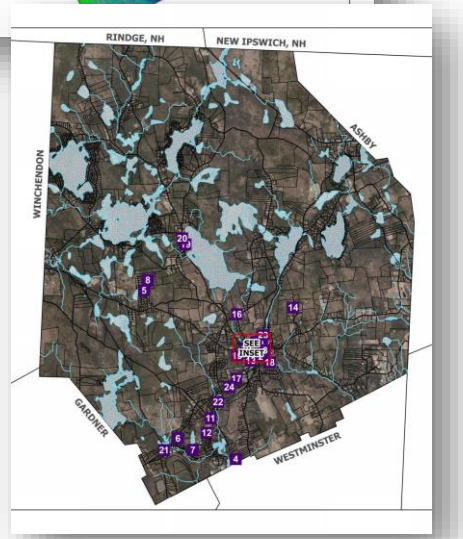
1. Introductory Slide Show
2. Workshop Agenda
3. Reference Figures
4. Base Figure
5. Workshop Group Matrices
6. Survey Results
7. Prioritized Actions
8. Invitation List
9. Invitation Letter
10. Public Listening Session Agendas
11. Public Listening Session Comments and Attendance

1). Introductory Slide Show

TOWN OF Ashburnham, MA
Municipal Vulnerability Preparedness

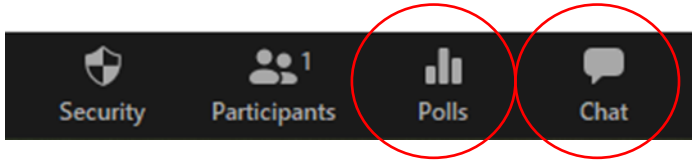


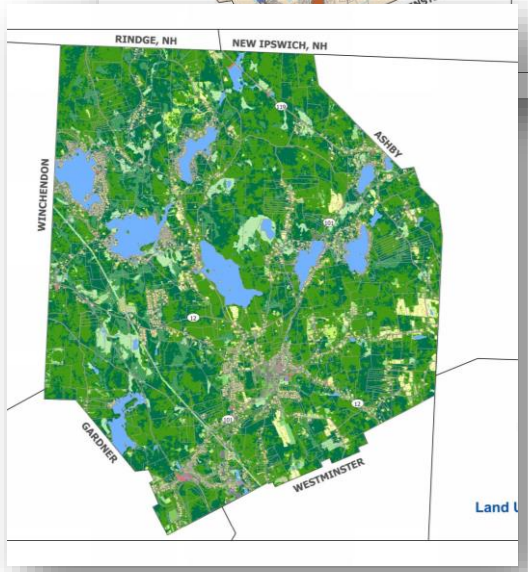




WELCOME!

- *The workshop will begin at 8:30 am.*
- *Take some time to familiarize yourself with zoom.*
- *We will be using the polls and chat function which are at the bottom of your screen.*





WHO AM I?

Lance Hill, PE
Managing Engineer

E-mail: lhill@parecorp.com

Cell phone: 774-991-0157

PARE CORPORATION
ENGINEERS SCIENTISTS PLANNERS
CELEBRATING 50 YEARS

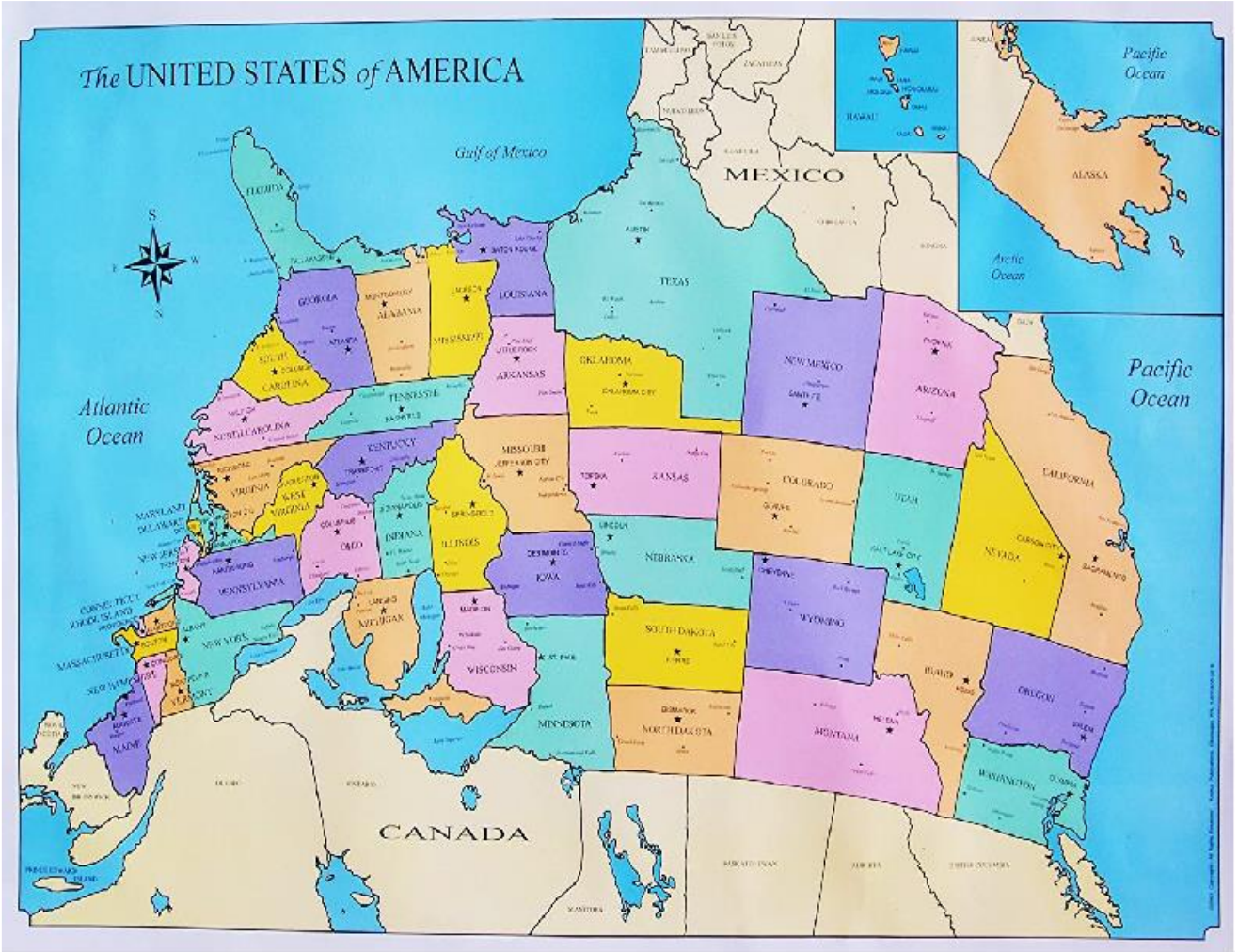
Today's Agenda

Municipal Vulnerability Preparedness Workshop Schedule

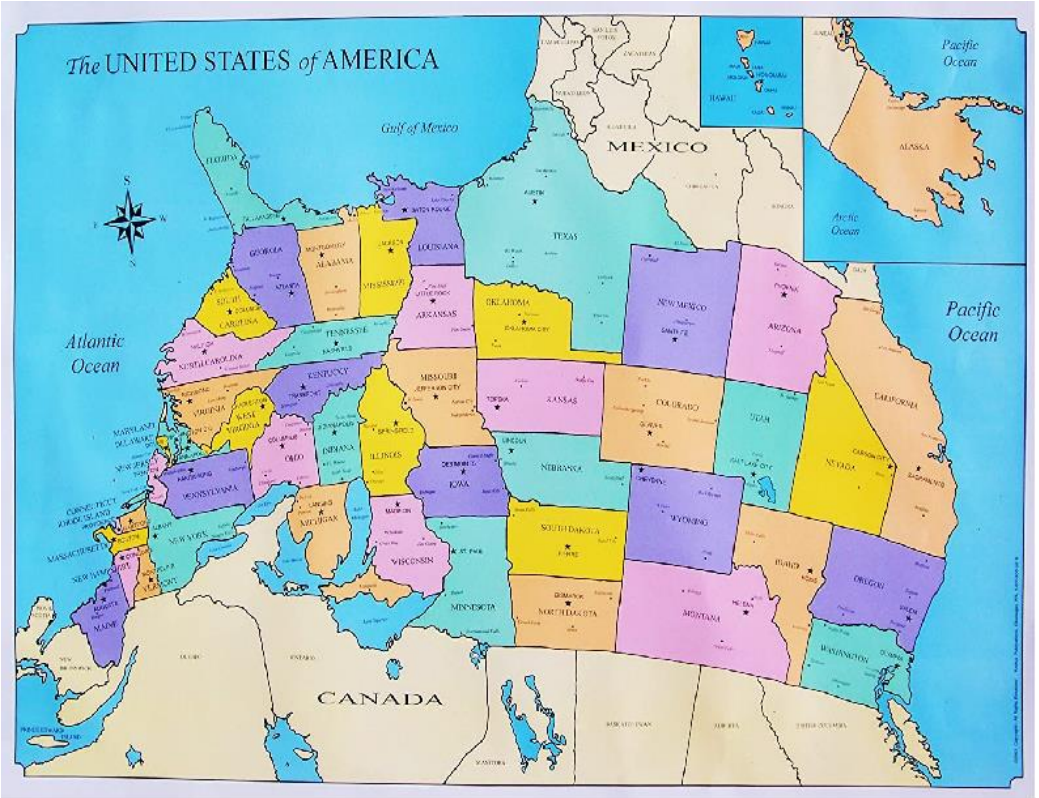
February 25th, 2021

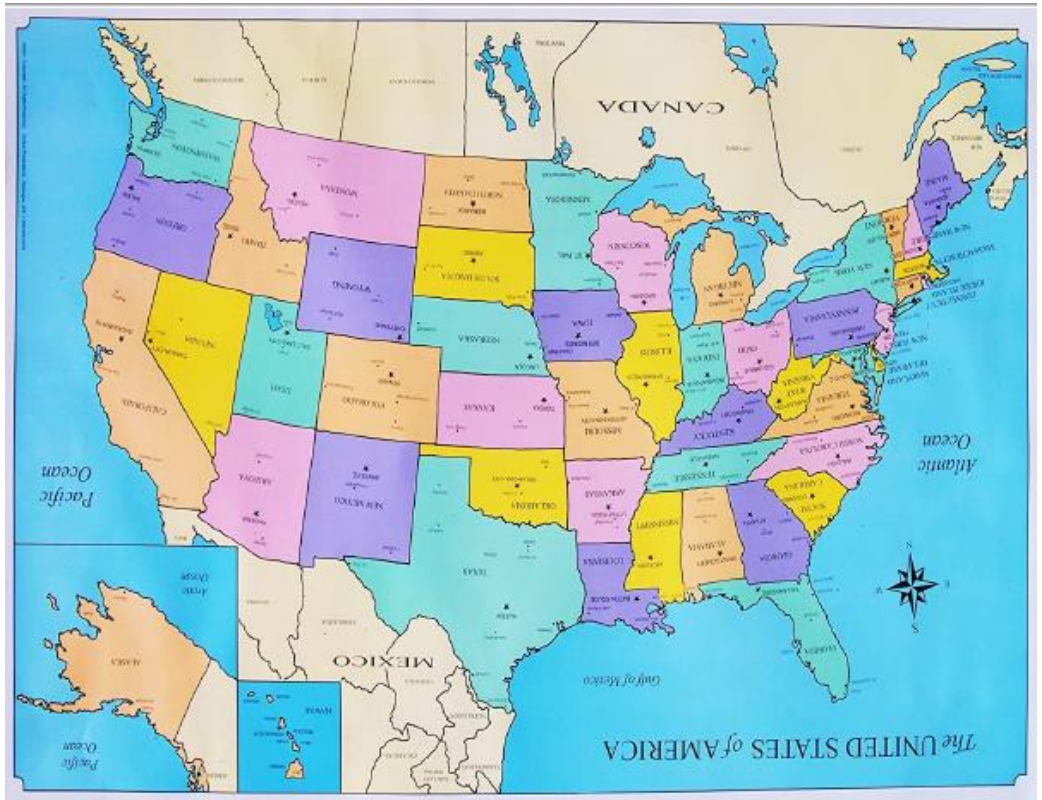
8:20-8:30	*Logon & Zoom Familiarity*
8:30-9:15	Welcome & Introduction • Workshop Overview • Climate Change introduction
9:15-9:45	Characterize Community Hazards • Overview of Maps & Matrix • Select Priority Hazards (Full Group) • Group Facilitator Introductions, Group Instructions
9:45-12:00	Breakout Groups: • Identify Community Vulnerability & Strengths - ~40 minutes per category (Environment, Infrastructure, and Society) • ***15 minute break at 10:30*
12:00-12:25	Reconvene in Full Group • Report from each Breakout Group
12:25-12:30	Closing Remarks & Wrap Up

Today's Goal:
Input from different perspectives



Today's Goal:
Input from different perspectives





WHO AM I?

Hillary B. King

MVP Central Regional Coordinator

E-mail: hillary.king@mass.gov

Telephone: 617.655.3913

Municipal Vulnerability Preparedness (MVP) Program

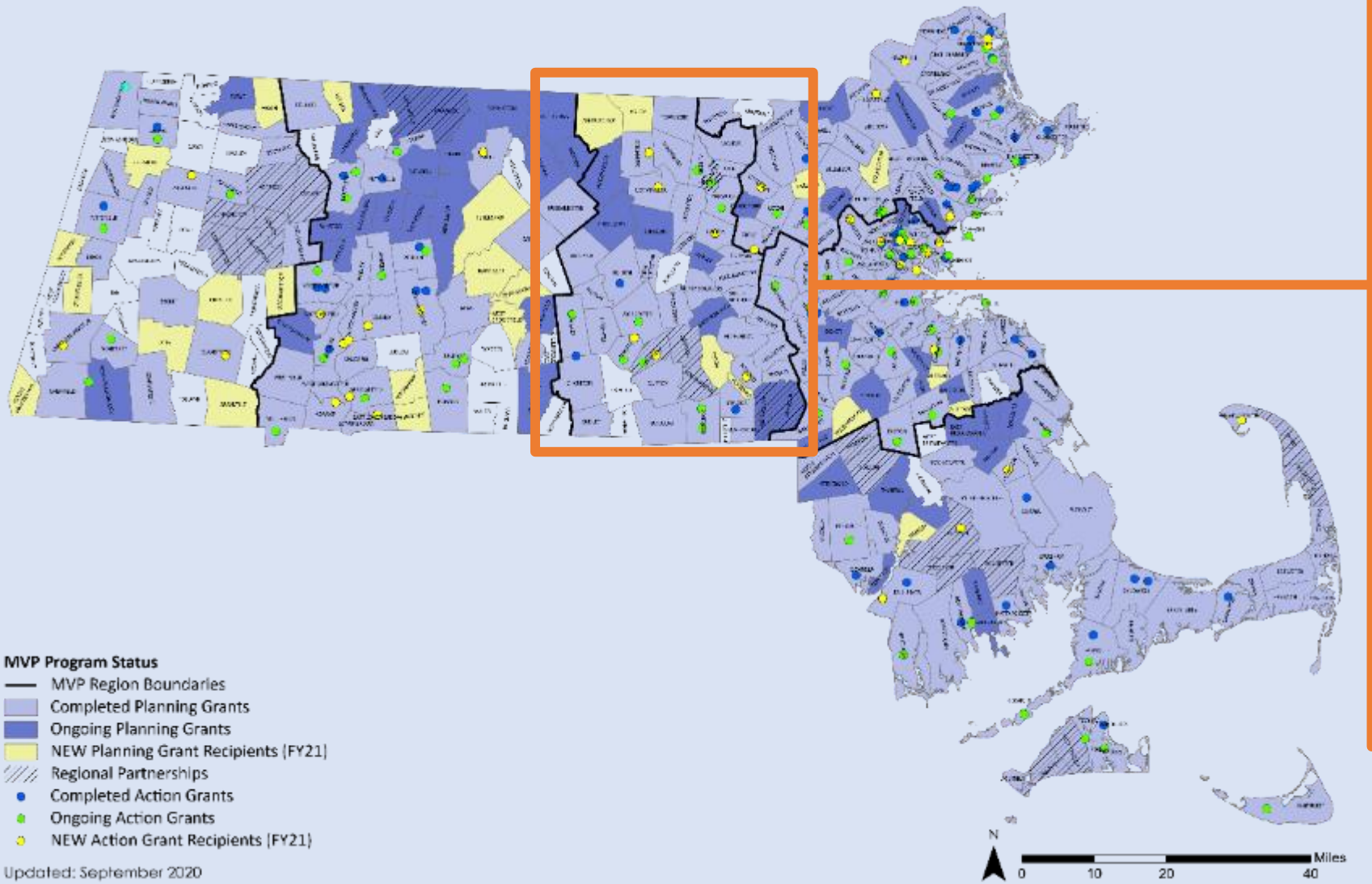
Massachusetts Executive Office of Energy and Environmental Affairs

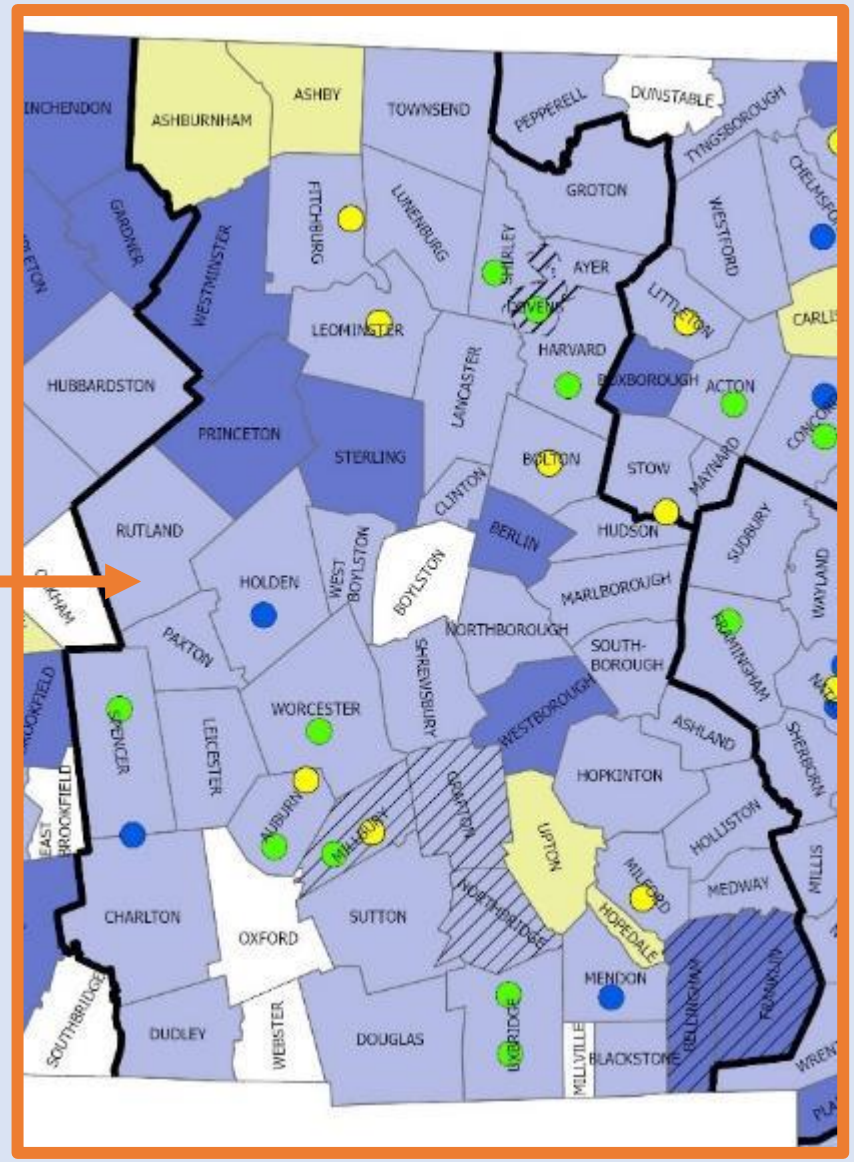
Program Overview

Ashburnham Community Resilience Building Workshop

February 25, 2021

Hillary B. King, MVP Central Regional Coordinator
hillary.king@mass.gov | 617.655.3913
http://resilientma.org/mvp





“An investment in our environment is an investment in our future”

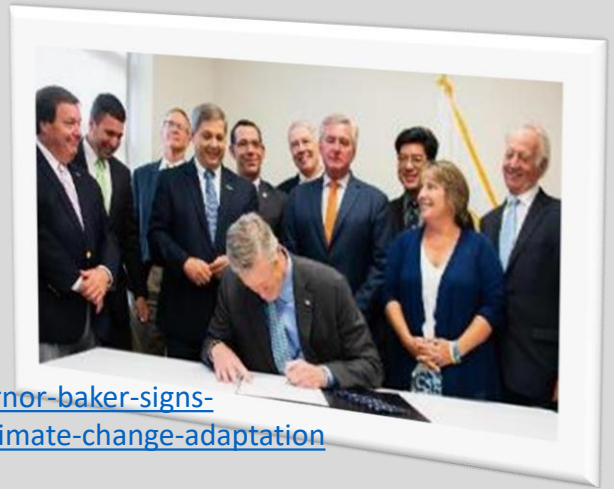
Executive Order 569 (2016)

- Comprehensive approach to reduce GHG emissions to combat climate change and prepare for the impacts of climate change
  - State Adaptation Plan
  - Climate Coordinators
  - Agency Vulnerability Assessments
  - Municipal Support

https://www.mass.gov/news/governor-baker-signs-climate-change-strategy-executive-order

Environmental Bond Bill (2018)

- $2.4 billion bond bill with focus on climate change resiliency
- Over $200 million authorized for climate change adaptation
- Codifies EO 569, including the MVP Program



https://www.mass.gov/news/governor-baker-signs-legislation-directing-24-billion-to-climate-change-adaptation

Why Municipal Vulnerability Preparedness?

RISING TEMPERATURES

CHANGES IN PRECIPITATION

SEA-LEVEL RISE

EXTREME WEATHER

Visit resilientma.org for more information from the State Hazard Mitigation and Climate Adaptation Plan (SHMCAP) about how climate change is intensifying natural hazards.

Climate resilience: is the ability of a community to **address the needs** of their built, social, and natural environment to **anticipate, cope with, and rebound stronger** from events and trends related to climate change hazards.

MVP Core Principles

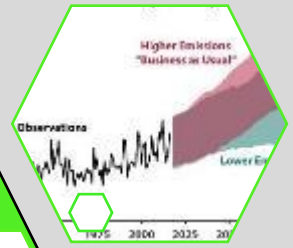
Multiple benefits to a broad cross-section of the community

Address identified climate change impacts

Community outreach & engagement

Project monitoring & maintenance for continued success

Proactive solutions supported by climate data



Focus on Environmental Justice (EJ) Populations

Prioritize Nature-based Solutions

Knowledge Sharing (successes & failures)

Think outside the box (& borders)

https://www.mass.gov/doc/mvp-core-principles/download

Funding climate resilience in municipalities

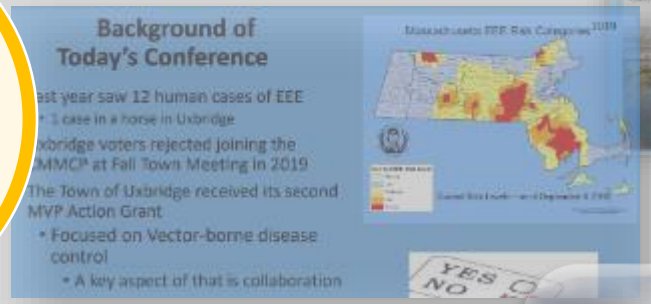
MVP
Municipal Vulnerability Preparedness

Planning Grant

- $15-$100k per plan
- ~ 9-mo process
- $1M available annually

Action Grant

- Open to MVP communities
- $25k - $2M per project, over one or two FY
- $10M available annually



http://resilientma.org/mvp

Action Grant Statistics From Last Round

142 applications

Over $46 million requested

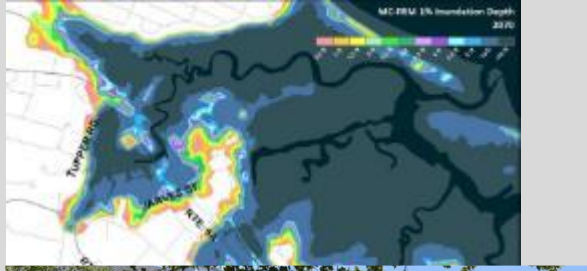
41 funded projects

Average grant size: ~$255,000

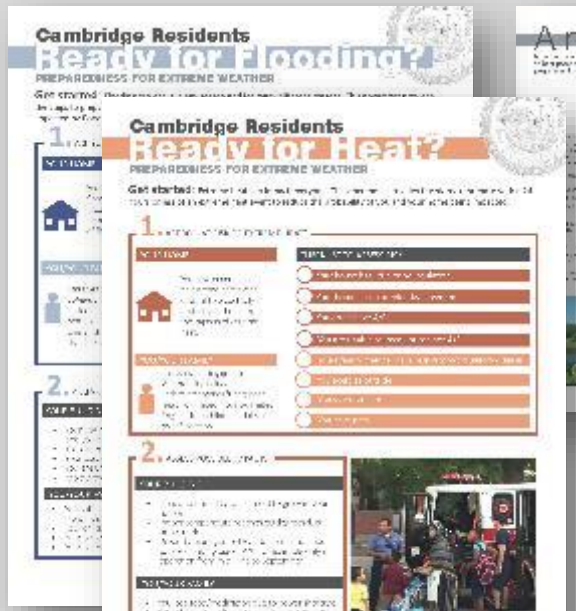
Climate Resilient Design Guidelines for Coolidge Corner

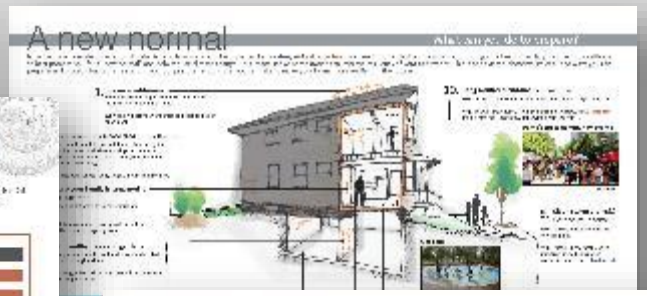
Public education and outreach

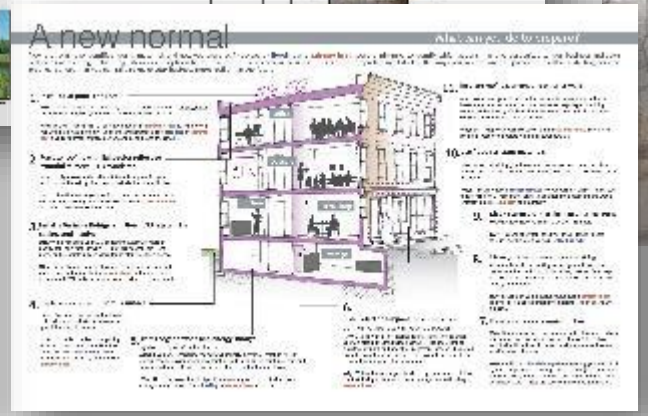
Reducing pavement and cleaning stormwater



Assessing Critical Infrastructure







Coonamessett River Restoration Project

Pine Island Pond Watershed Lands Project

Resilience toolkits for renters, small residential owners, smalls businesses, and large businesses

WHO AM I?

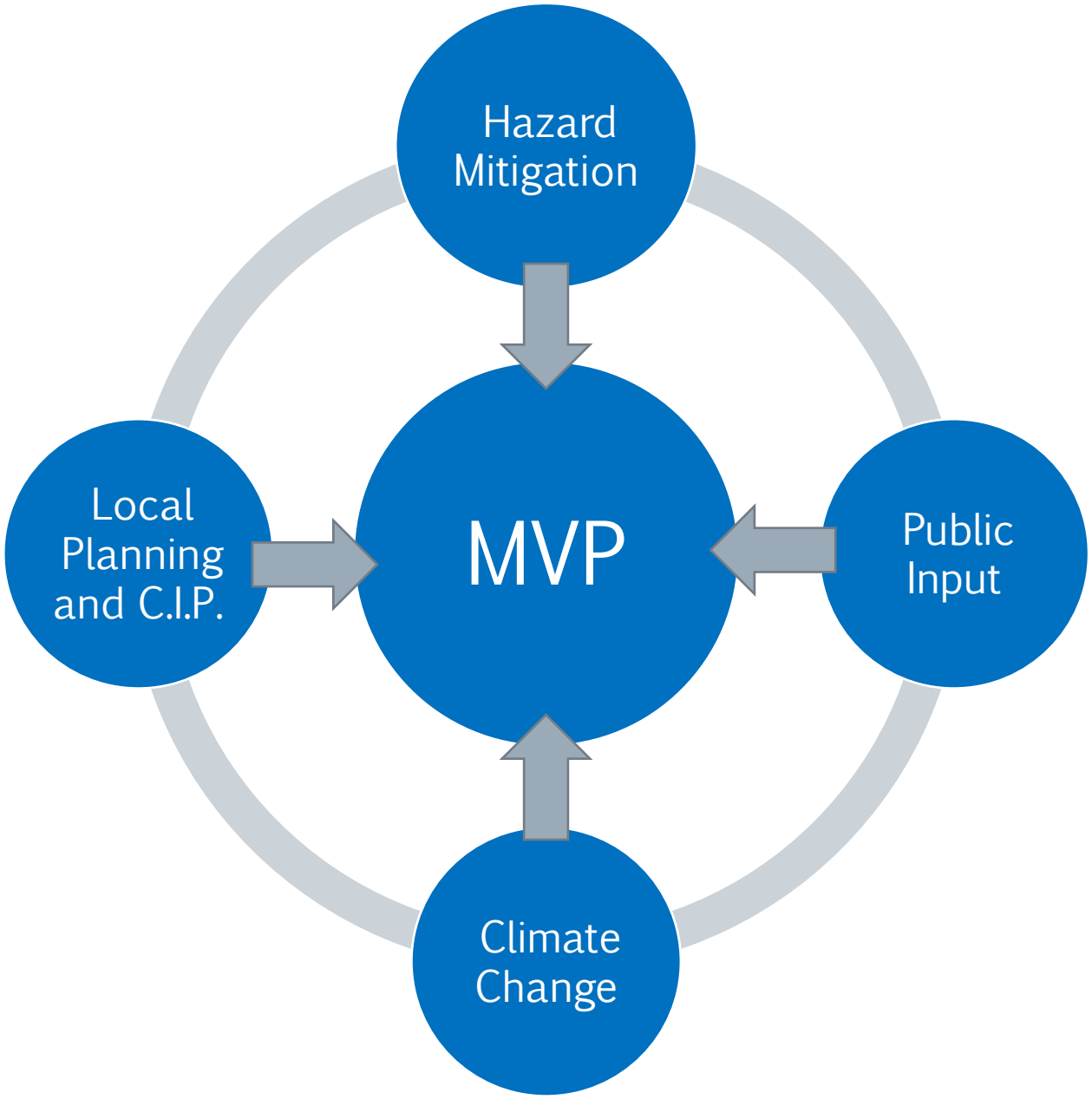
Brian Doheny

Town Administrator

Town of Ashburnham

Similar to a Capital Improvement Plan (C.I.P.) that:

- Incorporates public input
- Plans for impacts of climate change
- Identifies opportunities to take action that reduce future risk and build resilience



Example Project

Falmouth **FY19** **$760,000**	Falmouth is restoring the lower Coonamessett River. The project includes removal of an aging dam; restoration of floodplain wetlands; replacing failing culverts with a storm-smart culvert that provides passage for fish and wildlife.	Inland Flooding	Increased flood storage; Safer road	Improved fish and wildlife passage; Improved salt marsh migration
Mattapoisett **FY19** **$960,000**	Mattapoisett partnered with the Mattapoisett Land Trust and the Buzzards Bay Coalition to purchase 120 acres of forest, streams, freshwater wetlands and coastal salt marsh in the Pine Island Pond area to limit future development in this vulnerable location.	Extreme Weather; Coastal Flooding	Storm protection; Reduced chance of future development in harm's way	Recreational opportunities; Natural resource conservation
Spencer **FY19** **$370,492**	Spencer is implementing green stormwater infrastructure techniques as part of a parking lot redevelopment project. The design will incorporate rain gardens/bioretention and belowground infiltration systems to reduce runoff and pollutant loads from the lot.	Inland Flooding	Increased flood storage	Improved water quality; Additional recreational areas

Community Overview

Town Facts

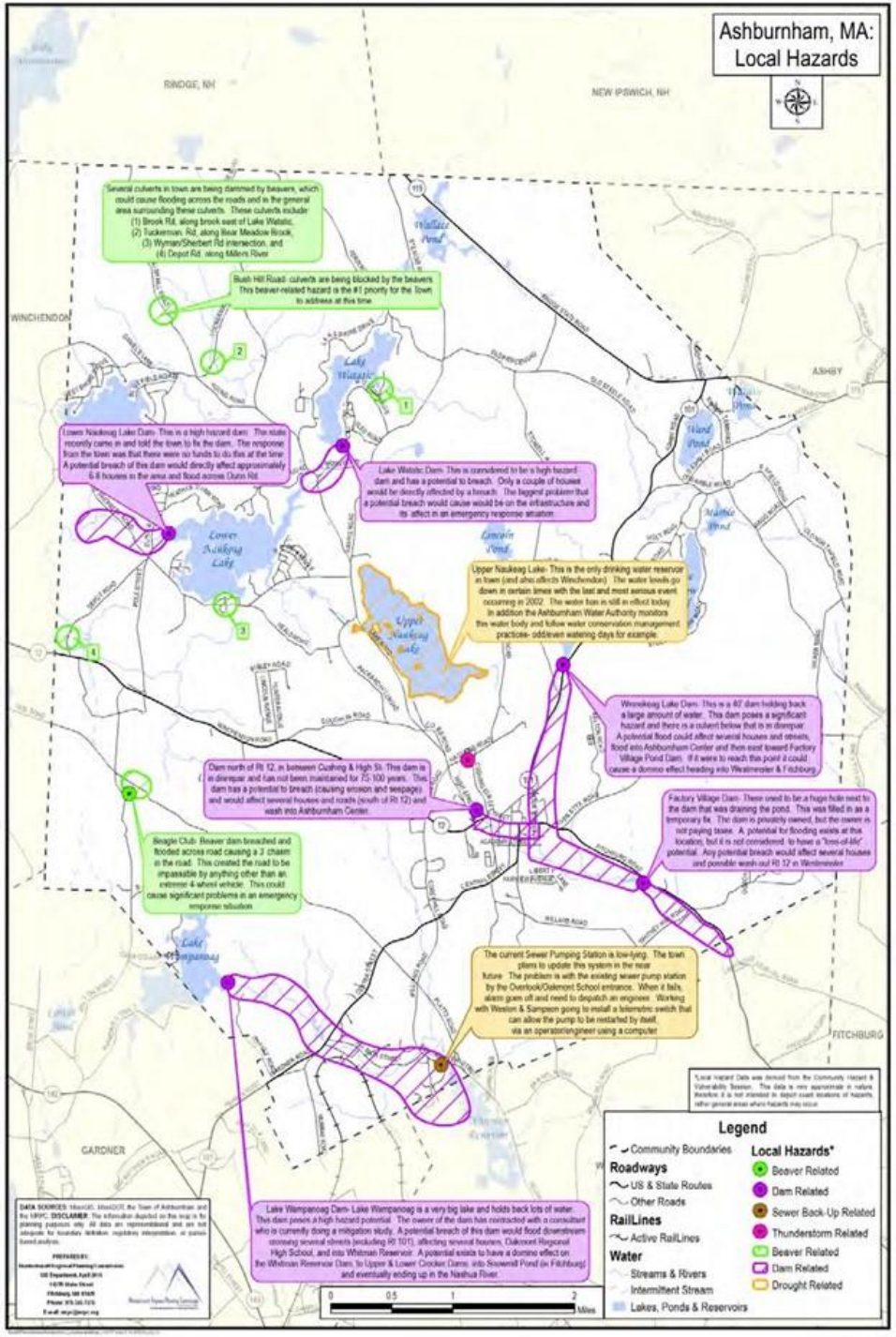
- Population (Census 2018) : 6,346
- Area: 41 square miles
- Land use Summary (2016):
  - 6% lakes (20 total, 9 of significant size)
  - 73% Forest
  - 10% Wetland
  - Historic Mill Town

2015 Regional Hazard Mitigation Plan – Hazard Map

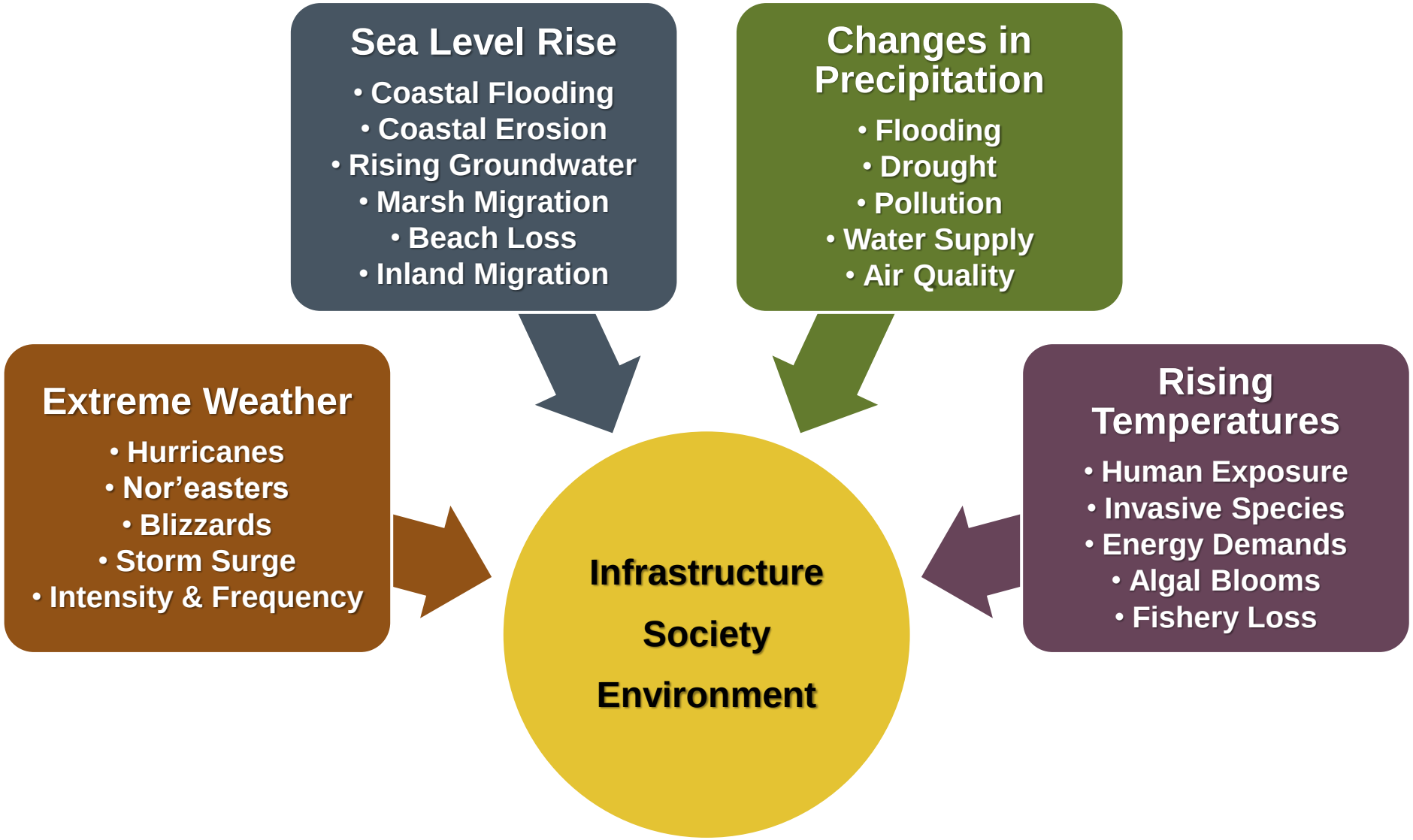
Ashburnham Natural Hazard Matrix				
Natural Hazard	Likelihood of Occurrence	Location	Impacts	Hazard Index
Natural Hazard Separated by Flood, Atmospheric Related and Winter Related, Other Natural Hazards, and Geologic Hazards	3 = Highly Likely 2 = Possible 1 = Unlikely	3 = Regional/State 2 = Multi Community/Regional 1 = Local/Town	4 = Catastrophic 3 = Critical 2 = Limited 1 = Negligible	Ranking Determined by Combining the Likelihood, Location and Impacts of a Natural Hazard
Flood-Related Hazards				
• Heavy Rain	3	2	2	7
• Snow Melt	2	2	2	6
• Dam Failure	2	2	4	8
• Ice Jams	2	1	3	6
• Beavers	3	1	2	6
Atmospheric Related and Winter Related Hazards				
• High Winds	2	1	2	5
• Hurricanes	2	1	4	7
• Tornados	2	1	4	7
• Nor'easters	2	1	3	6
• Severe Thunderstorms	2	1	2	5
• Heavy Snow	3	2	3	8
• Ice Storms	3	1	3	7
• Blizzard	3	2	3	8
Other Natural Hazards				
• Major Urban Fires	2	2	4	8
• Wildland Fire	2	2	4	8
• Drought	2	2	3	7
• Extreme Temperatures	2	2	3	7
Geologic Hazards				
• Earthquakes	2	3	4	9
• Landslides	1	1	4	6
• Tsunami	1	2	4	7

2015 Regional Hazard Mitigation Plan – Ashburnham Local Hazard Map

- Hazards listed on the Map included:
  - Dams
  - Beavers
  - Sewer Back up
  - Thunderstorms
  - Drought



Perceived Natural Hazards



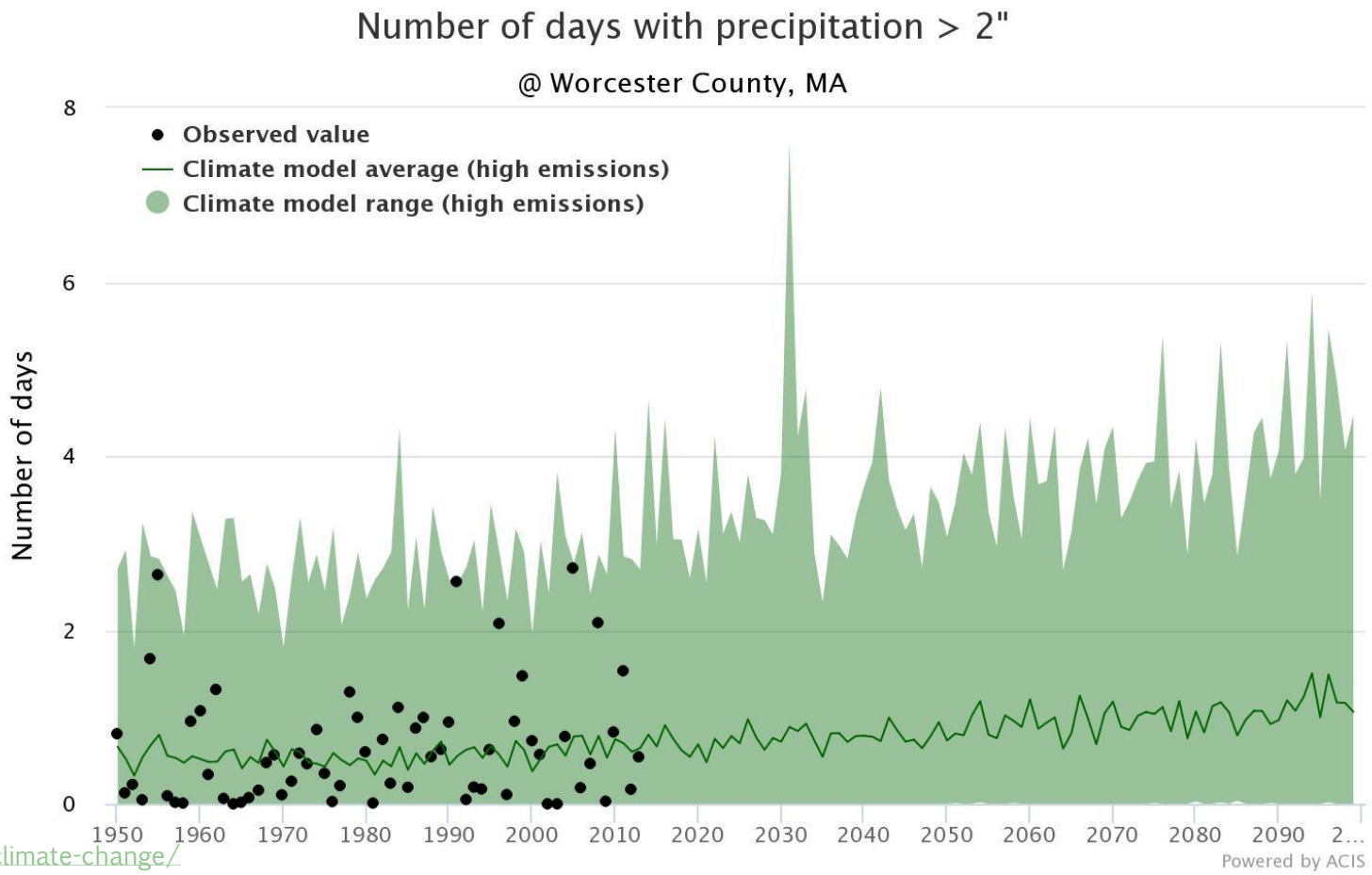
Extreme Weather

- **Dec 2008:** An ice storm that affected Ashburnham
- **Mar – Apr 2010:** A series of severe storms and flooding events throughout Massachusetts
  - Widespread rainfall, causing small streams to rise above their flood stages
  - Over $145 million received in individual and public assistance
- **Aug 2011, Tropical Storm Irene:** tropical storm producing heavy rain in Western Massachusetts
  - Average of 10 inches of rain in Western Mass
  - Power outages peaked at more than 500,000
- **Feb 2013, Winter Storm Nemo:** Blizzard producing widespread heavy snowfall throughout the state
  - Widespread snowfall greater than two feet, with snowfall rates of one to two inches per hour at time
  - Nearly 400,000 customers lost power
  - Over $43 million received in public assistance
- **Jan 2015, Winter Storm Juno:** Winter storm breaking daily snowfall records throughout MA

Changes in Precipitation

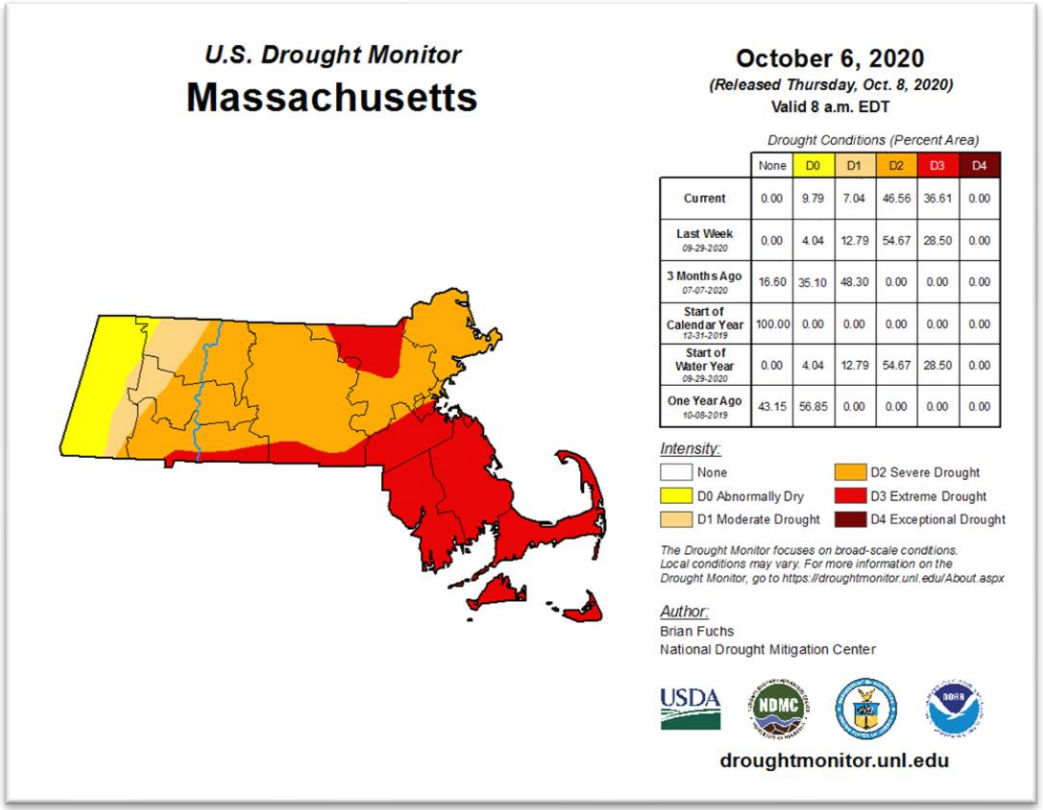
- Projections show increasing days of higher precipitation totals per year

Climate Indicator		Observed Value 1971-2000 Average	Mid-Century Projected Change in 2050s	End of Century Projected Change in 2090s
Days with Precipitation > 1"	Annual	7 days	Increase by 10-42% 8-10 more days per year	Increase by 15-55% 8-11 more days per year

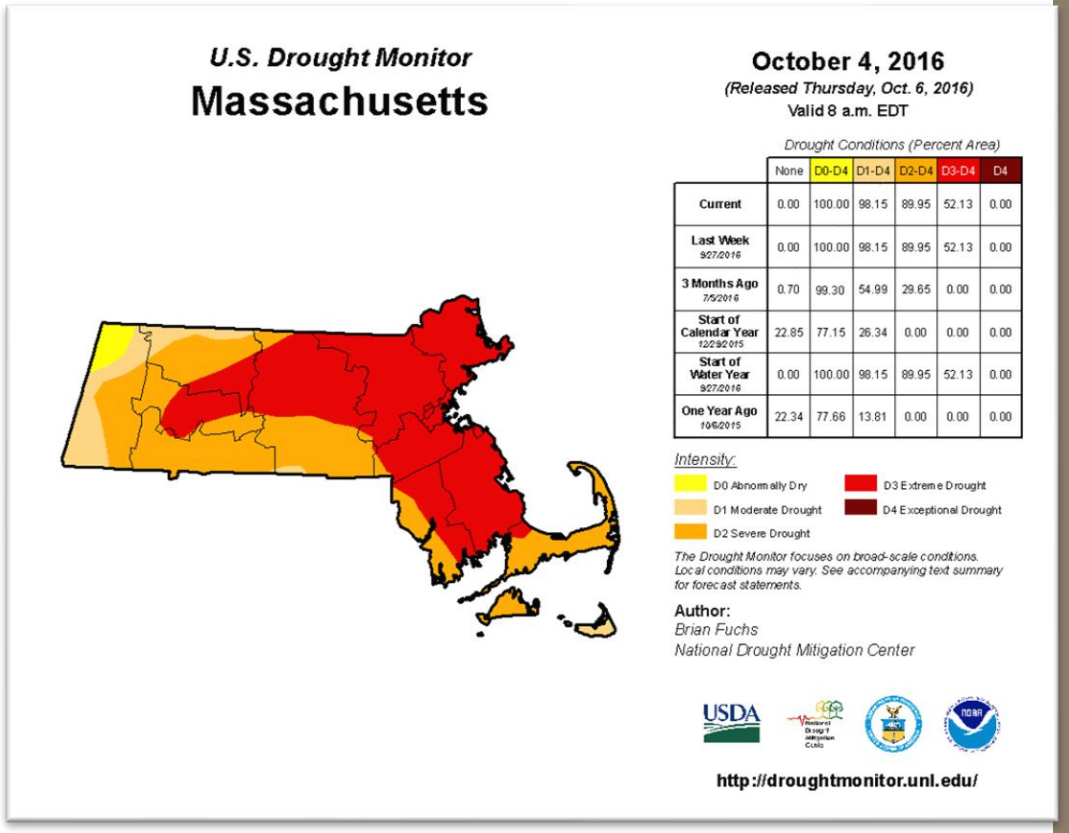


http://climatesmartfarming.org/tools/csf-county-climate-change/

Historic Drought



	None	D0	D1	D2	D3	D4
Current	0.00	9.79	7.04	46.56	36.61	0.00
Last Week 09-29-2020	0.00	4.04	12.79	54.67	28.50	0.00
3 Months Ago 07-07-2020	16.60	35.10	48.30	0.00	0.00	0.00
Start of Calendar Year 12-31-2019	100.00	0.00	0.00	0.00	0.00	0.00
Start of Water Year 09-29-2020	0.00	4.04	12.79	54.67	28.50	0.00
One Year Ago 10-08-2019	43.15	56.85	0.00	0.00	0.00	0.00

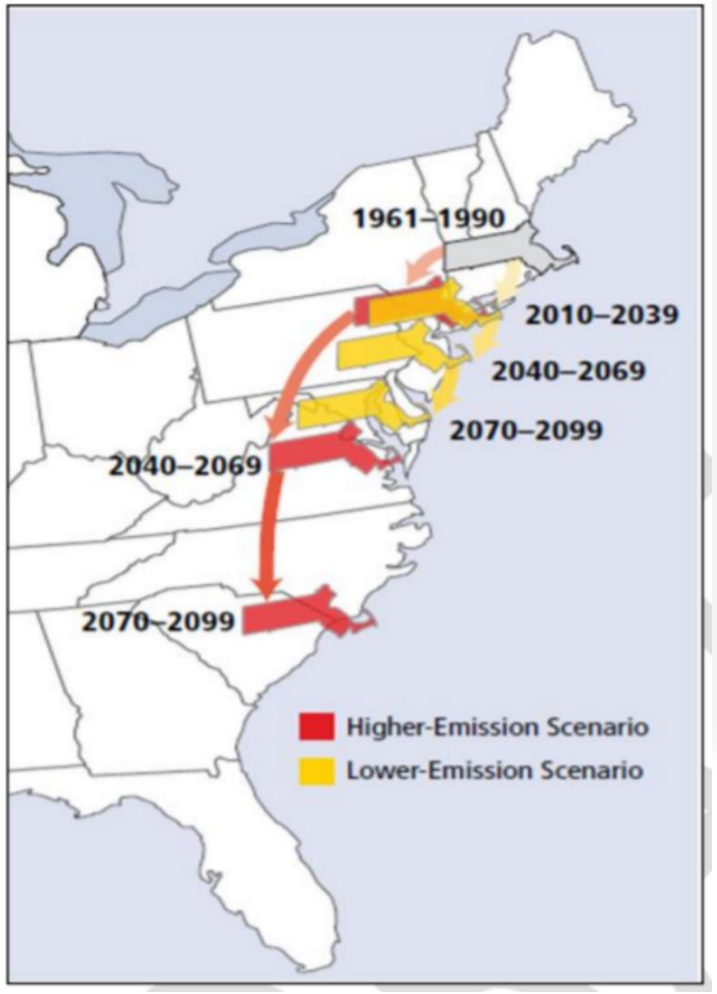


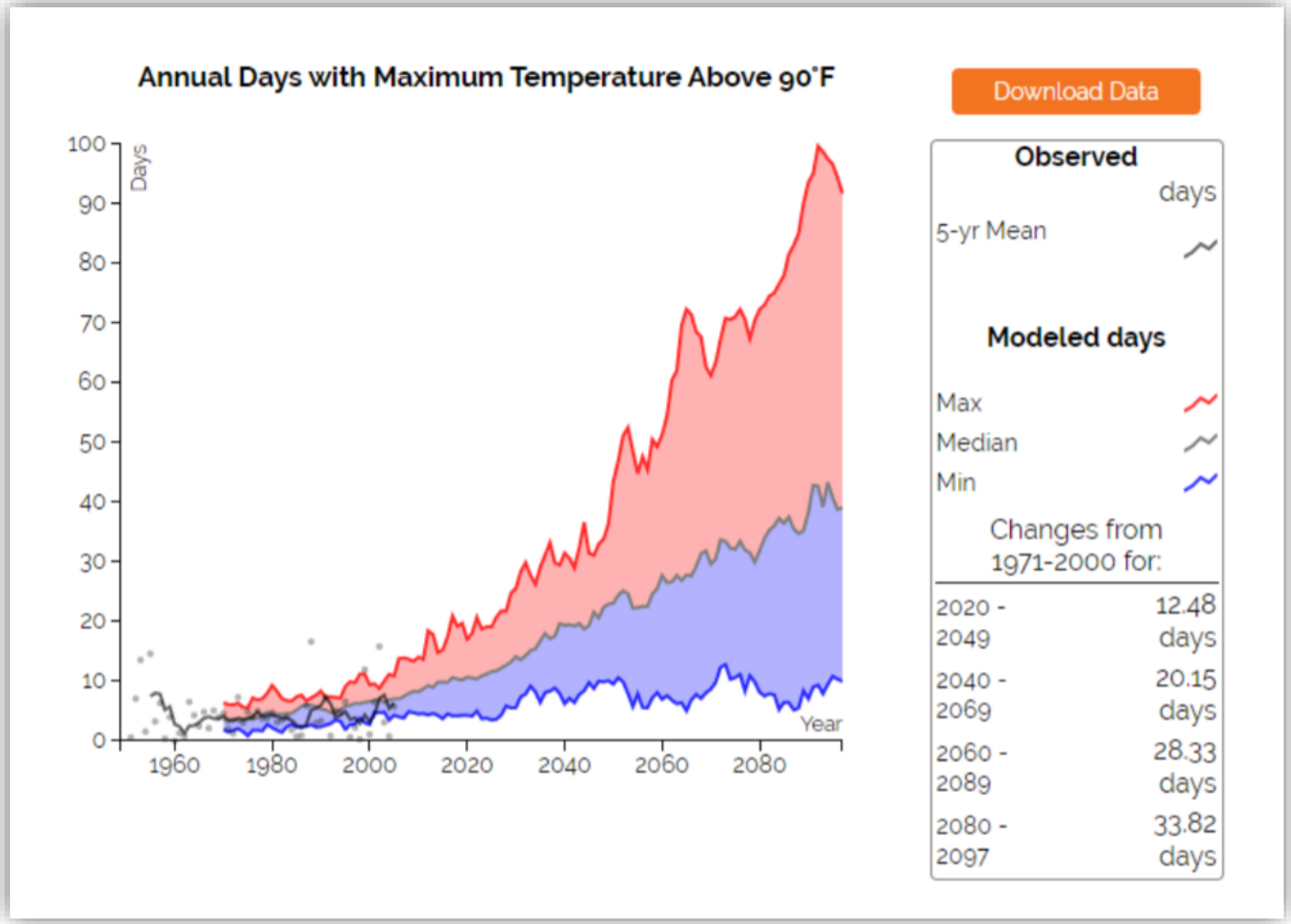
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	98.15	89.95	52.13	0.00
Last Week 9/27/2016	0.00	100.00	98.15	89.95	52.13	0.00
3 Months Ago 7/5/2016	0.70	99.30	54.99	29.65	0.00	0.00
Start of Calendar Year 12/29/2015	22.85	77.15	26.34	0.00	0.00	0.00
Start of Water Year 9/27/2016	0.00	100.00	98.15	89.95	52.13	0.00
One Year Ago 10/6/2015	22.34	77.66	13.81	0.00	0.00	0.00

Historic Wildfires (2009-2015)

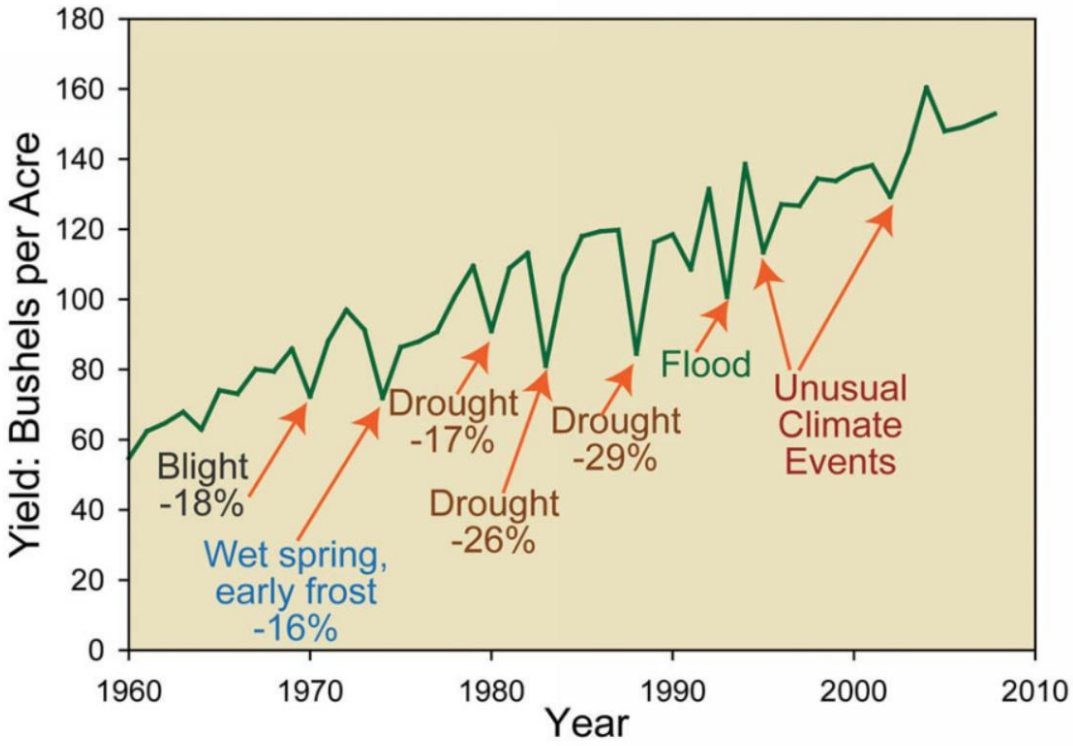
Community	# of Fires	# of Acres Burned	# of Acres Per Fire
Ashburnham	13	16.2	1.2

Rising Temperatures





Agriculture



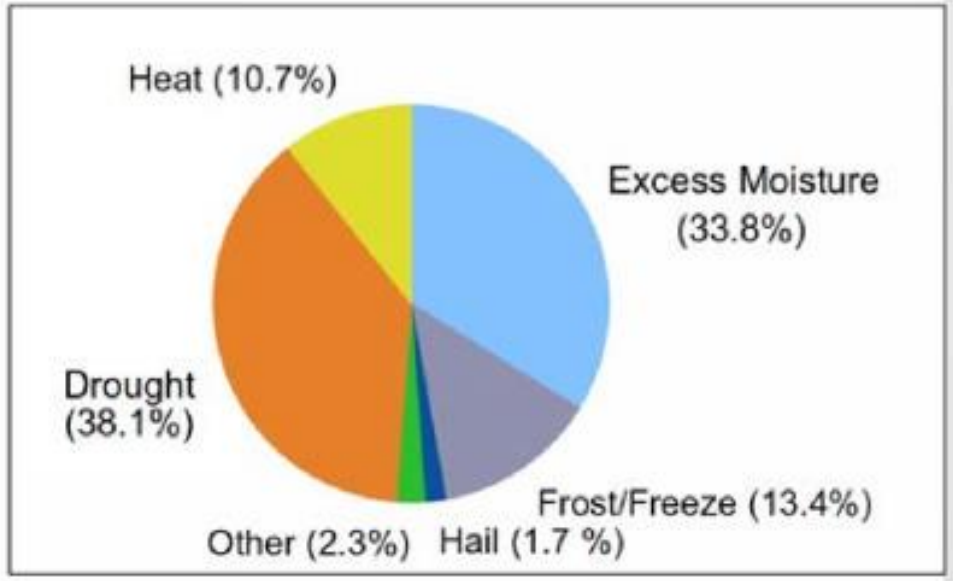
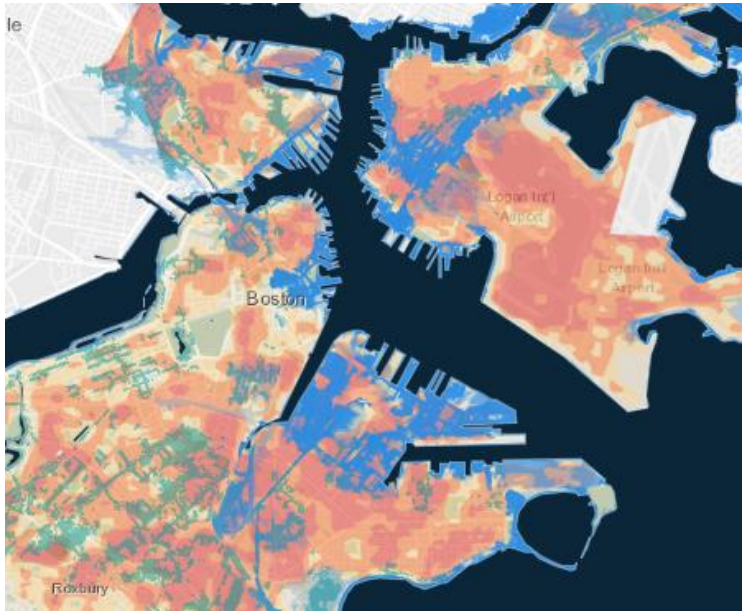
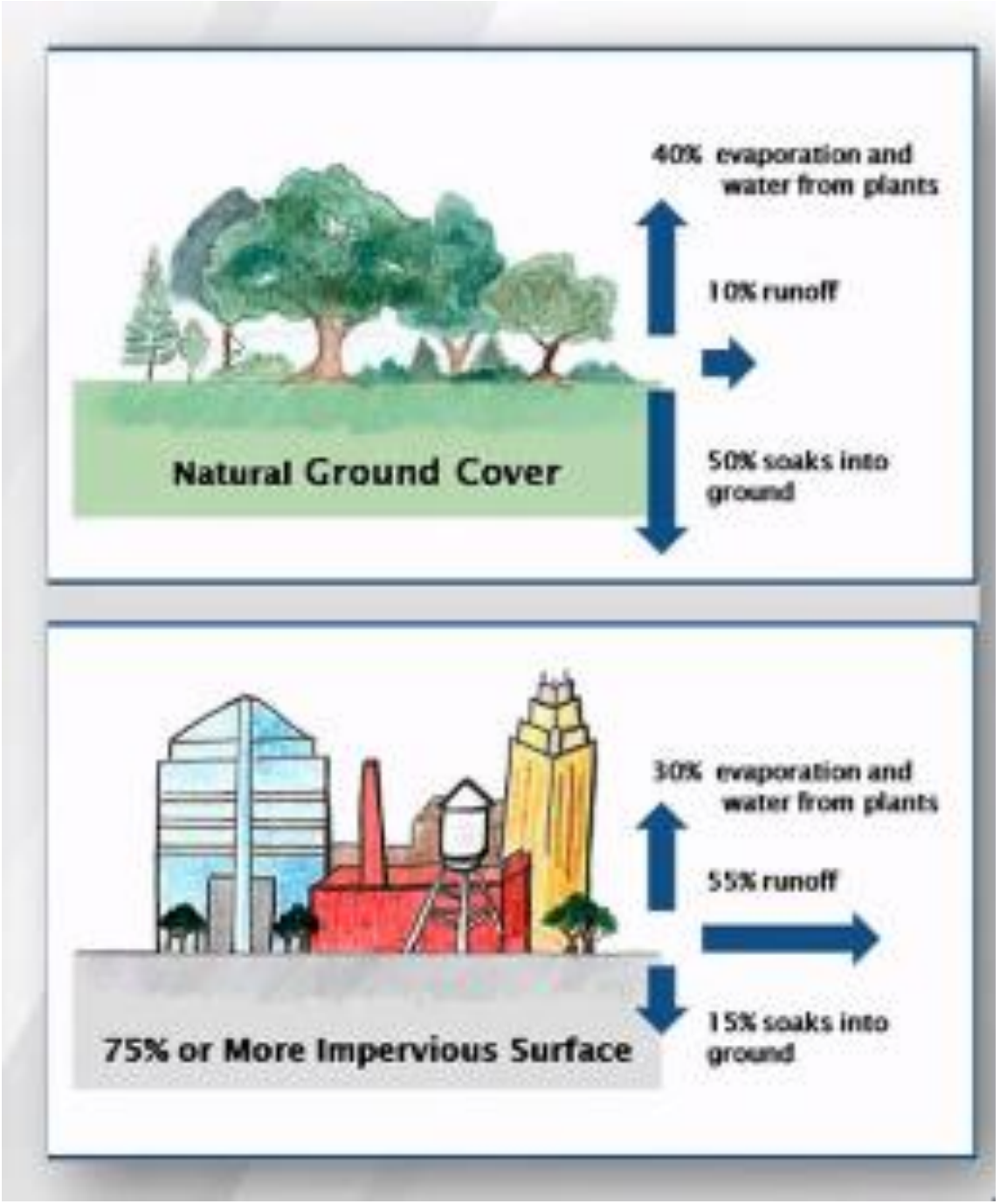


Figure 4. Categorization of weather-related crop losses in the northeastern U.S. from 2013 through 2016 (Wolfe et al., 2018)

Inland Migration





Massachusetts
Observed Climate Changes

Temperature: 2.9°F
Since 1895 (Statewide)

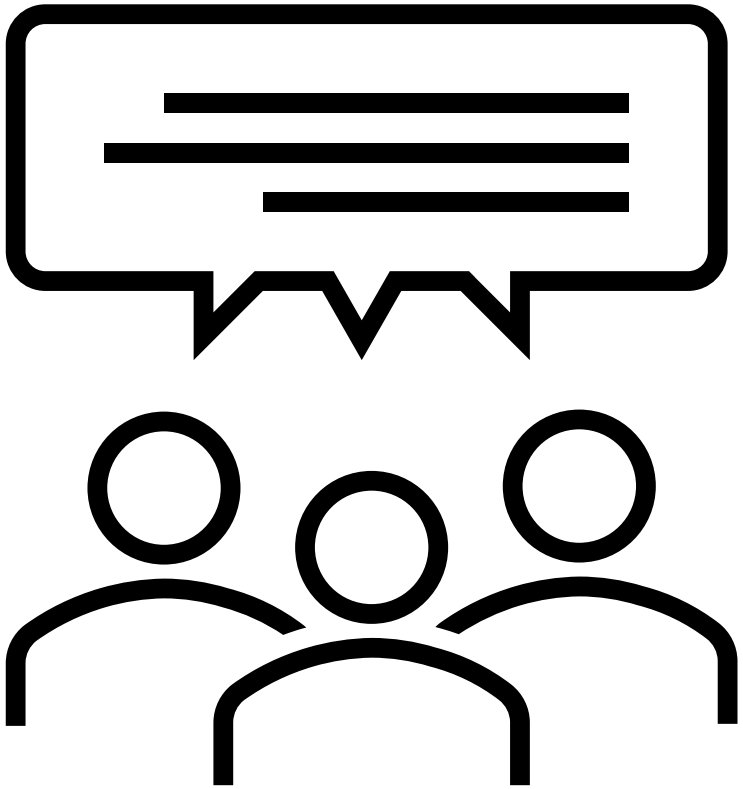
Growing Season: 15 Days
Since 1950

Sea Level Rise: 11 inches
Since 1922 (Boston)

Heavy Precipitation: 55%
Since 1958

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

Identify past, current, and future hazards



- What hazards have impacted your community in the past? Where, how often, and in what ways?
- What hazards are impacting your community currently? Where, how often, and in what ways?
- What effects will these hazards/changes have on your community in the future (5, 10, 25 years)?
- What is exposed to hazards and climate threats within your community?
- What have been the impacts to operations and budgets, planning and mitigation efforts?
- Others concerns or considerations related to impacts?

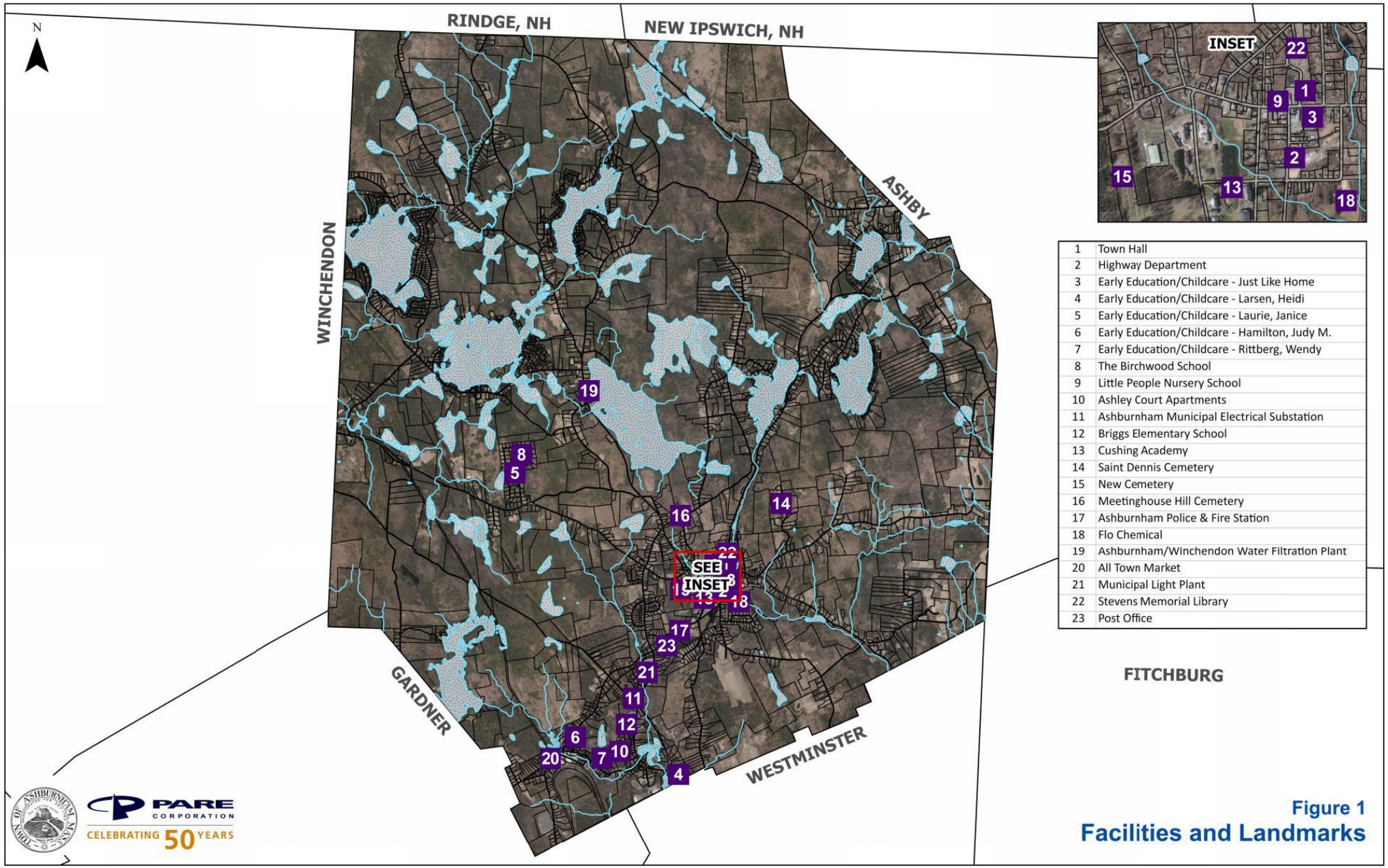


Figure 1
Facilities and Landmarks

Land Use Maps from 1985-2016

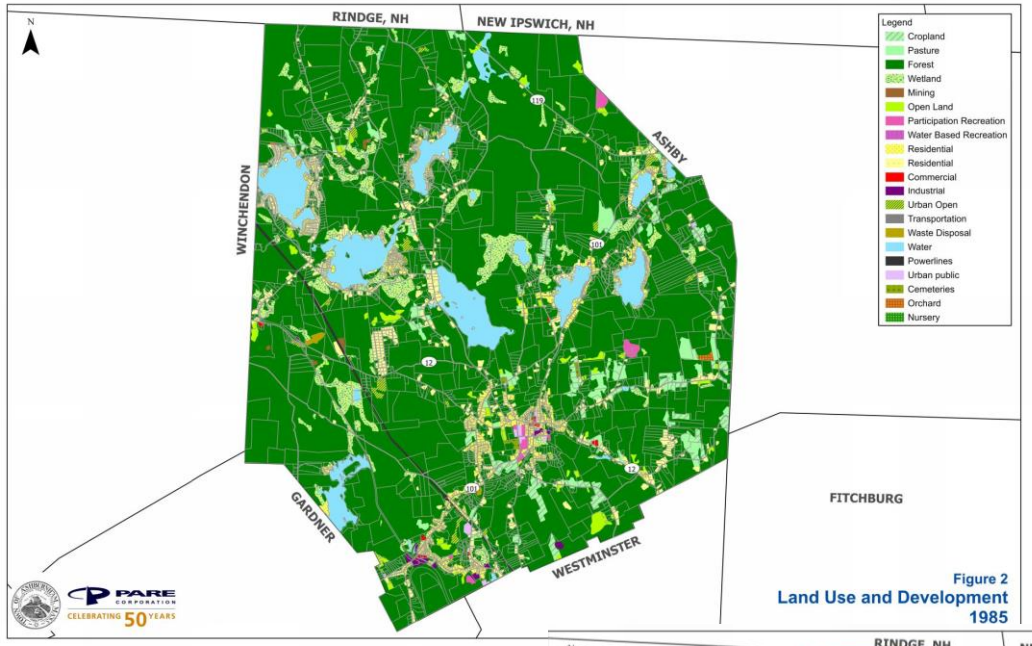


Figure 2
Land Use and Development
1985

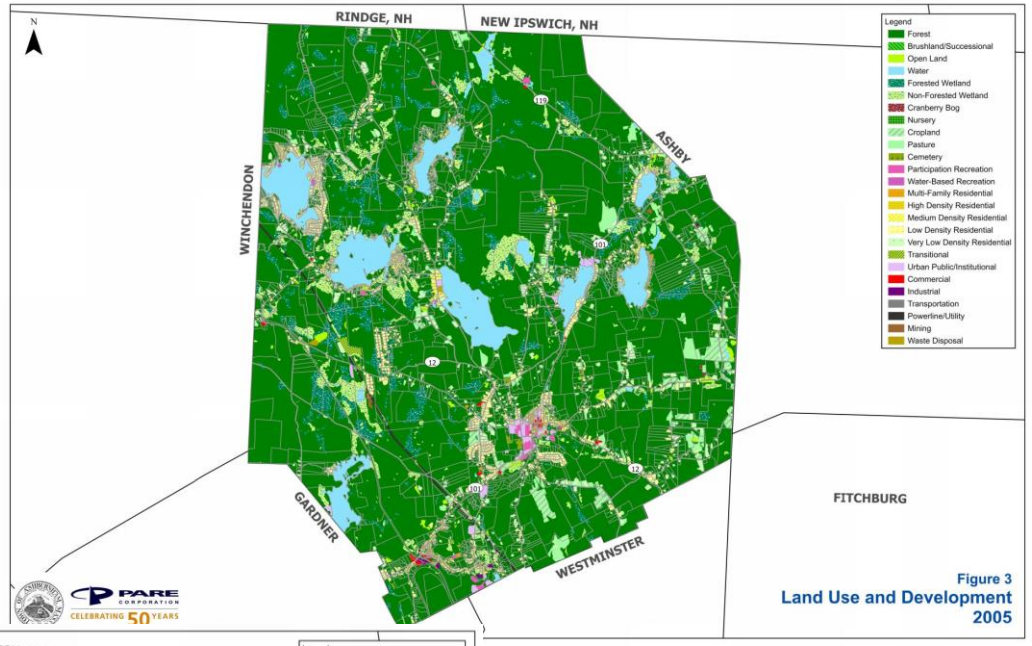


Figure 3
Land Use and Development
2005

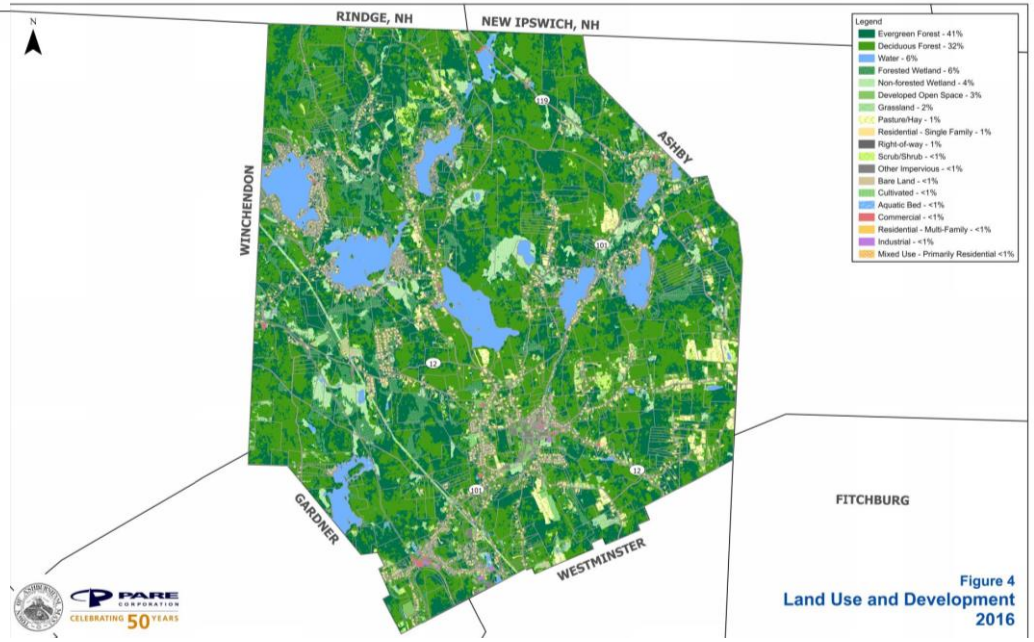


Figure 4
Land Use and Development
2016

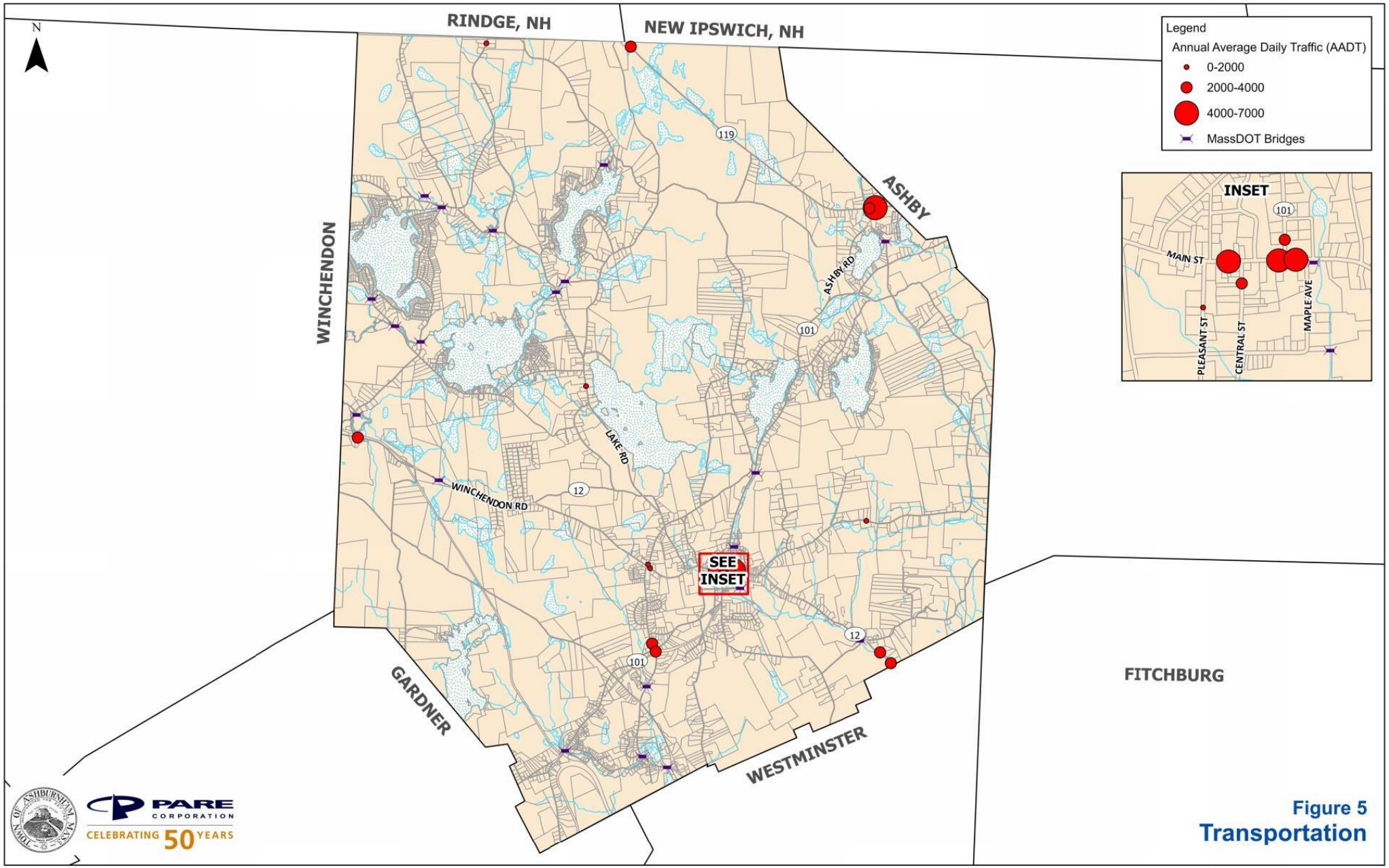


Figure 5
Transportation

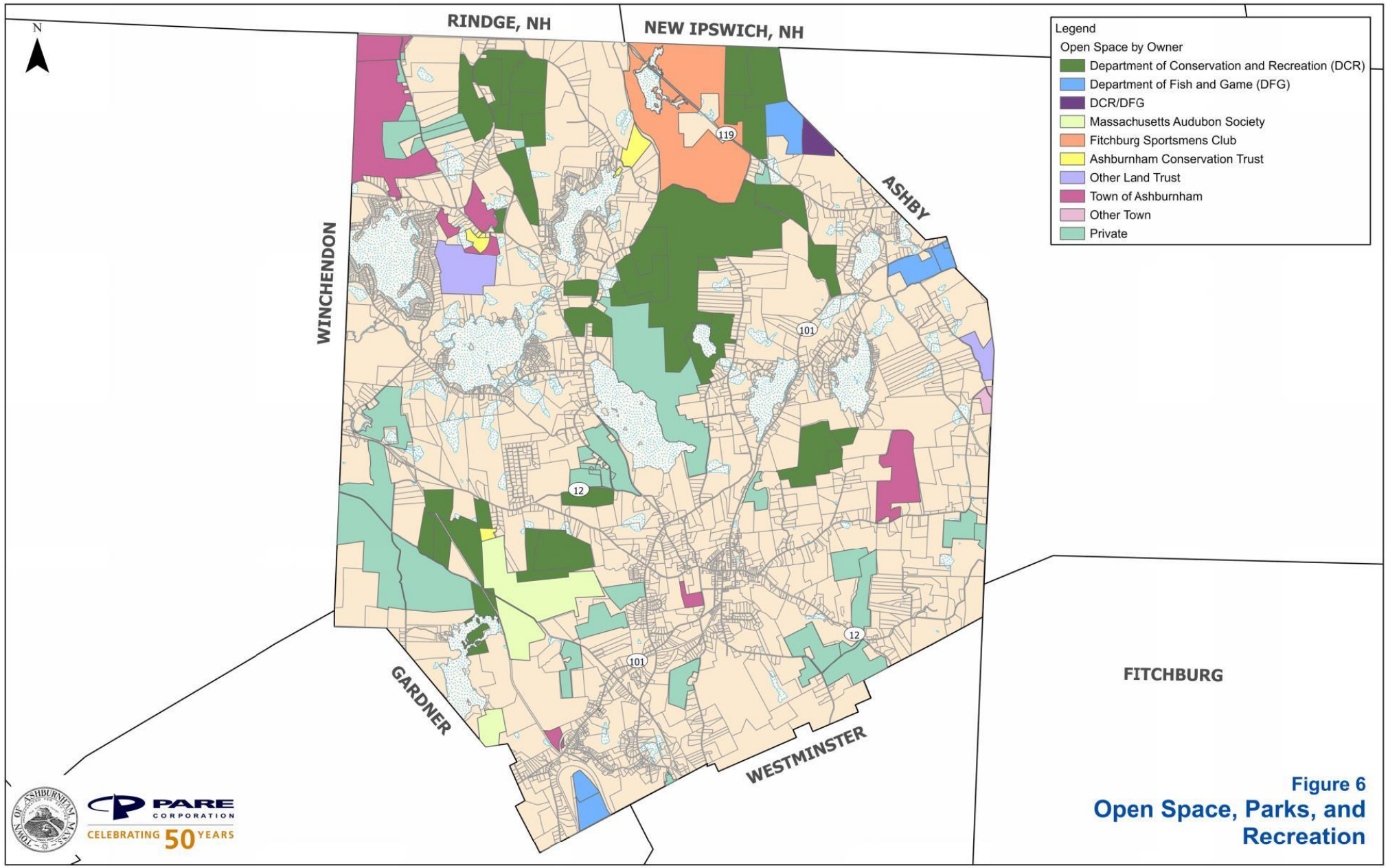
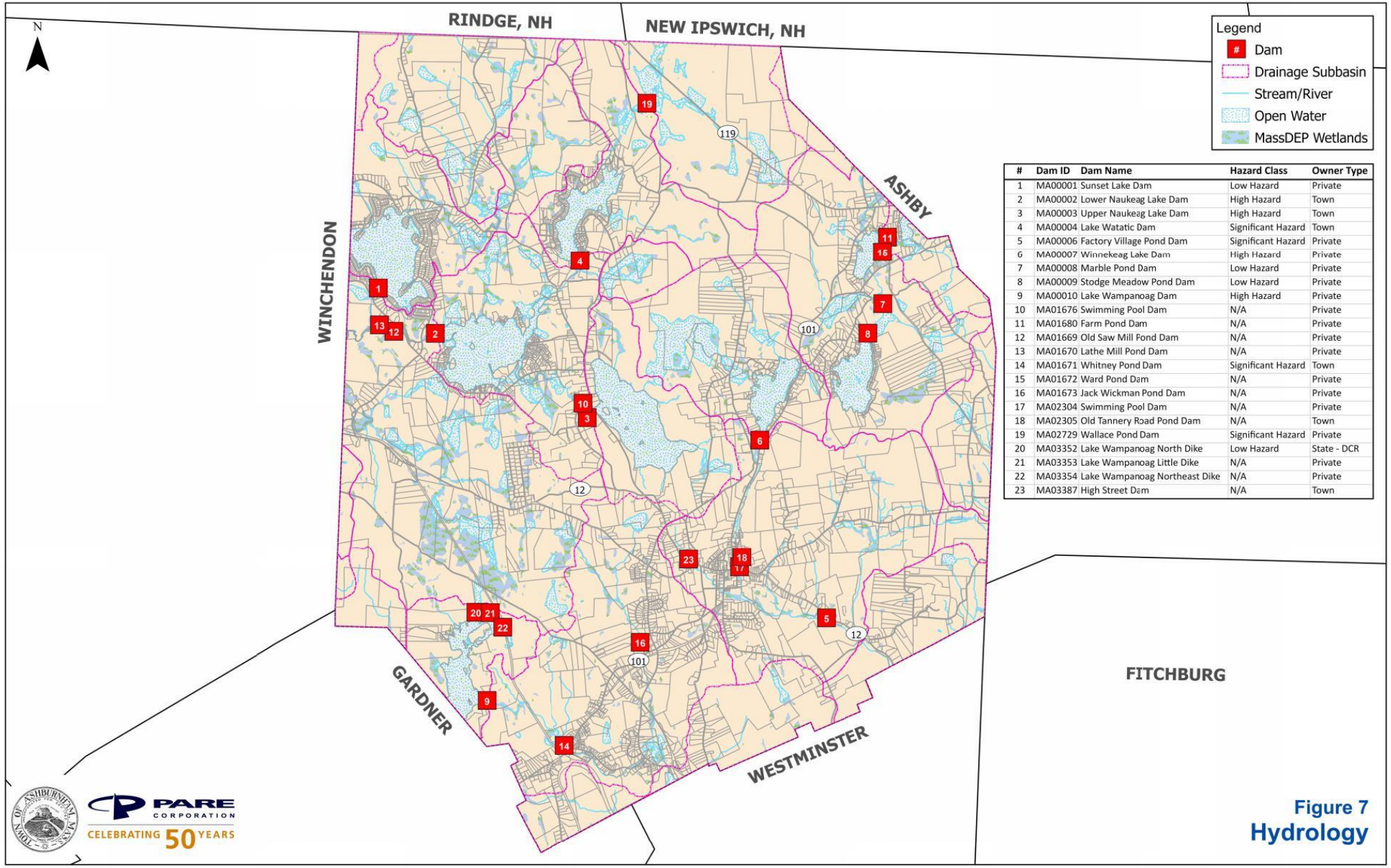


Figure 6
Open Space, Parks, and Recreation



#	Dam ID	Dam Name	Hazard Class	Owner Type
1	MA00001	Sunset Lake Dam	Low Hazard	Private
2	MA00002	Lower Naukeag Lake Dam	High Hazard	Town
3	MA00003	Upper Naukeag Lake Dam	High Hazard	Town
4	MA00004	Lake Watatic Dam	Significant Hazard	Town
5	MA00006	Factory Village Pond Dam	Significant Hazard	Private
6	MA00007	Winnekeag Lake Dam	High Hazard	Private
7	MA00008	Marble Pond Dam	Low Hazard	Private
8	MA00009	Stodge Meadow Pond Dam	Low Hazard	Private
9	MA00010	Lake Wampanoag Dam	High Hazard	Private
10	MA01676	Swimming Pool Dam	N/A	Private
11	MA01680	Farm Pond Dam	N/A	Private
12	MA01669	Old Saw Mill Pond Dam	N/A	Private
13	MA01670	Lathe Mill Pond Dam	N/A	Private
14	MA01671	Whitney Pond Dam	Significant Hazard	Town
15	MA01672	Ward Pond Dam	N/A	Private
16	MA01673	Jack Wickman Pond Dam	N/A	Private
17	MA02304	Swimming Pool Dam	N/A	Private
18	MA02305	Old Tannery Road Pond Dam	N/A	Town
19	MA02729	Wallace Pond Dam	Significant Hazard	Private
20	MA03352	Lake Wampanoag North Dike	Low Hazard	State - DCR
21	MA03353	Lake Wampanoag Little Dike	N/A	Private
22	MA03354	Lake Wampanoag Northeast Dike	N/A	Private
23	MA03387	High Street Dam	N/A	Town

Figure 7
Hydrology

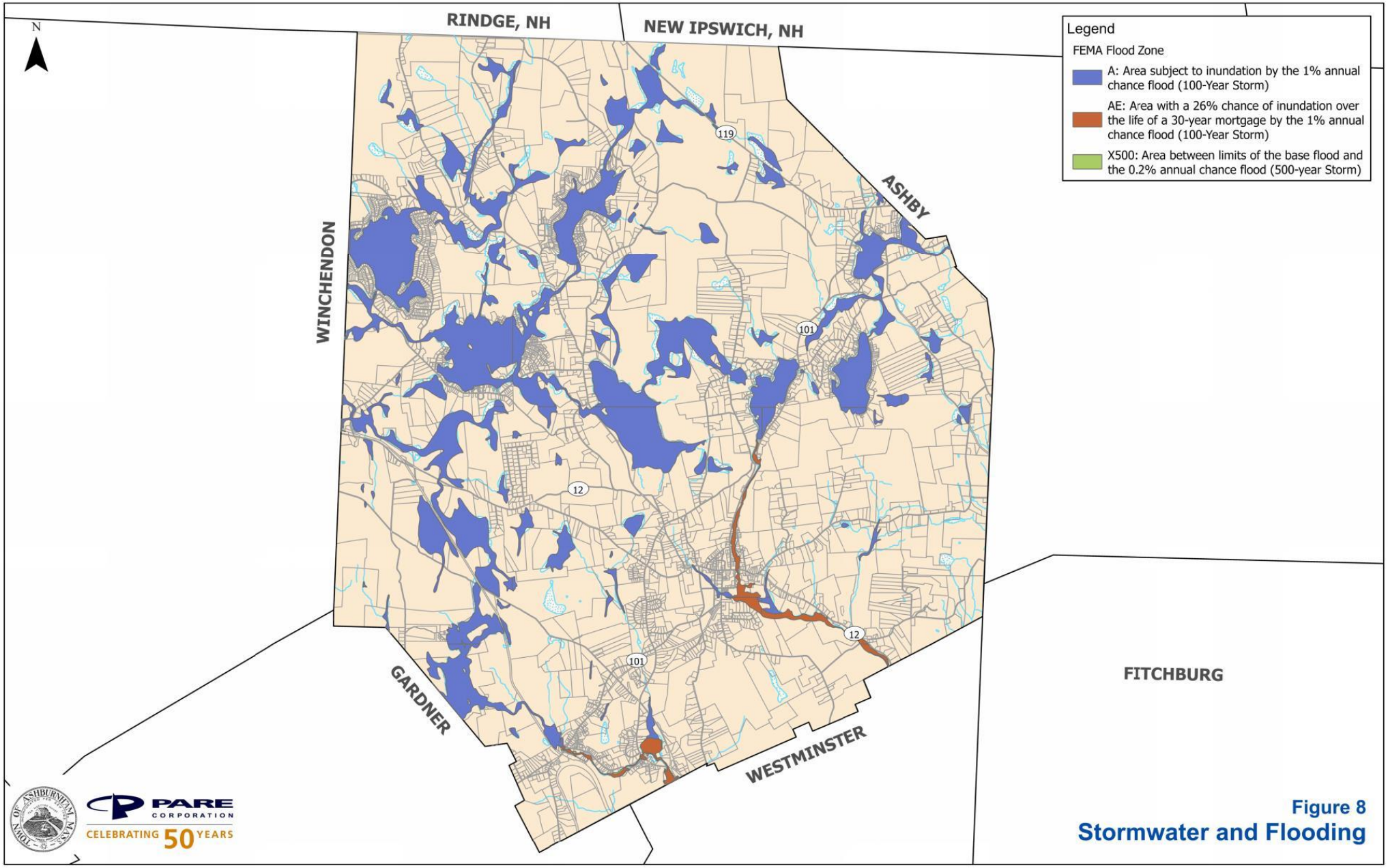
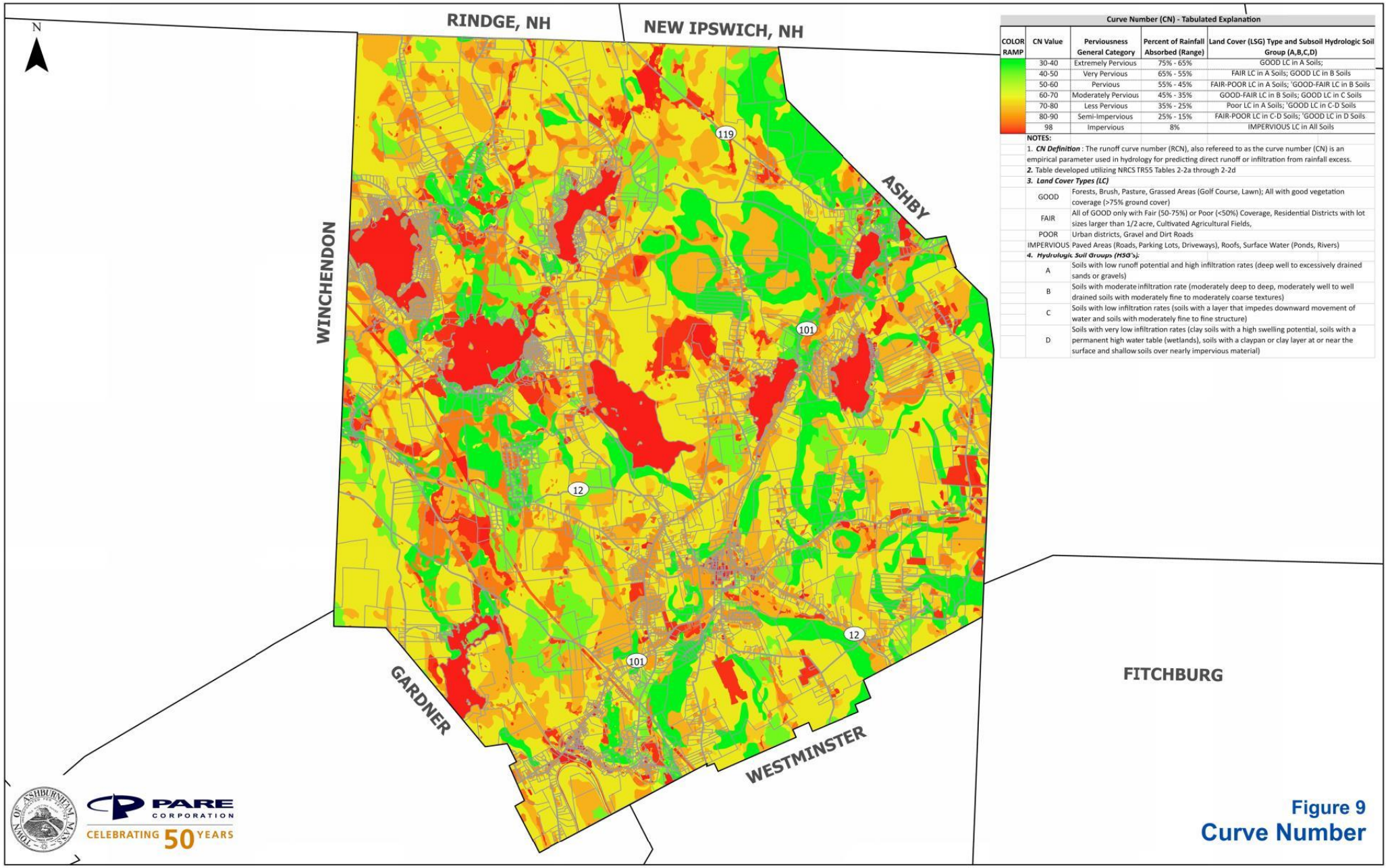


Figure 8
Stormwater and Flooding



Curve Number (CN) - Tabulated Explanation

COLOR RAMP	CN Value	Perviousness General Category	Percent of Rainfall Absorbed (Range)	Land Cover (LSG) Type and Subsoil Hydrologic Soil Group (A,B,C,D)
	30-40	Extremely Pervious	75% - 65%	GOOD LC in A Soils;
	40-50	Very Pervious	65% - 55%	FAIR LC in A Soils; GOOD LC in B Soils
	50-60	Pervious	55% - 45%	FAIR-POOR LC in A Soils; 'GOOD-FAIR LC in B Soils
	60-70	Moderately Pervious	45% - 35%	GOOD-FAIR LC in B Soils; GOOD LC in C Soils
	70-80	Less Pervious	35% - 25%	Poor LC in A Soils; 'GOOD LC in C-D Soils
	80-90	Semi-Impervious	25% - 15%	FAIR-POOR LC in C-D Soils; 'GOOD LC in D Soils
	98	Impervious	8%	IMPERVIOUS LC in All Soils

NOTES:

1. ***CN Definition*** : The runoff curve number (RCN), also refereed to as the curve number (CN) is an empirical parameter used in hydrology for predicting direct runoff or infiltration from rainfall excess.
2. Table developed utilizing NRCS TR55 Tables 2-2a through 2-2d
3. ***Land Cover Types (LC)***

GOOD	Forests, Brush, Pasture, Grassed Areas (Golf Course, Lawn); All with good vegetation coverage (>75% ground cover)
FAIR	All of GOOD only with Fair (50-75%) or Poor (<50%) Coverage, Residential Districts with lot sizes larger than 1/2 acre, Cultivated Agricultural Fields,
POOR	Urban districts, Gravel and Dirt Roads
IMPERVIOUS	Paved Areas (Roads, Parking Lots, Driveways), Roofs, Surface Water (Ponds, Rivers)

4. ***Hydrologic Soil Groups (HSG's):***

A	Soils with low runoff potential and high infiltration rates (deep well to excessively drained sands or gravels)
B	Soils with moderate infiltration rate (moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures)
C	Soils with low infiltration rates (soils with a layer that impedes downward movement of water and soils with moderately fine to fine structure)
D	Soils with very low infiltration rates (clay soils with a high swelling potential, soils with a permanent high water table (wetlands), soils with a claypan or clay layer at or near the surface and shallow soils over nearly impervious material)

Figure 9
Curve Number

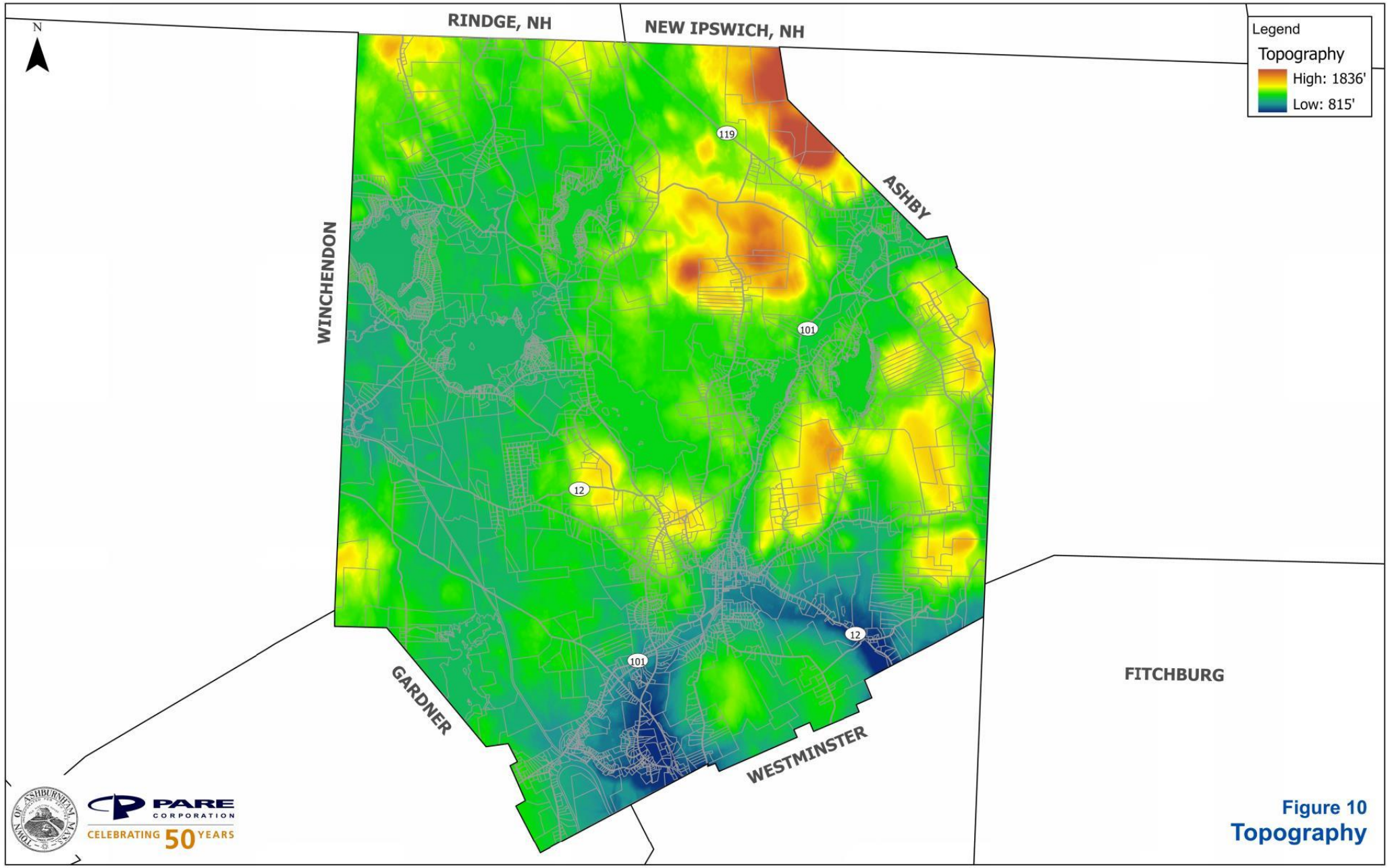


Figure 10
Topography

Survey Results

- What hazards are you most concerned with in the future regarding Climate Change?
  - Ice storms
  - Dam impacts
  - Flooding
  - Hurricanes
  - High winds
  - Drought
  - Heat waves
  - Forest Fires
  - Increased energy demand
  - Tornadoes
  - Heat/cold stress on wildlife
  - Increased animal-borne disease
  - Invasive species
  - Population displacement

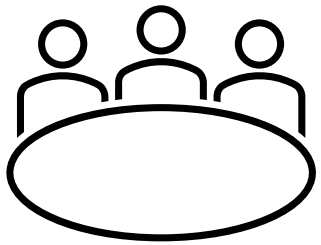
- What hazards have affected you the most?
  - Ice storms
  - Snow storms
  - Higher intensity storms
  - Periods of increased rainfall
  - Low-water levels
  - Dam breaches
  - Periods of increased energy demand

Survey Results

- What are the most vulnerable areas in town due to the hazards identified?
  - Outside village district (rural/remote residences)
  - Areas downstream of dams (esp. Winnekeag)
  - Areas within 100-year storm floodplain
  - Low-elevation areas
  - Unimproved roadways
  - Westminster Street Sewer Pump Station
  - Private homes owned by elderly
  - Areas with deficient culverts
  - Lakefront Communities

Survey Results

- What can be done now to plan for the hazards identified?
  - Microgrid power generation
  - Underground utilities
  - Repair deficient dams/increase dam maintenance
  - Identify additional funding sources for dam maintenance
  - Repair deficient culverts/increase culvert maintenance
  - Improve roadways
  - Raise electrical and pump equipment above ground at Sewer Pump Station
  - Emergency shelters
  - Portable generators
  - Improve emergency communication
  - Limit land clearing/development
  - Develop alternate water purification system
  - Improve water conservation measures
  - Conserve wetlands

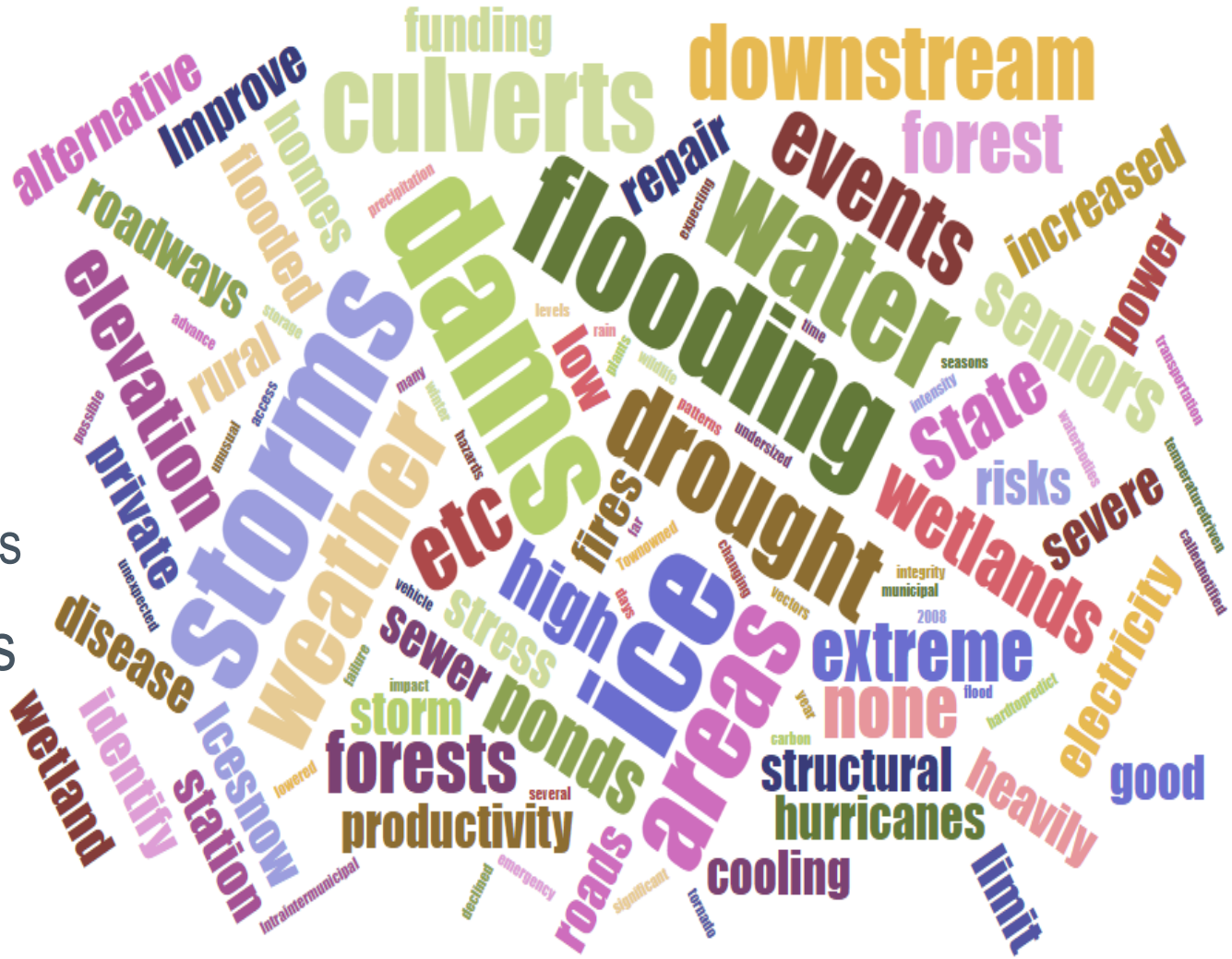


Survey Results

- How do you receive information during or after a hazard?
  - Cell phone
  - Radio
  - Television
  - Look out window
  - Direct involvement
  - Reverse 911
  - CodeRED
  - Email
  - Updates from Town Officials
  - Internet
  - Social media
  - Local news
  - Neighbors
  - MEMA Sitreps
  - HHAN notifications

Primary Identified Hazards

- Ice Storms
- Dam Failure
- Flooding
  - Dam Breach
  - Improperly-sized Culverts
- Higher frequency storms
- Droughts
  - Water supply concerns
  - Drinking water quality



Community Resilience Building Risk Matrix

www.CommunityResilienceBuilding.com

H-**M**-**L** priority for action over the **S**hort or **L**ong term (and **O**ngoing)
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					Priority	Time
								H - M - L	Short Long Ongoing
Infrastructural									
Societal									
Environmental									

Community Resilience Building Risk Matrix

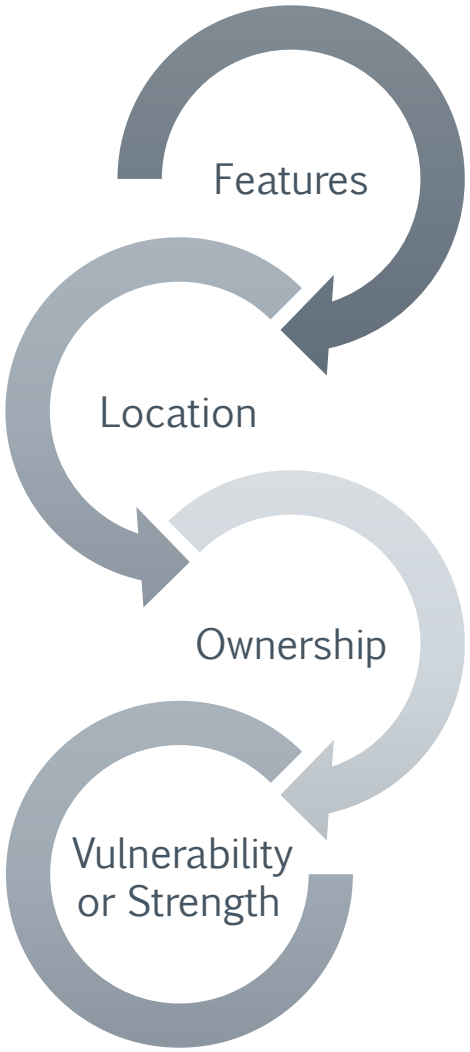
H-M-L priority for action over the Short or Long term (and Ongoing)
V = Vulnerability S = Strength

Features	Location	Ownership	V or S
Infrastructural			
Societal			
Environmental			

Infrastructural

Societal

Environment



Questions?

WELCOME TO
ASHBURNHAM
MASSACHUSETTS
Incorporated 1765
TOWN HALL

2). Workshop Agenda

Municipal Vulnerability Preparedness Workshop Schedule

February 25th, 2021

8:20-8:30 *Logon & Zoom Familiarity*

8:30-9:15 Welcome & Introduction
- Workshop Overview
- Climate Change introduction

9:15-9:45 Characterize Community Hazards
- Overview of Maps & Matrix
- Select Priority Hazards (Full Group)
- Group Facilitator Introductions, Group Instructions

9:45-12:00 Breakout Groups:
- Identify Community Vulnerability & Strengths
  - ~40 minutes per category (Environment, Infrastructure, and Society)
- ***15 minute break at 10:30*

12:00-12:25 Reconvene in Full Group
- Report from each Breakout Group

12:25-12:30 Closing Remarks & Wrap Up

March 3rd, 2021

8:20-8:30 *Logon & Zoom Familiarity*

8:30-8:40 Welcome & Recap

8:40-11:30 Breakout Groups:
- Identify Community Actions
- ***15 minute break at 10:15*
- Prioritize Community Actions

11:30-12:25 Reconvene in Full Group
- Report from each Breakout Group
- Determine Overall Priority Actions
- Final Thoughts & Discussion with Q&A

12:25-12:30 Closing Remarks & Wrap Up

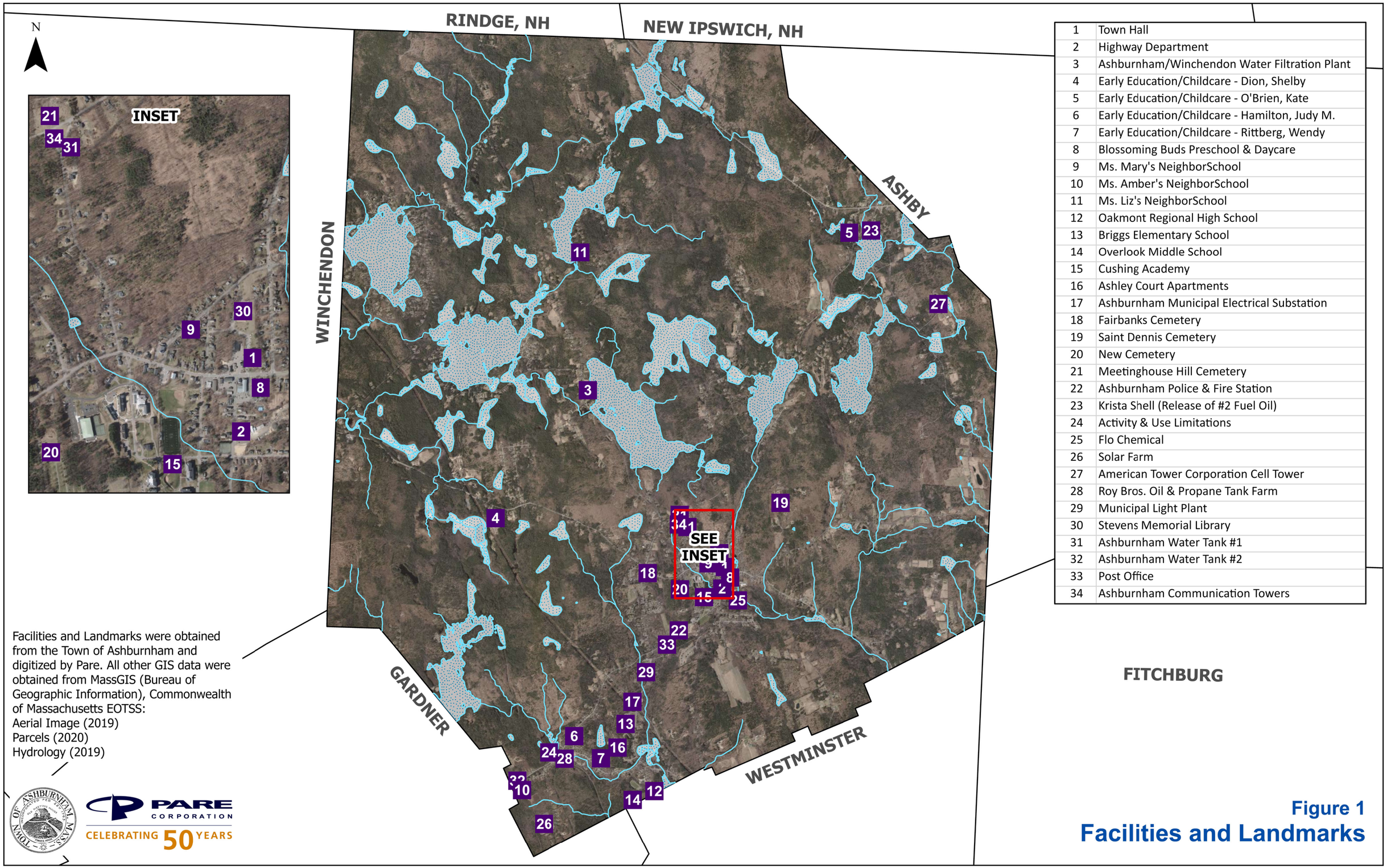
3) Reference Figures

Town of Ashburnham
Municipal Vulnerability Preparedness

Figure 1 - Facilities and Landmarks
Figure 2 - Land Use and Development 1985
Figure 3 - Land Use and Development 2005
Figure 4 - Land Use and Development 2016
Figure 5 - Transportation
Figure 6 - Open Space, Parks, and Recreation
Figure 7 - Hydrology
Figure 8 - Stormwater and Flooding
Figure 9 - Curve Number
Figure 10 - Topography
Figure 11 - Prime Forest Land
Figure 12 - Farmland Soils
Figure 13 - New England Landscape Futures Current Use 2020
Figure 14 - New England Landscape Futures Recent Trends 2060
Figure 15 - New England Landscape Futures Connected Communities 2060
Figure 16 - New England Landscape Futures Go It Alone 2060
Figure 17 - New England Landscape Futures Growing Global 2060
Figure 18 - New England Landscape Futures Yankee Cosmopolitan 2060

GIS data for Figures 1-12 were obtained from MassGIS (Bureau of Geographic Information).
GIS data for Figures 13-18 were obtained from New England Landscape Futures.

PARE CORPORATION
CELEBRATING 50 YEARS



1	Town Hall
2	Highway Department
3	Ashburnham/Winchendon Water Filtration Plant
4	Early Education/Childcare - Dion, Shelby
5	Early Education/Childcare - O'Brien, Kate
6	Early Education/Childcare - Hamilton, Judy M.
7	Early Education/Childcare - Rittberg, Wendy
8	Blossoming Buds Preschool & Daycare
9	Ms. Mary's NeighborSchool
10	Ms. Amber's NeighborSchool
11	Ms. Liz's NeighborSchool
12	Oakmont Regional High School
13	Briggs Elementary School
14	Overlook Middle School
15	Cushing Academy
16	Ashley Court Apartments
17	Ashburnham Municipal Electrical Substation
18	Fairbanks Cemetery
19	Saint Dennis Cemetery
20	New Cemetery
21	Meetinghouse Hill Cemetery
22	Ashburnham Police & Fire Station
23	Krista Shell (Release of #2 Fuel Oil)
24	Activity & Use Limitations
25	Flo Chemical
26	Solar Farm
27	American Tower Corporation Cell Tower
28	Roy Bros. Oil & Propane Tank Farm
29	Municipal Light Plant
30	Stevens Memorial Library
31	Ashburnham Water Tank #1
32	Ashburnham Water Tank #2
33	Post Office
34	Ashburnham Communication Towers

Facilities and Landmarks were obtained from the Town of Ashburnham and digitized by Pare. All other GIS data were obtained from MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS:
Aerial Image (2019)
Parcels (2020)
Hydrology (2019)

PARE CORPORATION
CELEBRATING 50 YEARS

Figure 1
Facilities and Landmarks

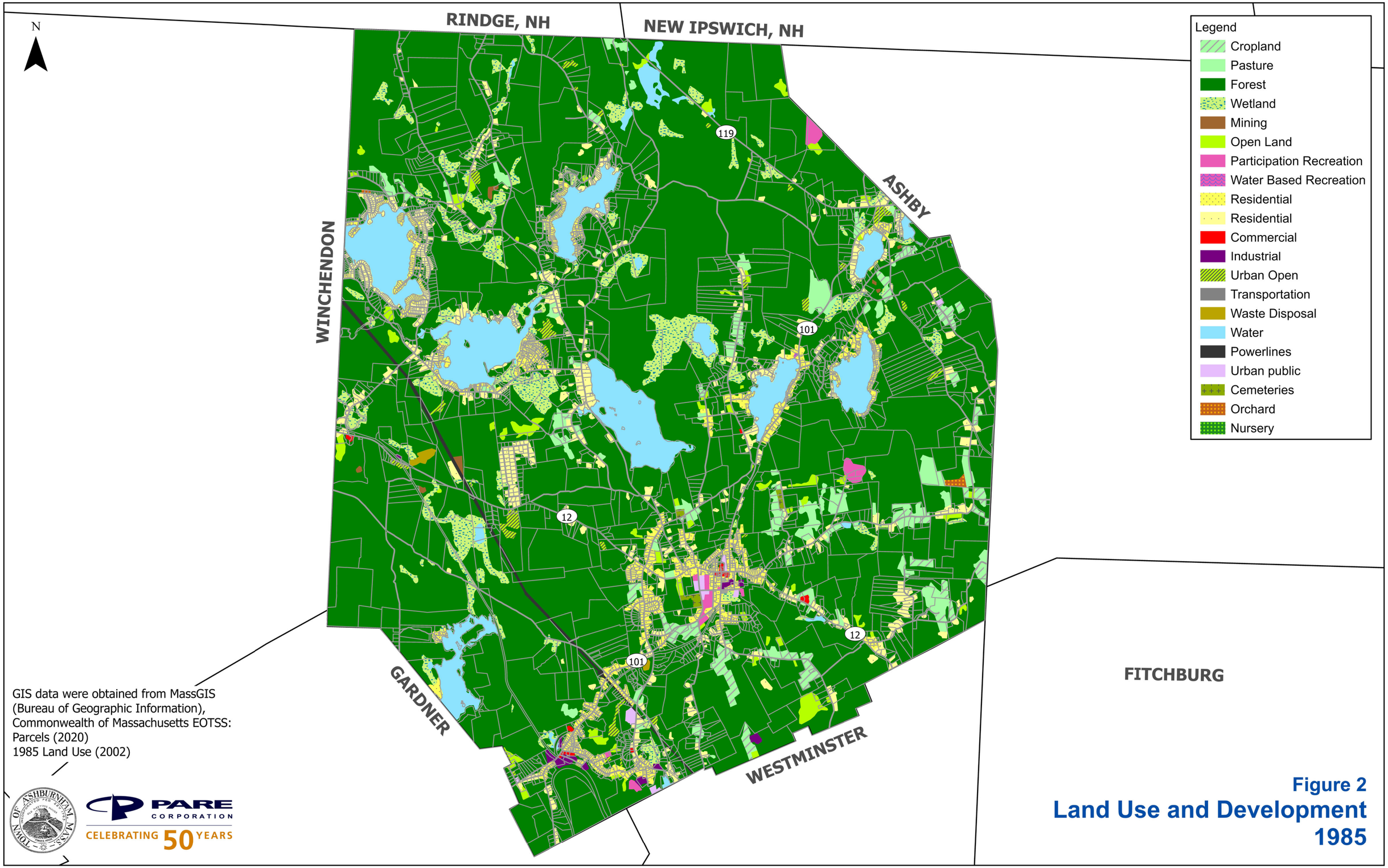


Figure 2
Land Use and Development
1985

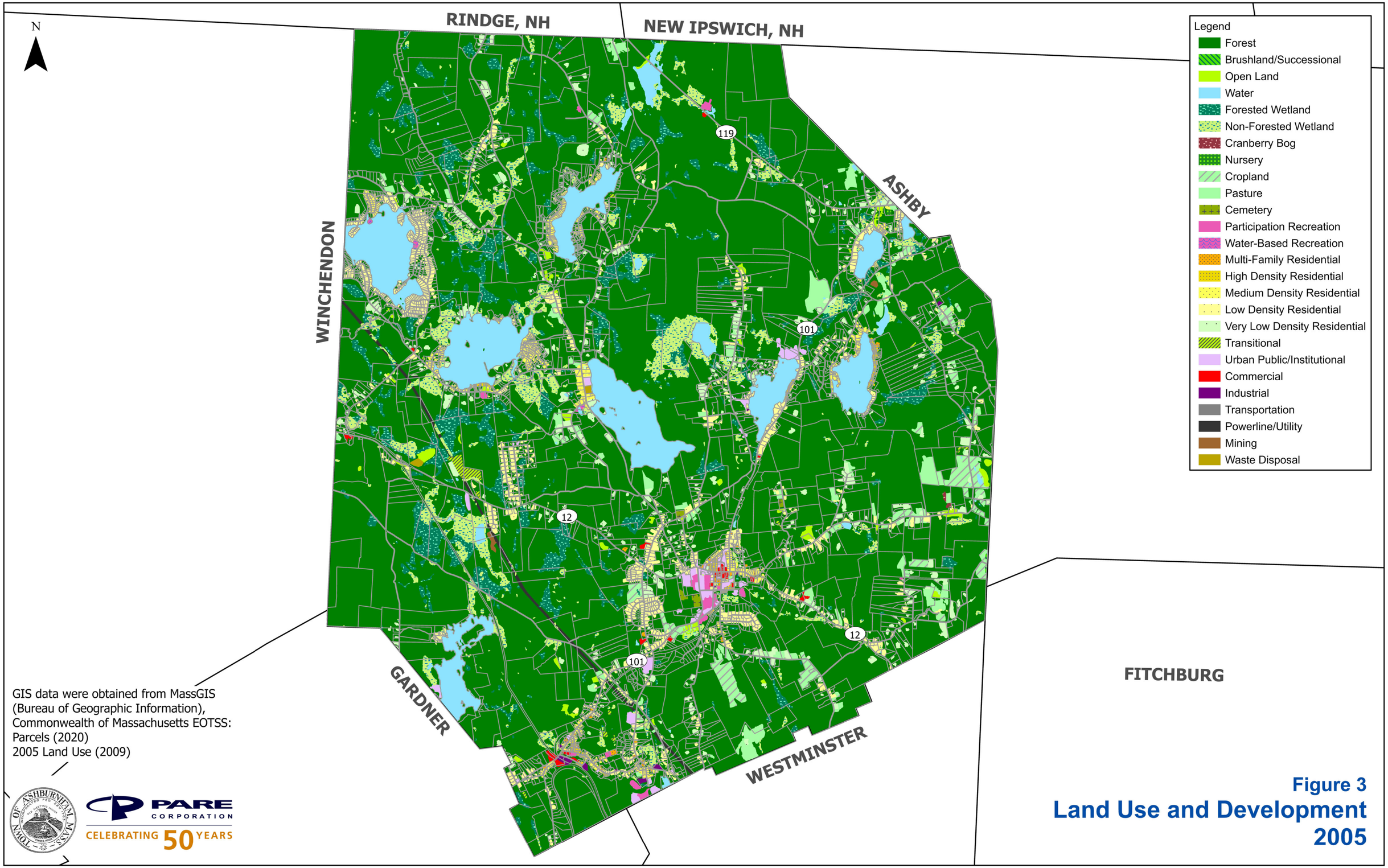
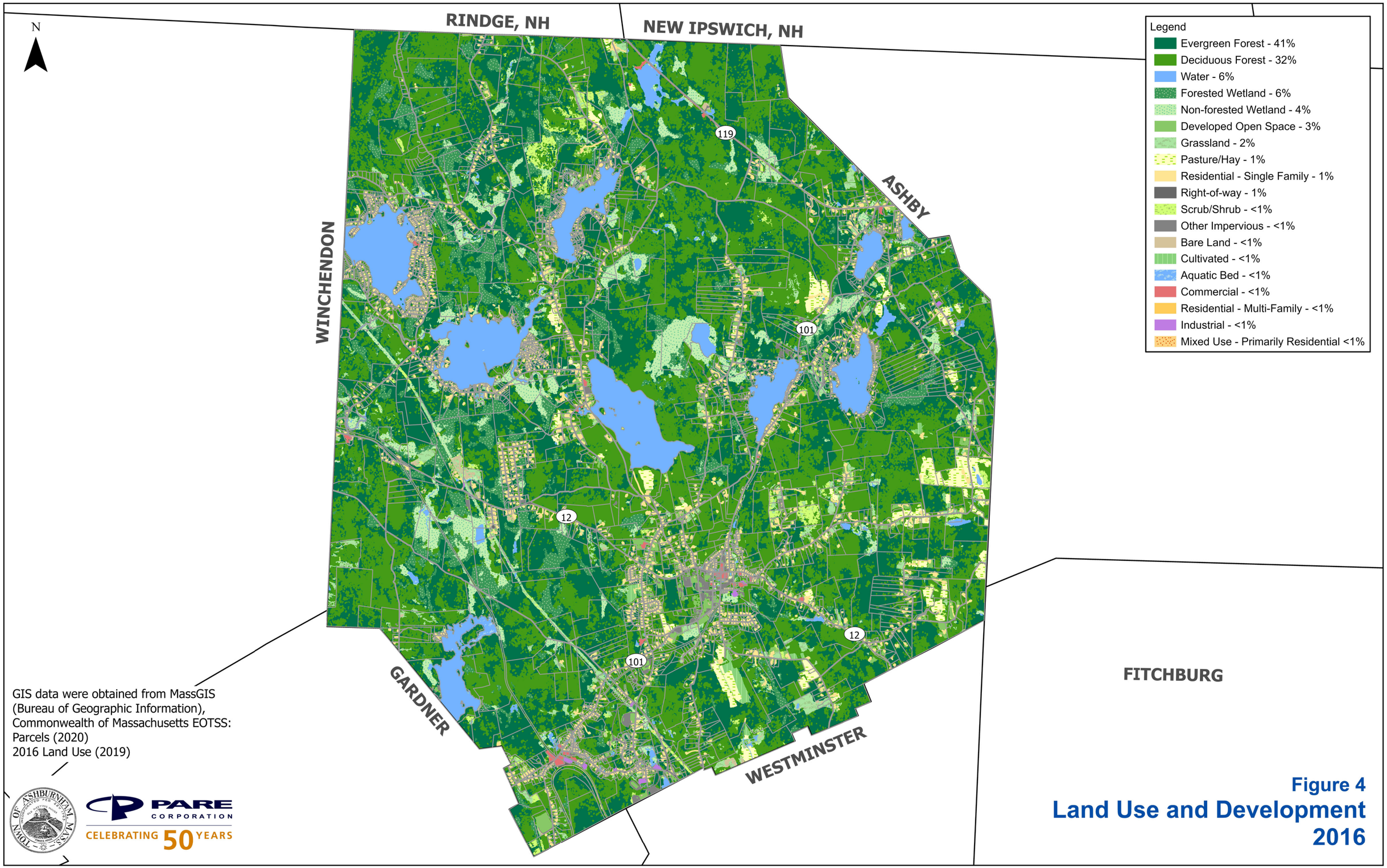


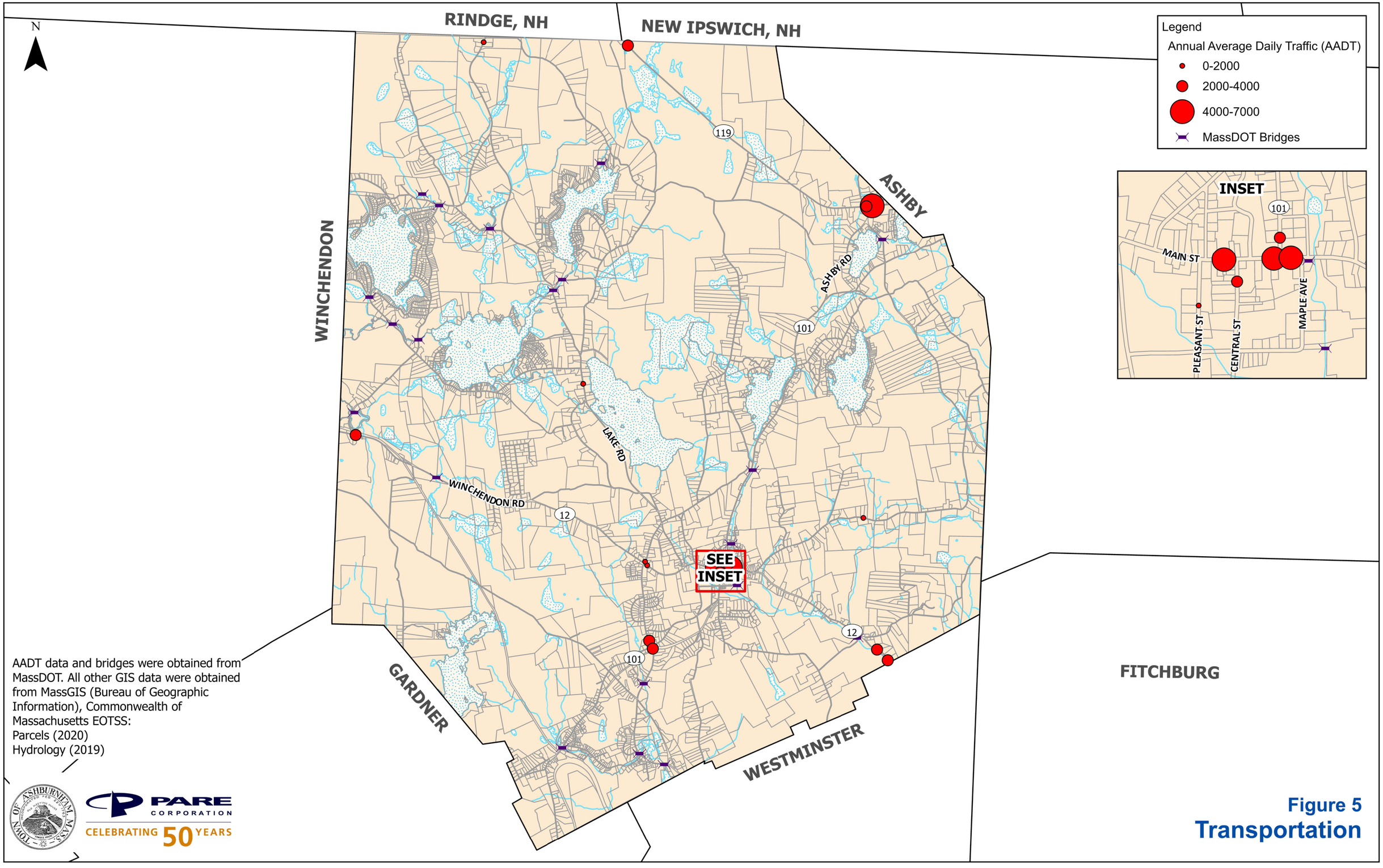
Figure 3
Land Use and Development 2005



GIS data were obtained from MassGIS
(Bureau of Geographic Information),
Commonwealth of Massachusetts EOTSS:
Parcels (2020)
2016 Land Use (2019)

PARE CORPORATION
CELEBRATING 50 YEARS

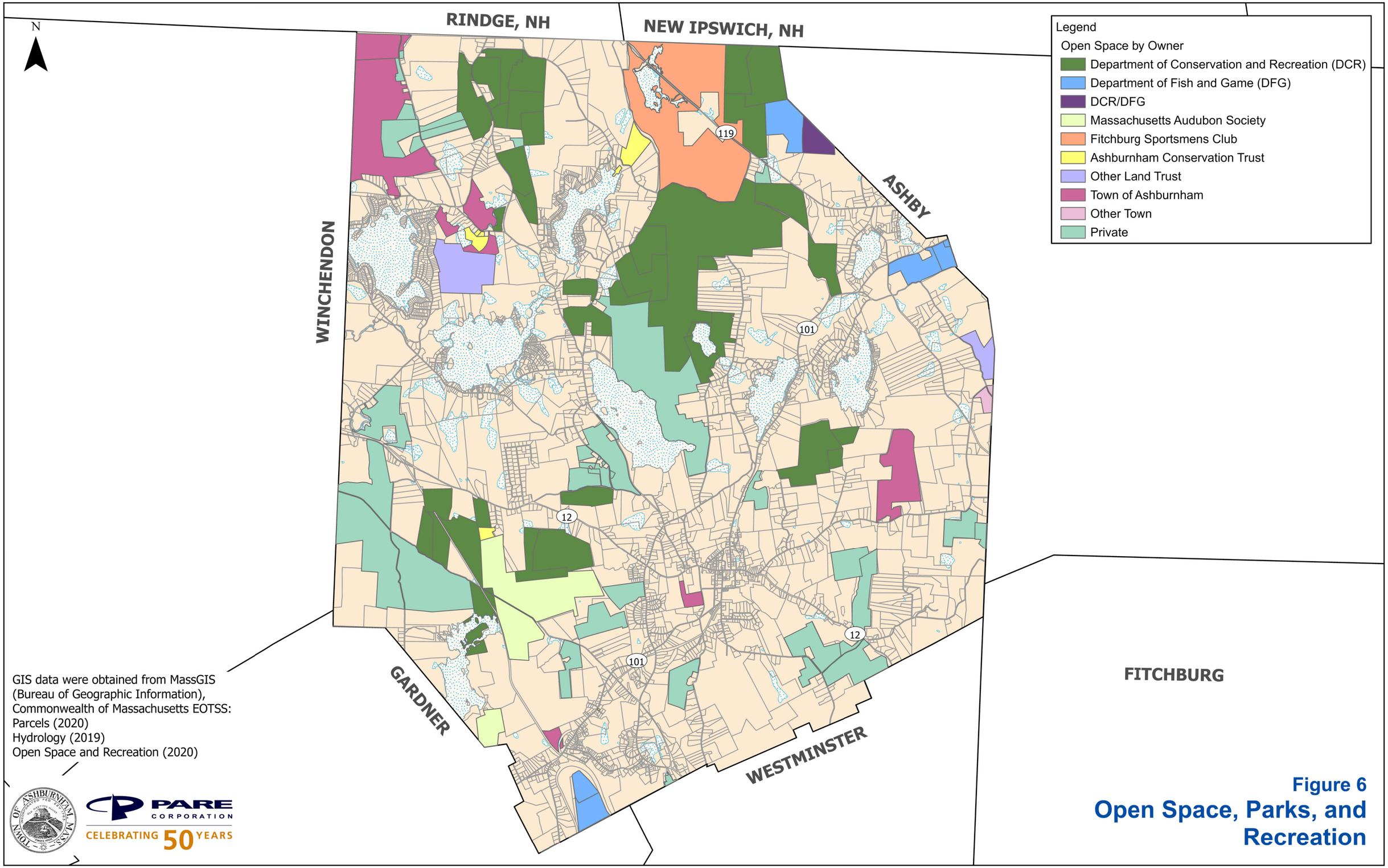
Figure 4
Land Use and Development 2016



AADT data and bridges were obtained from MassDOT. All other GIS data were obtained from MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS:
Parcels (2020)
Hydrology (2019)

PARE CORPORATION
CELEBRATING 50 YEARS

Figure 5
Transportation



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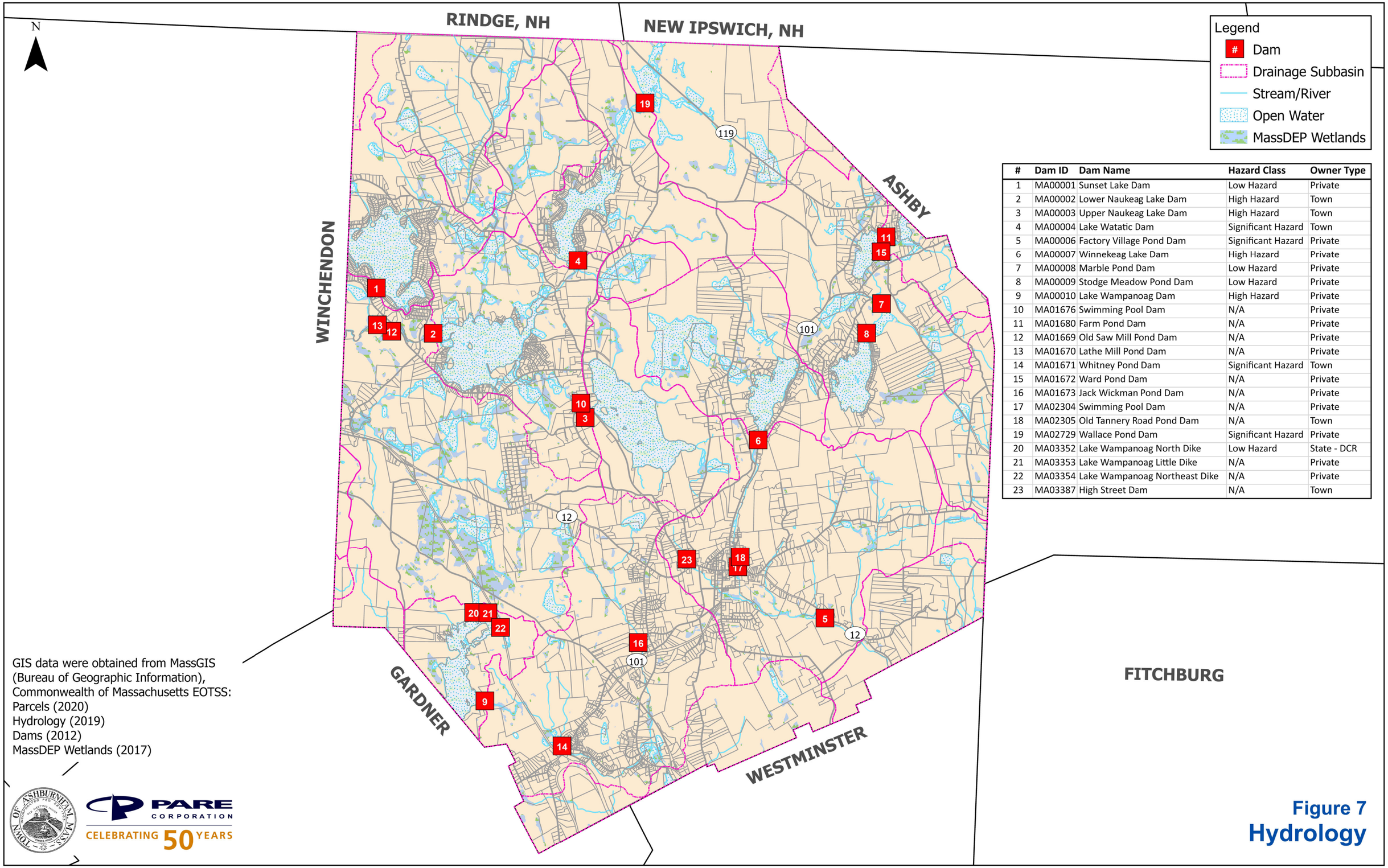
Commonwealth of Massachusetts EOTSS:
Parcels (2020)
Hydrology (2019)
Open Space and Recreation (2020)

PARE CORPORATION
CELEBRATING 50 YEARS

Figure 6
Open Space, Parks, and Recreation



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GIS data were obtained from MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS:
Parcels (2020)
Hydrology (2019)
Dams (2012)
MassDEP Wetlands (2017)

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CELEBRATING 50 YEARS

Figure 7
Hydrology

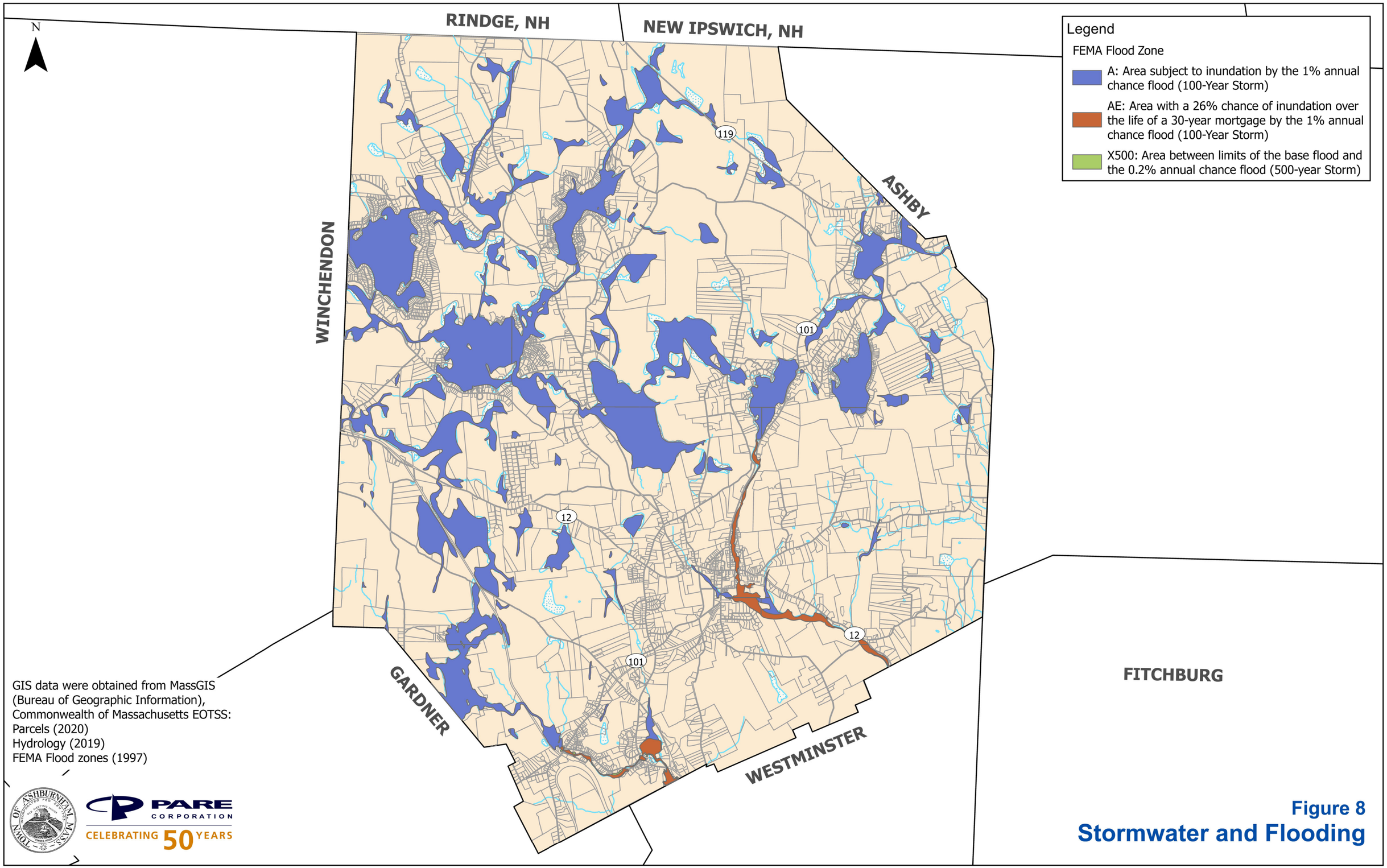
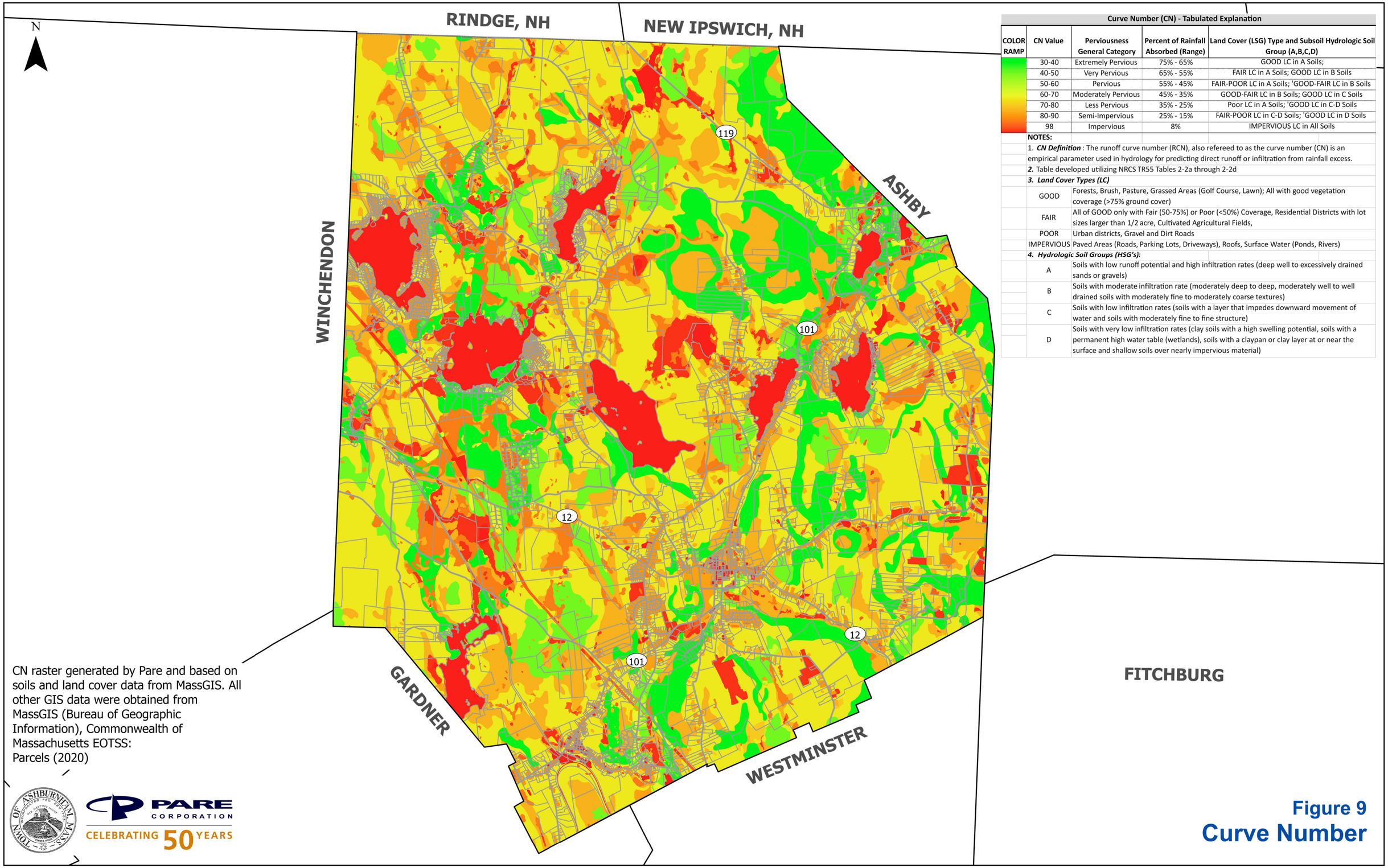


Figure 8
Stormwater and Flooding



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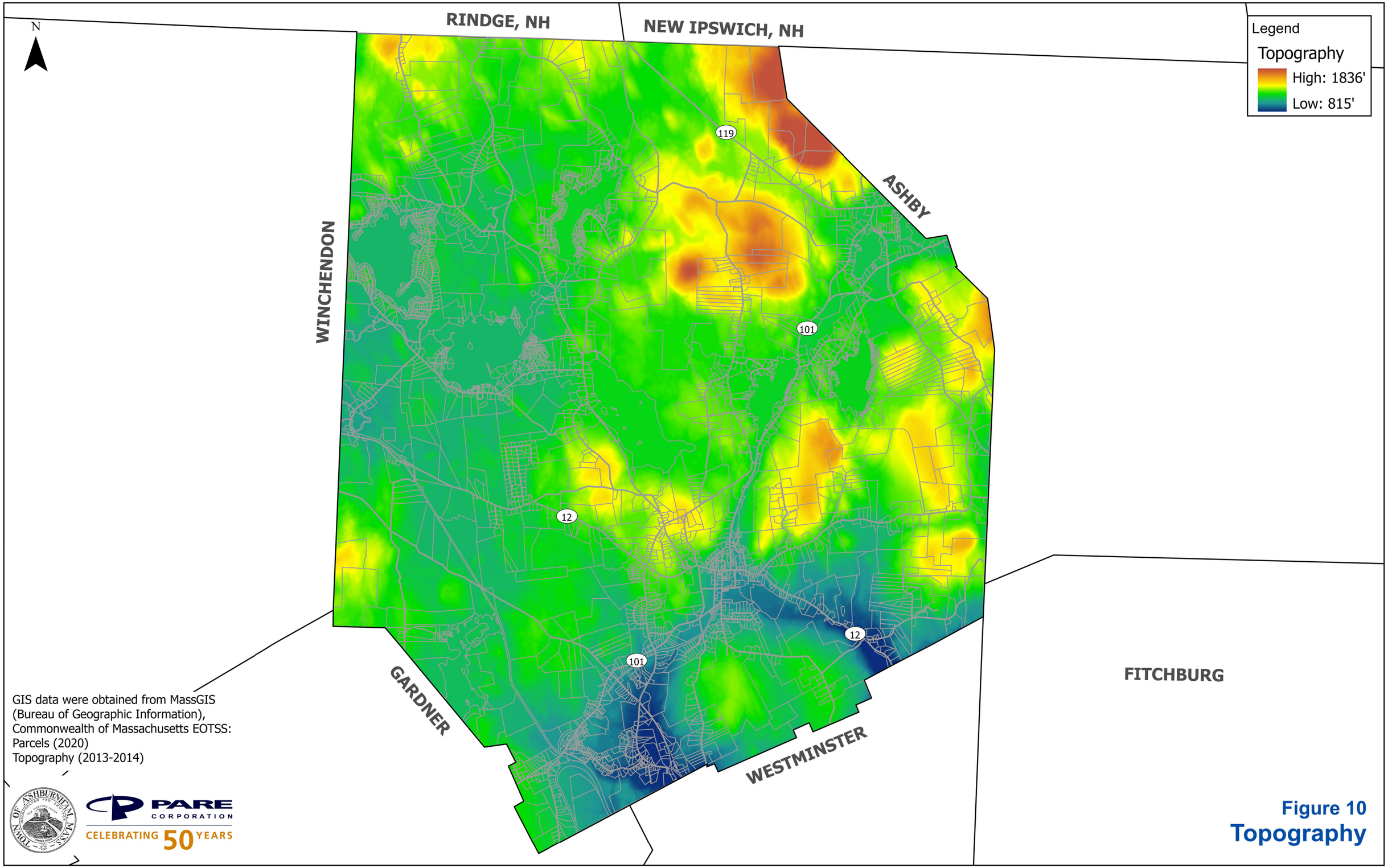
CN raster generated by Pare and based on soils and land cover data from MassGIS. All other GIS data were obtained from MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS: Parcels (2020)

PARE CORPORATION
CELEBRATING 50 YEARS

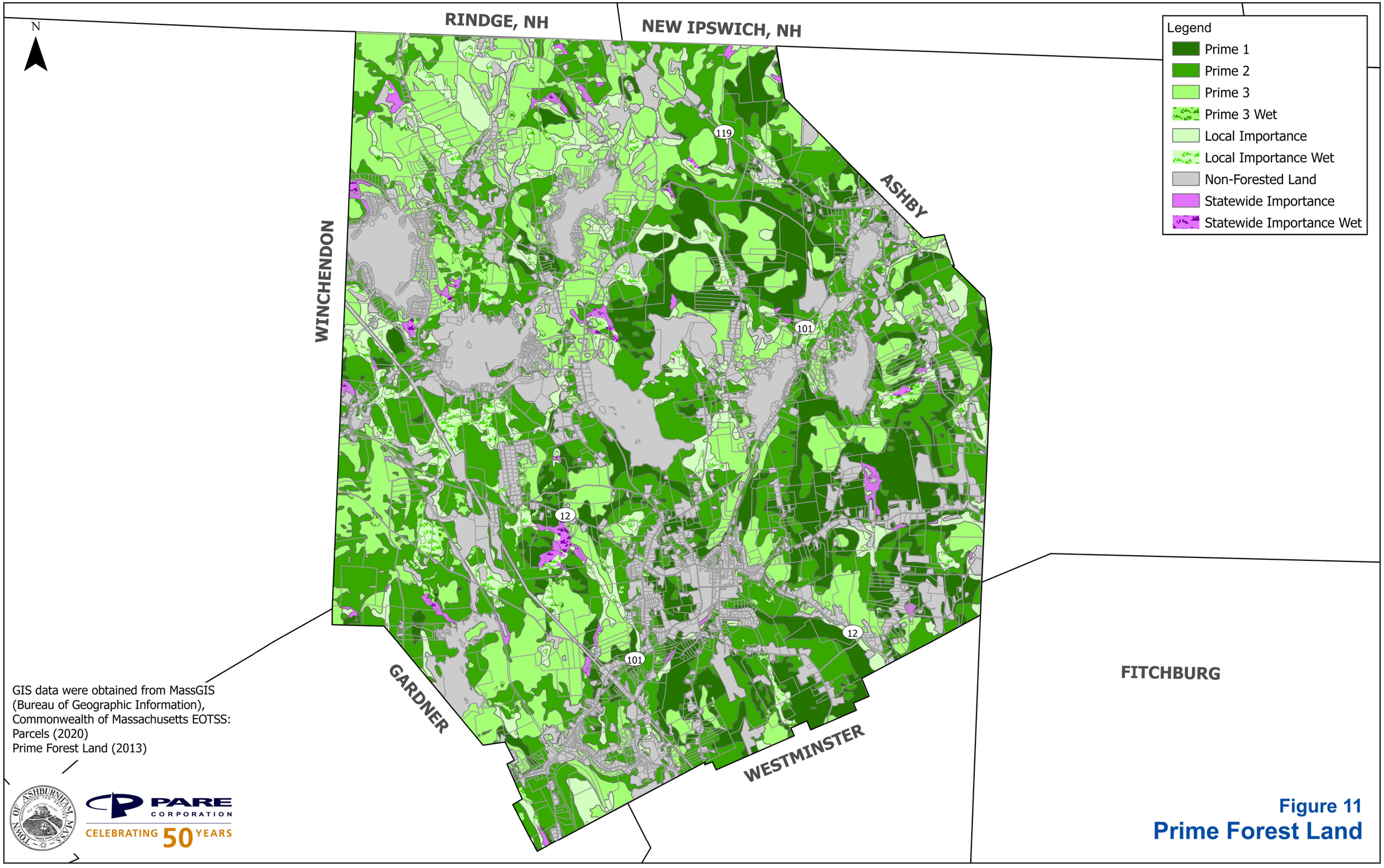
Figure 9
Curve Number



GIS data were obtained from MassGIS
(Bureau of Geographic Information),
Commonwealth of Massachusetts EOTSS:
Parcels (2020)
Topography (2013-2014)

PARE CORPORATION
CELEBRATING 50 YEARS

Figure 10
Topography



GIS data were obtained from MassGIS
(Bureau of Geographic Information),
Commonwealth of Massachusetts EOTSS:
Parcels (2020)
Prime Forest Land (2013)

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Figure 11
Prime Forest Land

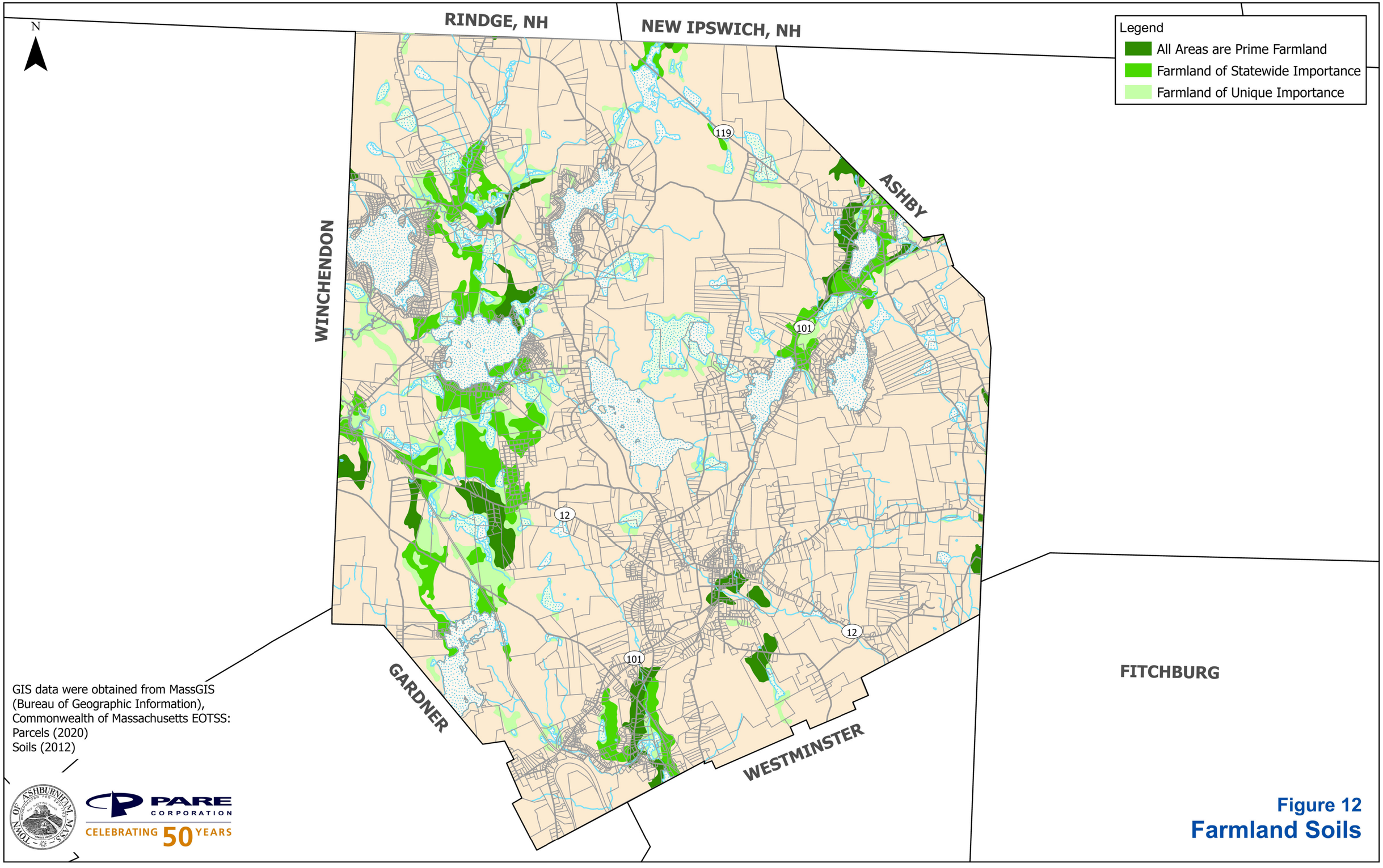
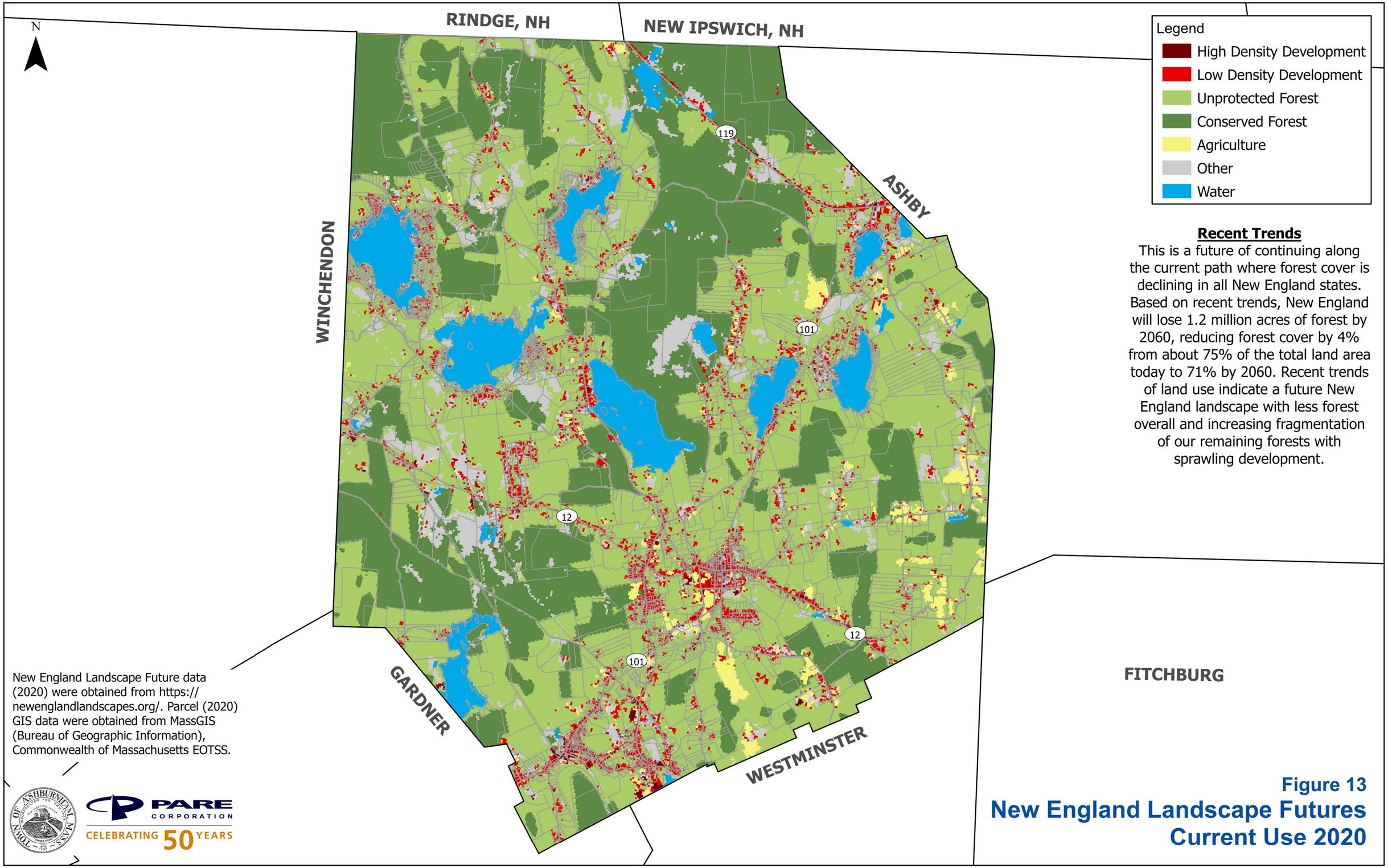


Figure 12
Farmland Soils



Recent Trends

This is a future of continuing along the current path where forest cover is declining in all New England states. Based on recent trends, New England will lose 1.2 million acres of forest by 2060, reducing forest cover by 4% from about 75% of the total land area today to 71% by 2060. Recent trends of land use indicate a future New England landscape with less forest overall and increasing fragmentation of our remaining forests with sprawling development.

New England Landscape Future data (2020) were obtained from https://newenglandlandscapes.org/. Parcel (2020) GIS data were obtained from MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS.

PARE CORPORATION
CELEBRATING 50 YEARS

Figure 13
New England Landscape Futures Current Use 2020

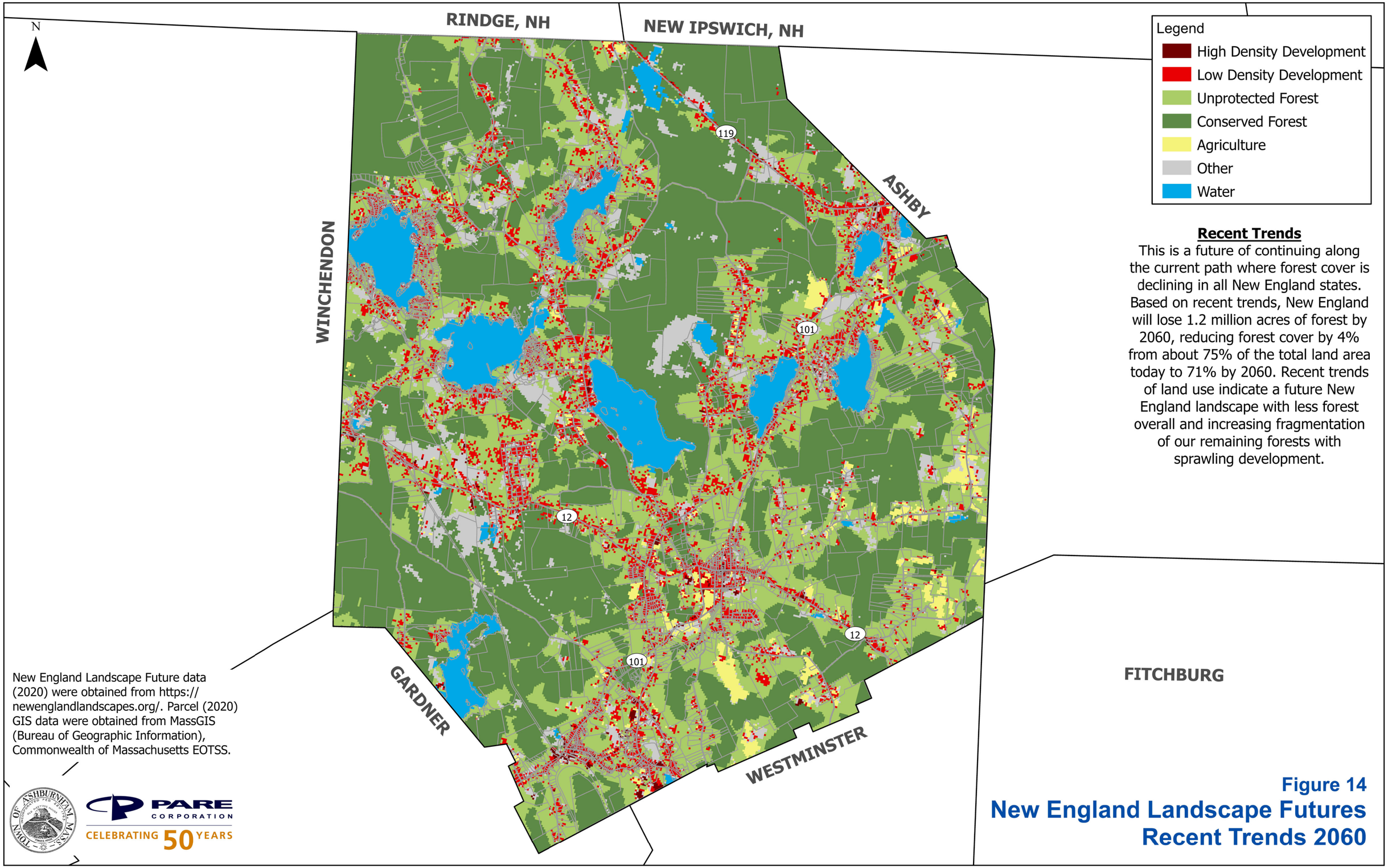
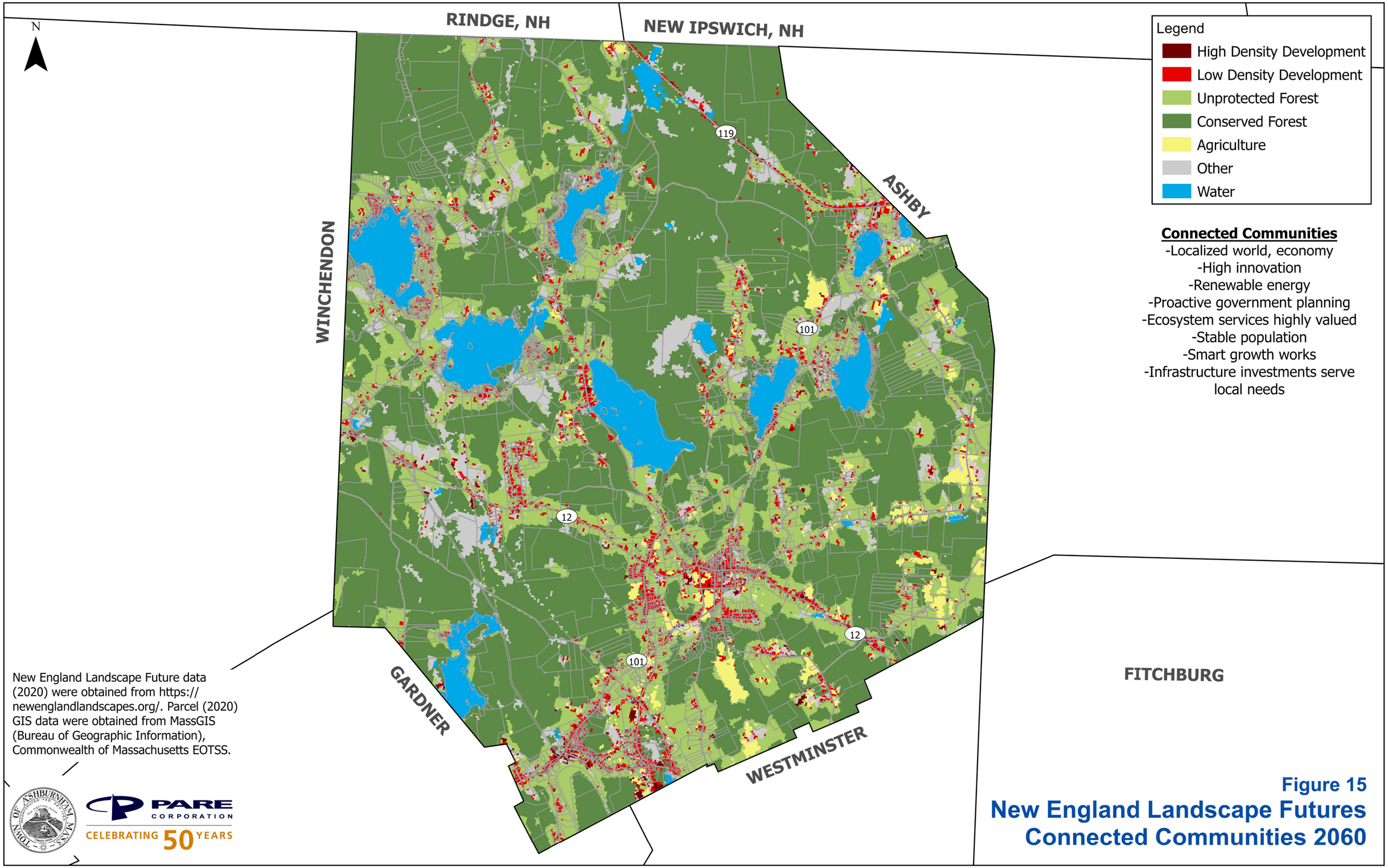


Figure 14
New England Landscape Futures
Recent Trends 2060



New England Landscape Future data (2020) were obtained from https://newenglandlandscapes.org/. Parcel (2020) GIS data were obtained from MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS.

PARE CORPORATION
CELEBRATING 50 YEARS

Figure 15
New England Landscape Futures Connected Communities 2060

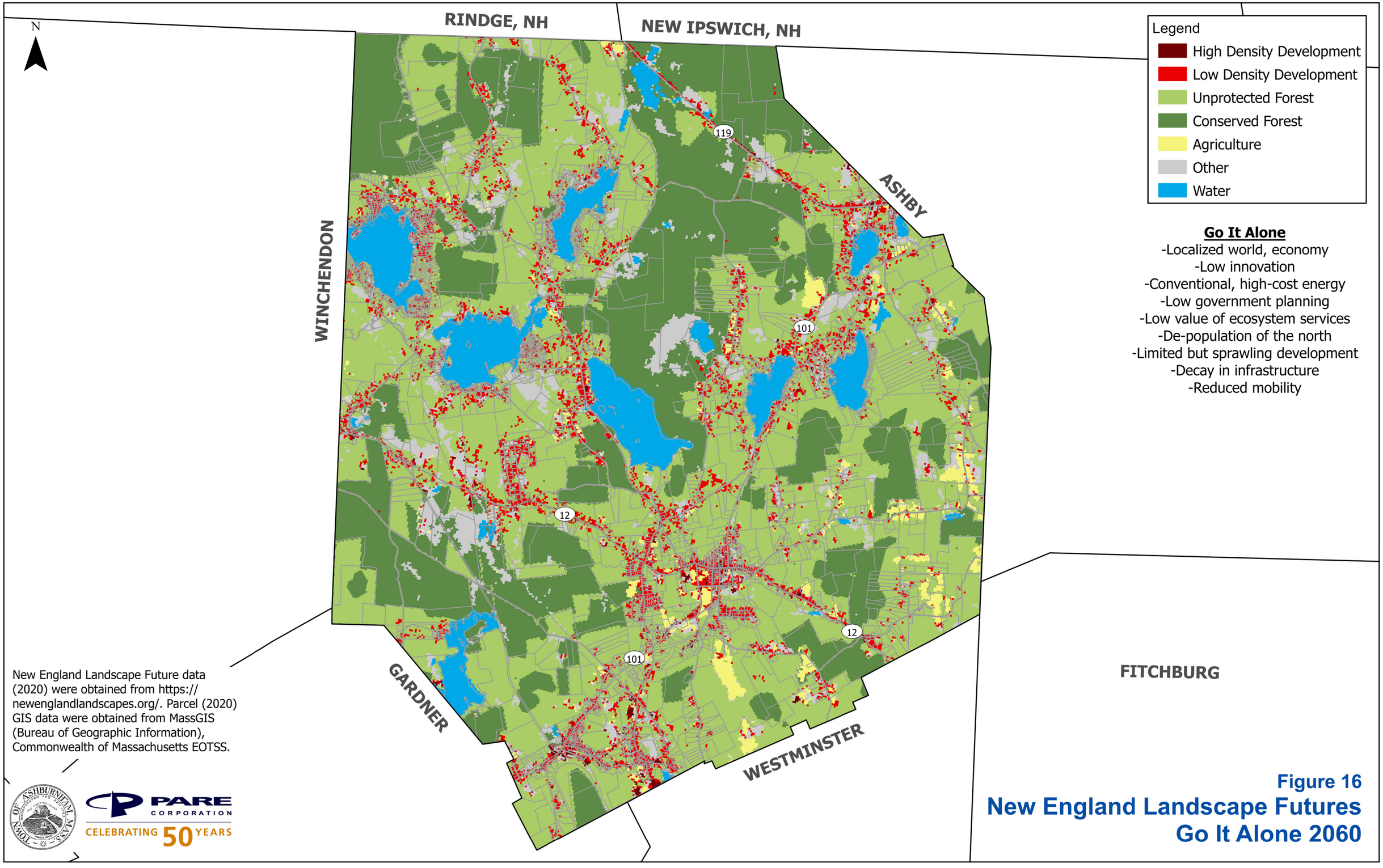


Figure 16
New England Landscape Futures
Go It Alone 2060

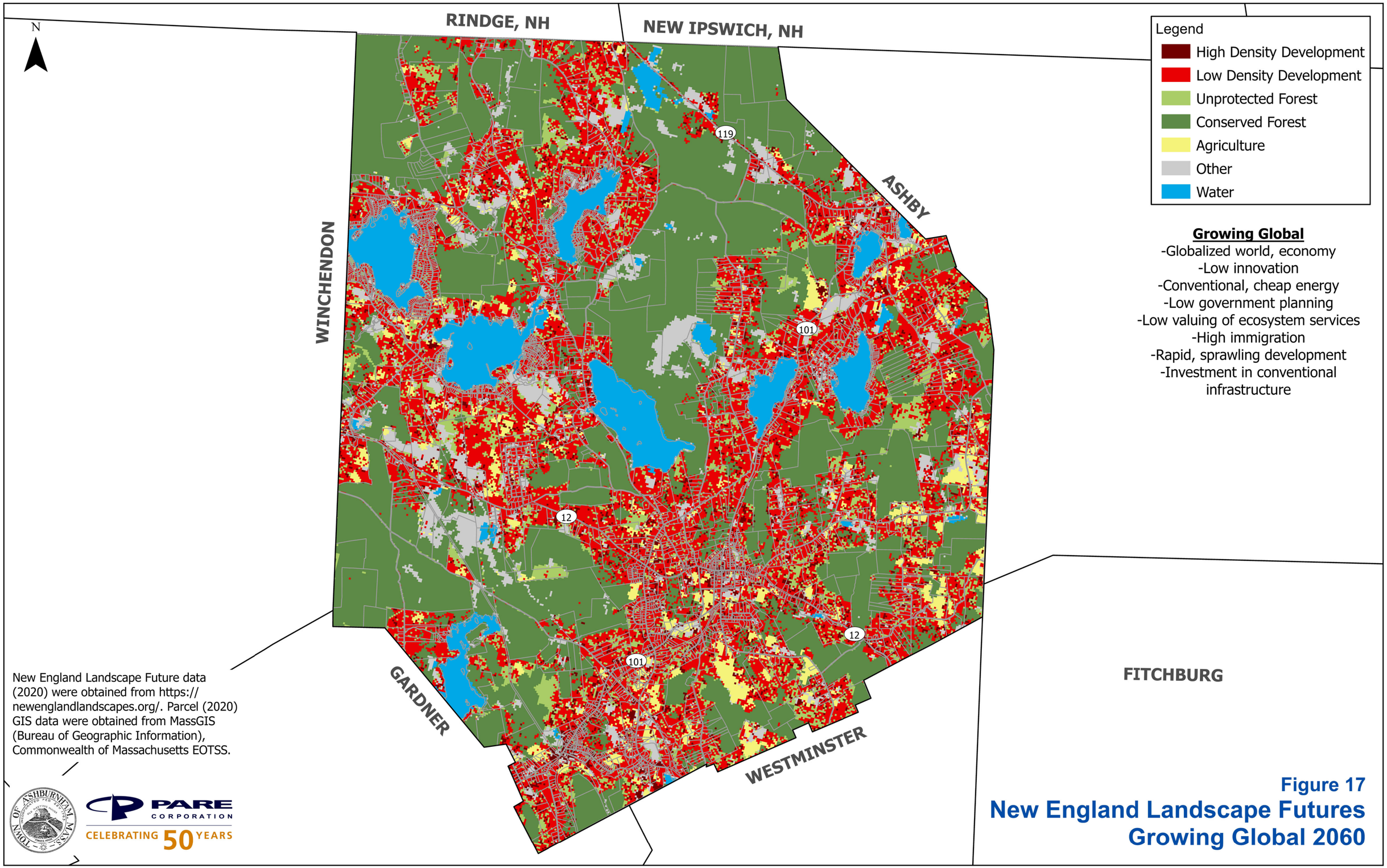


Figure 17
New England Landscape Futures
Growing Global 2060

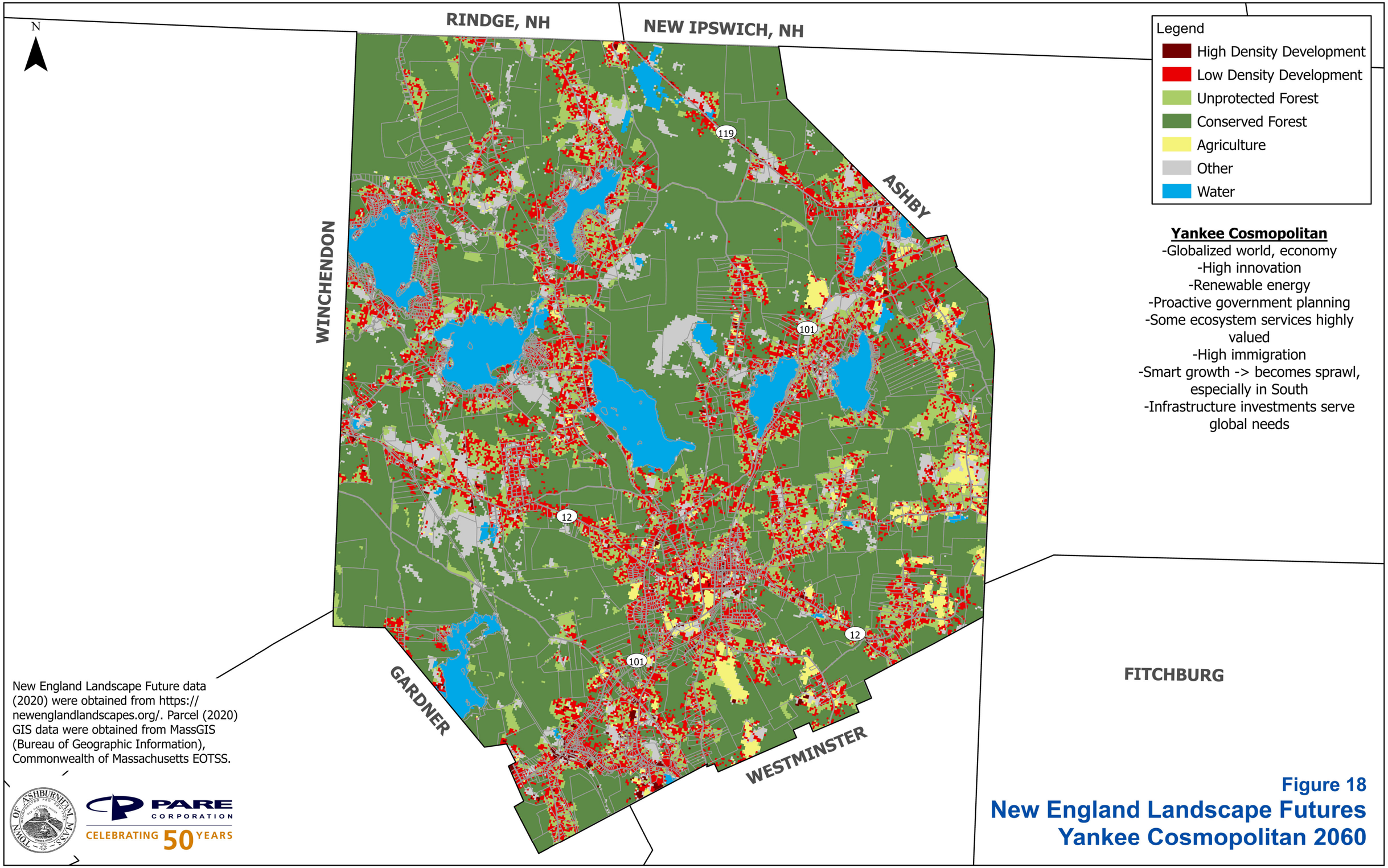
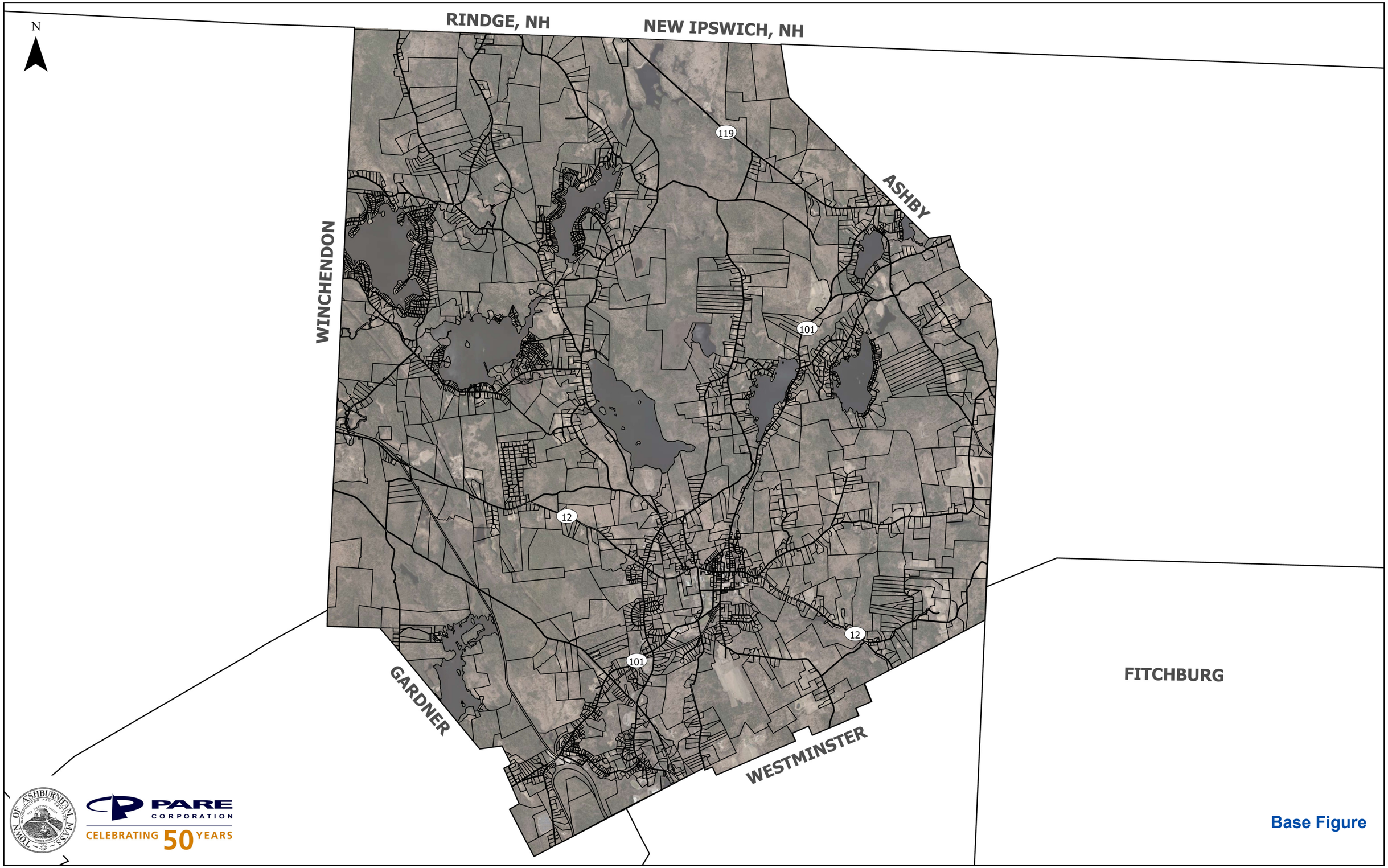


Figure 18
New England Landscape Futures
Yankee Cosmopolitan 2060

4) Base Figure


N
RINDGE, NH
NEW IPSWICH, NH
ASHBY
WINCHENDON
GARDNER
WESTMINSTER
FITCHBURG
119
101
12
12
101
PARE
CORPORATION
CELEBRATING 50 YEARS
TOWN OF ASHBURNHAM MASS.
Base Figure

5) Workshop Group Matrices

As stated in section 2.2.4 describing the MVP process, participants in the CRB Workshops were divided into four breakout groups. The following CRB Risk Matrices reflect the findings of each of these groups:

Community Resilience Building Risk Matrix www.CommunityResilienceBuilding.org

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	V or S	flooding	ice storms	extreme weather	drought	Priority H - M - L	Time Short Long Ongoing
Infrastructural							
1.DAMS (in series) and culverts SECOND	v	EAP Meeting to do a mock dam break with all agencies in the room.(consider what happens to downstream culverts, structures, evacuation routes, and what the timing for flooding). Consider removal and rehab needs for each dam (most dams need to stay). Evaluate low level outlets and other ancillary components and make sure will function as designed.				H	O/S
culvert at sewer pump station Westminster Road	v	H&H study to evaluate culvert capacity and needs (utilize existing flood studies to identify additional culverts of concern				M	L
Roy Brothers Storage (oil and propane storge)	v	meet/work with owner to review protocols and flood controls and study flooding potential with goal of understanding flood concerns and adding additional				L	L
Flo Chemical (ethanol storage) - containment incorporated into design	v/s	owner has taken steps to address spills, flooding. Coordinate to understand inundation mapping impacts to containment				L	O/L
3. TREE MAINTENANCE wooded shoulders around roadway, impact to overhead utilities	v	develop selective program to address dead, diseased trees and snags, public shade trees will require permitting process. Prioritize evacuation routes. utility company maintain their corridors and continue trimming programs, evaluate permitting requirements				H	S/O
additional fire station near North Ash - lakes area	v	evaluate need for a second location - possible complete a formal study to identify staffing needs, apparatus and location				L	L
2. GIS - utility mapping deficiencies THIRD	v	Town GIS update/develop data and mapping that incorporates current date data and additional data layers				H	S/L
Oakmont School Emergency Shelter- being updated	s	maintain second exit to maple street for emergency access				M	O
Cushing Academy - private response plan ability for short term shelter in place	s	coordinate receipt of Cushing Academy emergency response plan by Town - bring them into the fold				H	S
combined public safety building- modern/resilient	s	continue to fund maintenance and improvements to the physical structure of the bldg. and update dispatch center/change from VOIP. Review alternate EOC capacity/abilities relative to communication				M	O
Societal							
1 COMMUNICATION DEAD SPOTS - coverage/dead spots - downtown/communication FIRST	v	continue communication with cell providers, supplement radio communications along edges of town, add mobile repeater in one of the vehicles				H	S
dam EAP, municipal emergency response plans - virtual and local (100%)	s	schedule annual dam owners meeting, confirm dam owners up to date on inspections and EAP				M	S
3. TRANSPORTATION to shelters and hospitals during storm - public transport	v	develop standing agreements and discussion about possible needs (paratransport needs) Coordinate with Cushing Academy for use of their emergency transport vehicles				H	L
2. PUBLIC EDUCATION OF EMERGENCY PROCEDURES	v	when EMD completes plan and MEMA process, prepare outreach materials for distribution				H	S
generator education program - back feeding	v	develop/distribute outreach materials - coordinate with industry see if they have prepared information or can add to bills				L	S
2a. Elder Communication	v	develop a more robust list of elders needing assistance, improve communication mechanisms that are more applicable to older population, utilize local access television and develop posting protocols				M	O/L
2b. Neighborly support	s	develop formal gathering locations and communicate it to the public				L	L

Environmental							
fire risk due to downed limbs	v	education through existing programs (Chipping Grant) investigate fire breaks				L	L
2. LAND CONSERVATION	**s**	maintain current conservation properties, review open space regs/by laws to encourage 'clusters' and reduce sprawl				H	O/L
tree cutting plans/best forestry management plan/practices	v	educate homeowners/private land owners on forestry BMPs to encourage proper plans by logging company				L	L
1. WATER QUALITY ISSUES - inclusive of septic systems around lakes, nutrient loading, increased water temperatures FOURTH	v	public education on proper maintenance activities, review need for pumping mandates and current procedures for additions, develop database detailing types of systems and locations. Educate on public safety with regards to bacteria (blue green algae) and fishing				H	S
		review annual treatment programs for effectiveness, education program about fertilizing and water quality,				H	S
3. INVASIVE SPECIES	v	public education on species identification and proper invasive species management and eradication procedures.				H	S then O
beavers	v	develop beaver management plan that complies with current state regs. Educate public on how to report the location of a beaver dam				L	L

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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	Description / Discussion	Hazard 1: Flooding	Hazard 2: Ice Storms	Hazard 3: Extreme Weather (Snow, Wind, Heat Cold)	Hazard 4: Drought	Priority H - M - L	Time Short Long Ongoing
Infrastructural										
Dams	Townwide	Private / Town	S/V	Dams create economic benefit; Dam failure is a concern	• Ensure dam safety inspections are performed and that the defeciencies are addressed • EAP's are in place for all dams and up to date •-				H	S / O
Water Supply & Distribution - Plant and Upper Naukeag	Townwide	Town	S/V	Upgrading facilitates; Piping under roads prone to sever storms; Water storage tanks are available; 30-40% coming from plant; If plant isn't functioning there is a 2 day reserve. Ashburnham 300,000 gallons and Winchendon uses double that. Coordinate with Winchendon to limit their consumption or have them get an alternate source	• Town hangs on to the parcel of the Old Naukeag Hospital. •Having Winchendon look for alternative sources. • Increasing capabilities of the raw water system by updating • Options for improving the intake line at Upper Naukeag (New fitting or extend out the intake pipe). Further evaluation/study may be needed to ensure doing that modification will not result in issues • Water conservation: Communication to customers. • Drought contingency plan • Winchendon extension at Sherbert Road destruction line needs to be replaced. Sherbert Road improvements for flooding and washout •Options of water storage during spring				H	S / L / O
Electrical	Townwide	Town	S / V	Electrical failure is a major concern; Town has own utility company; Grants available to upgrade to underground/more resilient; Solar potential (south facing roofs)	•Explore grants to upgrade to underground. There's high costs and issues with this •Explore solar potential (many south facing roofs). Microgrids particularly at lake communities that would be isolated. • Ongoing tree clearing along power lines. A combination of budgets and grants funding the current program. Light department is evaluating poles				H	O / L
Water Supply - Wells	Townwide	Private	V	How will they hold up against drought	•Water conservation education outreach •- •-				M	O
Wastewater System	Townwide	Town	S / V	Everything goes to Gardner. Equipment issues. There has been some reported issues there. One of the pumping stations is located within a floodplain	• Further look into/study the pumping station vulnerability located within the floodplain •- •-				H	S / M-L
Transportation	Townwide	Town	V	No public transportation;	•Explore options of providing public transportation. •- •-				M-L	O
Roads	Townwide	Town and Private	V	Condition; not much traffic control; private roads that are not passable by	• •- •-					
Culverts / Bridges	Townwide	Town	V	Specific culverts and bridges that may be undersized	• Study done on all of them and prioritize them. Explore funding opportunities (MADER grant to fund study and construction) •					
Sherbert Road and East Rindge and Tuckerman	Townwide	Town	V	Prone to flooding with water supply line would be impacted	•Specific ones that are identified as high priority; look into advancing these. •- •-					
Societal										
Elderly Population / Who is at Risk / Action Plan for Transport and Supplies	Townwide	N/A	V	Identifying who needs help when; Organize a way of identifying and helping; Churches have intimate knowledge	• Strengthen the Senior Center (COA) in Town • No current database of people at risk. Develop a database of vulnerable people at risk to be used by Emergency Responders •Volunteer Disaster Recovery Committee could work with Emergency Management					
Sheltering During Disasters	Cushing and Briggs	Private	S / V	Actual facilities and transportation in getting them there; Are they aware who needs the help and is there a plan to get them what they need. Shelters available Cushing, Briggs, Oakmont, Ice Rink, Public Safety Building. Knowledge not known	•Identifying specific areas and public outreach of the areas •Plan for providing supplies to those locations •-					
Emergency Contact / Reverse 911	Townwide	Public	S / V	Electric dependent; People need to sign up; 5-6 people need to activate it	• Enhance participation in Reverse 911 and updating of contact information •Utilize newsletter as a reminder or way to get people signed up; Public access TV •Mobile sign in accessible location / other ways to ge the work out • Enhance internet access across the Town. Limited to Comcast currently. More cell Towers in Town • Organize volunteer groups to assist emergency					

Communication Between Town and Businesses and Public	Townwide	Public	V	Better communication between Town and Business so that businesses know Town needs and plans and vica versa; Townwide newsletter	•Improved communication between Town, Businesses, and Residents •Newsletter!!! •-					
Increasing Business and Tourist Attraction within Town / More Income for the Town	Townwide	Public/Private	S/V	Balance of Income and environmental considerations (limit where they can develop); Getting clean industry; Slow down reliance on strictly residential; Possibly of more arts and crafts types businesses;	•There is a lot of potential. Try to develop a plan to balance new development with clean industry •Focus on placing new development where it belongs. Manufacturers in appropriate areas •Arts and Crafts industry • Specific attractions. Times of year, places, planned events. Hiking, rail trail • Need to have a Town Planner!!!!					
Contact to Remote Areas	Townwide	Private	V	How do we reach them and how do they reach you	•Find a way to get internet access to remote areas and across the board •- •-					
Public Outreach Education	Townwide	Public	V	Natural disasters, benefits of assets (wetlands, lakes), what can individuals do	•Public outreach from Concom on benefits of natural resources. Simple list of what can and can't be done. What permits are needed for what type of work. Incorporate that into the Town's website •- •-					
Increasing/Decreasing Population	Townwide	Public	S / V	Increasing population would stress water system;	•- •- •-					
Privatization of Assets	Townwide	Public	V	Not doing enough to draw people both within Town and from other Towns to the many assets in Town	•- •- •-					
Environmental										
Land Protection / Conservation / Open Space / Shoreline Protection	Townwide	Town/State	S / V	Limit development and clearing around lake and within forests. Current open space bylaw to be mandated	•Limit development and other disturbance (clearing, etc.) around lakes, forests, wetlands, and other natural resources •Give the planning board the right to mandate the open space residential bylaw on large parcels •Need to have a full time Town Planner!!!!!					
Wetlands	Townwide	Town/State	S / V	Great asset within Town for Flood attenuation	•See #1 above •Update the wetland ordinance to be made more stringent. Use Winchendon as example •Have a full time proactive Conservation Agent •DPW clearing of beaver dams and brush around culverts. Would like DPW to work with ConCom much more closely. • Public education/outreach					
Beavers & Wildlife	Townwide	Town	V/S	Can create wetlands making them a strength; control needs to be improved; Devices; Tuckerman Road; Management and Preservation; Protection of wildlife habitat	•See #1 above •Management and Preservation of wildlife •Identify and prioritize areas most prone and install beaver control devices •-					
Water Quality Issues	Townwide	Town	V	All lakes have concerning nutrient levels. Older septic systems that are on lakes; Septics and other water quality issues; Would like to implement shoreline protection around lakes;	•See #1 above •Look at stormwater systems around the lakes. Green infrastructure techniques (rain gardens, etc.). Demonstrate an example project on Town property and they publish it for private property •Enforce low impact development bylaw					
Wastewater Processing	Townwide	Town	S / V	Want to keep it affordable but also keep water quality well; Everything goes out through Gardner	•- •- •-					
Inland Migration	Townwide	Town	V	Plan for them in locating. Not take up Open Space or areas that would	•See #1 above •- •-					
Forest Management / Wildfire	Townwide	Town / State	V	Not a real concern but access to forests is a concern	•ATV access is major issue. Installing gates at major access points. •- •-					

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

Features	Location	Ownership	V or S	Flooding	Ice Storms	Extreme Weather	Drought	Priority	Time
								H - M - L	**S**hort **L**ong **O**ngoing
Infrastructural									
Dams	Townwide	Town, Private, State	V & S	Removal or improvements; Condition assessments; increase availability of ODS records; increase monitoring of upstream environment (beavers)	Protect upstream slopes from ice damage; prevent ice dams at spillways	Temp. flux. could make raising/lowering difficult; prevent debris blockage from storm events	Prevent effects of dessication on dams: Move towards non-earthen	M (conditional)	O
Roadways/Culverts/Stormwater Management	Townwide	Town, Private, State	V & S	Beaver management; continue to monitor and address culvert efficiency	Address debris obstructions	Improve accessability of roads during extreme weather events	No major effects	H	O
Town Sewer/Town water	Westminster St.	Town	V & s	Williams Rd. flooded - potential to flood pump station. Could bring electrical and operating systems above grade - conduct feasibility study	Power loss - Could upgrade aux. power; Improve fuel reserves	Same as ice storms	Rain dancers; Improve water management practices esp. concerning new development; Increase public awareness & communication; increase storage; address water exports	H	O
Private Septic/Wells	Townwide (outside downtown)	Private	V	Pollution of wells from septics; Improve water stores at shelters	Power loss - Improve power distiburion	Same as ice storms	Limit on new new well drilling; review lessions learned in drought prone areas	L	O
Municipal light company	Townwide (2 specific locations)	Town	V & S	No major effects (thus far)	Identify alternate power supply or alternative routing (underground backup)	Move utilities underground; move towards microgridded supply; maintain trees around infrastructure	Wildfires - protect utility poles - move underground	H	L & O
Communication Infrastructure	"Pockets"	Private	V	No major effects	Improve structure integrity monitoring; adding towers,	Same as ice storms	No major effects	M (h)	S
Societal									
Library	20 Memorial Dr.	Town	S	No major effects	Power loss - add backup power source	Same as ice storms	No major effects	M	L
Schools	Village Center & S. Ash.	Town, Regional, Private	S	Address potential transportation issues; improve helipad location	Power loss, all schools have backups -Oakmont used as shelter	Review cooling systems during times of extreme heat	No major effects	M	O
Churches/Food Banks	Multiple locations	Private	V	Address issues with access and distribution; otherwise similar to above	Address issues with access and distribution; otherwise similar to above	Address issues with access and distribution; otherwise similar to above	No major effects	L	O
Residential Housing (Migration)/Senior Housing	Townwide	Private	V	Adhere to current protocols; review zoning bylaws	Senior housing - backup power source; improve transportation availability	Senior housing - backup power source and improve transportation availability	No major effects	H	S & O
Emergency Shelters	"Pockets"	Town & School District	S	Address potential accessibility issues; ; increase coordination with outside agencies	Address potential accessibility issues; ; increase coordination with outside agencies	Address potential accessibility issues; ; increase coordination with outside agencies	No major effects	L	O
Child Care Centers	Village Center & S. Ash.	Private	V	Identify any vunerable centers; determine if they have adequate response plans	No major effects	Develop emergency response plans	No major effects	L	S
Environmental									
Lakes	Townwide	Variable	V & S	Pollution - Increase monitoring; lower water	Address debris obstructions	Address debris obstructions	Adjust drawdown plans	M	O
Trail systems	Townwide	Private, Town & State	S	No major town response - could work closer with maintaining orgs.	No major town response - could work closer with maintaining orgs.	No major town response - could work closer with maintaining orgs.	May exacerbate erosion; increase likleyhoo d of brush fires - work with orgs.	L	O
Recreational Fields/facilities	Village Center & S. Ash.	Town	S & v	Relocate affected fields; maintain surrounding stormwater infrastructre	May increase maintenance	May increase maintenance	Improve irrigation; move towards sythetic cover	L	O
Open Space	Townwide (mostly north)	Variable	S	No major town response - could work closer with maintaining orgs.; buy-out flood prone areas	No major town response - could work closer with maintaining orgs.	No major town response - could work closer with maintaining orgs.	May exacerbate erosion; increase likleyhoo d of brush fires - work with orgs.	L	O

Beavers	Townwide	N/A	S & V	Monitor select beaver activity more closely with flow meters, monitor impoundments	Monitor select beaver activity more closely with flow meters, monitor impoundments	Monitor select beaver activity more closely with flow meters, monitor impoundments	Monitor select beaver activity more closely with flow meters, monitor impoundments	M (h)	L & O
Agriculture/Forestry	Townwide	Variable	S &V	Review and enforce existing forest management plan; identify vulnerable ag. Facilities; increase outreach	Review and enforce existing forest management plan; identify vulnerable ag. Facilities; increase outreach	Review and enforce existing forest management plan; identify vulnerable ag. Facilities; increase outreach	Review and enforce existing forest management plan; identify vulnerable ag. Facilities; increase outreach	L	O

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

Features	Location	Ownership	V or S	Flooding	Ice Storm	Extreme Weather	Drought	Priority (H - M - L)	Time (Short Long Ongoing)
Infrastructural									
Dams		Private/Public	V/S	Plan access to public and private dams for maintenance; consolidated plan for each dam (town-wide dam management plan); consortium of dam owners (annual meeting)				H	O
Water/Sewer System		Private/public	S - Water; V - Sewer	Explore pump station protection at bottom of hill. Address older water line infrastructure. Explore "I/I" flow to existing sewer - is it an issue?				H	L
Bridges/culverts		Public	V	Rte 101 bridge; Waterline connection across dams - explore cross connection routing/hardening across bridges; Route 12 bridge needs to be able to convey storms.				M	S
Schools/Public Safety/Emergency Shelter		Public	S	Explore more access to Overlook and Oakmont (only one-way in/one way out); Access to DPW to be protected/evaluated - need to get to protect existing equipment/account for maintenance (disposal of oil/gas).				M	S
Electric Grid		Public	S	Look to build resiliency/redundancy if it doesn't exist. Explore backup power generation (specifically for public safety/public works/school/emergency shelter)				H	S/O
Roads - Private/Public (DPW)		Public/Private	V	Sherbert Road extension as an example - main access road (private) (Explore longer term ownership/maintenance/access agreement - especially for snow/ice removal/downed trees)				M	L
Societal									
Cushing Academy			S						
Future Development/increase in development			S - steady growth; V - explosive growth	Make sure strategic growth plan accounts for water/sewer/school capacity and preserve local character. Encourage water saving techniques now. Establish procedure/threshold for new emergency/community center around growth. Include in bylaw review.				H	L
Library/cultural spots/many small churches			S -	Leverage communications networks.				see communication protocol	
COVID - public health/mental health - the next thing			V	Connection is important for mental health - ensure existing connections remain and are resilient. Establish an advertising program for trail network.				see communication protocol	
Community Organizations / Lend a hand assistance			S						
Elderly Population - communicate/take care			V						
Communication Protocol			V	Establish local resource to "get the news out" - unified/coordinated communications (collaborated with abutting towns?). Include in local mailings/annual newsletters?				H	S
Environmental									
Beavers			V	Fund a study to identify beaver dam locations/installation of beaver deceivers or other mitigation.				M	S
Protection of Natural Resources/wildlife			S/V	Layer dam protection & lake/pond access into OSRP. Prepare a natural resources protection plan (water sequestration, soils erosion, drought protection)				M	L
Forest Loss/forest management plan			V	Establish public information/education initiative to bring sustainable and state resources for forest management. Explore town-wide stakeholder group for forest management.				L	O
Wetlands impacts/development near wetlands			V	Review existing wetland bylaw to account for future resiliency.				M	S
Algae Blooms/cyano bacteria/fertilizer			V	Fund water-quality monitoring equipment and proactive testing protocol for volunteer sampling of lakes on specific water bodies - create an action plan for most vulnerable water bodies				H	O
Conservation Land/Recreation/Trails			S						

6) Survey Results

ID	Start time	What hazards are you most concerned with in the future regarding Climate Change?
1	2/17/21 16:24:47	Ice Storms, temperature driven impact on plants and wild life. forest fires
2	2/18/21 13:51:26	Structural integrity of the private and Town-owned dams, many of which are high or significant hazards; Flooding associated with changing patterns of precipitation and undersized culverts; Intra/intermunicipal transportation and emergency vehicle access during extreme weather events, e.g. flooding, ice/snow storms, hurricanes, etc.
3	2/19/21 19:31:43	Flodding
4	2/22/21 8:02:47	Dams
5	2/22/21 12:07:41	Dam failure due to hard-to-predict weather events
6	2/22/21 15:44:55	Flooding. Ice Storms
7	2/22/21 16:45:04	Drought
8	2/22/21 20:26:40	Flooding given our many bodies of water.
9	2/23/21 16:00:36	None
10	2/23/21 10:33:52	Unexpected storms--tornado touch down, hurricanes.
11	2/24/21 8:16:49	Ashburnham: 1.Flood risks. 2. Drought/ municipal water stress. Stress on forests and declined forest productivity (carbon storage). 3.Increased disease vectors (Lyme, EEE, etc) and increased pressure from invasive species. 4. Overloaded electricity for cooling (but less of a concern, as our climate is cooler than most due to rural, higher elevation). Globally: Severe weather, reduced agricultural productivity, heat waves/drought, displaced peoples. Etc.
12	2/24/21 11:43:08	Dams, flooding, beavers, high wind storms, ice storms, forest fires
13	2/24/21 12:16:55	Seniors are more vulnerable to environmental risks such as unsafe water, extreme weather events and future COSTS for alternative polices, etc. Also, vector-borne diseases.
14	2/24/21 13:12:13	Non-Point Source Pollution due to flooding of residential/manufacturing developed areas.
15	2/24/21 16:00:35	Extreme weather situations with possible loss of power Flooding
16	2/24/21 17:13:44	Obviously Extreme weather situations (Hurricane, Tornado Massive Rain storms etc..)
17	2/24/21 17:21:13	More frequent extreme weather events, especially ice storms. Increased vulnerability of our lakes to infestation by invasive species, including cyanobacteria (toxic algae), will be more likely as those organisms may be more tolerant to higher temperatures than native beneficial species. Changes in the annual pattern of streamflow in the lakes' tributaries could alter the lakes' ecosystems in unpredictable ways.
18	2/24/21 17:47:40	Weather extremes
19	2/24/21 19:36:04	Extreme weather & storm repairs
20	2/25/21 7:52:24	Weather changes
21	2/25/21 8:20:04	drought

ID	Start time	What hazards have affected you the most?
1	2/17/21 16:24:47	Ice storms
2	2/18/21 13:51:26	Ice/snow storms
3	2/19/21 19:31:43	Intensity of storms is all seasons
4	2/22/21 8:02:47	Wet lands
5	2/22/21 12:07:41	The winter ice going out and then coming back again. At an unusual time of year we also lowered the water levels 6 or 7 years ago when we were expecting several days of rain; downstream ponds were called/notified. as far in advance as possible.
6	2/22/21 15:44:55	2008 Ice storm.
7	2/22/21 16:45:04	Ice
8	2/22/21 20:26:40	None at this time.
9	2/23/21 16:00:36	None
10	2/23/21 10:33:52	Storms.
11	2/24/21 8:16:49	Personally: minor. Severe rains can be a hassle. Driving through flooded streets. But really, for me these are just inconveniences. We are prepared for power failures.
12	2/24/21 11:43:08	ice storms, dam breaches
13	2/24/21 12:16:55	In general any extreme weather event impacts seniors in town who do not have proper air conditioning or cooling centers. Individual health factors such as cardiovascular disease, falls and obesity are exacerbated when coupled with social isolation and limited income.
14	2/24/21 13:12:13	Flooded roadways due to insufficiently sized culverts.
15	2/24/21 16:00:35	Extreme weather
16	2/24/21 17:13:44	Being a homebuilder, my daily work and our crews daily work is essentially all outdoors. Bad weather makes for bad building sites - Rain is probably the biggest issue - when it rains it pours!
17	2/24/21 17:21:13	Invasive species, particularly in lake ecosystems. Ice storms.
18	2/24/21 17:47:40	weather extremes
19	2/24/21 19:36:04	Mainly snow removal & street repairs
20	2/25/21 7:52:24	High and low temperature
21	2/25/21 8:20:04	violent weather

ID	Start time	What are the most vulnerable areas in town due to the hazards you identified above?
1	2/17/21 16:24:47	Outside village district
2	2/18/21 13:51:26	Lands/residences downstream of all dams; Lands/structures subject to flooding during 100-year storm events
3	2/19/21 19:31:43	Low elevation areas
4	2/22/21 8:02:47	roads
5	2/22/21 12:07:41	Down stream ponds. Fortunately, the area is not heavily populated.
6	2/22/21 15:44:55	Westminster Street sewer pump station. All of our elderly in private homes.
7	2/22/21 16:45:04	Ice= rural areas Drought= All
8	2/22/21 20:26:40	Areas down stream if dams.
9	2/23/21 16:00:36	N/A
10	2/23/21 10:33:52	Dirt roads, places its hard to know roads are blocked. Electricity going out in the more remote areas.
11	2/24/21 8:16:49	Perhaps certain culverts and stream crossings: others will know locations better. Winnekeag dam: considered high risk if it blows (again).
12	2/24/21 11:43:08	Any of the lakes and ponds with poor dams.
13	2/24/21 12:16:55	The fact that many seniors still live in their homes alone.
14	2/24/21 13:12:13	Given the soils and slopes the town of Ashburnham these hazards are found throughout the entirety of Ashburnham
15	2/24/21 16:00:35	Lakefront communities, isolated areas on the power grid
16	2/24/21 17:13:44	I think almost any part of town is affected by the bad weather - minor flooding, whether at the streams and rivers or as water runs down the street. There really isn't any part of town that wouldn't have some kind issue with bad weather.
17	2/24/21 17:21:13	Ice storm vulnerability affects all areas of the town. Ecosystem changes affect all waterbodies as well as forested areas.
18	2/24/21 17:47:40	low laying areas
19	2/24/21 19:36:04	The private roads within the community
20	2/25/21 7:52:24	Keeping roads safe
21	2/25/21 8:20:04	lakes

ID	Start time	What can be done now to plan for the hazards identified above?
1	2/17/21 16:24:47	microgrid power generation, underground utilities
2	2/18/21 13:51:26	Repair dams to comply with State standards; identify and enlarge deficient culverts; improve roadways
3	2/19/21 19:31:43	Identify low elevation, build up areas, re-route water
4	2/22/21 8:02:47	make sure culverts are clear of debris
5	2/22/21 12:07:41	We monitor ice and water level very conscientiously. We have our dam inspected per state rules. We actively follow up on dam inspection recommendations and suggestions.
6	2/22/21 15:44:55	Begin plans to bring the electrical/pump equipment above ground at the sewer station.
7	2/22/21 16:45:04	Ice= shelters, portable generators, personal contact network to check on people Drought= limit land clearing, limit development based on a decreased water table, invest in alternative water purification and water saving systems and upgrades
8	2/22/21 20:26:40	Set up a prioritized plan to keep dams in good structural shape and develop funding sources.
9	2/23/21 16:00:36	N/A
10	2/23/21 10:33:52	?
11	2/24/21 8:16:49	Improve culverts. Protect forests and wetlands to mitigate flooding. Our state and local wetland protection is good, but fact is there is a lot of building within 50 feet of wetlands (and some even closer), all permitted and legal. We have been harvesting our forests pretty heavily in the last decade: you can see less absorption and infiltration in recently logged sites. Eventually they presumably recover.
12	2/24/21 11:43:08	Find funding to repair or remove dams in disrepair
13	2/24/21 12:16:55	Keep your senior community in the loop.
14	2/24/21 13:12:13	Improved zoning regulations that don't leave the impact to and from wetland issues strictly to the Conservation Commission.
15	2/24/21 16:00:35	shelter plans, loss of power plans, Dam maintenance
16	2/24/21 17:13:44	Currently we see in the engineering of site plans provisions for road run off, and driveway drainage. All necessary.
17	2/24/21 17:21:13	Ice storm vulnerability could be reduced by use of microgrid technology and electric transmission line vegetation management. Enhanced storm water management
18	2/24/21 17:47:40	Drainage, dam inspections
19	2/24/21 19:36:04	Begin partnering with the local communities
20	2/25/21 7:52:24	Staff for public works
21	2/25/21 8:20:04	water level control

ID	Start time	How do you receive information during or after a hazard?
1	2/17/21 16:24:47	cell phone
2	2/18/21 13:51:26	Radio/Television; Look out the window!
3	2/19/21 19:31:43	I am usually involved directly
4	2/22/21 8:02:47	cell phone
5	2/22/21 12:07:41	We have a few members who handle the water level duties. They monitor it themselves. If we need to let water out at any unusual time, we call and/or email the down stream ponds.
6	2/22/21 15:44:55	During the 2008 storm our Fire Chief provided updates.
7	2/22/21 16:45:04	Cell phone, internet, radio
8	2/22/21 20:26:40	As a town official I get information from our public safety and public works departments followed by local news.
9	2/23/21 16:00:36	?
10	2/23/21 10:33:52	This is the biggest area where Ashburnham falls down. How do we talk to each other to report what is going on, especially during an emergency where information is needed quickly. How do we reach folk not on facebook or nextdoor or email?
11	2/24/21 8:16:49	Town alert via cell phone? Not sure.
12	2/24/21 11:43:08	News stations or internet
13	2/24/21 12:16:55	Generally a robocall from the town if phone lines are working. Otherwise, people helping people by knowing their neighbors and checking in with them.
14	2/24/21 13:12:13	Surely you jest.
15	2/24/21 16:00:35	News, HHAN notifications, emails direct from state agencies
16	2/24/21 17:13:44	On the Cell Phone of course - the Weather Apps and also the local Police department pages and the AMLP
17	2/24/21 17:21:13	Reverse 911; social media.
18	2/24/21 17:47:40	Code Red or MEMA sitreps
19	2/24/21 19:36:04	N/A
20	2/25/21 7:52:24	Phone. Would prefer text
21	2/25/21 8:20:04	email

7) Prioritized Actions

TOWN OF ASHBURNHAM
Town Hall, 32 Main Street
Ashburnham, Massachusetts 01430
Tel. 978-827-4100 ext. 0
FAX 978-827-4105
www.ashburnham-ma.gov

March 3, 2021

Municipal Vulnerability Preparedness Action Priority List

#2

- Unified Communication- new letter/local resources
- Communication- Vulnerability Assessment Plan
- Communication - supplement with radio communication, mobile repeaters

#4

- Water/Sewer Systems- protection/update
- Water system- transmission main line protection
- Infrastructure- GIS system to map resources and take inventory
- Water/Sewer systems - protection/updates

#5

- Water quality- public education/ protection programs for preventative measures
- Wetland/Conservation- Protection plan/hire organizer

#1

- Electric - Alternative power supply, underground utility plan
- Electric Grid- Back up generators at public locations
- "hardening the grid"/redundancy /reimagining

#3

- Culverts/storm water management - Improvements and Beaver management
- Dam Management - inspections and EAP updates
- Dam management- Annual Meeting/Plan assessment
- Dam Management- EAP meeting, removal/rehab plans

PARE CORPORATION
CELEBRATING 50 YEARS

8) Invitation List

LIST OF FINAL STAKEHOLDERS/WORKSHOP PARTICIPANTS
MUNICIPAL VULNERABILITY PREPAREDNESS (MVP) PLANNING GRANT
ASHBURNHAM, MA

NAME①	TELEPHONE	E-MAIL	AFFILIATION/ORGANIZATION	RSVP③ Y	RSVP③ N
MUNICIPAL					
Leo Janssens	978-827-4100 ext. 0	ljanssens@ashburnham-ma.gov	Board of Selectmen		X
Roger Hoyt	978-827-4100 ext. 117	rhoyt@ashburnham-ma.gov	Planning Board	X	
Chris Picone	978-906-3502 (Cell)	cpicone@fitchburgstate.edu	Conservation Commission/Rail Trail	X	
Glenn Hathaway/ Rick Metcalf	978-827-4100 ext. 116/117	ghathaway@ashburnham-ma.gov rmetcalf@nashoba.org	Board of Health/ Nashoba Associated Board of Health	 X	X
David Perry	978-827-4100 ext. 6	daveperry6259@verizon.net	Zoning Board of Appeals		
Sarah Culgin	978-827-4100 ext. 122	sculgin@ashburnham-ma.gov	Inspection Services (Building/Zoning)	X	
Cec Snow		cecsnow@comcast.net	Open Space & Recreation Committee		X
David Berger	978-827-4120	davidberger46@comcast.net	Water/Sewer Commission		
Kevin Sullivan/ Richard Ahlin	978-827-4423 978-827-4423	ksullivan@amlp.org	AMLP/ Chair, Municipal Light Board		X
Hank Parkinson	978-827-4100 ext. 0		Parks & Recreation Committee		
Christina Sargent	978-827-4100 ext. 0	csargent@ashburnham-ma.gov	Historical Commission		
Janet Robbins	978-827-5000/ 978-827-4100 ext.123/124	(jrobbins@ashburnham-ma.gov)	Council on Aging	X	
Terri Anstiss/ Ed Vitone	978-827-4115	tanstiss@ashburnham-ma.gov evitone@comcast.net	Library Director/ Library Trustee	 X	
Sara Wyman	978-874-7461	swyman@westminster-ma.gov	Veteran's Agent		
Adam Testagrossa (Lead Operator)/Matt Johnson	978-827-5386	adam.testagrossa@Veolia.com	Veolia Water North America Northeast, LLC (Operator of Water Filtration Plant)	X	
SCHOOL DEPARTMENT					
Dr. Todd Stewart/ Kyle Johnson	978-827-1434 978-827-1434	 kjohnson@awrsd.org	Superintendent of Schools/ Chair, School Committee		 X
David Uminski	978-827-5907	duminski@awrsd.org	Oakmont Regional High School/ Principal	X	
Christine Martellio	978-827-1425	cmartellio@awrsd.org	Overlook Middle School/Principal	X	
Nathaniel North	978-827-5750	nnorth@awrsd.org	Briggs Elementary School/Principal		X
PRIVATE SCHOOLS					
Randy Bertin	978-827-7100	rabertin@cushing.org	Cushing Academy/Head of School	X	
LAKE ASSOCIATIONS					
Gary Gannon		ggannon50@comcast.net	Ashburnham Lakes Coalition		X
Bruce Cook	917-647-8875	bcookny@aol.com	Billy Ward Pond Improvement Association		
Matt Christensen	978-345-6624	attymtc@aol.com	Lake Winnekeag Association		
Steve Slocum		steve.slocum@comcast.net	Lower Naukeag Lake Association	?	
George Cornwall	978-827-5751	naukeaglakeclub@gmail.com	Naukeag Lake Club		
John Fairbanks	978-874-0462	jffminott@aol.com	Stodge Meadow Association, Inc.		X
Dave Urban (P)/Fred Sellars (E)/ Steve Douglas (D)		president@farhillsassociation.com environmental@farhillsassociation.com dam@farhillsassociation.com	Sunset Lake (Far Hills Association)	 X X	
Frank/Diane Fiorentino	978-827-5799	frbolo@hotmail.com	Watatic Lake Association		

DAM OWNERS②					
Robert Francis	978-874-1010	bfrancis@verizon.net	Crocker Pond Properties, Inc. (Lake Wampanoag Dam)	X	
Annette Wolf, VP	978-342-1080	642 River Street Fitchburg, MA 01420	Munksjo Paper Inc. (Lake Winnekeag Dam)		
Esther Erickson	978-827-6641	Esthererickson@comcast.net	Fitchburg Sportsmen's Club (Wallace Lake Dam)		X
ORGANIZATIONS					
Gary Howland/ Lorraine DeSouza	978-827-6427 978-252-5443	gwhowland@gmail.com expressive.print@comcast.net	Ashburnham Conservation Trust Open Space & Recreation Committee	X X	
Anna Wilkins	978-466-3900	awilkins@northcountylandtrust.org	North County Land Trust		
RELIGIOUS GROUPS					
Rev. Dr. Elizabeth Mae Magill	978-827-5553	ashburnhamcommunitychurch@gmail.com	Ashburnham Community Church		
Pastor Dan Allen	978-827-4010	pastor@peopleschurchhome.com. danallen@peopleschurchhome.com	People's Church		X
Deborah Moylan		sanctuaryministrycenter.org	Sanctuary/Assemblies of God		
Andrew Henderson (Camp Winnekeag)		a_henderson4@hotmail.com	Southern New England Conference of Seventh-day Adventists		
Rev. Kevin Hartford	978-827-5806	stdenis@comcast.net	St. Denis Church		
BUSINESSES					
Alexandra A. Schultes, MD	978-827-5167		Ashburnham Family Medicine		
	978-827-4739	ashmar43@yahoo.com	Ashburnham Marine & Power Equipment		
Jennifer McLaughlin	978-827-5109	jmclaughlin@atholsb.com	Athol Savings Bank		X
Rachel Freedman Dan Freedman	978-827-5101	rachel@zeinproducts.com dan@zeinproducts.com	Flo Chemical Corporation	X	
Paul/Theresa Maguire	978-827-5053	innkeeper@maguirehouse.com	Maguire House B&B		
John Moulton	978-827-5311	modularmoulton@verizon.net	Moulton Construction	?	
Valorie Daigle/ Angel Lehtonen	978-827-5944	northland.engineers@yahoo.com	Northland Engineers		
	800-558-5280	ashburnhamis@ostermangas.com	Roy Brothers Oil & Propane		
OTHER					
Scott Wehmeyer	978-827-9966	132 Williams Road Ashburnham, MA 01430	American Legion Post 142		
Nick Thornton/Acting Scout Executive		nick.thornton@scouting.org	Heart of New England Council/BSA Camp Split Rock		
Cory Gracie	978-827-4018	dimacaleandgraciere@verizon.net	Dimacale & Gracie (Real Estate)		
David Hearne	978-790-7765	dhearne@hearnerealty.com	Hearne Realty Group		
NEIGHBORING COMMUNITIES					
Chief Mike Bussell	978-386-5522	fchief@ashbyma.gov	Ashby MVP Leader		
Nick Erickson	978-602-0428	nerickson@fitchburgma.gov	Fitchburg MVP Lead/ Assistant City Engineer		
Lyndsy Butler		lbutler@gardner-ma.gov	Gardner MVP Lead		
Joshua Hall	978-874-5572	jhall@westminster-ma.gov	Westminster MVP Lead/ DPW Director		X
Tracy Murphy		tmurphy@townofwinchendon.com			

REGIONAL ORGANIZATIONS					
Karen Chapman/ Jennifer Burney		kchapman@mrpc.org jburney@mrpc.org	Montachusett Regional Planning Commission/Planners	X	X
Bruno Fisher/ Adam Gromelski	978-345-7711 ext. 2263	bruno.fisher@mrta.us Adam.Gromelski@mrta.us	MRTA (Assistant Administrator)/ Project Manager	X	X
Al Futterman	978-448-0299	AIF@NashuaRiverWatershed.org	Nashua River Watershed Association/Land Programs & Outdoor Director		
STATE AGENCIES					
Jeff Zukowski		Jeffrey.zukowski@mass.gov	MA Emergency Management Agency (MEMA)/Hazard Mitigation Planner		

① For some of the listed Affiliations/Organizations, the names of individuals only are intended as a starting point. While these persons may decide to participate themselves, they also may decide to designate another individual from within the organization to participate in the MVP workshops.

② The following dams are owned by the Town of Ashburnham: Farm Pond Dam/Rindge Turnpike (part owner?), High Street Dam, Lake Watatic Dam, Lower Naukeag Lake Dam, Upper Naukeag Lake Dam, and Whitney Pond Dam.

③ Affirmative response indicates stakeholder participation in at least one (1) full work session.

9) Invitation Letter

TOWN OF ASHBURNHAM
Town Hall, 32 Main Street
Ashburnham, Massachusetts 01430
Tel. 978-827-4100 ext. 0
FAX 978-827-4105
www.ashburnham-ma.gov

Dear <NAME>,

The Town of Ashburnham would like to invite you to participate in a two-day Community Resilience Building Workshop – the first step in the important process of building societal, environmental, and infrastructural resilience for Ashburnham. The workshop and associated planning efforts are being funded by a grant from the Executive Office of Energy and Environmental Affairs, via the Municipal Vulnerability Preparedness (MVP) program. The workshop will bring together a variety of community stakeholders to identify the hazards, strengths and vulnerabilities within our community, and then work together to prioritize actions that we can take to improve our community's resilience.

When: Thursday, February 25th and Wednesday, March 3rd, 8:30 am until 12:30 pm

Where: Virtually via Zoom

- Day 1: https://parecorp.zoom.us/j/94005105615
  - and/or +1 646-558-8656 Meeting ID 940 0510 5615
- Day 2: https://parecorp.zoom.us/j/96191428766
  - and/or +1 646-558-8656 Meeting ID 961 9142 8766

Please note that attendance at both sessions is required as the second session builds upon the first, and your input is necessary throughout the process.

Additional Details:

- If you need internet access, please contact Andrew Cummings at (978) 257-0334.
- If you are new to Zoom or need a refresher, take a moment and review these How-To videos
- Maps are currently available for download from the following link. We ask that you take some time in advance of the meeting to download and review the maps.

  https://aro365154440-my.sharepoint.com/:f:/g/personal/aboylan_parecorp_com/EvA_2pkqDWZMvQJWwhkPBzoBmpzsPf4RPuX-7oBOPRMoNw?e=ObJuMG

  - Contact Andrew Cummings at (978) 257-0334 if you require a hard copy and arrangements will be made before the workshop.

- Please use the link or QR code below to access a survey to gather preliminary data for the workshop. Regardless of whether you plan to attend the workshop or not, please respond and share it with other members of the community. Your response by February 22nd would be appreciated.

Ashburnham MVP Survey (office.com)

- Learn more about climate change-related hazards by clicking the link HERE, or by scanning the QR code below:

Please RSVP no later than February 19th by contacting the Town MVP Coordinator, Marshall Dennis at mwdennis223@gmail.com or (978) 827-5848.

I hope you can join us on February 25th and March 3rd and look forward to working with you on this important effort for our Town!

Sincerely,

Marshall W. Dennis, PWS/CWB
President, Wetlands & Wildlife, Inc.

Community Resilience Building Workshop Background

The workshop and associated planning efforts are being funded by a grant from the Executive Office of Energy and Environmental Affairs, via the Municipal Vulnerability Preparedness (MVP) program. The workshop will bring together a variety of community stakeholders to identify the hazards, strengths and vulnerabilities within our community, and then work together to prioritize actions that we can take to improve our community's resilience.

The primary objectives of the workshop, and why your participation is so important, are to:

- Understand the relationship between natural hazards and our local planning and mitigation efforts.
- Evaluate the strengths and vulnerabilities of our residents, infrastructure, and natural resources.
- Develop and prioritize long- and short-term actions the Town and local organizations can take to increase our community's resilience.
- Identify immediate opportunities for actions that reduce the impact of natural hazards and increase climate resilience in Ashburnham.

Discussions of climate impacts often focus on sea level rise and the vulnerability of our coastal communities. But inland towns like Ashburnham have also seen an increase in extreme weather like heavy rain, drought, and extreme heat. Our community, infrastructure, and natural resources are bearing the brunt of those impacts, so it is important that we take proactive steps to protect our community's resources.

10) Public Listening Session Agendas

Board of Selectmen
Extension 0
Town Administrator
Extension 0
Town Accountant
Extension 1, Option 3
Town Clerk
Extension 3
Tax Collector
Extension 1, Option 2
Treasurer
Extension 1, Option 1
Board of Assessors
Extension 2
Land Use Office
Extension 6
Planning Board
Extension 4, Option 1
Conservation Commission
Extension 4, Option 2

TOWN OF ASHBURNHAM

Town Hall, 32 Main Street

Ashburnham, Massachusetts 01430

Animal Control
Board of Health
Building Commission
Conservation Commission
Council on Aging
Cultural Council
Electrical Inspector
Gas & Plumbing Inspector
Historical Commission
Municipal Planning
Parks & Recreation
Planning Board
Zoning Board of Appeals

PHONE: (978)-827-4100
FAX: (978) 827-4105

Subject: Municipal Vulnerability Preparedness (MVP) Core Team @April 22, 2021 at 05:00 – 06:00 PM EDT

Topic: Municipal Vulnerability Preparedness (MVP) Listening Session

Time: April 22, 2021 05:00 – 06:00 PM EDT

Join Zoom Meeting:

https://parecorp.zoom.us/j/95047679638

Meeting ID: 950 4767 9638
One tap mobile
+16465588656,,95047679638# US (New York)
+13017158592,,95047679638# US (Washington DC)

Dial by your location
+1 646 558 8656 US (New York)
+1 301 715 8592 US (Washington DC)
+1 312 626 6799 US (Chicago)
+1 669 900 9128 US (San Jose)
+1 253 215 8782 US (Tacoma)
+1 346 248 7799 US (Houston)
Meeting ID: 950 4767 9638
Find your local number: https://parecorp.zoom.us/u/abyXYkNxCV

Agenda:

In response to an application submitted by the Town to the MA Executive Office of Energy and Environmental Affairs (EEA), Ashburnham was awarded a planning grant of $22,000 in September 2020 to implement the requirements of the State MVP Planning Grant. This grant was for the purpose of assessing the Town's vulnerability to and prepare for climate change impacts, build community resilience, and receive designation from the EEA as a Climate Change Municipal Vulnerability Preparedness (MVP) program municipality. When so designated, the

Town will be able to apply for EEA MVP Action Grants directed at resolving vulnerabilities identified during the planning grant process.

Initial MVP tasks involved the establishment of a core team to guide the planning process and the identification of workshop stakeholders from the municipality, including but not limited to municipal officials, community organizations, non-profits, and community residents, as well as local businesses and academic institutions.

In conjunction with the Town's selected MVP facilitator (Pare Corporation), two (2) workshops have been held to date. Based on these workshops, Pare has prepared a draft '*MVP Summary of Findings Report*', which will be the subject of the MVP Listening Session. The draft report may be reviewed at:

Ashburnham's MVP Summary of Findings Report: https://aro365154440-my.sharepoint.com/:f:/g/personal/aboylan_parecorp_com/ErGB6EoQBv1HvsKFvzw-Ja8Bkz8IPCJoOBObPezVK_WaWQ?e=A98Acb

Following a brief overview of the draft report, the MVP Listening Session will be open to the public's comments on the draft report, which will be reviewed for inclusion in the final report. If you cannot attend the Public Listening Session, comments will also be collected using the link below.

Ashburnham's MVP Summary of Findings Report Feedback: https://forms.office.com/Pages/ResponsePage.aspx?id=_jw0Rd6k3kqH6b2RcpSydit-frgO-BhPsCw35_te0r1URTJRQ1VMSjA1SDg3QU80NjJIU1dNNVhIWS4u

All public comments will be collected until April 29th, 2021. On behalf of the MVP Core Team, we look forward to your attendance and participation in the MVP Listening Session. Please contact Pare Corporation personnel Andrew Cummings (ACummings@parecorp.com) or the Town of Ashburnham for any questions or information request.

Board of Selectmen
Extension 0
Town Administrator
Extension 0
Town Accountant
Extension 1, Option 3
Town Clerk
Extension 3
Tax Collector
Extension 1, Option 2
Treasurer
Extension 1, Option 1
Board of Assessors
Extension 2
Land Use Office
Extension 6
Planning Board
Extension 4, Option 1
Conservation Commission
Extension 4, Option 2

TOWN OF ASHBURNHAM

Town Hall, 32 Main Street

Ashburnham, Massachusetts 01430

Animal Control
Board of Health
Building Commission
Conservation Commission
Council on Aging
Cultural Council
Electrical Inspector
Gas & Plumbing Inspector
Historical Commission
Municipal Planning
Parks & Recreation
Planning Board
Zoning Board of Appeals

PHONE: (978)-827-4100
FAX: (978) 827-4105

Subject: Hazard Mitigation Report - (MVP) Core Team @ May 25, 2021 at 05:00 – 06:00 PM EDT

Topic: Hazard Mitigation Plan (HMP) Public Listening Session

Time: May 25th, 2021 05:00 – 06:00 PM EDT

Annelise Boylan is inviting you to a scheduled Zoom meeting.

Join Zoom Meeting
https://parecorp.zoom.us/j/96742569635

Meeting ID: 967 4256 9635
One tap mobile
+13126266799,,96742569635# US (Chicago)
+16465588656,,96742569635# US (New York)

Dial by your location
+1 312 626 6799 US (Chicago)
+1 646 558 8656 US (New York)
+1 301 715 8592 US (Washington DC)
+1 346 248 7799 US (Houston)
+1 669 900 9128 US (San Jose)
+1 253 215 8782 US (Tacoma)
Meeting ID: 967 4256 9635
Find your local number: https://parecorp.zoom.us/u/abqMiHmYO0

Agenda:

In response to an application submitted by the Town to the MA Executive Office of Energy and Environmental Affairs (EEA), Ashburnham was awarded a planning grant of $22,000 in September 2020 to implement the requirements of the State MVP Planning Grant. This grant was for the purpose of assessing the Town's vulnerability to and prepare for climate change impacts, build community resilience, and receive designation from the EEA as a Climate Change Municipal Vulnerability Preparedness (MVP) program municipality. When so designated, the

Town will be able to apply for EEA MVP Action Grants directed at resolving vulnerabilities identified during the planning grant process.

The grant also requires the update of the town's Hazard Mitigation plan. Historically Ashburnham's has been included in the Montachusett's Regional Hazard Mitigation Plan last updated in 2015. This grant requires Ashburnham to create Ashburnham's Local Hazard Mitigation Plan which is to updated every five years. This Public Listening Session we will be focused on the draft HMP report, with a presentation summarizing the reports content.

Initial MVP tasks involved the establishment of the MVP Core Team to guide the planning process and the identification of workshop stakeholders from the municipality, including but not limited to municipal officials, community organizations, non-profits, and community residents, as well as local businesses and academic institutions. This information produced by the MVP workshop was integrated into the HMP report.

In conjunction with the Town's selected MVP facilitator (Pare Corporation), two (2) workshops have been held to date. Based on these workshops, Pare has prepared a draft '*Local Hazard Mitigation Plan*', which will be the subject of the HMP Public Listening Session. The draft report may be reviewed at:

Ashburnham's HMP Report:
https://aro365154440-my.sharepoint.com/:f:/g/personal/aboylan_parecorp_com/Ei-hMED8iFlPg5tBf5sCLI8B8P0FNgqGBXjzMGD2cD4jSA?e=mhCmgL

Following a brief overview of the draft report, the HMP Listening Session will be open to the public's comments on the draft report, which will be reviewed for inclusion in the final report. If you cannot attend the Public Listening Session, comments will also be collected using the link below.

Ashburnham's HMP Report Feedback:
https://forms.office.com/Pages/ResponsePage.aspx?id=_jw0Rd6k3kqH6b2RcpSydit-frgO-BhPsCw35_te0r1UMFFGRE9aOTdMUlhCVUJHQVZHU0ZWTFJCSC4u

All public comments will be collected until June 1st, 2021. On behalf of the MVP Core Team, we look forward to your attendance and participation in the HMP Public Listening Session. Please contact Pare Corporation personnel Andrew Cummings (ACummings@parecorp.com) or the Town of Ashburnham for any questions or information request.

11) Public Listening Session Comments and Attendance

Public Listening Session on April 22, 2021 Community Feedback

Community Member 1:

Dear Mr. Cummings:

As an Ashburnham resident, please find below my personal comments pertaining to Ashburnham's CRB Workshop Summary of Findings.

Page 4, Page 100- Top 5 Priorities for Increasing Community Resilience

Electric Grid Protection and Upgrades

In the listening session you made the comment workshop participant feedback may have been influenced by the Texas power grid failure happening earlier this year. I believe that this is the case, and such should not be considered the top priority/hazard for Ashburnham. I understand workshop participants recalled the ice storm of 2008 and this is an additional influencer of their opinion, but I wonder if they understand the steps our municipal light plant has taken since 2008 to lessen extreme weather impacts.

Ashburnham residents enjoy reliable low-rate power with few power outages. When they do occur, power is restored in a matter of hours if not minutes. The Ashburnham Municipal Light Plant has successfully implemented projects and developments since 2000 including the building a new headquarters in 2002, burying electric cable and phone wires underground downtown in 2007, designing and installing 3 solar arrays for green power generation, joining 14 municipal electric utilities to form a cooperative to harvest wind power, building a 20 acre solar field in 2013, and in 2017 receiving a grant toward the installation of a 3MW/5MWH Lithium Ion Energy Storage Facility. In addition, they instituted an aggressive annual tree and brush cutting program to lessen storm impacts and have upgraded equipment. I understand the concerns regarding AMLP being smaller and the sole provider of electricity but historically, AMLP has responded to emergency situations more swiftly and successfully than larger utility companies like National Grid and Until providing service to neighboring towns and cities.

It is disappointing that an AMLP representative did not attend the workshop. Not only would they have discussed recent projects and developments, but they would also weigh in on the possibility of Ashburnham burying underground electrical wires along nearly 100 miles of its roadway.

Communication Improvements

I agree that some, but not large, areas of Ashburnham are without reliable cell phone service. It is many times dependent on service provider. Generally, in Ashburnham, AT&T provides more coverage. Verizon less. Can coverage improve, yes.

Regarding internet and cable, there is only one choice- Comcast. I have been informed when Comcast installed its cable, it did so throughout the town- a requirement of Comcast's agreement with the town. Satellite, Dish and Direct TV, are other options. But with that said there still might be limited areas where cable and/or satellite service are not available or poor.

Finally, in emergency and other important situations, residents can sign up and receive Code Red reverse 911 notification as well as email notification from the town. Code Red notifications are available via phone call or text.

It was mentioned a newsletter/newspaper be published to inform residents lacking digital communications of emergency situations. I personally would love to have a local newspaper for all the obvious community reasons, but I don't believe a newspaper or newsletter can be published quickly enough, mailed, and delivered to every door in Ashburnham quickly enough during an emergency.

Dam and Flood Management/Water and Sewer Infrastructure Protection/Water Quality

In my opinion these are higher priority recommendations than Electric Infrastructure and Communication. Ashburnham has more than a couple high hazard or significant hazard dams plus many non-jurisdictional dams which increase the likelihood of flooding. There are outdated EAPs or in some cases can't be found. Storm water management is a problem. Flood maps are being updated and the town has an inadequate DPW facility and the required equipment to act during a dam/flood emergency.

I agree water/sewer and water quality protection are a priority.

Page 14- Workshop Participants

It was disappointing to learn that many of the individuals invited did not attend. I wish I knew who was invited and how invitations were sent, the content and explanation of the invitation, and if there was sufficient follow-up to the initial invitation. How could we have improved participation? I have attended neighboring community MVP public listening sessions and have been impressed with the breadth of the workshop participants.

As I mentioned earlier, it would have been helpful if an AMLP representative attended. No member of the Board of Selectmen attended. As a Board member I did not receive an invitation and had no knowledge the first workshop took place.

I am also disappointed at the absence of a town webpage explaining the MVP program. A dedicated MVP webpage is not unusual and more frequently the norm. Our neighbor to the east, Ashby, who received their planning grant the same time as Ashburnham has a webpage including an overview of the program and grant, a video, and an online survey. Perhaps if we provided the public with easier to access program information, we would have engaged more individuals in the workshop process.

As a final comment, I wish, as I have seen in other MVP Summary of Findings, that our report included a listing 5-10 specific priority projects a community should tackle. As the town moves forward to the next MVP step, the action grant, a prioritization plan would helpful when submitting that grant application.

Thank you in advance for consideration of my comments.

Community Member 2

Previously I had spoken to some seniors in town and asked their opinions and concerns regarding the workshop. The following is their input if you can add to spreadsheet what may have been omitted. Sounds like we covered most of these issues. I highlighted the one in bold that most seniors in town NEED and we cannot supply.

Probably the greatest danger to a senior is isolation after a major storm. If there is significant damage to infrastructure (flooding, loss of power, tree limbs falling, ice) then it will be very difficult to get help to a senior in need. What can be done now:

1. Establish consistent phone communication before, during, and after a storm. Ensure that seniors have cell phones and know how to use them. Workshops? Supplied phones?

2.Establish some sort of weekly news sheet that is distributed thru the mail (not e-mail) so seniors and everyone knows what is going on in town.

3. Maintain roads, dams, bridges, and trees so they don't become hazardous. Fix potholes on all roads!!!!!

4. Establish a town facility where seniors and all citizens can go if there is loss of power, lack of food, water etc. Make sure everyone knows about it beforehand and that transportation can be provided.

The most vulnerable areas of town are the rural areas. The roads in those areas are generally in need of repair and some areas are prone to flooding. During the last major ice storm there was no communication from the town. After the fact we learned that a building in town had been opened for warmth etc. However, they said it was poorly used and therefore shut down. Hmm. Imagine that. No one knew about it so what did they expect.

Set up a system of repair people who can react to a senior's need such a flooded basement, frozen pipes, no heat in a strong storm.

Community Member 3- From Survey:

Wondering about dams in town that might not impact Ashburnham as much as a neighboring town. How would preparedness be handled under such circumstances?

Community Member 4- From Survey:

I agree with question raised about AMLP electric grid being number one priority. Note that while as in all MA towns there is only a single provider (by law), the AMLP utilizes several sources of energy providers, including National Grid, but also sources from multiple renewable energy sources. I do believe that water and dam issues should be on the highest priority.

Summary of Public Listening Session on April 22nd Meeting Discussion:

Recorded by Annelise Boylan on April 22nd at 5pm

Participant's total (17):
Marshall Dennis
Bill Johnson

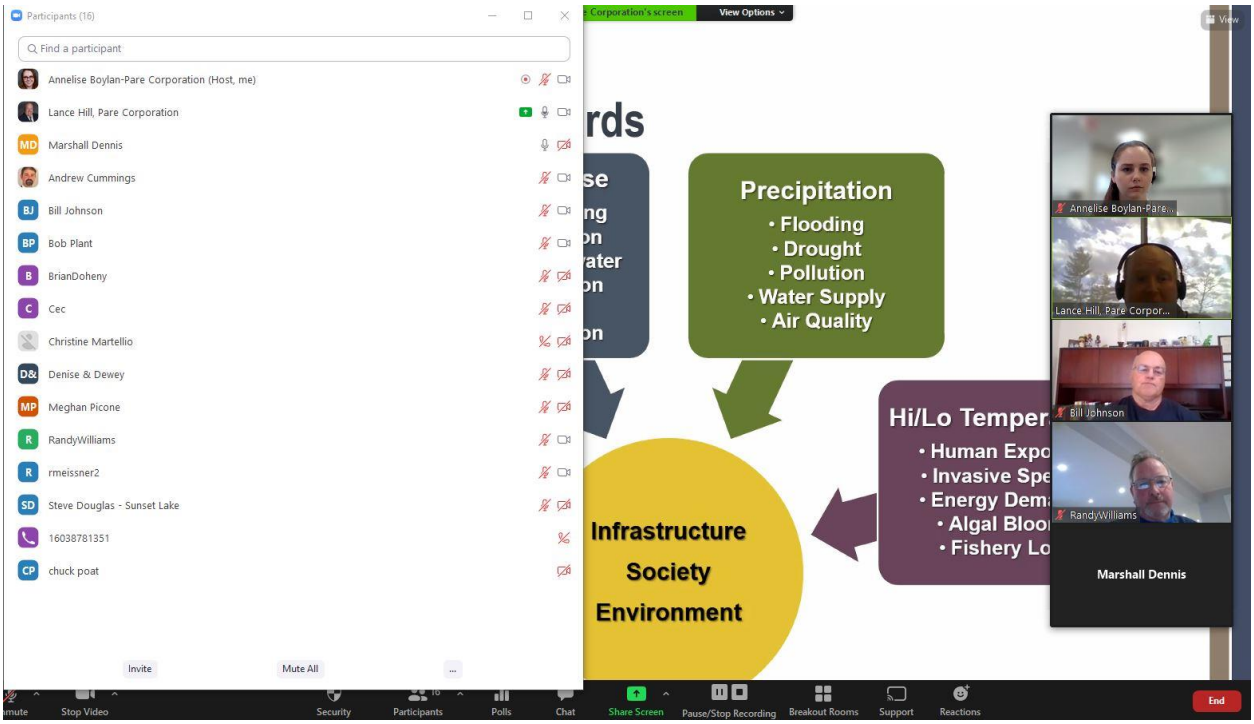
Bob Plant
Brian Doheny
Cec
Christine Martellio
Denise
Dewey
Chris Picone
Randy Williams
Rosemarie Meissner
Steve Douglas
Esther
Chuck Poat
Lance
Annelise Boylan
Andrew Cummings

Notes:

- Lance started the presentation at 5:05 pm and ended at 5:42 PM
- Ashburnham received a foot of snow on April 15th, 2021.
- Esther – requested to know how many people do not have internet or cable?, she stated that comcast would have put service lines in residential streets.
- Esther commented that the dams annual meeting action item was a great idea.
- Rosemarie Eldridge Meissner asked if non jurisdictional dam owners will also be allowed to participate? The smaller non jurisdictional dams are more of a concern due to the dams all being in series down the Phillips Brook.
- Ester asked what a non jurisdictional dam is, Lance responded explaining that a non jurisdictional dam is a dam not regulated by the state due to its size or magnitude/impact.
- Esther said she understood now that non jurisdictional means not critical or impactful.
- Rosemarie Eldridge Meissner stated though that the non-jurisdictional small dams when compounded together due to being in the watershed system has a big impact. 27 dams in town.
- Esther wanted to discuss the concerns with the municipal light plant and why people wanted action items against it.
- Steven Douglas- As a member of the Ashburnham Lakes Coalition, stated that he took an action to include the town in future discussions. ALC has reps from the 8 largest lakes in Ashburnham, including their dams. Recommended that maybe dam owners and town officials can meet at the lakes meeting annually.
- Esther stated how she thinks dams and lakes are a much more important action item than the Ashburnham Municipal Light plant (AMLP).
- Chris brought up the point that it is not the service of the plant, it is concerns of weather knocking out overhead lines and suggesting that grants would help pay for underground electric installation.
- Ester said she thought that was valid but seems like a waste for perfectly fine electrical lines
- Marshall stated that the light plants service and cost are not in question or content but that the concerns line in the redundancies in the system and that can make the town vulnerable during a

storm event. And if the isolated power goes out coupled with the down cell service, this leads to the issue compounding on itself making the electrical grid and the communication in town vulnerability that should be addressed.

- Esther stated the concern is valid but that communication lines for cellphones should be installed and fixed not electric.
- Ester discussed dam concerns, and how to inspect or be granted access to their record.
- Marshall stated that it is very difficult to get records from the state on dam data.
- Rosemarie Eldridge Meissner stated that you can formally request the records.
- Rosemarie Eldridge Meissner bought up the FEMA floodplain update and if it would be integrated into the plan, Marshall stated no due to the data being too preliminary.
- Rosemarie Eldridge Meissner thanked the group for attending on behalf of the board of selectmen.
- Bdoheny thanked pare and the community feedback.
- Cec-Will the communications improvements include cell phone coverage for RESIDENTS....not just for fire and police? I have NO cell phone service where I live.
- Cec- Comments are open until April 29? We are given 7 days to comment? When will this presentation be on the Town Website so that we can actually read the slides???
- Annelise added the links to the Summary of findings report and the survey. Also that the plan was uploaded with the agenda 2 weeks prior allowing all community members to review prior to the public hearing. Then community members were allowed to bring comment to the meeting or add to the survey if they could not attend. Also, for people who could not attend today stating that the video would be live on the website tomorrow and that all comments will be collected until April 29th, 2021.
- Meeting ended at 6:10 pm



Public Listening Session on May 25th, 2021 Community Feedback

Community Member 1:

My main concern with the HMP for Ashburnham is the lack of emphasis regarding two areas of concern. First, is the complete lack of reliable cell phone service throughout the town. Most people in civilized nations have dropped the use of a landline phone. However, here in Ashburnham, many households retain a landline at a greater rate than in other areas of Massachusetts because they cannot rely on a cell phone at their home nor when travelling within Ashburnham. In addition, there are limited options for internet, TV, and landline phone services. In Ashburnham many residents rely on Comcast, because they are the only company which will supply broadband and TV services. Hence, residents also utilize Comcast for their landline phone service as a part of a bundle package. Unfortunately, when the electricity goes out, so does the internet, TV, and landline phones. When the electricity is interrupted, there is no means to contact the electric company (AMLP), the police, nor fire department. I have been known to drive the ten miles to the AMLP station to inform them that the electricity is down in my part of town. During storms that resulted in the loss of electric power, I have driven to Fitchburg in order to obtain cell phone service so that I could call my boss. In the year 2021 you would think that we could do better than that.

Second, there should be an emphasis on the increased occurrence of ice storms in this geographic area. Having moved to Ashburnham 25 years ago, I have witnessed an increase in the frequency of ice storms. My first few years living here saw almost daily (albeit sometimes small) snowfall during the winter months. Now, there seems to be fewer snow events and more significant ice storms. I would attribute this to climate change. Speak to any Ashburnham resident and they would likely tell you that they would prefer a half foot of snow to an inch of ice. In snow, we retain electricity, internet, TV, and landlines. In ice storms, all are eliminated. Many of us remember the ice storm that left us in the dark for eleven days with trees blocking most roadways. That is why most households have a back up generator and fuel at the ready. These generators are what literally keep residents alive during significant ice storms.

I attended both listening sessions and appreciated the information imparted.

Summary of Public Listening Session on May 25th Meeting Discussion:

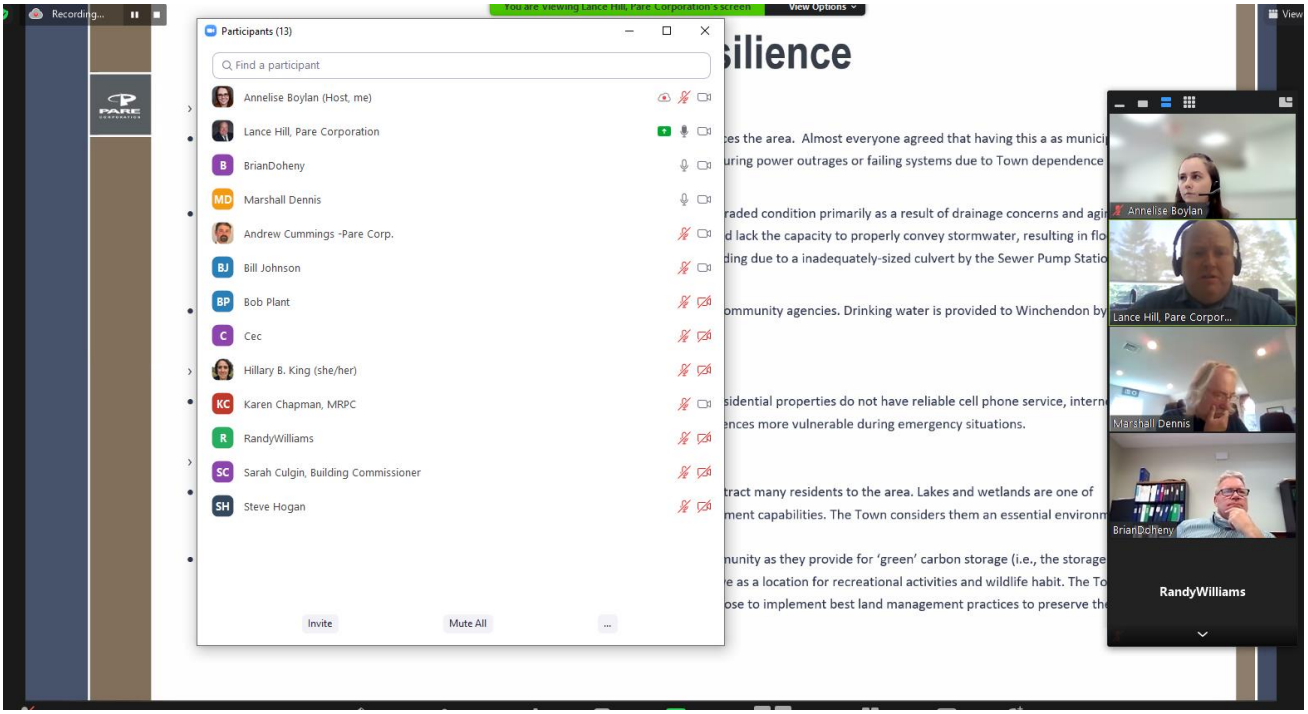
Recorded by Annelise Boylan on May 25th at 5pm

Participant's total (15):
Marshall Dennis
Bill Johnson
Bob Plant
Brian Doheny
Cec
Randy Williams

Lance
Annelise Boylan
Andrew Cummings
Hillary King
Karen Chapmen
Sarah Culgin
Steven Hogan
Gary Howland
Lorraine desouza

Notes:

- Lance started the presentation at 5:03 pm and ended at 5:31 PM
- Bill Johnson from the board of selectmen discussed how he was surprised to see that the need for a need DPW facility is missing from the mitigation measures for infrastructure. He stated that it is one of the town most important needs. Stating there was no mention of the current DPW facility for being inadequate and the DPW department needing more staff. He mentioned how the DPW facility has been on the docket for 20 years to be replaced, he stated how the second fire house was listed as a low priority which is not a necessity for the town to build at this time.
- Marshall stated that the DPW information was provided in his update he had provided to Pare that is to be updated in the future.
- Brian D stated that the DPW needs were discussed in his group during the CRB workshop about how new facility is needed and was requested to be integrated into the AMLD priorities since the DPW and AMLP work so closely together.
- Bill Johnson stated that for Table 4 he noticed many of the facility listed in the table are not up to date such as the old veteran's facility, the Mr. Mikes facility and others that are not places that exist anymore.
- Marshall stated that he provided pare with the updated Facilities table that is to be updated in the future.
- Bill stated that he was disappointed to see this information missing form the plan primarily the DPW facility because it is a big need for the town and reiterated that the DPW facility should be the number one priority.
- Marshall asked a question about the mitigation measure and how they are distinguished for time, money and level of effort. Annelise stated that table 22 as discussed with Marshall in the separate meeting, that the columns of time, money and departments being assigned to distinguish these differences to help guide the town when selection a project.
- Lance introduced Hillary King, Hillary explained the role of the MVP organization and how she is there to help the town in any of their needs.
- Steve Hogan asked Hillary what is typically the scope of the MVP action grant projects and if she could provide some examples.
- Hillary stated how the State as 10 million dollars per year for action grants for Municipalities or Regional projects. With 2 million dollars being the most allowed for local projects and 5 million for Regional Projects. She explained that the projects can have a broad scope that incorporate

the three elements of the Infrastructural, Societal and Environmental assessment to protect against natural hazards and future community planning for climate change.

- Marshall stated that he is looking for some final answers from the Core Team to finalize the LHMP and for the Core team to please provide a response to the May 15th email.
- Meeting ended at 5:49pm