









Legend

Critical Infrastructure Category

- Beach
- Ferry Terminal
- Fire Station
- Info Center
- Landfill
- Library
- Lighthouse
- Medical Facility
- Park-n-Ride
- Police Station
- Public Restroom
- School
- Town Hall
- Waste/Recycle Transfer Station
- Wastewater Treatment Plant

Features

- Town Boundary
- Structures\*
- Coastline

Sea Level Rise

(based on LiDAR Elevation)

- <=1ft

>1ft to 2ft

>2ft to 3ft

>3ft to 4ft

>4ft to 5ft

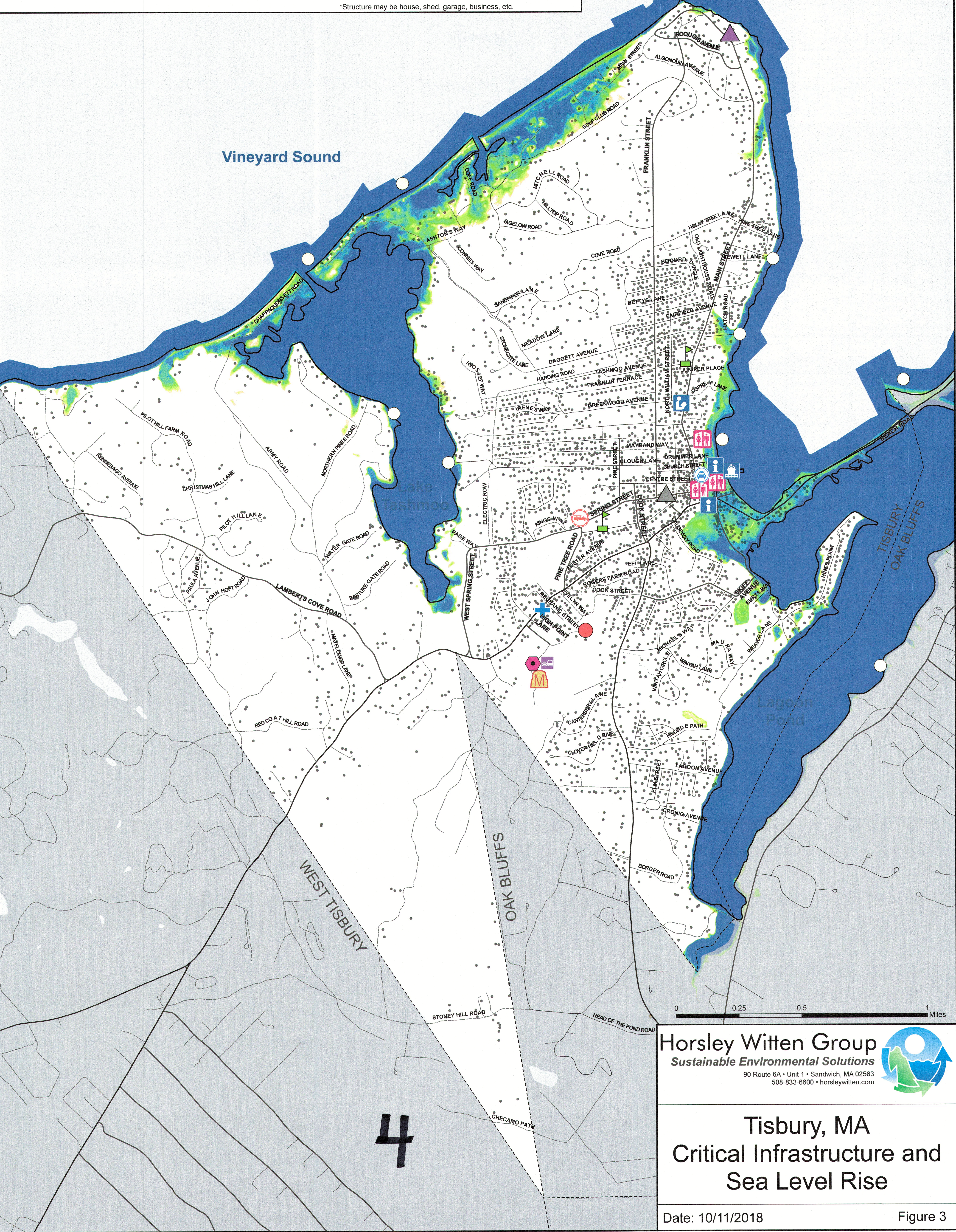
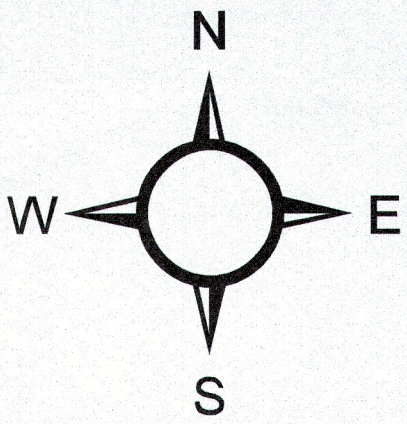
>5ft to 6ft

>6ft to 7ft

>7ft to 8ft

>8ft to 9ft

>9ft to 10ft
- \*Structure may be house, shed, garage, business, etc.



Horsley Witten Group  
Sustainable Environmental Solutions

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Tisbury, MA  
Critical Infrastructure and  
Sea Level Rise
















Date: 10/11/2018

Figure 3










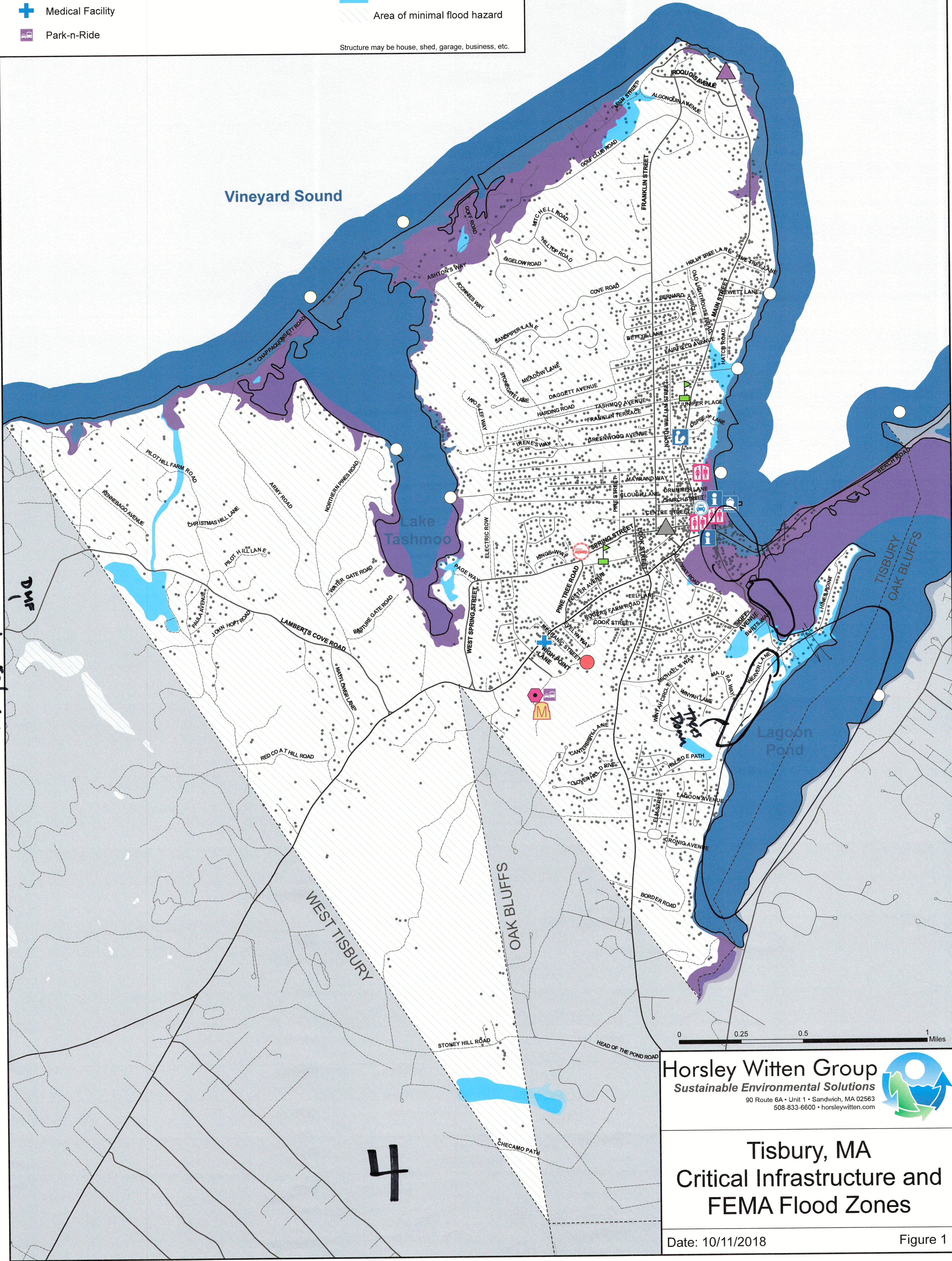
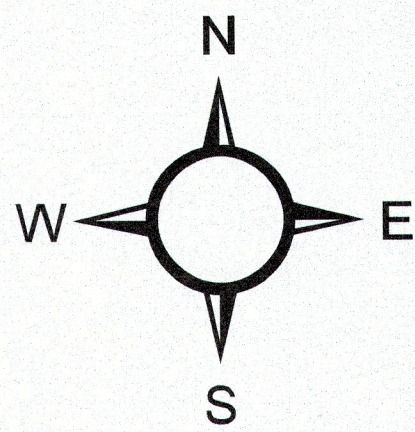
Legend

Critical Infrastructure Category

- |   |                  |   |                                |
|---|------------------|---|--------------------------------|
|  | Beach            |  | Police Station                 |
|  | Ferry Terminal   |  | Public Restroom                |
|  | Fire Station     |  | School                         |
|  | Info Center      |  | Town Hall                      |
|  | Landfill         |  | Waste/Recycle Transfer Station |
|  | Library          |  | Wastewater Treatment Plant     |
|  | Lighthouse       |   |                                |
|  | Medical Facility |   |                                |
|  | Park-n-Ride      |   |                                |

Features

- |   |               |
|---|---------------|
|  | Town Boundary |
|  | Structures*   |
|  | Coastline     |
- Flood Hazard Area**  
eff. 07/20/2016
- |   |                               |
|---|-------------------------------|
|  | 100 Year Flood Area (AE Zone) |
|  | 100 Year Flood Area (VE Zone) |
|  | 500 Year Flood Area           |
|  | Area of minimal flood hazard  |
- Structure may be house, shed, garage, business, etc.



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**Tisbury, MA**  
**Critical Infrastructure and**  
**FEMA Flood Zones**

Date: 10/11/2018

Figure 1



## **Attachment F: All Groups - Recommended Action Items**



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Community Resilience Building Risk Matrix				Recommended Action Items				www.CommunityResilienceBuilding.org				
Location = Mark on the map, note on matrix Multiple, Specific or Town-Wide <b>V</b> = Vulnerability <b>S</b> = Strength Type of Feature = <b>I</b> nfrastructural, <b>S</b> ocietal, or <b>E</b> nvironmental <b>H</b> igh, <b>M</b> edium, or <b>L</b> ow priority for action over the <b>S</b> hort or <b>L</b> ong term (and <b>U</b> ngoing)				Top Priority Hazards (floods, wildfire, hurricanes, drought, sea level rise, heat wave, etc.)								
				Intense Rain/Flooding	Hurricanes/Nor' Easters	Coastal Flooding/Storm Surge	Sea Level Rise	Group	Priority	Time		
								1-4	H - M - L	Short	Long	Ongoing
Features		Location	Owner	V or S								
Infrastructural												
Waterfront area flooding	Waterfront	Public/Private	V	Complete a comprehensive stormwater study				1	H			
Northside (Eastville) Breakwater	Eastville		V	Extend the north side (Eastville) beach water to protect Beach Road and the harbor				1	H			
Beach Road Seawall	Beach Road	State	V	Harden the Beach Road seawall				1	H			
Harbor protection	Waterfront		V	Extend northside (Eastville) breakwater to protect the harbor.				2	H			
Downtown roads vulnerable to flooding	Waterfront		V	Initiate roadway improvements to improve resiliency to coastal flooding, storm surge and sea level rise including, but not limited to: Water Street from 5 Corners to Union Street, Beach Road from 5 Corners to the Bridge, and Lagoon Pond Road to Hines Point.				2	H			
Stormwater network	Townwide	Town	V	Increase retention areas to reduce flows to low areas, porous pavement, green infrastructure				2	H			
Downtown area including Steamship Authority - 5 Corners - Beach Road	Waterfront	Public/Private	V	Raising roads and improving drainage, incentivizing the movement of facilities to higher ground (especially essential services) and purchasing properties to mitigate affects of floods and coastal resiliency.				3	H			
Drainage network	Townwide	Town	V	Redirecting and/or diverting stormwater to bioretention systems in key areas to avoid flooding and pollution of harbor and waterways.				3	H			
Secondary Transportation Hub	Townwide	Town	V	Identify a secondary transportation hub for use in ensuring that essential items can get to the island and provide for storage and distribution of commodities.				3	H			
Breakwater at Eastville	Eastville		V	Extent the north side (Eastville) beach water to protect Beach Road and the harbor				4	H			
Beach Road reconstruction	Beach Road	State	V	Complete beach renourishment with local dredge materials.				4	H			
Pump station at Stop and Shop	Waterfront	Town	V	Assess and retrofit the pump station at Stop & Shop to mitigate against problems during power outages.				4	H			
Societal												
Hazard Mitigation Planning	Townwide		V	Update the Tisbury Hazard Mitigation Plan to identify improvements to mitigate vulnerabilities associated with stormwater, electrical network, breakwater, seawall, police station, properties, Lagoon Pond bridge culvert, sewer pump station, etc...				1	H			
Education and Community Outreach	Townwide		V	Review current regulations, medical dependent population information, sewage, food/water/fuel, evacuation/shelter, tree trimming/brush, private road maintenance, preparedness/response/recovery and identify ways improve community outreach.				1	H			
Supply chain	Townwide		V	Increase energy storage (batteries from solar array), commodity resilience				2	H			
Communications	Townwide		V	Create a unified mass notification system, review emergency shelter plan, increase coordination between the town and emergency management, increase community outreach and share information about alternate travel routes.				2	H			
Emergency Shelters	Townwide		V	Review current emergency sheltering plans to ensure that they are viable for all incidents and accommodate both local citizens, off-island workforce and tourists.				3	H			
Supply Chain Action Plan & Steamship Authority Vulnerability Assessment	Townwide		V	Complete a comprehensive vulnerability assessment to identify supply chain vulnerabilities and identify mitigation measures.				4	H			
Emergency Manager Communications	Townwide		V	Increase communication and coordination between emergency management, town officials and the public.				4	H			
Environmental												
Environmental regulations	Townwide		V	Review current regulations to determine ways to determine ways to improve and mitigate the impacts of climate change in environmentally sensitive areas (e.g, wetlands, coastal areas).				3	H			



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## **Attachment G: High Priority Action Items**



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## Attachment G - Final Action Item Recommendations

Community Resilience Building Risk Matrix				High Priority Action Items		www.CommunityResilienceBuilding.org				
Location = Mark on the map, note on matrix Multiple, Specific or Town-Wide V = Vulnerability S = Strength Type of Feature = Infrastructural, Societal, or Environmental High, Medium, or Low priority for action over the Short or Long term (and Ongoing)				Top Priority Hazards (floods, wildfire, hurricanes, drought, sea level rise, heat wave, etc.)						
Features	Location	Owner	V or S	Intense Rain/Flooding	Hurricanes/Nor' Easters	Coastal Flooding/Storm Surge	Sea Level Rise	Group	Priority	Time
								1-4	H - M - L	Short Long Ongoing
Infrastructural										
Waterfront area flooding	Waterfront	Public/Private	V	Develop a comprehensive stormwater management plan for the community.				Multiple	H	S - L
Harbor protection	Waterfront		V	Identify and initiate harbor improvements (e.g., breakwater extensions) to protect downtown areas and the harbor.				Multiple	H	L
Downtown roads vulnerable to flooding	Waterfront		V	Initiate roadway improvements to improve resiliency to coastal flooding, storm surge and sea level rise including, but not limited to: Water Street from 5 Corners to Union Street, Beach Road from 5 Corners to the Bridge, and Lagoon Pond Road to Hines Point.				Multiple	H	S - L
Societal										
Hazard Mitigation Planning	Townwide		V	Update the Tisbury Hazard Mitigation Plan to identify mitigation opportunities associated with the stormwater network, electrical network, as well as the existing breakwaters, seawalls, police station, vulnerable properties, Lagoon Pond bridge culvert, sewer pump station, etc...				1	H	O
Education and Community Outreach	Townwide		V	Identify ways to improve and increase community education and outreach with regards to climate change hazards, emergency preparedness and evacuation and sheltering options.				1	H	O
Supply Chain Action Plan & Steamship Authority Vulnerability Assessment	Townwide		V	Complete a comprehensive vulnerability assessment to identify supply chain vulnerabilities and develop mitigation measures.				2, 4	H	S - L
Environmental										
Environmental regulations	Townwide		V	Review Town regulations and identify changes that could mitigate future impacts of climate change.				3	H	O



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## **Attachment H: November 8, 2018 Public Listening Session Summary**



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## Attachment H: November 8, 2018 Public Listening Session Summary

On November 8, 2018 the Town of Tisbury held a public listening session from 7:00 p.m. – 8:30 p.m. at the Tisbury Senior Center located at 34 Pine Tree Road in Vineyard Haven, MA 02568. There were 27 people in attendance. Will Keefer, MVP certified facilitator from HW, gave a presentation that provided an overview of the MVP Program, the MVP Workshop development and facilitation process and introduced seven high priority action items developed as part of the October 17, 2018 workshop.



Figure 1: Public Listening Session Networking

The public listening session provided an opportunity for those that were involved in workshop, as well as the public in general to help refine the draft high priority action items developed as a result of the workshop. The general sentiment of the audience was that the action items should be fairly broad in scope so that the community could engage others in determining specific projects that best suited the town's needs into the next century. For example, an original action item focused on extending the northside (Eastville) breakwater; however, several individuals pointed out that this option was just one of many that have been proposed, so further study was warranted before choosing a final option to pursue. Additional suggestions that resulted from the listening session included, in no particular order:

- Provide guidance to homeowners regarding grinder pump operation and noting that during an electrical outage they will not work.
  - Verify that current plans to protect the wastewater pump station at Stop & Shop take into account climate change hazards.
  - Review previous studies (e.g., 1980 breakwater option study) related to harbor protection options when determining the most appropriate project to undertake.
  - Consider planning for more extreme climate change scenarios rather than mid-range scenarios to ensure that projects are viable 100 or more years in the future.
  - Ensure that supply chain vulnerability assessments include the Steamship Authority and that assessment includes information captured in other relevant assessments.
  - Involve the Martha's Vineyard Commission (<http://www.mvcommission.org>) in the project development phase.
  - Ensure that once all towns on Martha's Vineyard have become MVP-certified that representatives get together to identify common goals and coordination opportunities.
  - Consider meeting with representatives from Nantucket to determine if there are any coordination opportunities.
  - Identify critical facilities currently in floodplains that could be moved (e.g., police station, post office) and or have operations relocated if temporarily unavailable (e.g., Continuity of Operations Planning).
  - Identify fuel storage options and locations.
  - Determine facility generator fuel storage capabilities at critical town facilities.
  - Ensure projects are also included in the Dukes County Hazard Mitigation Plan.
-



## **Attachment H: November 8, 2018 Public Listening Session Summary**

- Consider land purchases to provide more open space to collect stormwater runoff and serve as a coastal buffer.
- Consider prioritizing the high priority actions further when determining what projects should be proposed for grant opportunities.
- Overhead electrical wire vulnerabilities should lead to future initiatives to bury electrical lines where possible, particularly along Beach Road.
- Future sea level rise may result in coastal properties no longer being insurable.
- Future sea level rise may eventually require businesses in the downtown area to relocate to higher ground, which may necessitate the need to develop a secondary commercial area.
- Consider developing shelter-in-place plans for the community for those who would not evacuate due to a natural disaster (e.g., hurricane). Ferries can only transport a limited number of cars, so the majority of people who may try to evacuate would be left without their own transportation and would have to rely on public transportation in Woods Hole.

In addition, there were several unanswered questions resulting from the listening session that should be followed up on:

- What types of projects have the MVP grants funded in other communities?
- What other types of grants could projects related to the seven high priority action items be eligible for?
- Does sea level rise and coastal flooding impact development that has been built on fill differently than development on regular land?

In closing the public listening session, the MVP facilitator confirmed that the final October 17, 2018 Tisbury MVP Workshop summary report would be available for the public to review upon completion.

As a result of the public listening session, the core planning team incorporated suggestions from the public and confirmed the following seven high priority action items, in no priority order:

1. Conduct a comprehensive supply chain vulnerability assessment.
  2. Identify and initiate harbor improvements (e.g., breakwater extensions) to protect downtown areas and the harbor.
  3. Identify and undertake roadway improvements that improve resiliency to coastal flooding, storm surge and sea level rise in locations including, but not limited to:
    - Water Street from 5 Corners to Union Street.
    - Beach Road from 5 Corners to the Bridge.
    - Lagoon Pond Road from 5 Corners to Hines Point.
  4. Develop a comprehensive stormwater management plan for the community.
  5. Review and update the Tisbury section of the Dukes County Hazard Mitigation Plan.
  6. Increase community education and outreach with regards to climate change hazards, emergency preparedness and sheltering options.
  7. Review Town regulations and identify changes that could mitigate future impacts of climate change.
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