

Marshfield Multi Hazard Mitigation Plan Update

Public Presentation 1 – December 13th, 2022

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Presentation Outline

1. Overview of Hazard Mitigation Plan Process

What is a Hazard Mitigation Plan and why should Marshfield have a current one?

2. Overview of MHMP Chapters

Chapter 3: Hazard Identification

Chapter 4: Vulnerability Assessment

3. Public Participation

4. Schedule

Marshfield Multi-Hazard Mitigation Plan



Prepared For:
Town of Marshfield
870 Moraine Street
Marshfield, MA 02050

Prepared By:
Woods Hole Group, Inc.
81 Technology Park Drive
East Falmouth, MA 02536

March 2018

Overview of Hazard Mitigation Plan Process

Natural hazard mitigation planning is the process of reducing or eliminating the loss of life and property damage resulting from natural hazards such as floods, earthquakes, and hurricanes through long-term strategies, including planning, policy changes, programs, projects, and other activities.



What is a Hazard Mitigation Plan?



Identify and
Describe Hazards

Identify Community
Assets and Critical
Facilities

Conduct
Vulnerability
Assessment

Develop
Mitigation Actions

Why Should Marshfield Have a Hazard Mitigation Plan?



1. Help Marshfield prevent property damage and loss of life associated with natural hazards and expedite disaster recovery.
2. Prioritizes spending by instituting mitigation measures to make to community more resilient.
3. Makes Marshfield Eligible for FEMA funding
 - Building Resilient Infrastructure and Communities (BRIC) Grants
 - Flood Mitigation Assistance Program
 - Hazard Mitigation Grant Program



Overview of Marshfield's Hazard Mitigation Plan

Chapter 1: Introduction

Chapter 2: Local Profile

**Chapter 3: Hazard
Identification**

Chapter 4: Vulnerability
Assessment

Chapter 5: Mitigation
Measures

Chapter 6: Plan
Maintenance Process



Chapter 3: Hazard Identification

- Location(s) Impacted
- Strength/Magnitude
- Previous Occurrences
- Probability of Future Events
- Potential Impacts

Flooding
(Coastal &
Inland)

Coastal
Erosion

Hurricane/
Tropical
Storm

Severe Winter
Weather

Wildfire

Tornado

Drought

Extreme
Temperature

Earthquake

Invasive
Species

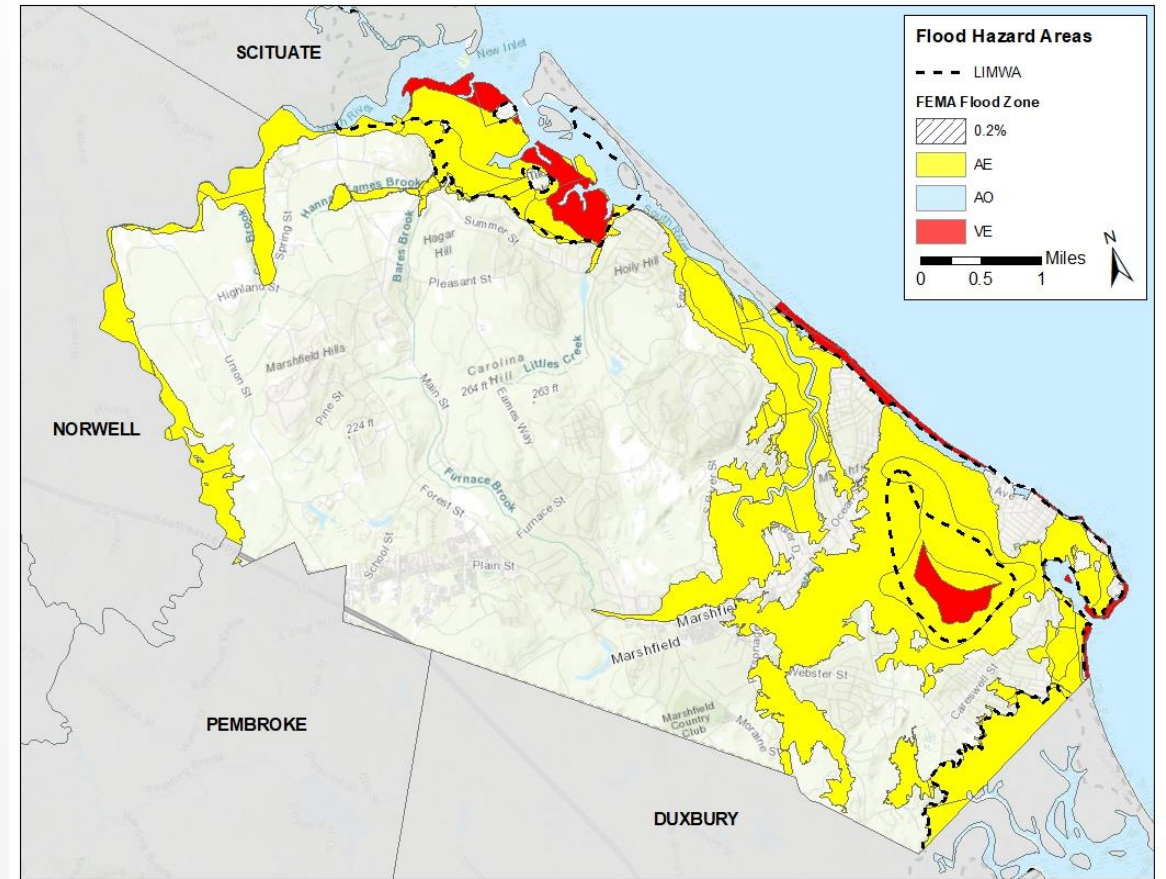
Other Severe
Weather

Landslide

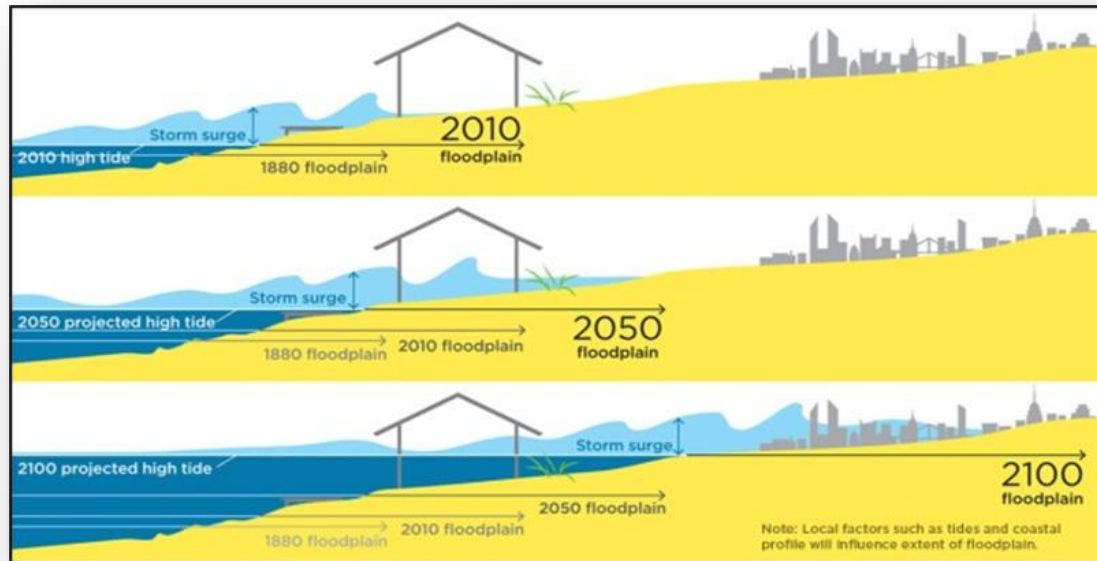
Tsunami

Dam/Culvert
Failure

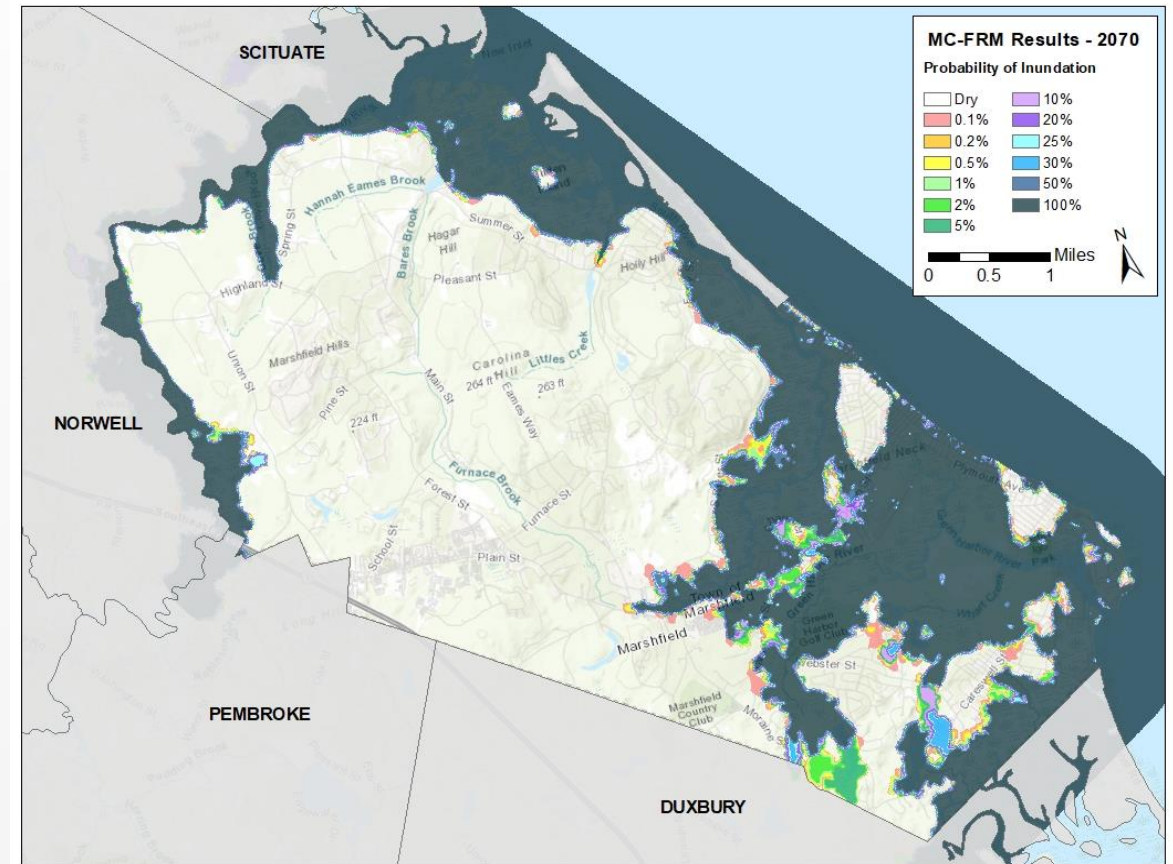
Chapter 3: Hazard Identification – Present Flooding (Coastal & Inland)



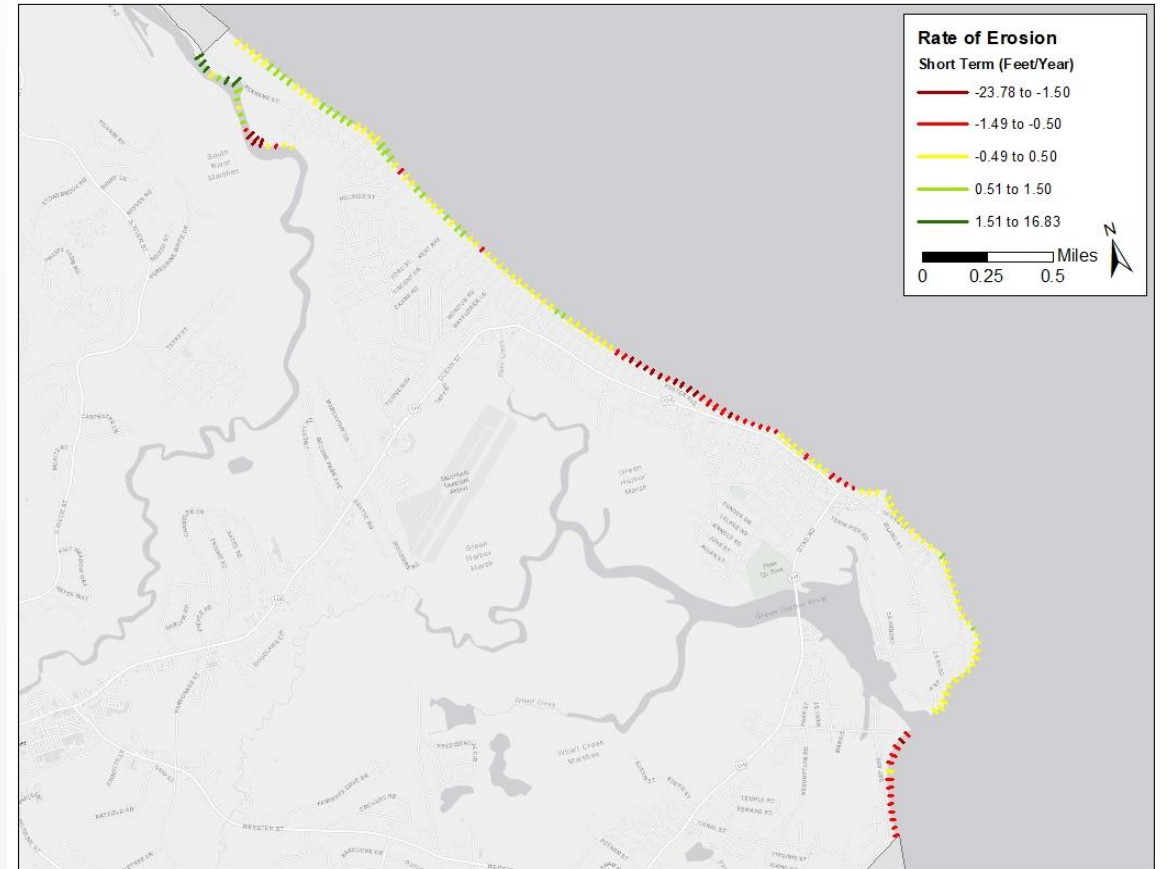
Chapter 3: Hazard Identification – Future Flooding (Coastal & Inland)



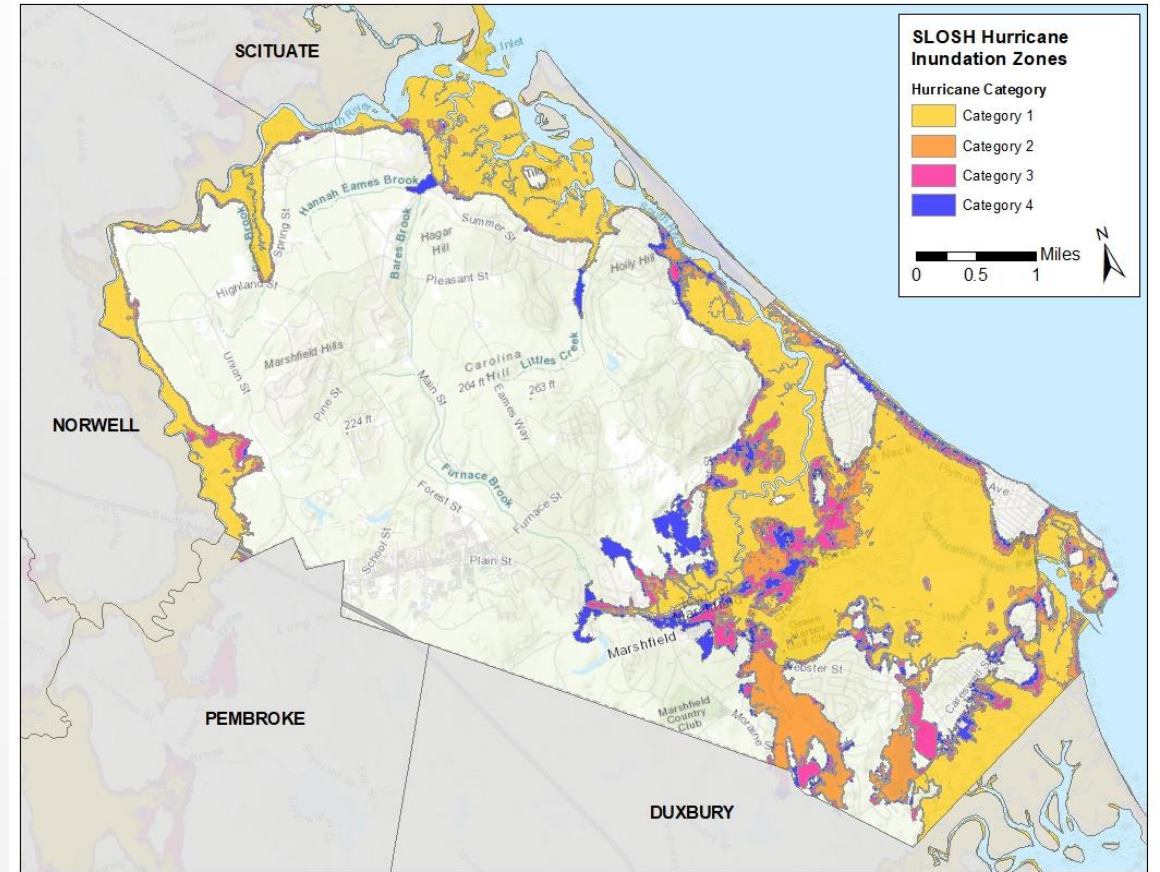
UCS. 2015. Causes of Sea Level Rise Fact Sheet. www.ucsusa.org/sealevelrisescience



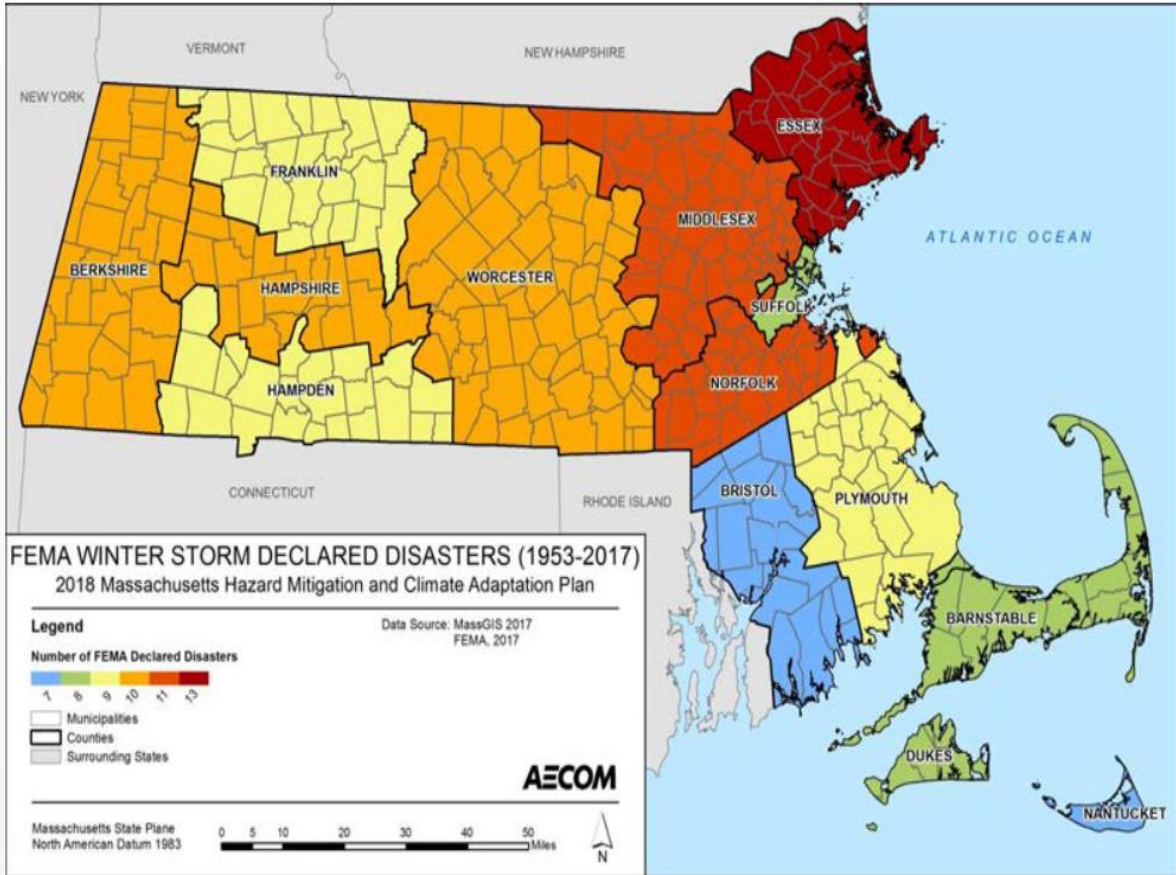
Chapter 3: Hazard Identification – Coastal Erosion



Chapter 3: Hazard Identification – Hurricanes / Tropical Storms

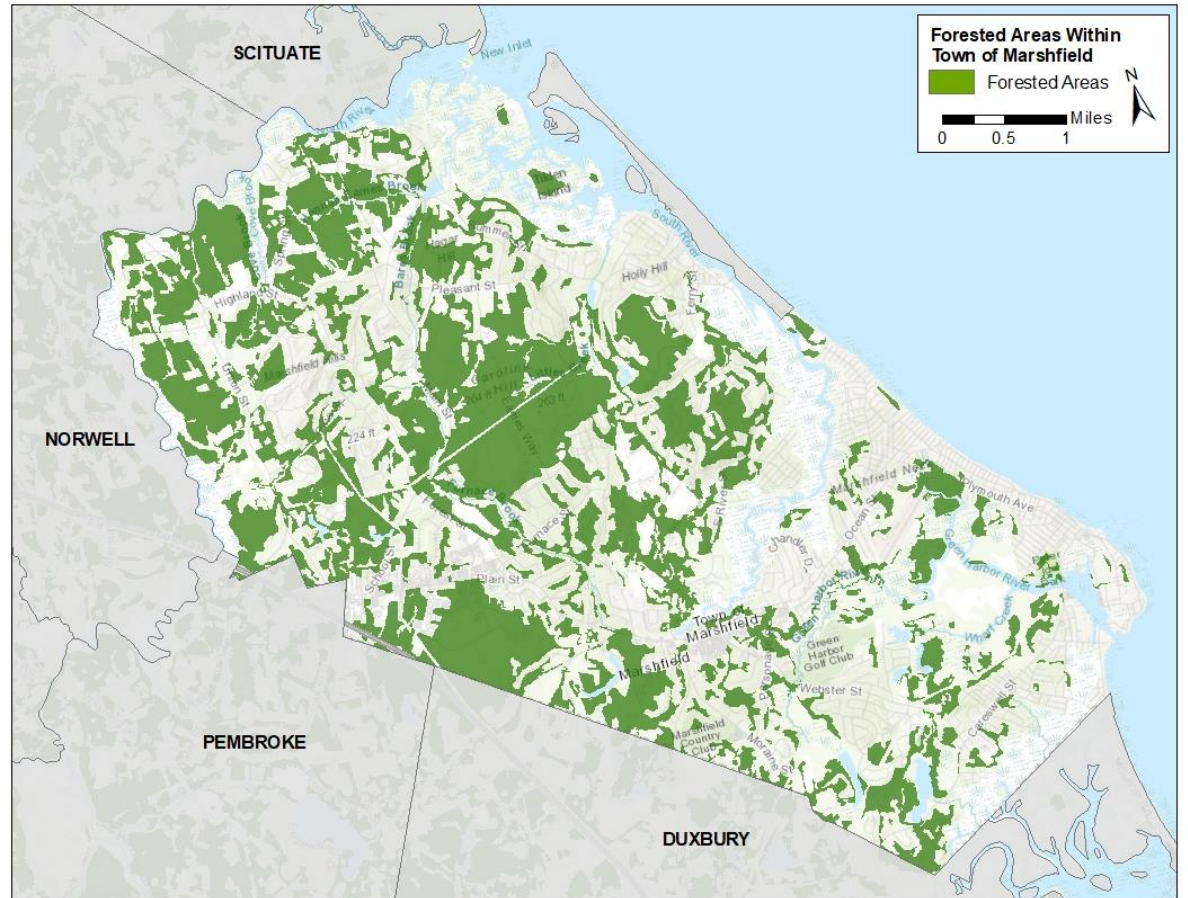


Chapter 3: Hazard Identification – Severe Winter Weather

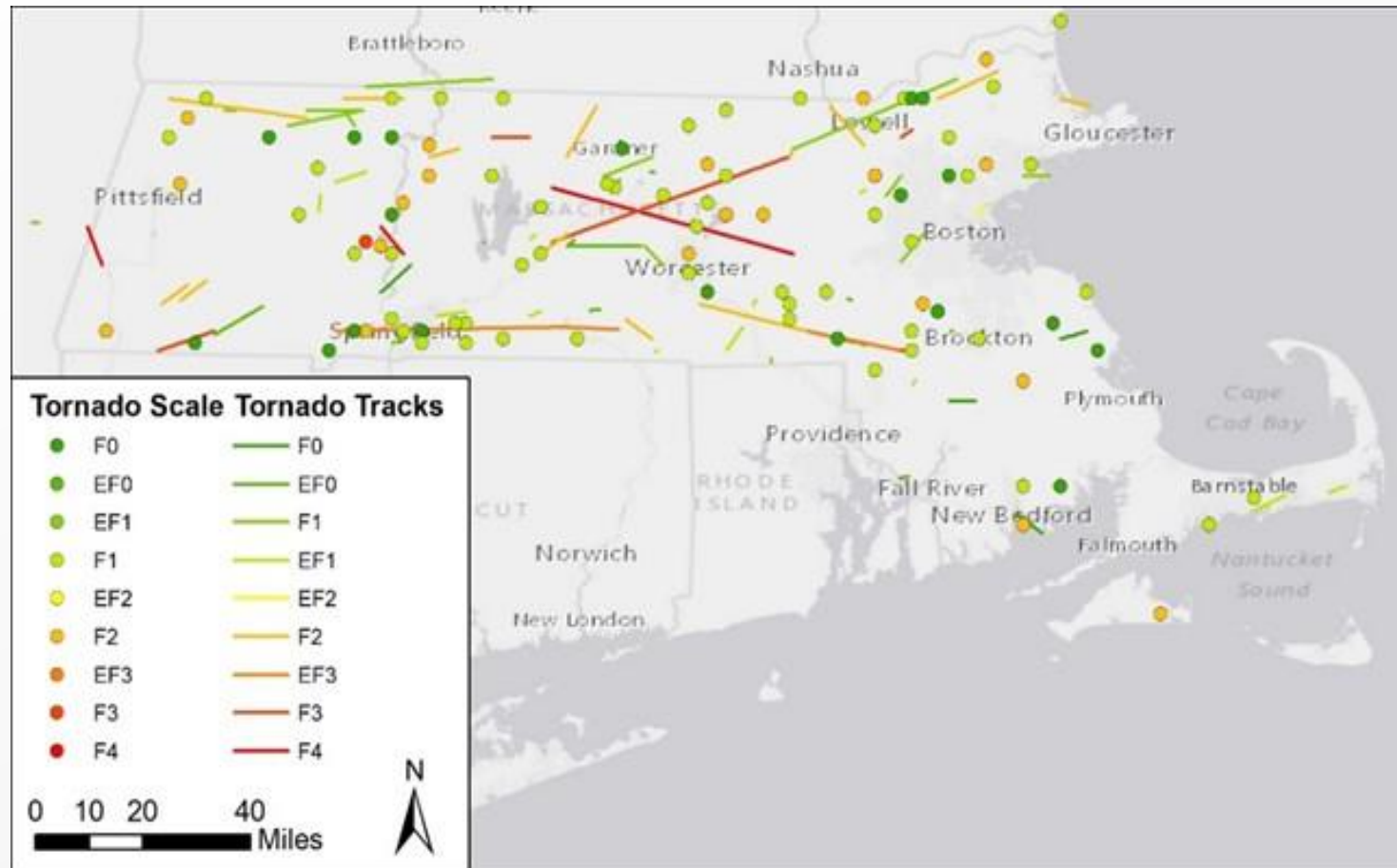


EEA. 2018. Massachusetts State Hazard Mitigation and Climate Adaptation Plan.

Chapter 3: Hazard Identification – Wildfire



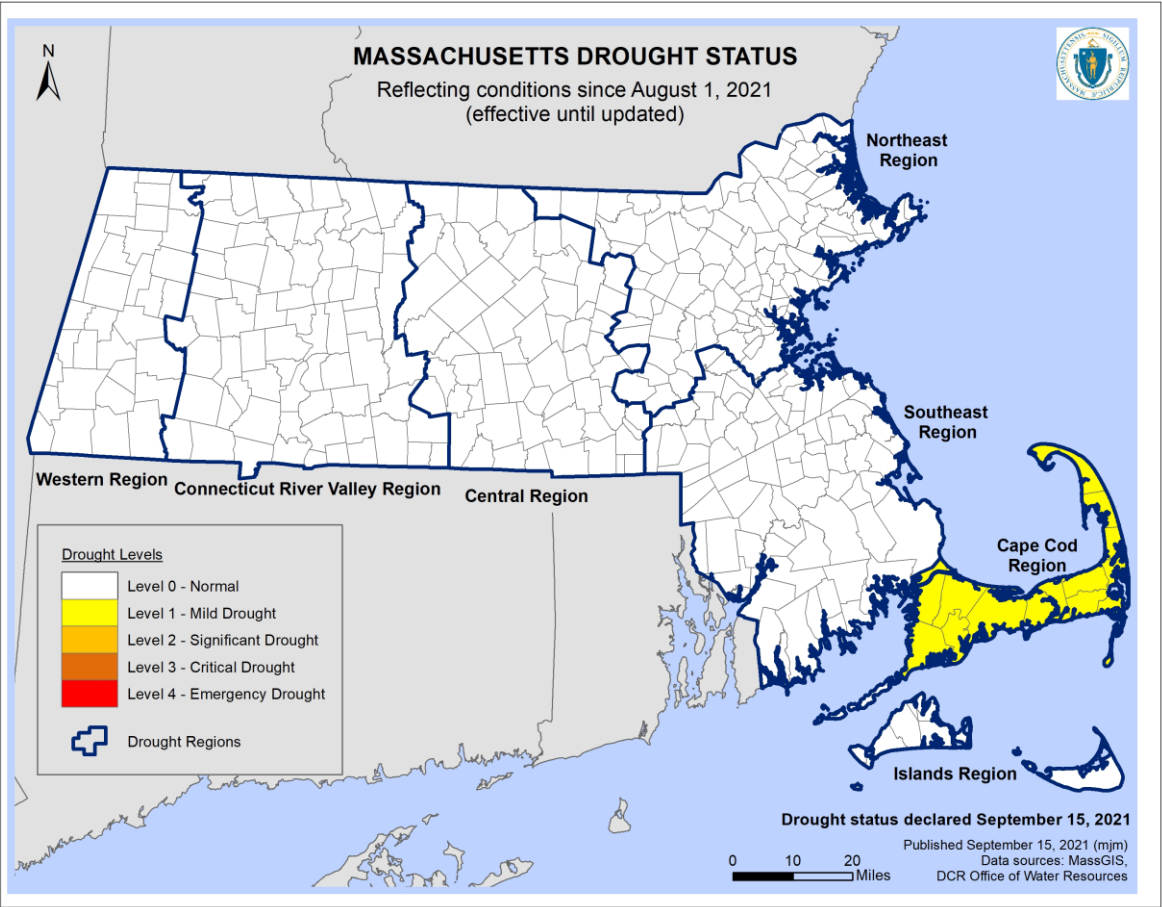
Chapter 3: Hazard Identification – Tornado



Chapter 3: Hazard Identification – Drought

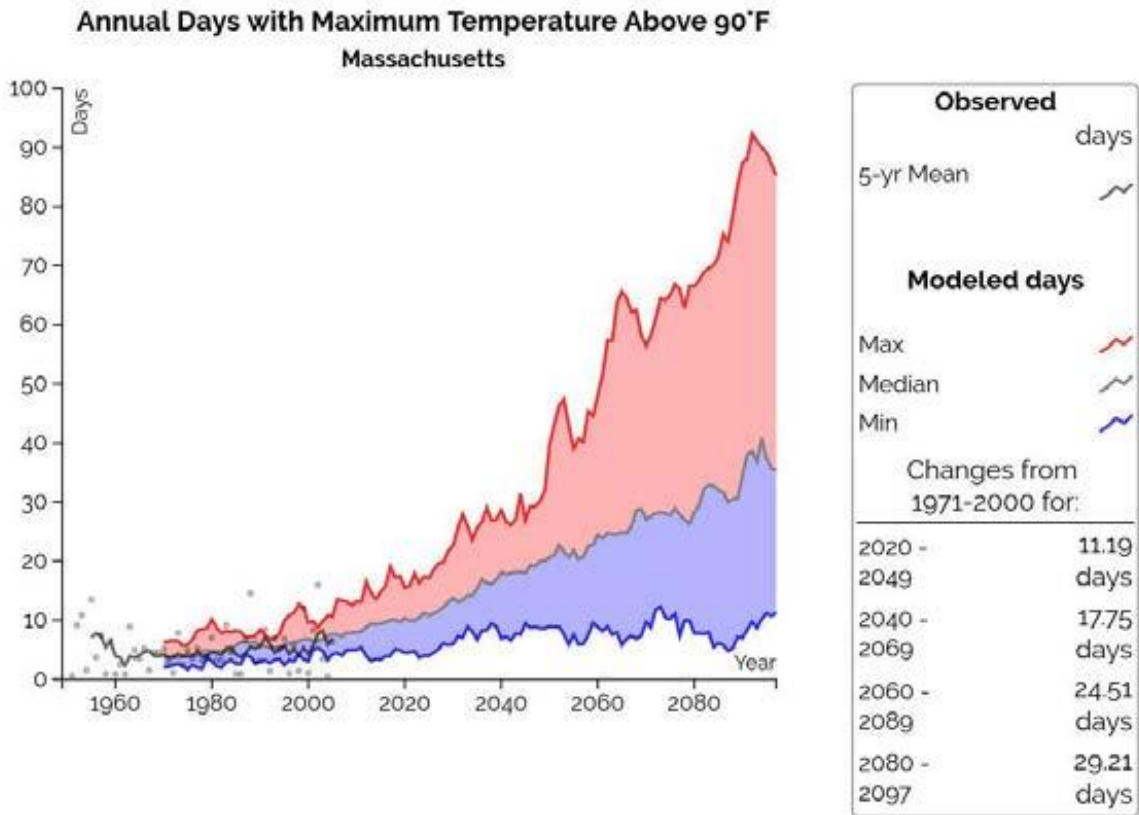
Massachusetts Drought Management Plan – Southeast Region 4/1/2022 – On Going	
April	Mild Drought
May	Significant Drought
June	Significant Drought
July (through mid-month)	Significant Drought
July	Critical Drought
August (through mid-month)	Critical Drought
August	Significant Drought
September	Mild Drought

Executive Office of Energy and Environmental Affairs. “Drought Status History,” September 2022.



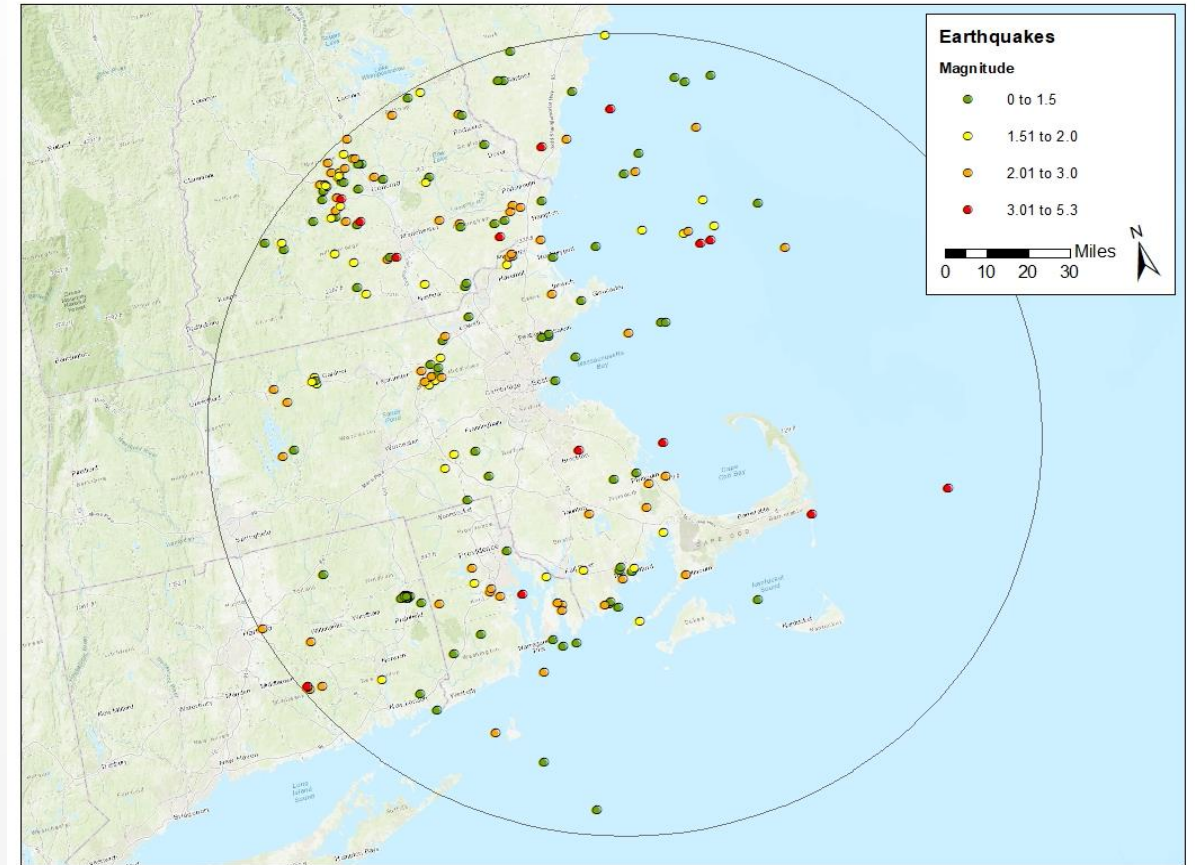
Executive Office of Energy and Environmental Affairs. “Massachusetts Drought Management Plan,” September 2019.

Chapter 3: Hazard Identification – Extreme Temperature



Executive Office of Energy and Environmental Affairs. “Massachusetts Integrated State Hazard Mitigation and Climate Adaptation Plan,” September 2018.

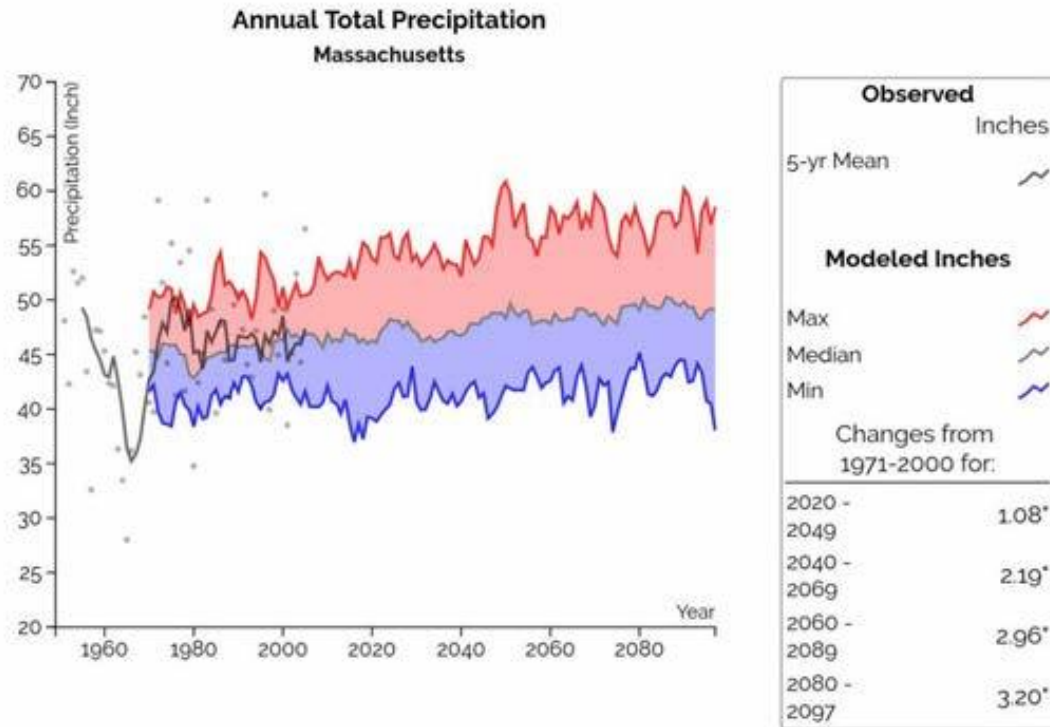
Chapter 3: Hazard Identification – Earthquakes



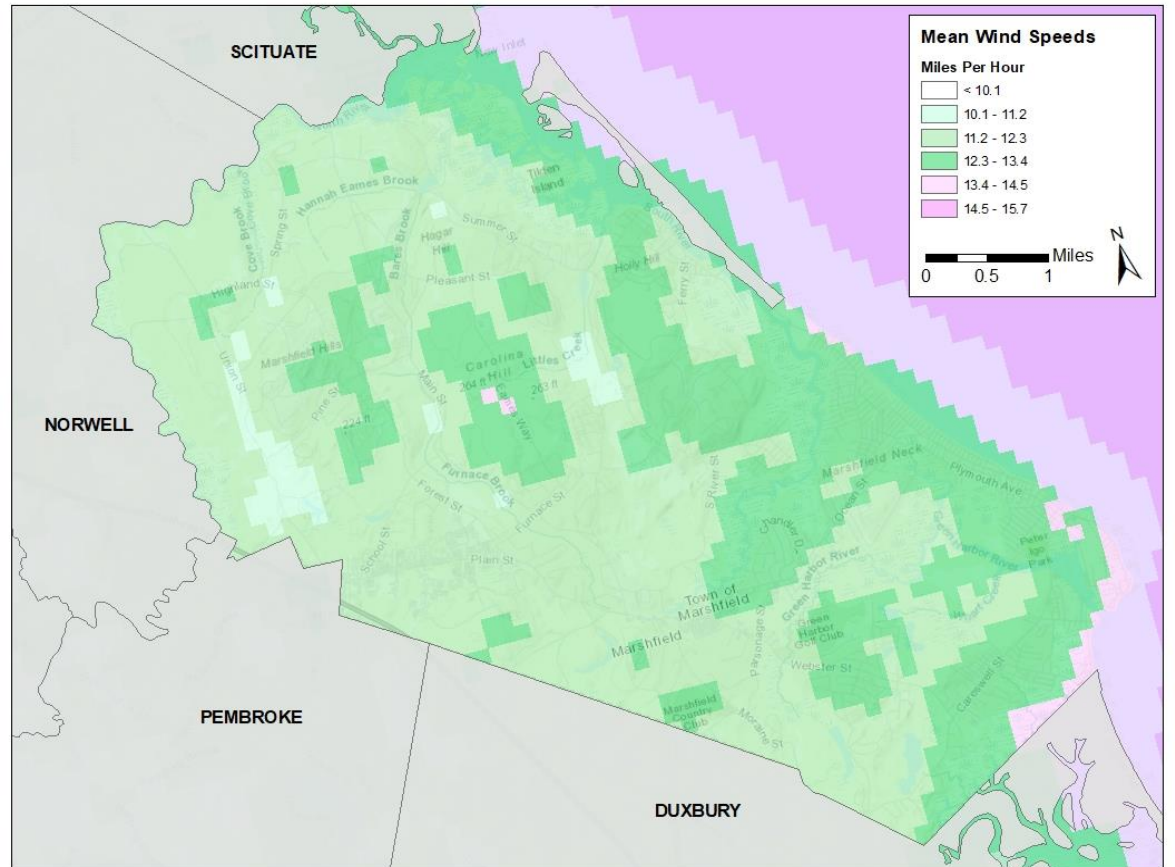
Earthquakes Within 100
Miles of Marshfield since
1970 (USGS)



Chapter 3: Hazard Identification – Other Severe Weather



Executive Office of Energy and Environmental Affairs. "Massachusetts Integrated State Hazard Mitigation and Climate Adaptation Plan," September 2018.



Chapter 3: Hazard Identification – Relative Risk of Hazards

	Likelihood				Severity				Area		Estimated Cumulative Risk
	Unlikely	Possible	Likely	Highly Likely	Minor	Serious	Extensive	Catastrophic	Isolated	Town Wide	
Score	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	
Severe Winter Weather				X		X	P			X	16
Extreme Temperature				X		X				X	16
Flooding (Inland & Coastal)				X			X		X		12
Other Severe Weather				X			X	P	X	P	12
Coastal Erosion				X		X	P		X		8
Earthquake		X				X		P		X	8
Hurricane & Tropical Storm			X			X	P		X	P	6
Drought		X			X					X	4
Dam/Culvert Failure		X				X			X		4
Wildfire		X				X	P		X		4
Invasive Species									X	P	4
Tornado		X			X				X		2
Landslide	X				X	P			X		1
Tsunami	X				X			P	X		1

- X indicates the believed value, while P indicates an extreme potential.
- This value is based on the formula:
Likelihood*Severity*Area.
- The Likelihood of the hazard is based on a scale of 1 to 4, with 1 being unlikely and 4 being highly likely.
- The Severity of the hazard was based on a scale from 1 to 4, with 1 being minor and 4 being catastrophic.
- Area was given a value of 1 for isolated and 2 for town-wide. The “P”s were not incorporated into the Estimated Cumulative Risk value.



Overview of Marshfield's Hazard Mitigation Plan

Chapter 1: Introduction

Chapter 2: Local Profile

Chapter 3: Hazard
Identification

**Chapter 4: Vulnerability
Assessment**

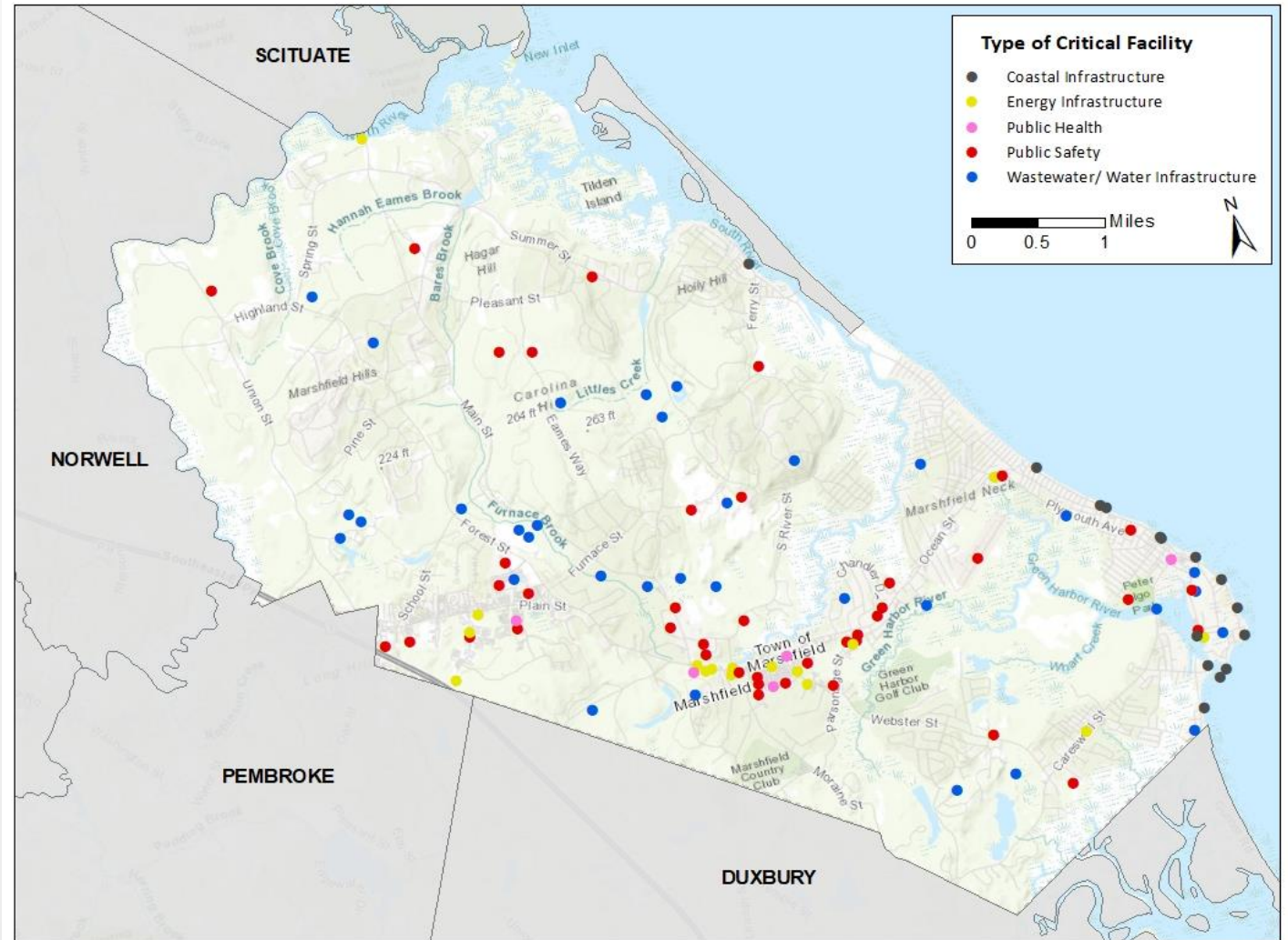
Chapter 5: Mitigation
Measures

Chapter 6: Plan
Maintenance Process

Chapter 4: Vulnerability Assessment

1. Vulnerability Assessment of critical facilities (Flooding).*
2. Vulnerability Assessment of Town Wide Parcels (Flooding).*
3. Qualitative Evaluation of Vulnerability of Critical Facilities to Additional Hazards.

*Includes FEMA, SLOSH and MC-FRM data



Chapter 4: Vulnerability Assessment - Critical Facilities

Category	ID	Name	FEMA Flood Zone	Min Hurricane Category That Will Affect Facility	Storm Surge Inundation Risk 2030	Storm Surge Inundation Risk 2050	Storm Surge Inundation Risk 2070
Coastal Infrastructure	1	Timber Bulk Head	AE	2	12%	75%	75%
	2	South River Revetment	AE	2	25%	78%	78%
	3	Fieldston Sea Wall	VE	1	75%	76%	81%
	4	Ocean Bluff Sea Wall	AO	1	97%	100%	100%
	5	Ocean Bluff Stone Revetment	AO	1	100%	100%	100%
	6	Hewitt's Point Sea Wall	VE	4	48%	48%	69%
	7	Hewitt's Revetment	VE	4	91%	91%	100%
	8	Brant Rock Seawall – Part A	VE	4	45%	80%	83%
	9	Brant Rock Seawall – Part B	VE	3	72%	80%	80%
	10	Brant Rock Revetment	VE	4	72%	82%	84%
	11	Brant Rock Rip Rap Slope	VE	2	40%	40%	48%
	12	Town Pier Sea Wall	AE	2	58%	77%	89%
	13	Green Harbor Stone Jetty East	VE	2	100%	100%	100%
	14	Green Harbor Stone Jetty West	VE	3	100%	100%	100%
	15	Bay Ave Sea Wall	VE	1	98%	98%	98%

Chapter 4: Vulnerability Assessment - Critical Facilities

Category	ID	Name	FEMA Flood Zone	Min Hurricane Category That Will Affect Facility	Storm Surge Inundation Risk 2030	Storm Surge Inundation Risk 2050	Storm Surge Inundation Risk 2070
Energy Infrastructure	16	Ocean Bluff Auto	AE	1	9%	53%	75%
	17	Cedar View Filling Station					
	18	A L Prime			1%	6%	29%
	19	Rand Handy Oil Co		2		75%	75%
	20	Public Petro	AE	4			
	21	Bill's Sunco	AE	4			2%
	22	Speedway Gas Station	AE				
	23	Shell Gas Station	AE				
	24	Taylor Marine		2	22%	45%	80%
	25	Roht Marine		1	58%	59%	76%
	26	Town of Marshfield Fuel Station	AE	3	3%	22%	35%
	27	Taylor Lumber Propane		4			
	28	Maintenance Facility	AE				
	29	Williams Coal & Oil Co.					
	30	Bay State Gas					
	31	Rand Handy Propane					

Chapter 4: Vulnerability Assessment - Critical Facilities

Category	ID	Name	FEMA Flood Zone	Min Hurricane Category That Will Affect Facility	Storm Surge Inundation Risk 2030	Storm Surge Inundation Risk 2050	Storm Surge Inundation Risk 2070
Public Health	32	Brant Rock Food Market	AE	2	14%	63%	75%
	33	Roche Brothers					
	34	Star Market					
	35	CVS		4			
	36	Walgreens Pharmacy					

Chapter 4: Vulnerability Assessment - Critical Facilities

Category	ID	Name	FEMA Flood Zone	Min Hurricane Category That Will Affect Facility	Storm Surge Inundation Risk 2030	Storm Surge Inundation Risk 2050	Storm Surge Inundation Risk 2070
Public Safety	37	Prence Grant Apt No. 1					
	38	Prence Grant Apt No. 2		4		6%	6%
	39	Proprietors Green Village Welch Health Care					
	40	Marshfield Veterans Home		4			
	41	Winslow Village No. 1		4			
	42	Winslow Village No. 2		4			
	43	Coastguard Relay Antenna					
	44	WATD media/Fire Radio system					
	45	Monopole	AE	3		2%	30%
	46	Verizon Telephone Exchange					
	47	Eversource Sub Station No. 1		3			
	48	Eversource Sub Station No. 2					
	49	Eversource Sub Station LAT 42.0886 Long -70.65	AE	1	7%	46%	74%
	50	Industrial Commercial Cell/Radio Tower					
	51	Radio Tower - Carolina Hill					
	52	WATD Media/Fire Municipal radio system					
	53	Cell Phone Tower	AE	1	9%	53%	75%
	54	Cell Phone Tower (American)					
	55	Cell Phone Tower					
	56	Marshfield Housing Authority - Housing					
	57	Grace Ryder Apartments					
	58	Main Post Office					

Chapter 4: Vulnerability Assessment - Critical Facilities

Category	ID	Name	FEMA Flood Zone	Min Hurricane Category That Will Affect Facility	Storm Surge Inundation Risk 2030	Storm Surge Inundation Risk 2050	Storm Surge Inundation Risk 2070
Public Safety	59	Marshfield Town Hall					59%
	60	Marshfield Animal Shelter					60%
	61	DPW Barn		3			1%
	62	DPW Main Office					
	63	Marshfield Senior Center					
	64	Road to Responsibility/Ventress Public Library		3	1%	75%	75%
	65	Marshfield Town Pier/Harbor Master Building	AE	2	29%	43%	81%
	66	Town Airport	AE	1	9%	53%	75%
	67	Daniel Webster School		4			1%
	68	South River School				4%	17%
	69	Furnace Brook Middle School					
	70	Marshfield High School					
	71	Martinson Elementary School					
	72	Eames Way Elementary School					
	73	Gov Edward Winslow School					
	74	Marshfield Police Station/EOC		4			
	75	Fire Station No. 2					
	76	Marshfield Fire Department – Central Fire Station					
	77	Fire Station No. 1	AO			5%	51%

Chapter 4: Vulnerability Assessment - Critical Facilities

Category	ID	Name	FEMA Flood Zone	Min Hurricane Category That Will Affect Facility	Storm Surge Inundation Risk 2030	Storm Surge Inundation Risk 2050	Storm Surge Inundation Risk 2070
Wastewater/ Water Infrastructure	78	Central Street Wastewater Pump Station	AE	2	12%	65%	75%
	79	Solid Waste Transfer Station					
	80	Wastewater Treatment Plant	AE	3		2%	42%
	81	Marshfield High School Wastewater Treatment Facility					
	82	Homestead Ave. Wastewater Pump Station		3	14%	15%	21%
	83	Plymouth Ave. Wastewater Pump Station	AE	1	9%	53%	75%
	84	Macker Terrace Wastewater Pump Station	AE	1	9%	53%	75%
	85	Anderson Dr. Wastewater Pump Station	AE	2	65%	75%	75%
	86	Carolina Hill Water Tank					
	87	Furnace Brook Water Pumping Station No. 4					
	88	Mt. Skirgo Rd. Water Pump					
	89	South River Pumping Station					
	90	Avon St. Wastewater Pump Station	AE	2	12%	75%	75%
	91	Webster St. Pumping Station No. 1					
	92	Church St. Water Pumping Station					
	93	Webster St. Pumping Station No. 2		3			4%

Chapter 4: Vulnerability Assessment - Critical Facilities

Category	ID	Name	FEMA Flood Zone	Min Hurricane Category That Will Affect Facility	Storm Surge Inundation Risk 2030	Storm Surge Inundation Risk 2050	Storm Surge Inundation Risk 2070
Wastewater/ Water Infrastructure	94	Furnace Brook Water Pumping Station No. 1					
	95	Union St. Water Pump Station No. 2					
	96	Furnace Brook Water Pumping Station No. 3					
	97	Ferry St. Water Pumping Station No. 2					
	98	Main Lift Pump Station	AE	2	14%	62%	75%
	99	Furnace Brook No. 2 Water Treatment Facility					
	100	Spring St. Water Pump					
	101	Union St. Water Pump Station No. 2					
	102	Pudding Hill Lane Water Tank					
	103	Telegraph Hill Water Tank					
	104	Ferry St. Water Pumping Station No. 1					
	105	Furnace Brook Water Pumping Station No. 2					
	106	School St. Water Pumping Station					
	107	Fairgrounds Well Site					
	108	Water Standpipe Forest St.					
	109	Dam - Dyke Rd. Dam	AE	3	44%	53%	80%
	110	Dam - Magoun Pond Dam					

Chapter 4: Vulnerability Assessment of Parcels & Buildings

VE FEMA Flood Zone

Land Use	Number of Parcels			Value of Buildings			Value of Total Property		
	Total	Total in Hazard	% in Hazard	Total Value	Total Value in Hazard	% Value in Hazard	Total Value	Total Value in Hazard	% Value in Hazard
Residential - Single Family	9,378	305	3%	\$2,462,858,350	\$70,295,100	3%	\$4,935,214,965	\$212,734,700	4%
Residential - Multi-Family	83	2	2%	\$166,521,000	\$1,582,900	1%	\$213,178,500	\$1,950,400	1%
Temporary Lodging	1	0	0%	\$597,900	\$0	0%	\$902,100	\$0	0%
Commercial - Retail/Offices/Services	195	1	1%	\$100,789,507	\$0	0%	\$197,621,107	\$259,900	0%
Commercial - Manufacturing/Distribution	46	0	0%	\$27,831,400	\$0	0%	\$54,824,400	\$0	0%
Public Services	117	0	0%	\$204,347,708	\$0	0%	\$276,934,708	\$0	0%
Agricultural	6	0	0%	\$223,700	\$0	0%	\$1,549,439	\$0	0%
Open Space	944	21	2%	\$3,462,200	\$358,500	10%	\$137,403,070	\$8,360,900	6%
Recreation	9	0	0%	\$4,101,000	\$0	0%	\$18,064,046	\$0	0%
Vacant	935	17	2%	\$17,884,900	\$113,200	1%	\$92,893,336	\$1,532,700	2%
Total	11,714	346	3%	\$2,988,617,665	\$72,349,700	2%	\$5,928,585,671	\$224,838,600	4%

Chapter 4: Vulnerability Assessment of Parcels & Buildings

Category 2 Hurricane (Slosh 2)

Land Use	Number of Parcels			Value of Buildings			Value of Total Property		
	Total	Total in Hazard	% in Hazard	Total Value	Total Value in Hazard	% Value in Hazard	Total Value	Total Value in Hazard	% Value in Hazard
Residential - Single Family	9,378	523	6%	\$2,462,858,350	\$92,069,500	4%	\$4,935,214,965	\$222,651,900	5%
Residential - Multi-Family	83	4	5%	\$166,521,000	\$1,584,800	1%	\$213,178,500	\$2,319,600	1%
Temporary Lodging	1	0	0%	\$597,900	\$0	0%	\$902,100	\$0	0%
Commercial - Retail/Offices/Services	195	17	9%	\$100,789,507	\$4,267,900	4%	\$197,621,107	\$8,376,500	4%
Commercial - Manufacturing/Distribution	46	3	7%	\$27,831,400	\$545,800	2%	\$54,824,400	\$1,251,300	2%
Public Services	117	9	8%	\$204,347,708	\$738,500	0%	\$276,934,708	\$3,979,800	1%
Agricultural	6	0	0%	\$223,700	\$0	0%	\$1,549,439	\$0	0%
Open Space	944	51	5%	\$3,462,200	\$0	0%	\$137,403,070	\$3,803,300	3%
Recreation	9	1	11%	\$4,101,000	\$0	0%	\$18,064,046	\$15,284	0%
Vacant	935	64	7%	\$17,884,900	\$59,500	0%	\$92,893,336	\$4,084,400	4%
Total	11,714	672	6%	\$2,988,617,665	\$99,266,000	3%	\$5,928,585,671	\$246,482,084	4%

Chapter 4: Vulnerability Assessment of Parcels & Buildings

Major Storm Event in 2050

Land Use	Number of Parcels			Value of Buildings			Value of Total Property		
	Total	Total in Hazard	% in Hazard	Total Value	Total Value in Hazard	% Value in Hazard	Total Value	Total Value in Hazard	% Value in Hazard
Residential - Single Family	9,378	3,543	38%	\$2,462,858,350	\$772,538,000	31%	\$4,935,214,965	\$1,018,616,947	21%
Residential - Multi-Family	83	39	47%	\$166,521,000	\$35,887,100	22%	\$213,178,500	\$16,400,200	8%
Temporary Lodging	1	0	0%	\$597,900	\$0	0%	\$902,100	\$0	0%
Commercial - Retail/Offices/Services	195	86	44%	\$100,789,507	\$40,266,675	40%	\$197,621,107	\$37,099,300	19%
Commercial - Manufacturing/Distribution	46	8	17%	\$27,831,400	\$2,091,800	8%	\$54,824,400	\$398,100	1%
Public Services	117	47	40%	\$204,347,708		0%	\$276,934,708	\$28,015,300	10%
Agricultural	6	2	33%	\$223,700	\$223,700	100%	\$1,549,439	\$1,158,800	75%
Open Space	944	355	38%	\$3,462,200	\$794,600	23%	\$137,403,070	\$51,858,890	38%
Recreation	9	6	67%	\$4,101,000	\$1,827,000	45%	\$18,064,046	\$7,368,540	41%
Vacant	935	413	44%	\$17,884,900	\$3,371,600	19%	\$92,893,336	\$27,139,300	29%
Total	11,714	4,499	38%	\$2,988,617,665	\$857,000,475	29%	\$5,928,585,671	\$1,188,055,377	20%

Public Participation

Future Opportunities to
Participate in the HMP
Process



Public Participation: Future Opportunities to Participate in MHMP Process



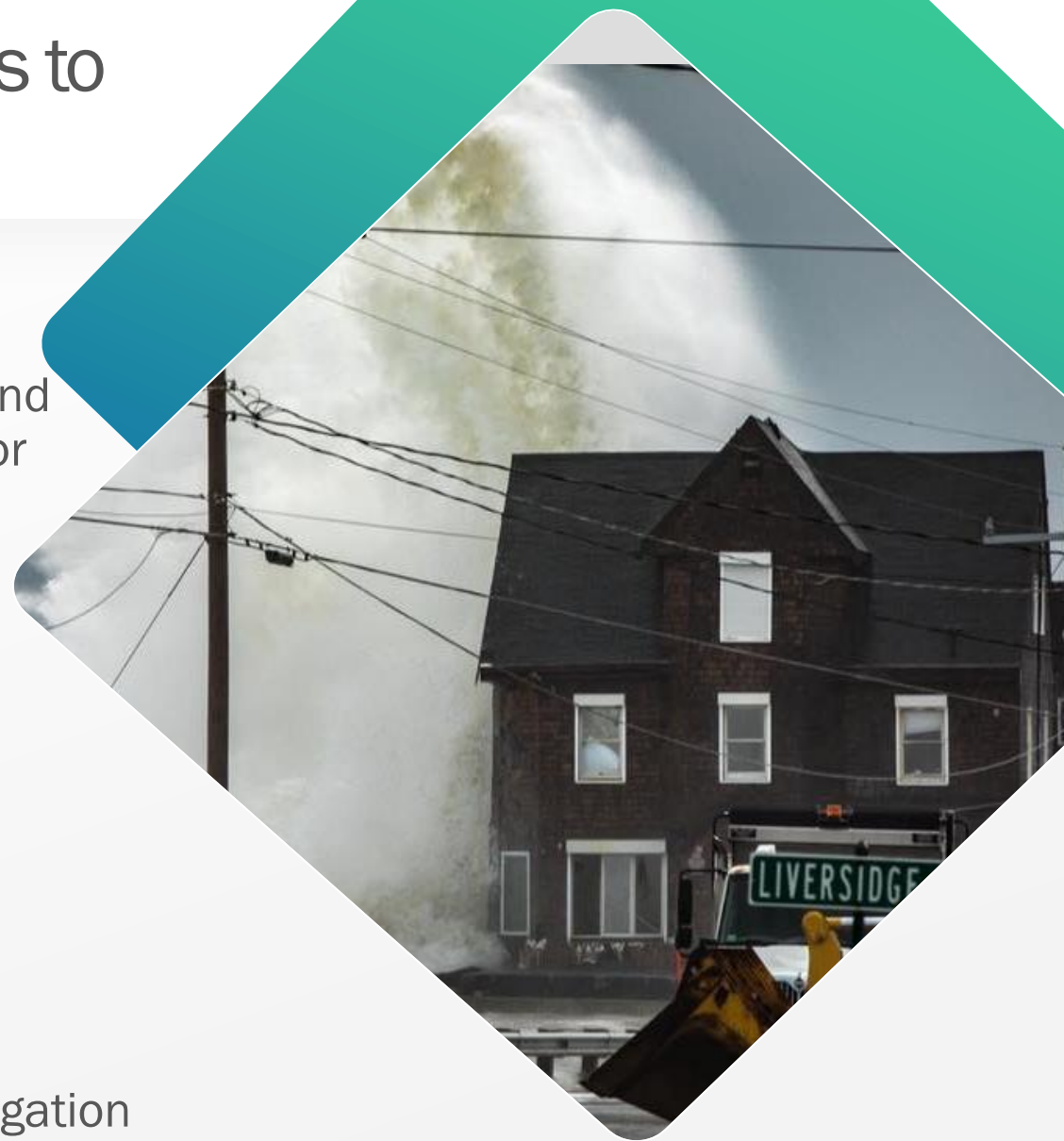
Provide comments or feedback to Greg Guimond at anytime in the process at (781) 834-5554 or at gguimond@townofmarshfield.org.



2nd Public Presentation: March 7th, 2023 (tentative)



Review and comment on the Draft Hazard Mitigation Plan document: February 2022



Schedule



Questions?



Open the camera on your smartphone and point it at the QR code to take the Marshfield Public Survey.

As residents of Marshfield, do you know of:

- Any areas of vulnerability within the Town?
- Any suggested actions to address those vulnerabilities?
- Any issues with coastal erosion?
- Any knowledge of problematic invasive species within the Town?



Email comments to Greg Guimond at gguimond@townofmarshfield.org

www.woodsholegroup.com