

City of New Bedford Multi-Hazard Mitigation Plan 2025



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NEW BEDFORD MULTI-HAZARD MITIGATION PLAN

New Bedford, Massachusetts

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Acronyms & Abbreviations

ADA	Americans with Disabilities Act
AI	Artificial Intelligence
ACS	American Community Survey
APC	Assawompset Ponds Complex
APT	Advanced Persistent Threat
BFE	Base Flood Elevation
BRIC	Building Resilient Infrastructure and Communities
CBRN	Chemical, Biological, Radiological, Nuclear [Incidents]
CCTV	Closed-Circuit Television
CEMP	Comprehensive Emergency Management Plan
CERCLA	Comprehensive Environmental Response Compensation, and Liability Act
CFR	Code of Federal Regulations
CIP	Capital Improvements Plan
CIPP	Cured in Place Pipe
COOP	Continuity of Operations Plan
CRS	Community Rating System
CSO(s)	Combined Sewer Overflow(s)
DCR	Department of Conservation and Recreation
DFE	Design Flood Elevation
DMA	Disaster Mitigation Act
DPI	Department of Public Infrastructure
EAA	Economic Adjustment Assistance
EAP/EAPs	Emergency Action Plan (s)
EDA	Economic Development Administration
EECBG	Energy Efficiency and Conservation Block Grant
EJ	Environmental Justice
EOC	Emergency operations center
EPA	Environmental Protection Agency

EPCRA	Emergency Planning and Community Right to Know Act
FAA	Federal Aviation Administration
FBI	Federal Bureau of Investigation
FDA	U.S. Food and Drug Administration
FEMA	Federal Emergency Management Agency
FHOD	Flood Hazard Overlay District
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
FMA	Flood Mitigation Assistance
GHG	Greenhouse Gas
GIS	Geographic Information System
gpm	Gallons Per Minute
GPS	Global Positioning System
H ₂ S	Hydrogen sulfide
HGA	Human Granulocytic Anaplasmosis
HI	Hazard Index
HIRA	Hazard Identification and Risk Assessment
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HUD CDBG	Housing and Urban Development Community Development Block Grant
HVAC	Heating, Ventilation, and Air Conditioning
HW	Horsley Witten Group, Inc.
I-DIEM	The Institute for Diversity and Inclusion in Emergency Management
I/I	Infiltration and Inflow
IEDs	Improvised Explosive Devices
IoT	Internet of Things
IPCC	Intergovernmental Panel on Climate Change
IPZ	Ingestion Pathway Zone
KLA	Kim Lungren Associates
LACP	Lateral Assessment Certification Program

If	Linear foot
LID	Low Impact Development
LHMC	Local Hazard Mitigation Committee
LRRP	Local Rapid Recovery Plan
LTCP	Long Term CSO Control Plan
MA DPH	Massachusetts Department of Public Health
MA SHMCAP	Massachusetts State Hazard Mitigation and Climate Adaptation Plan
MACE	Major Aircraft Crash Event
MACP	Manhole Assessment Certification Program
MassDEP	Massachusetts Department of Environmental Protection
MassDOT	Massachusetts Department of Transportation
MBTA	Massachusetts Bay Transportation Authority
MC-FRM	Massachusetts Coast Flood Risk Model
MEMA	Massachusetts Emergency Management Agency
mg	Million Gallons
mgd	Million Gallons Per Day
MHHI	Mean Higher High Water
MHI	Median Household Income
MIS	New Bedford Management Information Systems Department
MHMP	Multi-Hazard Mitigation Plan
MMI	Modified Mercalli Intensity
mph	Mile(s) Per Hour
MSSPs	Managed Security Service Providers
MTCO _{2e}	Metric tons of carbon dioxide equivalent
MVP	Municipal Vulnerability Preparedness
NAVD88	North American Vertical Datum of 1988
NCEI	National Centers for Environmental Information
NESIS	Northeast Snowfall Impact Scale
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association

NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRC	Nuclear Regulatory Commission
NWS	National Weather Service
O&M	Operations and Maintenance
ODS	Office of Dam Safety
PACP	Pipeline Assessment and Certification System
PAG	Protective Action Guidelines
PCB	Polychlorinated Biphenyls
PGA	Peak Ground Acceleration
PowerBI	Power Business Intelligence
PS	Pumping Station
PSAs	Public Service Announcements
RRC	Regional Reception Center
SAFE	Student Awareness of Fire Education
SCADA	Supervisory Control and Data Acquisition
SF	Square feet
SFHA	Special Flood Hazard Area
SHMC	State Hazard Mitigation Committee
SLOSH	Sea, Lake, and Overland Surge from Hurricanes
SLR	Sea Level Rise
SRF	State Revolving Fund
SRRPED	Southeastern Regional Planning and Economic Development District
SRTA	Southeastern Regional Transit Authority
SSHWS	Saffir-Simpson Hurricane Wind Scale
STAPLEE	Social, Technical, Administrative, Political, Legal, Economic, and Environmental
SSes	Sewer System Evaluation Survey
SW	Stormwater
SWMM	Storm Water Management Model
T-HUB	Evacuation Transportation Hub

TIP	Transportation Improvement Program
TORRO	Tornado and Storm Research Organisation
USCG	United States Coast Guard
UPS	Uninterruptible Power Supply
USACE	U.S. Army Corps of Engineers
USDA	United States Department of Agriculture
USDA-NRCS	United States Department of Agriculture – Natural Resources Conservation Service
USGS	United States Geological Survey
VB IEDs	Vehicle-borne Improvised Explosive Devices
VCISO	Virtual Chief Information Security Officer
VEOC	Virtual emergency operations center
VoIP	Voice Over Internet Protocol
WIFIA	Water Infrastructure Finance and Innovation Act
WMD	Weapons of Mass Destruction
WTP	Water Treatment Plant
WUI	Wildland Urban Interface
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

1. INTRODUCTION

1.1. Overview

Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters. These monies only partially reflect the true cost of disasters because additional expenses to insurance companies and non-governmental organizations are not reimbursed by tax dollars. Many disasters are predictable, and much of the damage caused by these events can be alleviated or even eliminated.

Hazard mitigation is defined by the Federal Emergency Management Agency (FEMA) as “any sustained action taken to reduce or eliminate long-term risk to human life and property from a hazard event.” The results of a three-year, congressionally mandated independent study to assess future savings from mitigation activities provide evidence that mitigation activities are highly cost-effective. On average, every dollar spent on mitigation saves communities \$6 in avoided future losses in addition to saving lives and preventing injuries (National Institute of Building Science Multi-Hazard Mitigation Council 2019).

Hazard mitigation planning is the process of determining how to reduce or eliminate the loss of life and property damage resulting from natural, human-caused, or technological hazards. “Hazard mitigation” means to permanently reduce or alleviate the losses of life, injuries and property that result from a range of hazards through long-term strategies. These long-term strategies include planning, policy changes, programs, projects, and other activities.

This 2025 Update was prepared pursuant to the requirements of the Disaster Mitigation Act (DMA) of 2000 (Public Law 106-390) and the implementing regulations set forth by the Interim Final Rule published in the *Federal Register* on February 26, 2002 (44 Code of Federal Regulations (CFR) §201.6) and finalized on October 31, 2007 (hereafter, these requirements and regulations will be referred to collectively as the Disaster Mitigation Act). While the DMA emphasized the need for mitigation plans and more coordinated mitigation planning and implementation efforts, the regulations also established the requirements that local hazard mitigation plans must meet in order for a local jurisdiction to be eligible for certain federal disaster assistance and hazard mitigation funding under the Robert T. Stafford Disaster Relief and Emergency Act (Public Law 93-288). Because the City of New Bedford is subject to many kinds of hazards, access to these programs is vital.

Information in this 2025 Update will be used to help guide and coordinate mitigation activities and decisions for local land use policy in the future. Proactive mitigation planning will help reduce the cost of disaster response and recovery to the community and its property owners by protecting critical community facilities, reducing liability exposure, and minimizing overall community impacts and disruption. New Bedford has been affected by hazards in the past and is thus committed to reducing future disaster impacts and maintaining eligibility for federal funding.

The City of New Bedford’s 2016 plan was developed as a natural hazard mitigation plan. This 2025 Update represents an expanded assessment of hazard within the community, and includes natural, human-caused, and technological hazards (with references to the State Hazard Mitigation Plan for consistency).

1.2. What Hazard Mitigation can do for the City of New Bedford

A primary benefit of hazard mitigation is that preventative measures taken now can identify actions implementable before hazards occur and greatly reduces the impact and costs associated with the aftermath of a hazard event. By planning ahead, New Bedford will minimize the economic and social disruption that often results from natural, human-caused, and technological hazards.

The adoption and implementation of this 2025 Update can significantly reduce the cost of post-disaster cleanup. In addition, this update will assist New Bedford in becoming eligible to receive both pre- and post-disaster assistance from FEMA through its various programs, including the Community Rating System (CRS), Building Resilient Infrastructure and Communities (BRIC), Flood Mitigation Assistance (FMA) Program, and Post-Disaster Hazard Mitigation Grant Program (HMGP).

1.3. New Bedford's Mission Statement

The New Bedford Local Hazard Mitigation Committee (LHMC) developed the following mission statement:

“Our mission is to proactively identify, assess, and mitigate all risks, from natural, human-caused, and technological, including those intensified by climate change and to safeguard the lives, property and natural resources in the City of New Bedford. We strive to enhance community safety and resilience equitably through collaborative planning, ensuring operational continuity, increasing public preparedness for disasters, managing resources effectively, protecting and restoring natural assets, and promoting a sustainable economy that addresses both current and future challenges.”

1.4. Goals

The New Bedford LHMC reaffirmed and updated the following hazard mitigation goals:

- Prevent and reduce the loss of life, property, infrastructure, and cultural resources resulting from natural, human-caused, and technological hazards. Identify and seek funding mechanisms to address proposed mitigation actions.
- Integrate hazard mitigation planning into relevant municipal departments, boards/commissions and planning initiatives.
- Collaborate with state, regional, and federal agencies and surrounding communities to ensure cooperation for natural, human-caused, and technological hazards that affect multiple communities.
- Ensure that future development is compliant with federal, state, and local regulations; is reflective of the diversity, equity and inclusion of disadvantaged populations; and considers future projections for anticipated climate change impacts.

1.5. Planning Process

The DMA of 2000 places high priority on the continuation of the planning process after the initial submittal, requiring communities to seek and receive reapproval from FEMA to remain eligible for assistance. The evaluation, revision, and update process are also a means to create an institutional awareness and involvement in hazard mitigation as part of daily activities.

The City of New Bedford, with the assistance of a Consultant Team, including the Horsley Witten Group, Inc. (HW), Kim Lungren Associates (KLA), and The Institute for Diversity and Inclusion in Emergency Management (I-DIEM), developed this 2025 Update.

A Core Team of several City Officials (Department of Public Infrastructure and Resilience and Environmental Stewardship) and the Consultant Team was established to comprehensively plan for the development and implementation of New Bedford's Multi-Hazard Mitigation Plan (MHMP) 2025 Update. Representatives from various municipal departments in New Bedford, in addition to community stakeholders representing socially vulnerable and typically disadvantaged neighborhoods, were solicited for participation on the LHMC. A Technical Committee was established and convened several times throughout the project's evolution to develop, evaluate, and review some of the more technical aspects of the hazard mitigation planning process (including scoring of the natural, human-caused, and technological hazard indices). Finally, an Equity Partners Group was also identified and established to assist with community engagement targeted towards New Bedford's Environmental Justice (EJ) populations, with several of these members also representing the Equity Partners Group on the LHMC.

HW conducted a series of meetings from January 2023 through May 2025 with the New Bedford Core Team, LHMC, Technical Committee, Equity Group, and the community. The public workshops were held in an open public forum and in accordance with Massachusetts General Laws c. 30A, Sections 18 – 25 in compliance with the requirements of the Federal DMA of 2000.

1.5.1. New Bedford Multi-Hazard Mitigation Plan Core Team

A Core Team of several City Officials and the Consultant Team was established to comprehensively plan for the development and implementation of New Bedford's Multi-Hazard Mitigation Plan (MHMP) 2025 Update. The Core Team held a project kickoff meeting in February 2023 to collaborate on the primary elements necessary to develop an expanded MHMP that represents the diversity of the City of New Bedford overall. Thereafter, the New Bedford MHMP Core Team met approximately once per month for the duration of the project.

Members of the New Bedford MHMP Core Team:

City of New Bedford

- Justin Chicca – Deputy Commissioner, Department of Public Infrastructure
- Courtney Cohen – Project Manager, Resilience and Environmental Stewardship Department
- Jim Costa – Superintendent of Wastewater, Department of Public Infrastructure
- Adam Hart – Supervising Engineer, Department of Public Infrastructure
- Rachel Mulroy – Planning Department
- Brian Nobrega – Director, Emergency Management Department
- Michele Paul – Director, Resilience and Environmental Stewardship Department
- Shawn Syde – City Engineer, Department of Public Infrastructure

Consultant Team

- Kate Galbo – Climate Action Planning Manager, KLA
- Tacy Lambiase – Climate Communications and Storytelling Manager, KLA
- Kim Lundgren – Chief Executive Officer, KLA
- Carley Petrone – Climate Analysis Manager, KLA

- Nate Kelly – President, HW
- Kellie King – Environmental Planner, HW
- Craig Pereira – Project Manager/Senior Planner, HW

The Core Team coordinated on the day-to-day initiatives for the project, often strategizing data collection, public outreach and engagement, stakeholder interviews, and brainstorming effective ways to effectively engage with typically disadvantaged populations and Environmental Justice (EJ) areas.

1.5.2. LHMC

The LHMC included municipal officials responsible for assisting with data collection and distribution, community outreach and engagement, meeting facilitation, and overall project scheduling. For this 2025 Update, it was important to also diversify the composition of a traditional LHMC, so additional stakeholders were added representing various community agencies that primarily support typically disadvantaged populations and EJ areas.

Members of the New Bedford LHMC (**bold font** denotes membership on the Technical Committee):

City of New Bedford

- Joshua Amaral – Director, Housing and Community Development
- Derek Belong – Captain, New Bedford Police Department
- Jennifer Carloni – Director, Planning Department
- Gordon Carr – Executive Director, New Bedford Port Authority
- **Courtney Cohen** – Project Manager, Resilience and Environmental Stewardship Department
- **Christina Connelly** – Chief Operations Officer
- **Jim Costa** – Superintendent of Wastewater, Department of Public Infrastructure
- **John Costa** – Director, Information Technology
- Jonathan Darling – Public Information Officer
- **Cesar Duarte** – Director, Engineering and Operations Department
- Steffany Elmore – Administrative Manager, Emergency Management Department
- **Scott Kruger** – Chief, New Bedford Fire Department
- Neil Mello – Chief of Staff
- Rachel Mulroy – Planning Department
- **Brian Nobrega** – Director, Emergency Management Department
- Andrew O'Leary – Superintendent, New Bedford Schools
- **Paul Oliveira** – Chief, New Bedford Police Department
- **Michele Paul** – Director, Resilience and Environmental Stewardship Department
- **Chance Perks** – Conservation Agent
- **Jamie Ponte** – Commissioner, Department of Public Infrastructure
- **Travis Rebello** – Hazardous Materials Coordinator, New Bedford Fire Department
- **Danny Romanowicz** – Commissioner, Inspectional Services Department
- **Stephanie Sloan** – Director, Public Health Department
- **Shawn Syde** – City Engineer
- **Michael Thomas** – Director, Emergency Medical Services

- **Jennifer Vieira** – Commissioner, Department of Facilities and Fleet Management

Massachusetts Emergency Management Agency

- Nate Cochran – Local Coordinator, Region 2
- Jeff Zukowski – Hazard Mitigation Planner

Equity Partners

- John Andrade – Old Bedford Village Economic Development Corporation
- Helena DaSilva-Hughes – Immigrants' Assistance Center
- Renee Leadbetter – Director, New Bedford Shannon Program
- Marci Pina-Christian – Executive Director, New Bedford Human Rights Commission
- Cynthia Spence – New Bedford Housing Authority
- Darlene Spencer – President, New Bedford Cape Verdean Association
- Corinn Williams – Executive Director, New Bedford Community Economic Development Corporation

Consultant Team

- Kate Galbo – Climate Action Planning Manager, KLA
- Kim Lundgren – Chief Executive Officer, KLA
- Carley Petrone – Climate Analysis Manager, KLA
- Nate Kelly – President, HW
- Kellie King – Environmental Planner, HW
- **Craig Pereira** – Project Manager/Senior Planner, HW

The LHMC met on five separate occasions at project milestones throughout the evolution of the project.

1.5.3. Technical Committee

Given the wide range of representatives serving on the LHMC, it was determined that the formation of a Technical Committee would best serve the project, particularly during the development and scoring of the natural, human-caused, and technological hazard indices.

In addition to the New Bedford LHMC members identified earlier, one additional member participated in the New Bedford Technical Committee:

- Scott Servis – Director, New Bedford Regional Airport

1.5.4. Equity Partners Group

An Equity Partners Group was solicited early on to incorporate meaningful opportunities to collect feedback among New Bedford's residents and bring new and often underrepresented voices into the public participation process. The goal of the Equity Partners Group was to increase awareness and understanding of the City's hazard mitigation and emergency management planning and how it relates to the lived experiences of all New Bedford residents.

Individuals that expressed an interest in a greater level of involvement were also invited to serve on the LHMC and represent the many constituents throughout the City on that body. Overall, the Equity Partners Group served as the primary stakeholder list for outreach and engagement

efforts initiated throughout the project, particularly for the Ward-specific meetings that occurred during the Fall of 2023.

Members of the New Bedford Equity Partners Group (**bold font** denotes membership on the LHMC):

- Eldric Abreu – Community Outreach Coordinator, Waterfront Historic Area League
- Carl Alves – Chief Executive Officer, Positive Action Against Chemical Addiction, Inc.
- **John Andrade** – Old Bedford Village Economic Development Corporation
- Jan Baptiste – Vice President, Cape Verdean Association
- Wendy Bluis – Program Director, Highpoint Treatment
- Stan Brajer – Director, New Bedford Community Connections Coalition/United Way of Greater New Bedford
- Danielle Brown – Program Director, Steppingstone
- Sheila Chasse – Director of Housing, Catholic Social Services
- **Helena DaSilva-Hughes** – Immigrants' Assistance Center
- Sabrina Davis – Coalition for Social Justice
- Allie Donahue – Disaster Program Manager, American Red Cross
- Genesis Galan – People Acting for Community Endeavors
- Sean Hargraves – Dennison Memorial Community Center
- Debra Kelsey – Navigator/Certified Recovery Coach, Fishing Partnership Support Services
- Pam Kuechler – People Acting for Community Endeavors
- **Renee Leadbetter** – Director, New Bedford Shannon Program
- Rev. David Lima – Rise Up for Homes
- Moises Muniz – Corps Officer, Salvation Army
- Sylvia Nobre-Hilton – Chief Operating Officer, Coastline Elderly Services
- **Marci Pina-Christian** – Executive Director, New Bedford Human Rights Commission
- Marlene Pollock – Coalition for Social Justice
- Ron Raymond – President, Longshoremen's Association Local 1413
- Rev. Michael Racine – Collaborative Staff, Whaling City Catholic Community
- James Reid – Executive Director, Veteran's Transition House
- Connie Rocha-Mimoso – Director of Community Health Services, Seven Hills
- **Cynthia Spence** – New Bedford Housing Authority
- **Darlene Spencer** – President, New Bedford Cape Verdean Association
- **Corinn Williams** – Executive Director, New Bedford Community Economic Development Corporation

1.5.5. Project Components, Implementation, Outreach, and Engagement

Implementation of the many project components took shape as the project evolved. The Core Team served as the primary group responsible for evaluating the effectiveness of the various components of the project, as well as “shifting on the fly” when specific community touchpoints were considered unsuccessful.

Project Kickoff Meeting – Core Team

A Kickoff Meeting was conducted with the Core Team on February 6, 2023, to review project goals, key tasks and deliverables, and data needs. Communication and coordination

expectations were set and the mechanics of the project were discussed. A complete set of Core Team meeting materials is included in Appendix B.

Project Website, Social Media, and Printed Media

A project webpage was designed and hosted on the City's municipal website to announce the project, inform and engage the community before, during and after plan development, and to serve as a repository of project documents, presentations, and summaries. See <https://www.newbedford-ma.gov/emergency-management/new-bedford-multi-hazard-mitigation-plan/>.

2016 Plan Report Card

Early in the project, the Consultant Team created a 2016 Plan Report Card to identify the City's accomplishments on the existing mitigation actions, identify what actions should be carried forward into the 2025 Update, and identify actions that are no longer relevant. The numbering following each Department's list of actions represent the action number assigned during the development of the 2016 plan.

5.3.1 Emergency Management Department

5.3.1.1 Purchase and Install Auxiliary Generators

The City proposes to purchase and install auxiliary generators for critical local government department operations centers at the following locations:

1. Health Department – 1213 Purchase Street.
 - Completed (for vaccines only)
2. Emergency Management Department – 834 Kempton Street
 - Not completed due to lack of funding and municipal personnel capacity
 - Removed: No longer relevant, moving to a building that has a generator
3. DPI Complex – 1105 Shawmut Avenue
 - Not completed due to lack of funding and municipal personnel capacity
 - Removed: No longer relevant, building is already on generator power
4. Emergency Medical Services Department – 181 Hillman Street
 - Not completed due to lack of funding and municipal personnel capacity
 - Carried forward into 2025 Update: See Section 5.3, Action 5.3.12.1

Engineering and planning services will determine each facility's individual power needs. Appropriate generators and fuel containment facilities will be installed at each location thereafter.

5.3.1.2 Improve Warning Capabilities

The City proposes to improve the City's emergency warning capabilities through the purchase of a "Reverse 911" geo-based telephone notification service. Training of appropriate E911 Center personnel in the use of this system will be required for the system to reach full functionality. Education activities will be held to educate the public on the City's use of the system and promote "opt-in" for residents' cellular or Voice Over Internet Protocol (VoIP) phones.

- Completed

5.3.1.3 Special Needs Registry

The City proposes to revive its “Special Needs Registry” and promote voluntary registration (or participation) by residents who may require additional assistance, transportation, and/or sheltering in the event of a major emergency or disaster. The program will be implemented within the next calendar year and will be continually carried out via the following action items:

1. Conduct community outreach efforts to encourage persons with access and functional needs to register.
 2. Provide specialized, pre-disaster emergency information to this population.
 3. Update and maintain registry database for use in emergency situations.
- Completed

5.3.1.4 Community Preparedness Outreach/Messaging Efforts

The City proposes to improve community preparedness and outreach by implementing the following action items:

1. Distribute all-hazard and hazard-specific disaster safety information through various media.
 2. Continue “Know Your Zone” outreach efforts to residents in hurricane evacuation areas.
 3. Develop disaster education programs for specific vulnerable populations.
 4. Make locally developed disaster preparedness material available in multiple languages.
- Completed

5.3.1.5 Community Rating System Participation

Over the next several years the City will be exploring participation in the federal Community Rating System (CRS) program. Staff will evaluate program requirements, review existing activities eligible for program “credits” and explore potential activities that could be initiated and/or implemented to secure additionally needed “credits” to secure a CRS rating classification. Participation in this program will allow a discount in flood insurance premium rates, which reflect the reduced flood risk as a result of meeting the goals of the CRS program.

- Not completed due to lack of funding and municipal personnel capacity
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.11.5

5.3.1.6 Debris Management Plan

The City proposes to develop a Debris Management and Monitoring Plan. The plan will address the collection, monitoring and disposal of debris after a storm event. Development of such a plan will enhance the City’s efforts to secure reimbursement under FEMA’s Public Assistance Program in a declared disaster for debris removal operations.

- Not completed due to lack of funding and municipal personnel capacity
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.6.7

5.3.1.7 Update Local Multi-Hazard Plan

The City will update the Local Multi-Hazard Plan at least every five years, as required by FEMA, or as needed. Section 6 of this Plan provides a detailed discussion of the City's procedure for monitoring, updating and evaluating the Plan.

- In progress as of this writing

5.3.2 Police Department

5.3.2.1 New Roof for Police Station #1

The roof for Police Station #1 is aging and in need of repairs. Accordingly, the City proposes to install a new roof at Police Station #1 over the next two years. Having a new roof will mitigate potential structural damage during a natural disaster.

- Not completed due to lack of funding and municipal personnel capacity. Station is closed and anticipated to be converted to office space.
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.12.5

5.3.2.2 New Parking Lot Drainage System at Police Headquarters

The parking lot at Police Headquarters is subject to localized flooding during heavy precipitation events. The City is proposing to install a new drainage system in the parking lot. Alleviating the flooding will allow the Police Department to better respond to disaster events.

- Not completed due to lack of funding and municipal personnel capacity
- Removed: Currently on-hold as the City of New Bedford seeks a new location for Police Headquarters

5.3.2.3 New Communications Systems

The technology currently used by emergency personnel at the City's Emergency Radio Broadcast Towers is aging. To address this aging infrastructure, new radio antenna repeaters and satellite receivers, including any associated battery backup systems, are proposed to aid emergency personnel during natural disasters.

- In progress as of this writing: Construction started in 2024, awaiting back-ordered equipment and construction of two new towers

5.3.3 Fire Department

5.3.3.1 Emergency Generators for Radio Transmitters

The main radio transmitters for the New Bedford Fire Department and the New Bedford Police Department located at the Regency Towers are not supported by the emergency generator. The generator at this facility is currently at capacity with a battery backup in place that has limited duration. To address this adverse weather public safety infrastructure problem, the City proposes to add a generator to the radio room or relocate the radio equipment to the New Bedford Hotel, which does have generator capacity available.

- In progress as of this writing

5.3.3.2 Upgrade of Fire Alarm System

The present fire alarm system uses wire-based technology, which is subject to damage every time there is moderately severe weather. Upgrading of the system to a wireless-based system would address this problem. It will require the upgrading of all municipal buildings to this new technology. With 80 buildings and an average cost of \$10,000 per unit, the cost will be \$800,000 for the full program.

- Completed

5.3.3.3 Replace/Renovate Existing Fire Stations

The fire stations in the City have an average age of 102 years of age with the newest having been constructed in the early 1950's. None of these buildings were constructed to seismic standards and are of unreinforced masonry. These types of buildings are the most prone to catastrophic failure in the event of a seismic event. This would result in the possible complete loss of fire protection during a moderate event. In addition, these structures located throughout the City would be logical locations for mass care facilities in the event of a catastrophic event. At present none of our buildings have this capability in their design and this should be a future consideration.

- Partially completed (South End Public Safety Complex): As of this writing, looking to site North End Public Safety Complex
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.12.3

5.3.3.4 EMT Training for Fire Department Members

The New Bedford Fire Department has 230 uniform members (2016 count) who are currently medically trained to the first responder level. The concept of a citizen's emergency response team has not had the impact that was anticipated. By providing EMT training to the members of the New Bedford Fire Department, the City would be able to increase the level of services provided to the citizens in the aftermath of a catastrophic event. This would also have a positive impact on day-to-day operations as medical responses account for over 60 percent of emergency calls. By using the New Bedford Fire Department in this way, the City would have the ability to have a surge capacity of EMT trained personnel for major events.

- Completed: In 2022, the City and New Bedford Firefighter's Local 841 agreed to a new Collective Bargaining Agreement which included an annual EMT stipend. Since that time, the number of certified EMTs continues to increase. Currently, there are 36 EMTs and Paramedics employed by the New Bedford Fire Department.

5.3.3.5 Stockpile Supplies for Operations Crews and Local Population

The City's emergency services, police, fire, Emergency Medical Services, Department of Public Infrastructure, Department of Facilities and Fleet Management and others, must be able to sustain operations continuously from the onset of the disaster until outside help arrives during a major natural disaster. When a major natural disaster occurs, outside help will frequently not be available for 72 hours at a minimum. For widespread events, such as hurricanes and earthquakes, when the local infrastructure no longer functions, it can take longer for that help to be effective. From a service continuation standpoint, the ability of emergency service agencies to operate beyond 24 hours begins to deteriorate when there is a lack of food, potable water

and fuel. Thus, the City proposes to stage large supplies of water and meals-ready-to-eat to be available to sustain operations crews. These supplies will also be available to support the local population at mass care shelters if needed. With the extended shelf life of these supplies, they are a long-term investment. This mitigation action will include a study to find an appropriate location for this facility.

- Completed

[5.3.4 Planning Department](#)

[5.3.4.1 Adopt Stormwater Ordinance](#)

The Planning Department and DPI have implemented a stormwater ordinance. Stormwater regulations that address Low Impact Development (LID) to increase the efficiency of stormwater control at the source have been drafted. A public hearing will be held prior to finalizing the regulations. The City intends to implement the new regulations during the 2016 calendar year.

- Completed

[5.3.4.2 Integrate Disaster Mitigation into Comprehensive Master Plan](#)

The Planning Department intends to integrate disaster mitigation into the next comprehensive master plan for the City. Disaster mitigation will be addressed during all phases of the City's next planning cycle. This will assist the City evaluating future development projects and zoning changes, and in developing new ordinances.

- In progress as of this writing, anticipated June 2025 completion

[5.3.5 Harbor Development Commission \(d.b.a. New Bedford Port Authority\)](#)

[5.3.5.1 Installation of a Wave Attenuator at Pope's Island Marina](#)

The City is proposing to install a wave attenuator on the southwestern side of Pope's Island Marina. The wave attenuator will help to protect the structures and vessels in the marina during significant storm events.

- Not completed due to lack of funding and municipal personnel capacity
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.9.5

[5.3.5.2 Installation of a Storm Mooring System at Pope's Island](#)

The Environmental Protection Agency is overseeing the dredging of contaminated soils in New Bedford Harbor. These removed soils are buried in a CAD cell field north of Pope's Island. The City is proposing to install a mooring system in the CAD cell field to protect this area during significant storm events.

- Not completed due to lack of funding and municipal personnel capacity
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.9.6

[5.3.5.3 Repair, Bolster and Expand Commercial Fishing Piers](#)

The City is proposing to repair, bolster and expand the commercial fishing piers in the harbor. These improvements to the commercial fishing piers will allow the piers to secure larger

fishing vessels during storm events. Protection of fishing vessels during storm events will reduce the impact to the fishing industry.

- Not completed as of this writing: Implementation in progress. Pier fendering replacement on three of the five piers, with one pier to be rebuilt in 2025.
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.9.4

5.3.5.4 Dredge New Bedford Harbor

The City is proposing to dredge all the required areas identified in Phase V of the Harbor Development Commission's dredging project. This project will permanently open up new berths within the hurricane barrier for commercial and recreational vessels, which will allow these vessels to be protected during storm events.

- As of this writing, under construction and remains ongoing

5.3.5.5 Expansion of Pope's Island Marina

The City is proposing to expand Pope's Island Marina to create more berths for recreational vessels. Expansion of the marina will allow these vessels to be protected during storm events. Phase 1 of this project will occur during the effective period of the Local Multi-Hazard Mitigation Plan.

- Not completed due to lack of funding and municipal personnel capacity
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.9.7

5.3.5.6 Replacement of Mooring Anchors and Gear

The City is proposing to replace all the existing mooring anchors to a helix-style and replace all the gear to hazelett-style. Replacing these fixtures will make them more resistant to storms.

- Not completed as of this writing: Implementation in progress
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.9.2

5.3.5.7 Fund Unified Command Center for Local/State/Federal Emergency Response Agencies

The City is proposing to fund a Unified Command Center for local, state and federal emergency response agencies. During natural disasters this center will be activated and used to coordinate the City's response to the natural disaster.

- Completed

5.3.5.8 Assess and Mitigate Utility and Infrastructure Weaknesses on the Waterfront

The City is proposing to conduct an assessment of the utilities and infrastructure on the waterfront to identify any weaknesses. Based on this assessment, the City will implement mitigate measures to address any deficiencies that are identified.

- Completed

5.3.6 Department of Public Infrastructure (DPI)

5.3.6.1 Install New SCADA System at Sewer Pump Stations

The City will continue to expand the installation program of new SCADA systems within pumping stations to ensure remote monitoring of all stations in the event of a disaster. This improved system will also eliminate the potential for prolonged system failures that result in flooding.

- Partially completed (10 pump stations remain) as of this writing
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.10.15

5.3.6.2 Clarks Cove Pump Station and Hurricane Barrier Localized Flooding Improvements

Inadequately sized sewer and stormwater drainage systems cause localized flooding near Clarks Cove Pump Station and near the hurricane barrier. Therefore, in conjunction with the U.S. Army Corps of Engineers (USACE), the City will undertake further improvements to the Clarks Cove Pump Station, to low-lying areas near the hurricane barrier, and to the sewer and stormwater drainage systems.

- Partially completed (new generator purchased, electrical improvements completed, actuator maintenance completed, maintenance inspections completed) as of this writing
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.10.5

5.3.6.3 Flood-proof Sewer Pump Stations within Flood-prone Areas

The City proposes to complete flood-proofing the wastewater and flood control pump stations, and the emergency power facilities located within the FEMA 100-year floodplain boundary. Upgrading these facilities will ensure that critical wastewater facilities continue to operate during natural disaster events.

- Partially completed
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.10.9

5.3.6.4 Coggeshall Street Area Stormwater Drainage Improvements

The City is working to complete stormwater drainage system improvements projects in the Coggeshall Street, Sawyer Street, Deane Street, Logan Street, Purchase Street, Belleville Avenue, and Acushnet Avenue areas in order to increase stormwater drainage capacity in these streets. These measures will mitigate or eliminate localized flooding problems and aid in drainage capacity during disaster events.

- Partially completed (work on Coggeshall Street and Mitchell Street completed) as of this writing
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.10.11

5.3.6.5 Maple and Chancery Streets Stormwater Drainage Improvements

The City is proposing to undertake drainage infrastructure improvements to address localized street flooding in the vicinity of Maple and Chancery Streets. Some improvements have already been undertaken and future improvements would also address capacity problems in the stormwater drainage and sewer systems in this area.

- Not completed due to lack of funding and municipal personnel capacity
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.10.9

5.3.6.6 Page Street Stormwater Drainage Improvements at St. Luke's Hospital

The City is proposing to undertake stormwater drainage system improvements to address flooding issues at Page Street, near St. Luke's Hospital. Addressing flood problems in this area will help to ensure access to the hospital during natural disasters.

- Not completed due to lack of funding and municipal personnel capacity
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.10.10

5.3.6.7 Buttonwood Park Pond and Dam Improvements

The City is proposing to undertake improvements to the Buttonwood Park Pond and Dam and conveyance structures downstream to address overtopping during storm events. Mitigation of overtopping will alleviate flooding in surrounding areas.

- Not completed due to lack of funding and municipal personnel capacity
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.10.1

5.3.6.8 Pearl Street Stormwater Drainage Improvements

The City is proposing to undertake stormwater drainage system improvements to address street flooding within Route 18, Hillman Street, Pearl Street, and at the intersection of Acushnet Avenue and Pearl Street in the vicinity of the Railyard, Division of Career Services, and Whale's Tooth Parking Lot. Stormwater drainage system improvements in these areas will help to provide continued access to these roads during natural disaster events.

- Partially completed (Pearl Street and Acushnet Avenue work is completed, although still experiencing flooding in this area. Additional investigations are ongoing)
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.10.11

5.3.6.9 Brownell Avenue and Hawthorn Street Stormwater Drainage Improvements

The City will undertake stormwater drainage system improvements to address localized flooding in the area of Brownell Avenue and Hawthorn Street and conveyance structures downstream during major precipitation events. Addressing localized flooding in this area will help mitigate flooding impacts during natural disaster events.

- Not completed due to lack of funding and municipal personnel capacity
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.10.11

5.3.6.10 New Bedford Reservoir Dam and Turner's Pond Dam Improvements

The City will undertake improvements at the New Bedford Reservoir Dam and Turner's Pond Dam. These improvements will address deficiencies identified at these dams and will help to ensure that these dams remain stable during significant precipitation and disaster events.

- Partially completed (Turner's Pond Dam improvements in progress) as of this writing
- Carried forward into 2025 Update: Separated into two separate actions:
 - New Bedford Reservoir Dam: See Section 5.3, Action 5.3.10.2
 - Turner's Pond Dam: See Section 5.3, Action 5.3.10.3

5.3.6.11 Establish “Micro-Grid” within City for Auxiliary Power

The City proposes to establish “micro-grids” within key City locations for auxiliary power. These “micro-grids” will mitigate power outages during disaster events, enabling the City to respond to emergency situations in a timely and more efficient manner.

- Not completed due to lack of funding and municipal personnel capacity
- Removed, no longer relevant

5.3.6.12 Route 18 and Wamsutta Street Stormwater Drainage Improvements

The City will undertake stormwater drainage system improvements to address flooding at the intersections of Route 18 and Wamsutta Street, Wamsutta Street and North Front Street, Wamsutta Street and Acushnet Avenue, and at the Wamsutta Street Pump Station. Improvement of the drainage capacity in these areas will alleviate flooding during heavy precipitation and natural disaster events and help to ensure continued access to these roads during a disaster event.

- Partially completed (MassDOT Southcoast Rail and City under Coggeshall Phase 3) as of this writing
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.10.10

5.3.6.13 Sheffield Street/ Stratford Street Stormwater Drainage Improvements

The City is proposing to correct localized flooding problems associated with an unnamed stream to the east of Acushnet Avenue. Flooding generally occurs in the area of Sheffield Street, southerly to Stratford Street and in the downstream portion of the City’s CSO Outfall 027 drain system in the northern part of the City. Addressing flooding this area by improving the stormwater drainage system will help to ensure continued access to these roads during a disaster.

- Not completed due to lack of funding and municipal personnel capacity
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.10.11

5.3.6.14 Mitigation of Drainage Issues from Tarkiln Hill Road to Nash Road Pond

The Copper Brook drain system was originally constructed as a water supply for Revere Copper located within New Bedford, conveying water from the Nash Road Pond to the Copper Brook Pond at the mills. The drain is a patchwork of various pipe diameters, materials and ages; some of which consists of stone blocks and granite rubble. The drain traverses some of the busiest streets in the City, crosses under both Route 18 and Route 195 before discharging to the Copper Brook Pond. The pond overflows to a stream located adjacent to Wamsutta Street and eventually to the Acushnet River. The drain and pond systems have historically been susceptible to flooding during wet weather events due to inadequate capacity and the condition of the pipe. Under heavy rainfall events, the Nash Road Pond overtops and floods Nash Road, making it impassable. Most recently, a section of the Copper Brook pipe partially collapsed within Acushnet Avenue, one of the City’s busiest streets. In addition, there are direct overflow points from the drain to the City’s sewer system contributing to the City’s combined sewer overflow (CSO) problem. The pond and stream at the downstream end of Copper Brook create a bottleneck for water to flow to the Acushnet River. Therefore, both the pond and stream need to be addressed as part of the overall solution to mitigate flooding resulting from the brook. This

project will be coordinated with flooding that occurs at Wamsutta Street and Route 18, as both flooding areas result from issues with the Copper Brook system and Wamsutta Street stream.

- Partially completed (portions of pipe from Coggeshall Street to Acushnet Avenue currently being replaced. MassDOT and South Coast Rail replaced a small portion of pipe in Purchase Street as part of the South Coast Rail Project.
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.10.11

5.3.6.15 West End CSO Separation Contract Phase IV

Phase IV of the West End CSO Separation project consists of constructing the main intercepting drain (7,600-lf) for the separation of approximately 12,500-lf of combined sewer in the West End Sewer Separation – Phase V portion of the program. This portion is the fourth phase of sewer separation in the West End area of New Bedford. Construction of Phase I was completed in 2001 and the construction of Phase II and III was completed in the summer of 2006. In addition to reducing CSO discharges to Clarks Cove, the Phase IV Sewer Separation will discharge stormwater from the project area to the Inner Harbor. This is important because the removal of stormwater, in addition to the reduction in CSOs, is required to attain maximum use of the shellfish beds in Clarks Cove. The project also provides the main trunk drain to address critical flooding areas at the intersection of Maple Street and Chancery Street, as well as the western portion of St. Luke's Hospital.

- Not completed due to lack of funding and municipal personnel capacity
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.10.11

5.3.6.16 West End CSO Separation Contract Phase V

Phase V of the West End CSO Separation project consists of separating approximately 12,500-lf of combined sewer in the West End area of New Bedford. The Phase V sewer separation is the fifth phase of sewer separation in the City's West End. The West End Sewer Separation – Phase IV portion of the project will provide the main intercepting drain for this portion of the program and has been described in Section 5.2.6.15. As is the case with the Phase IV Sewer Separation project, the Phase V portion of the program will also reduce CSO discharges to Clarks Cove by separating the combined sewer system. Stormwater from the project area will be discharged to the Inner Harbor, helping to attain maximum use of the shellfish beds in Clarks Cove. In addition to reducing CSO's, Phase V sewer separation will also provide the sideline drains required to mitigate sewer system flooding at the intersection of Maple and Chancery Streets and along the western portion of St. Luke's Hospital that occurs due to wet weather. This will address a public health issue and safety issue that occurs.

- Not completed due to lack of funding and municipal personnel capacity
- Carried forward into 2025 Update: See Section 5.3, Action 5.3.10.11

5.3.6.17 Assawompset Dam Improvements

The City is proposing to undertake improvements to the Assawompset Dam and associated downstream conveyance facilities. These improvements will repair any defects with the dam and ensure that the downstream conveyance systems will have adequate capacity during heavy precipitation and disaster events.

- Not completed due to learning the dam is owned by City of Taunton

- Removed, no longer relevant

5.3.6.18 Improve the Inter-Municipal Agreement with Taunton for Assawompset Dam

The City will pursue the development of a clearer agreement between the City of Taunton and the City of New Bedford on the ownership, maintenance, and control of the Assawompset Dam. Restructuring this contract will provide each party with a clear understanding of their responsibilities regarding dam operations and expedite procedures during disaster events.

- Not completed due to learning the dam is owned by City of Taunton
- Removed, no longer relevant

5.3.6.19 Improve Communications and Data Gathering for Infrastructure Systems

The City will continue in its pursuit to purchase and upgrade equipment required to implement asset management strategies, improvements in communication and data gathering in the field. These technologies will meet Administrative Order and CMOM program requirements and ensure proper operation and maintenance of the City's stormwater, flood protection, and sewer systems.

- Completed

5.3.6.20 Implement Snow Plowing Tracking System

The City will work to implement a snow plow tracking system to more efficiently clear City streets during snow events. This plan will be based on GPS and GIS technologies that will enable staff to efficiently route plows throughout the City.

- Completed

5.3.6.21 Incorporate Disaster Mitigation Plan Projects into City Projects

The City will incorporate the Disaster Mitigation Plan capital and operation and maintenance projects identified in this Plan into the City's updated Long Term CSO Control Plan (LTCP) and Capital Improvements Plan (CIP) as appropriate. Integrating these projects into the LTCP and CIP will help to ensure that these projects are completed. The authority behind that integration of the Long Term CSO and Capital Improvements Plan into the Disaster Mitigation Plan is the Commissioner of Department Public Infrastructure.

- Completed

LHMC Meeting #1

The New Bedford LHMC met for the first time on September 22, 2023, at the New Bedford Free Public Library. At this meeting the LHMC reviewed project components including the scope, schedule, project webpage, interdepartmental email, the establishment of various committees, and most importantly, a targeted focus on rolling out a comprehensive equity-focused outreach and engagement strategy. Data collection needs were also discussed, including critical facilities and vulnerable populations data, National Flood Insurance Program (NFIP) data, dams, and feedback for the 2016 Plan Report Card. The expansion of the 2016 Natural Hazards Mitigation Plan to a "Multi-Hazard Mitigation Plan" and the specific hazards to be profiled were discussed. Finally, the draft community outreach and engagement strategy was also discussed. A complete set of meeting materials is included in Appendix B.

Online Community Survey

An online community survey was conducted to understand the community's perspective of hazard mitigation preparedness, familiarity with various types of hazards, how individuals receive information, and personal needs regarding hazard and disaster response and recovery. The survey was translated into Spanish and Portuguese and available online from July 2023 to May 2024. A total of 213 responses were received.

The survey was promoted through a variety of approaches. The survey link and QR code were posted on the project website and distributed at various listening posts throughout the community. The LHMC distributed the survey link and QR code via their personal and professional networks and on Facebook. Project business cards were also distributed with the survey link and QR code within the community and at the first Public Workshop in April 2024.

A brief summary of responses collected is included below. The full survey summary is included in Appendix B.

- Most respondents have experienced winter-related hazards (74%), communicable disease-related hazards (62%), and wind-related hazards (60%).
- Approximately one-third of respondents (34%) feel their household and/or business is “adequately to very well” prepared to deal with a natural, human-caused, or technological hazard.
- More than half of respondents have been impacted by climate-related hazards such as higher heating costs (63%), higher cooling costs (60%), and power outages (56%).
- A majority of respondents receive useful information via local news and social media (72%), personal experiences with natural hazards (59%), and the New Bedford Emergency Management Department (35%).
- Overwhelmingly, 75% of respondents do not know where their nearest emergency shelter is located.
- Over half of respondents (56%) feel they are prepared to go 72 hours without power in their home in the case of an emergency.

Ward-Specific and Equity Partners Group Coordination

Engagement with the Equity Partners Group was initiated in summer of 2023. The New Bedford Core Team provided support in developing a list of stakeholders and social service agencies representative of typically disadvantaged individuals from the many EJ areas throughout the community. From there, seven stakeholders were recruited to engage at a higher level to participate on the New Bedford LHMC, while the others originally solicited were included on the distribution list for future outreach and engagement.



Michele Paul (Director of Resilience and Environmental Stewardship – City of New Bedford) presenting at a ward-specific community meeting.

It was determined that meeting residents where they are was best to facilitate participation in the process. Ward-specific meetings were held as follows:

- Ward 1: November 6, 2023, at the Pulaski School
- Ward 2: September 25, 2023, at the Wilks Library
- Ward 3: October 16, 2023, at Keith Middle School
- Ward 4: November 2, 2023, at McCoy Recreation Center
- Ward 5: October 4, 2023, at Hathaway Elementary School
- Ward 6: October 30, 2023, at the Hazelwood Park Community Center

The primary goals of the ward-specific meetings were to better understand:

- Local knowledge of risks and vulnerabilities.
- Resident experiences with specific hazards, including how people were affected or have recovered from previous hazard events.
- Location-based information related to experiences and impacts.
- Resident preferences for receiving and accessing information and resources.

Resident participation at the ward meetings was significantly limited, prompting a two month pause (January and February 2024) on outreach and engagement so the Core Team could develop and implement alternative outreach and engagement practices to better engage community stakeholders. Findings from the ward-specific meetings are included in the LHMC Meeting #2 summary in Appendix B.

New Bedford Technical Committee Meeting

The expansion of this 2025 update to include human-caused, and technological hazards prompted the creation of a Technical Committee of municipal officials who could speak directly to the history of hazards and vulnerabilities experienced by the City since 2016 at a much more granular level. The Technical Committee met on November 6, 2023, to score the hazard index for natural, human-caused, and technological hazards further described in Section 3.4. A complete set of meeting materials is included in Appendix B.

Community Outreach and Engagement Re-boot

As mentioned earlier, resident participation at the ward-specific meetings was very limited. To provide meaningful opportunities to collect input from residents while also bringing new and often underrepresented voices into the public participation process, the Core Team decided to pause efforts and reach out specifically to the Equity Partners Group and ask them what they thought would be a useful and realistic approach towards engagement.

On December 18, 2023, the Core Team held a virtual listening session to better understand alternative outreach measures for consideration identified by the Equity Partner Group. From that session, the Core Team considered and implemented (where noted) the following:

- Listening Posts placed throughout the community:
 - Howland Green Branch Library
 - New Bedford Free Public Library
 - Lawler Branch Library
 - Wilkes Branch Library
 - Denison Memorial Community Center
 - Global Learning Charter Public School
 - Whaling Museum (exhibition and screening)
- Meeting-In-A-Box: A pre-packaged listening session to discuss local knowledge on risks/vulnerabilities, lived experiences dealing with hazards, and solicitation for potential mitigation actions for consideration that can be implemented by a community champion/in a familiar setting. Unfortunately, there weren't any requests for this alternative.

Has your home, business, or quality of life been affected by extreme storms, flooding, drought, or high heat days? **Tell us how you've been impacted.**

Place a sticky dot next to all of the impacts that you have personally experienced.

Flood Damage

Damage from storms (wind, snow, ice, heavy rain)

Higher cooling costs

Higher heating costs

Heat stress/illness

Loss of business due to extreme weather

Tree/plant stress

Something else (Tell us about it on a sticky note!)

How else have you been impacted by hazards in our community?


Share your experiences through a short survey from the City, that will feed into the Local Multi-Hazard Mitigation Plan update.

nbresilient.com


Listening Post Example

- A fact sheet and the online community survey link and QR code were distributed electronically to the following:
 - Coalition for Social Justice listserv
 - Alma Del Mar Charter School
 - Global Learning Charter School
- The online community survey link and QR code were posted on the digital message board inside Southeastern Regional Transit Authority (SRTA) buses.
- Individual and Organizational Meetings: Unfortunately, there weren't any requests for this alternative.
- Boots-on-the-Ground: Members of the Consultant Team canvassed SRTA bus routes and shelters to distribute project business cards that included the project website and the online community survey link and QR code.

New Bedford, MA
Multi-Hazard Mitigation Plan
2024 Update



www.newbedford-ma.gov/emergency-management/new-bedford-multi-hazard-mitigation-plan/



Take the Community Survey
<https://www.surveymonkey.com/r/6KTNVMJ>
Participate and be entered to win a \$50 gift Card

*Project business cards distributed at
SRTA bus routes and shelters*

LHMC Meeting #2

The New Bedford LHMC met a second time on February 14, 2024, at the Fort Taber Community Center to review the hazard index for natural, human-caused, and technological hazards; discuss the findings from the ward-specific meetings and outreach and engagement reboot; and review progress on the Geographic Information System (GIS) data rectification. A complete set of meeting materials is included in Appendix B.

Municipal and Stakeholder Interviews

The Consultant Team conducted several interviews with municipal officials and stakeholders to better understand the impacts experienced from the range of hazards and to discuss future needs/preliminary mitigation actions for consideration. Interviews were conducted with the following organizations and individuals:

- Greater New Bedford Regional Refuse District (Anthony Novelli – Executive Director)
- New Bedford Inspectional Services Department (Danny Romanowicz – Director of Inspectional Services and Commissioner of Buildings)
- Eversource (Anthony Veilleux – Community Liaison)
- New Bedford Council on Aging (Pamela Amaral-Lima – Director)
- New Bedford Community Services Department (Cynthia Wallquist – Director)
- New Bedford Economic Development Council (Marianella Perry – Business Support and Communications and Derek Santos – Executive Director)
- New Bedford Department of Facilities and Fleet Management (Jennifer Vieira – Director and James Sylvia - Assistant Director)
- Greater New Bedford Community Health Center (Cheryl Bartlett – CEO), Southcoast Health Hospital Network (Christopher LeBlanc – Director of Facilities and Engineering, Craig Forcina – Director of Safety, Security and Emergency Management, Dennis Swift – Associate Safety and Emergency Management Officer, and Emily Quinn – Government Liaison)

- New Bedford Housing Authority (Cynthia Spence – Director of Modernization, Planning, and Development)
- Greater New Bedford Vocational Technical High School (Zeb Arruda – Facilities Director)
- One SouthCoast (Mike O'Sullivan – CEO and Ian Trombly – VP of Public Policy)
- Southeastern Regional Transit Authority (Shayne Trimbly – Director of Transit Planning)
- New Bedford Tourism, Marketing, and Zoo (Ashley Paine – Director of Tourism and Marketing, Amy Desrosiers – Marketing Manager, and Gary Lunsford – Director of New Bedford Zoo)
- USACE (Heather Shields – Levee Safety Program Manager and Flynt Tuller – Geotechnical Engineer)

Public Workshop #1

The first public workshop was held on April 11, 2024, at the Vault in downtown New Bedford as part of the City's AHA Celebration (Sustainable SouthCoast). Announcements were posted on the project webpage and emailed to municipal boards and commissions and individuals who had added themselves to the project listserv. The presentation included an overview of the various planning committees, project components, and federal and state guidance. The presentation also provided an overview of the *ResilientMass Plan: 2023 MA State Hazard Mitigation Plan and Climate Adaptation Plan* and discussion of how the 2025 Update aligns with the state plan. Finally, the presentation reviewed the scored natural, human-caused, and technological hazard indices, and a status summary of the mitigation actions from the 2016 plan. A complete set of meeting materials is included in Appendix B.

LHMC Meeting #3

The New Bedford LHMC met for the third time on September 19, 2024, to review the summaries from Public Workshop #1, the online Community Survey, and municipal and stakeholder interviews. Findings from the various overlay analyses and draft map series were presented. The LHMC also developed a mission statement and goals for the 2025 Update. A complete set of meeting materials is included in Appendix B.

LHMC Meeting #4

The New Bedford LHMC met for a fourth time on December 4, 2024, at the Fort Taber Community Center. The LHMC reviewed FEMA's Social, Technical, Administrative, Political, Legal, Economic, and Environmental (STAPLEE) Score Sheet and conducted an abbreviated Benefit Cost Analysis to prioritize mitigation actions. Several municipal departments required more time to pull together their mitigation actions for consideration, so a second date (LHMC meeting #4, part 2) was scheduled.

LHMC meeting #4, part 2 was held on January 24, 2025, at the Department of Public Infrastructure to finish the abbreviated Benefit Cost Analysis and prioritization of the remaining mitigation actions. A complete set of meeting materials (for both meetings) is included in Appendix B.

Public Workshop #2

Placeholder text.

Municipal Integration

Since the completion of the 2016 Plan, the City of New Bedford has successfully implemented findings from the 2016 Local Hazard Mitigation Plan Update into the following policy, programmatic areas and plans:

- City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018
- New Bedford Harbor Port Assessment Summary
- Resilient Design Guidelines New Bedford Harbor, June 2020
- City of New Bedford Open Space and Recreation Plan 2021 – 2028
- A City Master Plan New Bedford 2020 (2025 Update in progress)
- New Bedford Pump Station Floodproofing Project, 2016
- New Bedford Comprehensive Emergency Management Plan – Draft 2025
- City of New Bedford Green Infrastructure Master Strategy and Implementation Roadmap Report, June 2022
- NB Resilient – New Bedford’s Plan for Community Climate Action + Resilience, 2020
- North End/South End Resilience Hub Business Planning
- Maritime Business Resilience Toolkit: City of New Bedford & Town of Fairhaven, June 2020
- Port of New Bedford Strategic Plan 2018 – 2023
- Circulation & Drainage Master Plan Brooklawn Park, New Bedford, MA, August 7, 2020
- East Beach Parking Lot Green Infrastructure Retrofit, June 2022
- City of New Bedford Sassaquin Pond Watershed Management Plan, September 2021
- Assawompset Ponds Complex (APC) and Nemasket Watershed Management and Climate Action Plan, August 2022
- Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

Municipal Website

The New Bedford City Council and Planning Board are the primary entities responsible for regulating development. Feedback to the City Council and Planning Board was ensured through the participation of the Mayor’s Chief of Staff and the City’s Chief Operating Officer on the LHMC. This involvement throughout the evolution of the development of the New Bedford MHMP ensured that the operational policies and any mitigation strategies or identified hazards were evaluated and incorporated.

With this information, the Project Consultant prepared the 2025 Update which was available for public comment from March 31, 2025 through April 18, 2025, on the New Bedford website, project webpage (see Appendix C for Notice of Availability of draft) with comments returned and considered for incorporation into the 2025 Update.

The 2025 Update was also forwarded to the neighboring communities of: Freetown, Deborah L. Pettey – Town Administrator; Acushnet, Thomas Farland – Director, Office of Emergency Management; Dartmouth, Tim Sheridan – Emergency Management Director, Emergency Management Agency; and Fairhaven, George Samia – Acting Town Administrator who received notice of the draft 2025 Update availability on the City of New Bedford’s website, with comments returned (and incorporated into the 2025 Update). The draft 2025 Update was then submitted to MEMA for consideration. It is the intention of the New Bedford LHMC that the 2025 Update be an available and pertinent source of information to a wide variety of individuals and interests. The 2025 Update also has a specific and pragmatic function: by identifying and prioritizing local mitigation needs, the 2025 Update has already served, and will continue to serve as a basis for amendments to local policies and regulations.

1.6. History of Disaster Declarations

Since 1953, FEMA Region 1 (the New England States) has endured more than 150 federal emergency (EM) and major disaster declarations (DR), 28 of which impacted Massachusetts.

Table 1-1 provides a summary of the most significant past federal emergency and major disaster declarations for Bristol County, Massachusetts (where New Bedford is located):

Table 1-1. Significant Federal Emergency and Major Disaster Declarations, Bristol County

ID Number	Type	Date
DR-4214	Severe Winter Storm/Snow/Flooding	January 2015
DR-4372	Severe Winter Storm/Snow/Flooding	March 2018
DR-4496	Covid-19 Pandemic	March 27, 2020
DR-4651	Severe Winter Storm/Snowstorm	January 28, 2022
	MA Shelter Capacity Crisis	August 8, 2023
EM-3599	Hurricane Lee	September 15, 2023
DR-4780	Severe Storms and Flooding	September 2023

Sources: <https://www.fema.gov/disaster/declarations>, NOAA National Center for Environmental Information, www.ncdc.noaa.gov.

1.7. Recent Disaster Declarations

Bristol County communities, including New Bedford, have experienced significant losses during several recent storms, prompting FEMA to declare these storms as disasters. The following are descriptions of recent storms that have been declared as disasters by FEMA and that have affected the City of New Bedford.

1.7.1. Severe Winter Storm/Snow/Flooding – January 2015 (FEMA DR-4214)¹

A historic winter storm brought heavy snow to southern New England with blizzard conditions to much of Rhode Island and Massachusetts, beginning during the day on Monday, January 26, 2015, and lasting into the early morning hours of Tuesday, January 27. The highest snowfall totals, averaging two to three feet, extended from extreme northeast Connecticut and northwest Rhode Island into much of central and northeast Massachusetts, including greater Boston. Much of southeast Massachusetts and the rest of Rhode Island received one to two feet of snow. Totals dropped off dramatically west of the Connecticut River Valley where totals of four to eight inches were observed.

The storm was well-forecasted, with Blizzard Watches and Winter Storm Watches issued two days before the snow began. Low pressure tracked northeast from the Carolinas and strengthened rapidly as it slowly passed southeast of Nantucket on Monday evening, January 26. All of the precipitation fell as snow with this storm. At its peak, snowfall rates of two to three inches per hour were common.

¹ FEMA Region 1 Declared Disasters, <https://www.fema.gov/locations/massachusetts>.

Daily snowfall records were set for January 27 in Boston (22.1 inches, previous record 8.8 inches in 2011), Worcester (31.9 inches, previous record 11.0 inches in 2011), and Providence (16.0 inches, previous record 6.7 inches in 2011). In Providence, the total of 19.1 inches was the fourth highest on record (dating back to 1904), while in Boston the total of 24.6 inches was the sixth highest on record (dating back to 1872).

The Blizzard of January 2015 produced very strong winds late Monday into Tuesday near the Massachusetts and Rhode Island coasts where gusts of 50 to 65 miles per hour (mph) were common.

1.7.2. Severe Winter Storm/Snow – March 2018 (FEMA DR-4372)²

Low pressure moving out of the Ohio Valley passed south of Southern New England on March 2 and moved out to sea on March 3. This storm brought heavy snow to northwest Massachusetts, heavy rain and strong winds to central and eastern Massachusetts, and coastal flooding to the coastline. Moderate to major coastal flooding took place over three tide cycles due to astronomically high tides and a persistent northeast wind. This built a storm surge of two to four feet along the Massachusetts East Coast.

1.7.3. Covid-19 Pandemic – March 2020 (FEMA DR-4496)³

The President declared a major disaster on March 27, 2020, as a result of COVID-19 that occurred from January 20, 2020 and continuing pursuant to his authority under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Pub. L. No. 93-288 (1974) (codified as amended at 42 U.S.C. § 5121 et seq.) (“Stafford Act”). This declaration, designated FEMA-4496-DR-MA, authorized Public Assistance Category B and the Crisis Counseling Program statewide. Authorized by Section 403 of the Stafford Act, FEMA may provide financial and/or direct assistance under Public Assistance Category B for emergency protective measures taken to respond to COVID-19 that are not authorized under other federal statutes. State, tribal, and local government entities and certain private nonprofit organizations throughout the entire state are eligible to apply for Public Assistance Category B. Authorized by Section 416 of the Stafford Act, FEMA may provide financial assistance under the Crisis Counseling Program to the state to provide professional counseling services or training of disaster workers to victims of COVID-19 in order to relieve mental health problems caused or aggravated by COVID-19 or its aftermath.

1.7.4. Severe Winter Storm/Snowstorm – January 28, 2022 (FEMA DR-4651)

Explosive cyclogenesis of a low-pressure center off the Mid Atlantic coast brought a strong winter storm with blizzard conditions to all of southern New England Saturday and Saturday night. The storm tracked from east of the Carolinas to the 70 degrees West and 40 degrees North benchmark bringing extreme snowfall rates of two to four inches per hour and winds gusting to hurricane force along the coast and 50 to 60 mph inland. The heaviest snow, just under 30 inches, fell over southeast Massachusetts, and in Rhode Island up to two feet fell. Snow tapered off overnight Saturday with quiet weather to follow on Sunday.

² Ibid.

³ Ibid.

1.7.5. MA Emergency Shelter Crisis⁴

Massachusetts Governor Maura Healey declared a state of emergency to address the record number of households seeking help from the state-run family shelter system, including many new immigrants and refugees. It is acknowledged that this is not a natural hazard event and there was not a FEMA declaration for Massachusetts.

1.7.6. Hurricane Lee (FEMA EM-3599)

Hurricane Lee started as Tropical Storm Lee in the tropical Atlantic Ocean in September 2023. It organized and grew stronger extremely quickly: it is the third-fastest growing hurricane on record. Rapid intensification is consistent with the impacts of climate change. As Lee moved north, the storm weakened and turned northwest.

1.7.7. Severe Weather and Flooding (FEMA DR-4780)

In September 2023, a stationary frontal boundary, combined with a low-pressure area in eastern New Jersey and a convergence zone across Connecticut, Rhode Island, and Massachusetts, brought slow-moving showers and thunderstorms to the Northeastern United States, bringing heavy rainfall across portions of the region.

⁴ New England Public Media, <https://www.nepm.org/regional-news/2023-08-08/massachusetts-gov-healey-declares-a-state-of-emergency-in-overwhelmed-family-shelter-system>.

2. COMMUNITY PROFILE

2.1. Geology, Natural Resources, and Climate

The City of New Bedford is an urban community located in southeastern Massachusetts. It is bordered to the west by Dartmouth, to the north by Freetown, to the east by Acushnet, and Buzzards Bay to the south. New Bedford is 54 miles south of Boston and 33 miles southeast of Providence, Rhode Island. It has a total land area of 20.14 square miles.

Geologists classify the southeastern Massachusetts area as part of the Northeast Coastal Lowlands/Coastal Plain region. The landscape is heavily influenced by the impacts of glaciers that receded 12,000 years ago. The area has low hills, somewhat porous soils, deposits of sand and gravel, multiple swamps, lakes, rivers and ponds, and a high-water table. The glaciers left behind thick layers of sand and gravel lying over bedrock. Today, the Acushnet River at the southeastern edge of the city lies at or below sea level. The elevation rises to the west, coming up from the Acushnet River, but then drops again in wetland areas around the airport. The general elevation is 50 feet above sea level and the highest point is 181.5 feet above sea level.

The water resources of New Bedford have played a central role in its development. The harbor area remains an active port, and the city has 11.4 miles of tidal shoreline. The hurricane barrier, completed in 1966, closes during storm events and protects the recreational and commercial fleet. New Bedford enjoys its reputation as a “safe harbor” because of the hurricane barrier. The stone and steel barrier extends across the mouth of New Bedford Harbor to the Fairhaven side near Fort Phoenix. It is 9,100 feet long and 20 feet above median sea level. The harbor section has two 440-ton gates in the center that can be closed during strong tides or storms to protect the inner harbor. The western section protects the city from tidal surges in Clarks Cove. Built by the USACE, the hurricane barrier is the largest stone structure on the East Coast. The area protected by the barrier includes 1,400 acres of densely developed industrial and commercial properties along the New Bedford waterfront and the Acushnet River.

Surface water accounts for 3.9 square miles of area and includes the Acushnet River and three major ponds: Sassaquin, Turners, and the Buttonwood Park Pond.

New Bedford has historically experienced an average winter temperature of 33°F and average summer temperatures of 69°F according to baseline temperatures 1970 - 2030.⁵ Typical annual precipitation is 43 inches. The growing season, from the last killing frost in the spring to the first killing frost in the fall, runs between 180 to 200 days. The area is subject to a variety of severe weather events, including hurricanes, Nor’easters, thunderstorms, blizzards, tornadoes, and drought to name just a few. All of these are discussed more fully in Section 3.

⁵ Eastern Research Group, Inc., *ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan*, September 2023, https://www.mass.gov/files/documents/2023/10/10/2023%20ResilientMass%20Plan_10.10.23%20508.pdf

2.2. Population Characteristics

According to the Decennial Census the City of New Bedford had a total population of 101,079 in 2020.⁶ New Bedford's population in 2010 was 95,072, representing an increase of 6.4 percent (6,007 persons). This growth is expected to continue steadily to approximately 107,000 people in 2050.⁷

New Bedford's residents are younger than Massachusetts' population as a whole. As compared to Massachusetts, 5.9% of the population is under the age of 5 and 24.7% is under 19 (as opposed to 4.8% and 22.2%).⁸ New Bedford has a smaller population of older adults (over 65): 15.3% versus 17.5%, though that share is expected to grow.⁹ Older adults are at higher risk of adverse impacts during and following a disaster.

The City is more diverse than the Commonwealth. 24.3% of residents of New Bedford are Hispanic or Latino, and an additional 16.1% identify as having heritage of two or more races.¹⁰ The median household income in New Bedford in 2023 dollars (averaged across 2019 – 2023) was \$56,025, with 19.9% of residents living in poverty.¹¹

Socioeconomic disparities matter in understanding the risks and vulnerabilities of disasters. Disasters do not impact all people in the exact same way. The Fifth National Climate Assessment (Chapter 21) states this very clearly:

“Extreme heat, storms, flooding, and other climate-related hazards are causing disproportionate impacts among certain communities in the Northeast, notably including racial and ethnic minorities, people of lower socioeconomic status, and older adults. These communities tend to have less access to healthcare, social services, and financial resources and to face higher burdens related to environmental pollution and preexisting health conditions.”

2.3. Transportation Network

New Bedford is served by the SRTA bus network. SRTA has fourteen routes serving New Bedford and Fairhaven. Service starts at 5:30 AM and extends until 6:30 or 8:30 PM, depending on the route. In addition, the Massachusetts Bay Transportation Authority (MBTA) is actively working on extending commuter rail service to New Bedford through the South Coast Rail project (with service beginning by the end of March 2025). New Bedford boasts a strong recreational bike network and plans to connect to other bike paths in adjacent communities are underway.

⁶ Decennial Census, [DP1: PROFILE OF GENERAL POPULATION ... - Census Bureau Table](#).

⁷ UMass Donahue Institute population projections: <https://donahue.umass.edu/business-groups/economic-public-policy-research/massachusetts-population-estimates-program/population-projections>

⁸ Decennial Census, [DP1: PROFILE OF GENERAL POPULATION ... - Census Bureau Table](#).

⁹ Ibid.

¹⁰ Ibid.

¹¹ <https://www.census.gov/quickfacts/fact/table/newbedfordcitymassachusetts/INT100223>

New Bedford has a total of 281 miles of roadway. Routes 18 and 140 act as the major north/south routes and Route 6 as a major east/west route. Nearly three miles of Interstate 195 run through the center of the City, dividing it into a north and south area. There are 34 bridges in New Bedford. Of these, six are classified as structurally deficient, all owned by MassDOT. Five of these bridges are part of the I-195/Route 18 interchange (set to be replaced starting in summer 2025) while the sixth is part of the Route 6/Route 18 interchange.¹² In addition, the 2023 Southeastern Regional Planning and Economic Development District (SRPEDD) Regional Transportation Plan recommends replacing the New Bedford/Fairhaven Bridge. It was completed in 1903 and is classified as functionally obsolete.

2.4. Land Use

Statistics compiled from the 2011 National Land Cover Dataset from the United States Geological Service (USGS) indicate the following breakdown of land uses in New Bedford:

- 2.2 acres agriculture (0.2%)
- 1,447 acres open space (11.2%)
- 2,037 acres wetland (15.8%)
- 2,595 acres high density development (20.0%)
- 3,974 acres medium density development (30.7%)
- 1,461 acres low density development (11.2%)
- 1,282 acres natural/undisturbed (9.9%)
- 111 acres water (1%)

2.5. Housing and Development

The Decennial Census listed 44,588 housing units in 2020, with more (61%) residents renting their homes than owning (39%).¹³ Overall, the housing stock increased by 1,655 units from 2010 to 2020.¹⁴ Residential growth has been steady. Since 2007, the former mill buildings near Riverside Avenue and Wamsutta Street along the Acushnet River have been redeveloped from industrial and business use to multi-family residential use. This change in use of the area has made more of the population vulnerable to the impacts of natural hazards that may result in coastal flooding and thus has increased the City's overall vulnerability.

2.6. Cultural and Historic Sites

The Buttonwood Park Zoo, originally created in 1894 and completely renovated in the late 1990s, is located on approximately 8 acres in its namesake park. The zoo is a year-round operation with over 200 animals.

The New Bedford Whaling National Historical Park was established in 1996 as part of the National Park System. It commemorates the City's heritage as the world's preeminent whaling

¹² MassDOT: <https://geo-massdot.opendata.arcgis.com/datasets/MassDOT::bridges/explore?location=41.697934%2C-72.112666%2C7.45>

¹³ Ibid.

¹⁴ https://donahue.umass.edu/data/pep/dashboards/census2020_dashboard.html

port during the 19th century. The National Historical Park covers 34 acres (over 13 city blocks) in the Downtown Historic District (also a National Historic Landmark District) and waterfront areas. The National Historical Park includes a visitor center and historic sites including the New Bedford Whaling Museum, the Seamen's Bethel, and the Fishing Heritage Center. The Rotch-Jones-Duff House is also part of the National Park System located at 396 County Street. Overall, there are more than 70 contributing resources in the New Bedford Whaling National Historical Park, most of which are privately-owned historic structures. The SSV Ernestina-Morrissey's homeport is New Bedford and docks near Coast Guard Park, however it is part of the permanent fleet of the Massachusetts Maritime Academy

Other major historical and cultural sites include the New Bedford Art Museum and New Bedford Free Library Special Collections, both located on City Hall Square in the Downtown Historic District/National Historic Landmark District; the New Bedford Museum of Glass located in the James Arnold Mansion Museum (itself a major historic landmark with an active agreement with the Bridgewater State University archeological field School) located at 427 County Street, the Zeiterion Performing Arts Center located at 674 Purchase Street, the Verdean Veteran's Memorial Hall located at 561 Purchase Street, the Cape Verdean Association located at 1157 Acushnet Avenue, The Community Economic Development Center at the Capitol Theater located at 1418-1440 Acushnet Avenue, Youth Opportunities Unlimited at Victory Point (on Clark's Point), and the Groundwork South Coast Community Garden at Riverside Park (along the Acushnet River).

2.7. Utilities and Special Features

2.7.1. Wastewater System

The New Bedford wastewater system serves approximately 96% of the city's population and about 69% of the land area. In addition, some service is extended to Dartmouth and Acushnet. The south and central parts of the city are served with a combined sewer and stormwater system, while the northern part of the city is primarily serviced by separate sanitary sewers. The system consists of approximately 266 miles of sanitary and combined gravity and pressure sewers and 29 pump stations. The secondary treatment plant is located at Fort Rodman. There is a special flood control pumping station that is part of the New Bedford Hurricane Barrier system owned by the City that can be used during a major hurricane event to redirect wastewater from the City's main interceptor and other low-lying segments of the collection prone to wet weather flooding to a discharge pipe in Clarks Cove. This pump station also acts as a flood control station that is used during high tide/significant wet weather events to pump stormwater to Clarks Cove to protect the south end of the city.

2.7.2. Water Supply

New Bedford receives its water from the Assawompset Ponds Complex, located in the towns of Freetown, Lakeville, Middleboro and Rochester. The water treatment plant is located in Rochester on the shore of Little Quittacas Pond. The treated water from this facility is pumped directly to the north end of New Bedford and to the High Hill reservoir from which it is distributed to other areas of the city.

2.7.3. Port of New Bedford

The Port of New Bedford is the highest value fishing port in the United States for 22 years running. It is home to nearly 500 commercial fishing boats during peak season, with over 300 of

them home-ported in New Bedford. It is also part of the New Bedford Free Trade Zone, which provides manufacturing opportunities for duty-free importers and exporters. The port offers a ship agency, freight forwarding, stevedoring services, marine construction, blast freezing warehouse and truck-brokering facilities all in one location. The New Bedford Port also has a waterfront warehouse capacity that is one of the largest U.S. Department of Agriculture (USDA)-approved cold treatment centers on the East Coast. The Port has over 950 recreational boating slips, including 198 at the publicly managed Pope's Island Marina. These are all protected from major storms by the hurricane barrier. In addition, there is a seasonal ferry service from New Bedford to Martha's Vineyard, Nantucket, and Cuttyhunk Island.

The Port is also hosting the marshalling and construction of the first commercial-scale offshore wind development in the United States. Vineyard Wind 1 operates out of the New Bedford Marine Commerce Terminal located on the southernmost portion of the New Bedford waterfront within the hurricane barrier. The arrival of the offshore wind industry has led to significant private investment revitalizing long dormant waterfront industrial facilities at the sites of the former Sprague Energy power plant and the Revere Copper manufacturing complex.

2.7.4. New Bedford Regional Airport

The New Bedford Regional Airport includes two runways, a Federal Aviation Administration (FAA) control tower, over 150 registered aircrafts, and a flight school. There are over 55,000 annual operations including takeoffs and landings at this 823-acre facility.

2.7.5. Utility Providers

Utility providers in New Bedford include Eversource for both electricity and natural gas. For electricity services, the City is divided into two service areas: the North service area (north of Route 6) has Verizon-owned utility pole sets, and the South service area has Eversource-owned utility pole sets. These two service areas often create challenges and confusion for customers when power is out, poles are down, or there are trees on wires. As service repair calls come in from customers, they may be redirected to another provider depending on which service area is impacted and which utility has been contacted, as each utility can only service their own equipment. The DPI also fields phone calls regarding downed wires, pole damage, and tree damage to wires. The public may not be aware of the two service areas or fully understand that each utility can only service their own equipment.

Utility infrastructure in New Bedford is aging. Eversource is currently working on improving resiliency and redundancy of its system. Three major transmission lines terminate in New Bedford and Eversource is currently upgrading transmission lines within the region. There is currently no backup battery storage in New Bedford and the southern service area is at distributed energy resource (i.e., solar) capacity. Eversource maintains an industry standard for vegetation management, trimming trees that over 40 feet in height or overhang wires. Eversource works with New Bedford's DPI (permitting) regarding design standards for compliance with City regulations and restoration of public rights-of-way.

Eversource is often asked about the feasibility of putting utilities underground. This is considered cost-prohibitive (approximately \$1 million per mile) as there is limited remaining space underground with existing utilities and considering that all transmission lines daylight at some point, leaving them vulnerable.

Eversource is also working on their Gas System Enhancement Plan program replacing cast iron and steel pipes underground (as early as the 1920's) that are old and susceptible to leaking, and is a very intense undertaking. Eversource indicated that regionalization of services are not a realistic goal as local regulations/permitting vary across communities despite electric circuits and gas lines running through multiple communities.

2.8. Environmental Justice Areas

The U.S. Environmental Protection Agency (EPA) defines Environmental Justice (EJ) as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Within the context of natural hazards and their mitigation, potential EJ concerns may arise from income-related factors, discrimination (overt or institutional), cultural isolation and barriers, language isolation, lack of transportation access, and disability (especially among the elderly). Massachusetts identifies EJ communities using a combination of data from the 2016 – 2020 ACS 5-Year Estimates and 2020 Decennial Census where U.S. Census Block Groups meet one or more of the following criteria:¹⁵

1. The annual median household income is not more than 65% of the statewide annual median household income (MI),
2. Minorities comprise 25% or more of the population¹⁶ (M), or
3. 25% or more of households lack English language proficiency (E).

Seventy-one of New Bedford's 87 census block groups qualify as EJ communities (**Table 2-1**). New Bedford's median household income of \$49,000 is 58% of the Commonwealth's median household income, though median household income varies substantially by block group.

Table 2-1. Environmental Justice Areas, New Bedford

Census Tract	Block Group	Total Pop.	Minority (%)	Median Household Income (MHI)	Statewide MHI (%)	Limited English (% HHs)	EJ Criteria
6501.02	1	1,422	42%	\$48,446	57%	4%	MI
6501.02	3	1,643	33%	\$74,653	88%	11%	M
6502.01	2	1,167	25%	\$102,933	122%	2%	M
6502.01	3	886	30%	\$102,904	122%	9%	M
6503	2	893	30%	\$57,539	68%	0%	M
6503	3	1,124	27%	\$41,905	50%	13%	MI
6504	1	1,137	35%	\$72,014	85%	4%	M
6504	2	1,419	38%	\$48,750	58%	7%	MI
6504	3	1,028	49%	\$40,987	49%	4%	MI

¹⁵ Environmental Justice populations are defined at the Block Group level, which is a geographical unit used by the U.S. Census Bureau. Block groups typically consist of 600 to 3,000 people. See <https://www.mass.gov/info-details/environmental-justice-populations-in-massachusetts> for more information.

¹⁶ In municipalities where the median household income is 150% of the statewide median household income, this is raised to 40%.

Census Tract	Block Group	Total Pop.	Minority (%)	Median Household Income (MHI)	Statewide MHI (%)	Limited English (% HHs)	EJ Criteria
6504	4	697	31%	\$58,517	69%	11%	M
6505	1	665	27%	\$53,964	64%	5%	MI
6505	2	1,265	31%	\$30,789	36%	17%	MI
6505	3	1,475	36%	\$47,112	56%	11%	MI
6506	1	1,600	45%	\$36,513	43%	11%	MI
6506	2	800	49%	\$14,057	17%	28%	MI/E
6506	3	773	40%	\$50,769	60%	10%	MI
6507	1	1,250	72%	\$24,150	29%	14%	MI
6507	2	1,784	80%	\$25,625	30%	38%	MI/E
6508	1	931	41%	\$69,243	82%	20%	M
6508	2	836	49%	\$16,809	20%	10%	MI
6508	3	1,046	68%	\$33,571	40%	36%	MI/E
6508	4	998	60%	\$35,304	42%	27%	MI/E
6509	1	855	75%	\$48,404	57%	24%	MI
6509	2	1,430	48%	\$48,158	57%	16%	MI
6509	3	855	77%	\$24,554	29%	16%	MI
6510.01	1	902	35%	\$95,962	114%	6%	M
6510.01	2	2,122	26%	\$59,219	70%	1%	M
6510.02	2	1,903	57%	\$70,417	83%	11%	M
6511	1	1,199	70%	\$26,444	31%	30%	MI/E
6511	4	916	38%	\$27,404	32%	4%	MI
6511	2	1,398	64%	\$39,979	47%	11%	MI
6511	3	1,009	44%	\$80,000	95%	0%	M
6512	1	849	74%	\$27,214	32%	36%	MI/E
6512	2	1,610	53%	\$42,778	51%	22%	MI
6513	2	1,034	41%	\$33,587	40%	1%	MI
6513	1	1,152	54%	\$23,625	28%	16%	MI
6514	1	1,153	43%	\$48,871	58%	28%	MI/E
6514	3	712	54%	\$41,131	49%	9%	MI
6514	4	703	58%			7%	M
6514	2	799	54%	\$107,742	128%	4%	M
6515	1	1,018	47%	\$52,292	62%	2%	MI
6515	2	1,077	73%	\$82,292	98%	4%	M
6515	3	1,185	58%	\$52,321	62%	0%	MI
6516	4	1,153	45%	\$45,592	54%	8%	MI
6516	1	796	68%	\$52,708	62%	0%	MI
6516	2	986	44%	\$62,344	74%	0%	M
6516	3	1,001	34%	\$62,083	74%	2%	M
6517	1	1,007	78%	\$22,482	27%	7%	MI
6517	2	1,194	51%	\$48,854	58%	0%	MI

Census Tract	Block Group	Total Pop.	Minority (%)	Median Household Income (MHI)	Statewide MHI (%)	Limited English (% HHs)	EJ Criteria
6518	1	1,321	42%	\$12,981	15%	14%	MI
6518	2	744	56%	\$11,911	14%	4%	MI
6519	1	743	68%	\$16,563	20%	21%	MI
6519	2	1,424	83%	\$37,250	44%	31%	MI/E
6520	2	950	48%	\$44,340	53%	20%	MI
6520	3	1,180	48%	\$48,750	58%	9%	MI
6520	1	738	46%	\$48,889	58%	3%	MI
6521	2	800	31%	\$80,500	95%	13%	M
6521	1	711	34%	\$98,796	117%	0%	M
6521	3	1,253	33%	\$64,875	77%	15%	M
6523	1	1,037	31%	\$31,796	38%	42%	MI/E
6523	2	1,079	52%	\$27,941	33%	17%	MI
6524	2	1,357	29%	\$44,107	52%	26%	MI/E
6524	1	1,388	41%	\$27,471	33%	26%	MI/E
6525	1	1,511	55%	\$62,167	74%	13%	M
6525	2	1,500	57%	\$37,123	44%	19%	MI
6526	1	1,406	54%	\$45,982	54%	21%	MI
6526	2	1,803	73%	\$29,939	35%	20%	MI
6527	3	1,182	39%	\$49,453	59%	4%	MI
6527	1	881	66%	\$36,615	43%	8%	MI
6527	2	1,049	53%	\$17,000	20%	38%	MI/E
6527	4	815	57%	\$20,625	24%	13%	MI

Source: MA Executive Office of Energy and Environmental Affairs.

2.9. Conclusion

The following general characteristics, drawn from this profile, are relevant to the design of a disaster mitigation strategy:

- New Bedford is a growing community with a dense downtown area and less developed outlying areas. The historical development pattern has concentrated development along the Acushnet River and New Bedford Harbor. The core downtown area includes many buildings at the river's edge and an active harbor.
- Development will take the form of redevelopment and infill in the downtown and new development in the northern areas of the city.
- The hurricane barrier protects a large land area and the harbor. A portion of the city lies outside this protective dike, and this peninsula includes a critical facility, the wastewater treatment plant. The Clarks Cove pumping station was originally constructed to provide capacity to pump inland flood waters to Clarks Cove and to convey flow from the main interceptor to Clarks Cove. Previously, the City could be flooded from the old primary plant because it was hydraulically connected to the main interceptor and City's collection system. This is no longer the case and the City can't be flooded from the plant anymore.

The use of the gate on the main interceptor is no longer relevant as the system can't flood from the ocean side of the barrier.

- The City maintains the hurricane barrier, with the exception of the navigation gates and the barrier across New Bedford and Fairhaven Harbor, which are maintained by the USACE and the portion of the hurricane barrier system located in Fairhaven which is owned by the Town of Fairhaven.
- The Buttonwood Park Zoo represents a unique resource that needs its own natural disaster plan to protect the animals and the public.
- The aging housing stock means many of the buildings predate current building codes, and the infrastructure in general (e.g., bridges, watermain, sewers, roadways, and dams) is aging.

3. RISK ASSESSMENT

3.1. Introduction

Identifying potential hazards is the first step in any effort to reduce community vulnerability. The subsequent identification of the risk and vulnerability for a community are the primary factors in determining how best to allocate finite resources to address what mitigation might take place. FEMA's *Local Mitigation Planning Policy Guide* (April 19, 2023)¹⁷ was used as a basic template to identify various natural, human-caused, and technological hazard types.

The hazard identification and analysis processes involved all hazards that potentially threaten the City of New Bedford, also consistent with the *ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan*¹⁸ (MA SHMCAP), which fully integrates a hazard mitigation plan and a climate adaptation plan. Identifying and profiling each potential hazard that may affect New Bedford enables the city to make determinations related to:

- Which hazards merit special attention.
- What actions might be taken to reduce the impact(s) of those hazards.
- What resources are likely to be needed.






The MA SHMCAP includes an updated Risk Assessment that considers the exposure and vulnerability of state assets, human populations, lifelines, critical facilities, economic activity, natural resources, and other infrastructure or resources of each hazard across the five sectors defined in the *2022 Massachusetts Climate Change Assessment (Climate Assessment) Volume II Statewide Report*.¹⁹ These sectors are described in **Figure 3-1**.

¹⁷ Federal Emergency Management Agency, *Local Mitigation Planning Policy Guide*, April 19, 2023, https://www.fema.gov/sites/default/files/documents/fema_local-mitigation-planning-policy-guide_042022.pdf.

¹⁸ Eastern Research Group, Inc., *ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan*, September 2023, https://www.mass.gov/files/documents/2023/10/10/2023%20ResilientMass%20Plan_10.10.23%20508.pdf.

¹⁹ Executive Office of Energy and Environmental Affairs, Massachusetts Emergency Management Agency, 2022 Massachusetts Climate Change Assessment, Volume II, December 2022, <https://www.mass.gov/doc/2022-massachusetts-climate-change-assessment-december-2022-volume-ii-statewide-report/download>.

Figure 3-1. Exposure and Vulnerability Sectors

	<p>Human sector <i>Impacts to people’s health, welfare, and safety. Includes mortality, injury, and mental health impacts. This sector also identifies the characteristics that make populations more vulnerable to hazard exposure. To inform this sector, the Commonwealth used data from the U.S. Census, the MA environmental justice data mapping tool, and population projections, among other sources.</i></p>
	<p>Governance sector <i>Impacts to state and municipal owned buildings, government finances, and the ability of the government to run effectively and achieve its mission and functions and provide services to its service populations. Includes damage to state- or municipality-owned buildings, reductions in tax revenue, expenses for maintenance of state- or municipality-owned transportation infrastructure and impacts to government workers.</i></p>
	<p>Infrastructure sector <i>Impacts to buildings and transportation assets and services, and to utilities infrastructure involved in providing power, communications, wastewater, stormwater, and potable water. This sector includes an assessment of community lifelines and critical assets, which enable all other aspects of society to function. Critical facilities were identified as critical assets that enable all other aspects of society to function.</i></p>
	<p>Natural environment sector <i>Impacts to ecosystems, native species, ecosystem functions, recreation assets and open spaces, and natural resources, and how plants and animals can thrive there. Assesses vulnerabilities and consequences for critical resources and conserved lands. The Risk Assessment used geospatial data and tools such as BioMap, U.S. Geological Survey data, and others.</i></p>
	<p>Economy sector <i>Impacts to people’s ability to work and make a living, due to damage to buildings, infrastructure, industries, and the natural environment. Includes interruptions to workplace or regular economic activity; disruptions to specific sectors such as agriculture, fisheries, or tourism; and economic damages to individuals.</i></p>

Source: ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan.

3.2. Climate Change

Findings from the Climate Assessment Volume II Statewide Report have been leveraged in the update of the risk assessment. The Climate Assessment includes an analysis of the most significant impacts that climate change poses to the Commonwealth across five sectors (human health, governance, infrastructure, natural environment, and economy) based on three factors:

- **Magnitude of consequence:** How large of a climate effect is expected from this impact? Scores are classified on a five-point scale, “Extreme” to “Insignificant,” and focus on the magnitude of the impacts of climate change rather than the magnitude of the issue.

- Disproportionality of exposure: Will populations living in EJ areas be disproportionately affected more than the rest of the population? Measured on a three-point scale, “Limited disproportionality” to “Disproportionate impacts,” evaluated both quantitatively and qualitatively.
- Need for effective adaptation: Is enough currently being done to adapt to this impact, or are there gaps in effective adaptation actions? Focuses on “time sensitive” need to adapt facilitated through a prescribed approach of database development of adaptation actions and plans, analysis of actions and plans for relevance to climate assessment impacts, and evaluation of actions by impact via assignment of an adaptation score.

These factors are scored ranging from 0 to 100 and then averaged to translate into an “urgency score,” a measure of the priority of the need for adaptation for each impact within each sector (Figure 3-2).

Figure 3-2. Urgency Score Components

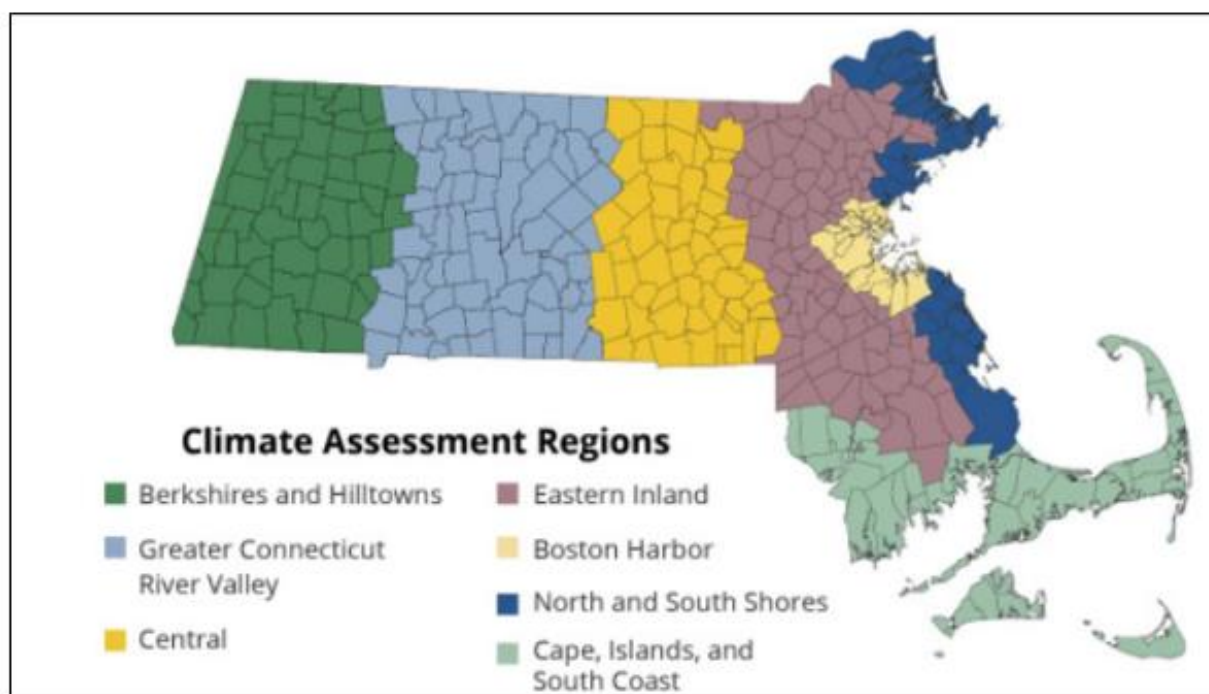
Magnitude of Consequence	+	Disproportionality of Exposure	+	Adaptation Gap	=	Urgency Score
Extreme Level of Consequence		Disproportionate Exposure		Extreme Adaptation Gap		High Priority
Major Level of Consequence				Moderate Adaptation Gap		Medium Priority
Moderate Level of Consequence		Potential For Disproportionality		Minimal Adaptation Gap		
Minimal Level of Consequence						
Insignificant Level of Consequence		Limited Disproportionality		Insignificant Adaptation Gap		Lower Priority

Source: 2022 Massachusetts Climate Change Assessment, Volume II.

Acknowledging the diversity of geography, economy, land use, and demographics across the Commonwealth, the 2022 Massachusetts Climate Change Assessment (Climate Assessment) Volume III Regional Report²⁰ subdivides the state into seven climate regions (**Figure 3-3**) and summarizes the highest urgency climate impacts across the five sectors (human health, governance, infrastructure, natural environment, and economy).

²⁰ Executive Office of Energy and Environmental Affairs, Massachusetts Emergency Management Agency, 2022 Massachusetts Climate Change Assessment, Volume III, December 2022, <https://www.mass.gov/doc/2022-massachusetts-climate-change-assessment-december-2022-volume-iii-regional-reports/download>.

Figure 3-3. Climate Assessment Regions



Source: 2022 Massachusetts Climate Change Assessment, Volume III.

The City of New Bedford falls within the Cape, Islands, and South Coast Region which is particularly vulnerable to climate stressors including sea level rise (SLR), storm surge, increasing temperatures, and more extreme precipitation. The most important climate risks for this region include increased coastal hazards, including sea surface temperature changes, coastal flooding, and the potential for hurricane force winds; and flooding associated with high rainfall events.²¹ A snapshot of the regional climate outlook through the end of the century is provided in **Figure 3-4**.

Figure 3-4. Regional Climate Outlook

2030	2050	2070	2090
NEAR TERM The summer mean temperature could increase by 3.6°F from the historical period (1950-2013), increasing tick activity and the risks of Lyme disease.	MID-CENTURY Sea surface temperatures increase by 3.1°F, reducing marine fish catch and increasing risks from harmful bacterial infections.	MID-LATE CENTURY The historical 10 percent annual chance daily rainfall event (2.4 to 4 inches) could occur five times more frequently.	END OF CENTURY Tropical cyclone frequency could increase by nearly 50 percent, leading to damage from storm surge, heavy rainfall, and high winds.

Source: 2022 Massachusetts Climate Change Assessment, Volume III.

²¹ Ibid.

3.2.1. Climate Change Impacts in the Cape, Islands, and South Coast Region²²

The most urgent climate change impacts per sector for the Cape, Islands, and South Coast Region are provided below. Additional details (urgency scores) and less urgent impacts are provided in the Climate Assessment Volume III Regional Report.

Human Sector

- **Increase in Vector Borne Diseases Incidence and Bacterial Infections**, including West Nile Virus and Lyme disease due to more favorable conditions for ticks and mosquitos.
- **Health and Cognitive Effects from Extreme Heat, Health Effects of Extreme Storms and Power Outages, Emergency Service Response Delays and Evacuation Disruptions, Reduction in Food Safety and Security, and Damage to Cultural Resources** (all tied scores).

Infrastructure Sector

- **Damage to Electric Transmission and Distribution Infrastructure** associated with heat stress and extreme events.
- **Reduction in Clean Water Supply**, particularly for communities reliant on well water.

Natural Environment Sector

- **Marine Water Ecosystem Degradation** because of warming, particularly in the Gulf of Maine, and ocean acidification.
- **Coastal Wetland Degradation** from SLR and storm surge.
- **Coastal Erosion** from SLR and storm surge, particularly in areas not protected by wetlands.

Governance Sector

- **Increase in Demand for State and Municipal Government Services**, including emergency response, food assistance, and state-sponsored health care.
- **Reduction in State and Municipal Revenues**, including a reduced property tax base due to coastal flood risk.

Economy Sector

- **Reduction in the Availability of Affordably Priced Housing** from direct damage (e.g., flooding) and the scarcity caused by increased demand.
- **Decrease in Marine Fisheries and Aquaculture Productivity** from changing ocean temperatures and acidification, which leads to decreased catch and revenues, and impact on related industries.

²² Ibid.

3.3. Hazard Identification

The New Bedford LHMC evaluated each of the hazard types that may affect New Bedford. In addition to natural hazards, the 2025 MHMP incorporates human-caused and technological hazards, which were not assessed as part of the City's March 2016 Hazard Mitigation Plan. The 2025 MHMP also incorporates updated climate change considerations for all profiled natural hazards; as relevant, climate change considerations are also evaluated for human-caused and technological hazards.

3.3.1. Hazard Groupings

For the purposes of the 2025 MHMP, and for consistency with the MA SHMCAP, the New Bedford LHMC organized hazards into the following categories with associated hazards.

Natural Hazards

- Flood-Related Hazards
 - Riverine/Flash Flooding
 - Inland/Urban Flooding, Heavy Rain
 - Dam Failure
 - Coastal Flooding/Erosion
- Winter-Related Hazards
 - Blizzards/Snow/Nor'easter
 - Extreme Cold
- Wind-Related Hazards
 - Hurricanes/Tropical Storms
 - High Winds
 - Tornadoes/Waterspouts
 - Lightning/Thunderstorms
 - Hail
- Geologic-Related Hazards
 - Earthquakes
 - Landslides
 - Tsunami
- Extreme Heat-Related Hazards
- Drought-Related Hazards
- Wildfire/Brushfire-Related Hazards
- Communicable (Infectious) Disease-Related Hazards
- Invasive Species-Related Hazards
- Vector-Borne Related Hazards
- Changes in Groundwater-Related Hazards

All citywide mapping of hazards were updated to ensure consistency with the most recent data available (Appendix A):

Environmental Justice Areas

- Map A-1.1 Environmental Justice Areas

Flood Risks

- Map B-1.1 Flood Risks North
- Map B-1.2 Flood Risks North Central
- Map B-1.3 Flood Risks South Central
- Map B-1.4 Flood Risks South

Massachusetts Coast Flood Risk Model (MC-FRM)

- Map C-1.1 MC-FRM North
- Map C-1.2 MC-FRM North Central
- Map C-1.3 MC-FRM South Central
- Map C-1.4 MC-FRM North

Critical Facilities

- Map D-1.1 Critical Facilities North
- Map D-1.2 Critical Facilities North Central
- Map D-1.3 Critical Facilities South Central
- Map D-1.4 Critical Facilities South

Vulnerable Populations

- Map E-1.1 Vulnerable Populations North
- Map E-1.2 Vulnerable Populations North Central
- Map E-1.3 Vulnerable Populations South Central
- Map E-1.4 Vulnerable Populations Facilities South

Average Annual Snowfall

- Map F-1 Average Annual Snowfall

Hurricane Surge Inundation Zones (Sea, Lake and Overland Surge from Hurricanes (SLOSH))

- Map G-1.1 Hurricane Surge Inundation Zones North
- Map G-1.2 Hurricane Surge Inundation Zones North Central
- Map G-1.3 Hurricane Surge Inundation Zones South Central
- Map G-1.4 Hurricane Surge Inundation Zones South

Tornado Incidence

- Map H-1 Tornado Incidence

Earthquake Incidence

- Map I-1 Earthquake Incidence

Wildland Urban Interface

- Map J-1.1 Wildland Urban Interface North
- Map J-1.2 Wildland Urban Interface North Central
- Map J-1.3 Wildland Urban Interface South Central
- Map J-1.4 Wildland Urban Interface South

MC-FRM Annual Coastal Flood Exceedance Probability

- Map K-1.1 MC-FRM Annual Coastal Flood Exceedance Probability (20230): Clarks Cove

MC-FRM Flood Depths for 1% Annual Coastal Flood Exceedance Probability

- Map K-1.2 MC-FRM Flood Depths for 1% Annual Coastal Flood Exceedance Probability (2030): Clarks Cove

Note that mapping related to invasive species was not completed due to the extent and variability of known invasive species' distribution and growth patterns. Maps for communicable and vector-borne related hazards were also not completed due to their capacity to affect all

populations across the city. Specific geographic considerations are discussed in these hazards' respective sections.

Similarly, the New Bedford LHMC also evaluated each of the human-caused and technological hazard types that may affect New Bedford. For the purposes of this 2025 MHMP, and for consistency with the *Commonwealth of Massachusetts Hazard Identification and Risk Assessment*²³ (HIRA), the New Bedford LHMC organized human-caused and technological hazards into the following categories with associated hazards:

Human-Caused Hazards (Deliberate Acts)

- Cyber Incident
- Terrorism
 - Improvised Explosive Devices
 - Vehicle-borne IEDs
 - Active Shooter
 - Vehicle into Crowds
 - Drones
- Urban Fire
- Civil Unrest/Disturbance
- Chemical/Biological/Radiological/Nuclear Agent

Human-Caused Hazards (Other/Accidental)

- Hazardous Materials Accident/Spill
- Nuclear Power Plant Incident
- Major Airplane Crash

Technological Hazards

- New Bedford/Fairhaven ACOE Hurricane Barrier System
- Infrastructure Failure
 - Communications
 - Emergency Services
 - Energy
 - Information Technology
 - Transportation Systems (includes the Port of New Bedford)
 - Water/Wastewater/Stormwater Systems

3.4. Hazard Profiles: Location, History, and Probability of Future Occurrence

In assessing the hazards to a community, both the risk and the vulnerability must be considered. A hazard is the actual event that poses danger to the community (e.g., hurricane, tornado, earthquake). The term “risk” refers to the predicted impact that a hazard would have on people, services, and specific facilities and structures in the community. The term “vulnerability” refers to the characteristics of society or environment affected by the event which results in associated costs from damages. The vulnerability of an area refers to its susceptibility to a hazard. The areas of the city affected by extreme natural, human-caused, and technological events are

²³ Commonwealth of Massachusetts, *Hazard Identification and Risk Assessment (HIRA)*, February 2019.

identified by the hazard risk assessment. In determining the risk and vulnerability of the city, the likelihood, frequency, and magnitude of damage from identified hazards are assessed.

In developing an updated Risk Assessment, the New Bedford LHMC defined the risks that the city could face and followed up with an assessment of the vulnerability of the at-risk areas, and the implications of experiencing natural, human-caused, and technologic disasters (e.g., loss of life, damage to the natural environment, property damage, and economic impacts). A risk assessment determines the likelihood of adverse impacts associated with specific hazards, and a vulnerability assessment is concerned with the qualitative or quantitative examination of the exposure of some societal component (i.e., economy, environment, social). The result of this process was the preparation of a Risk Assessment Matrix (**Table 3-1**) that lists the vulnerable areas and the primary effects from an event on these areas. The matrix was then used to establish mitigation benefits and develop mitigation strategies (Section 5).

3.4.1. Hazard Index – Natural Hazards

The New Bedford Technical Committee evaluated each of the natural, human-caused, and technological hazards and collectively determined the likelihood of occurrence, locations affected, and potential impacts of each. This information was used to establish a Hazard Index (HI) value (HI=1 being lowest impact and HI=10 being highest impact) for each of the types of hazards, presented in **Table 3-2** and **Table 3-3**. The highest hazard index values were assigned to those hazards deemed to have the highest level of impact on the community.

The Hazard Index for this 2025 Update utilizes the same criteria guidance from the 2016 Hazard Mitigation Plan for frequency, severity, and location with several modifications.

Criteria for Frequency Categorization (Based on Past Hazard Events)

- **Unlikely (0):** Events that occur at least once in the next 100 years. Less than 1% probability in the next 100 years.
- **Possible (1):** Between 1% to 10% probability in the next year, or at least one chance in the next 100 years.
- **Likely (2):** Between 10% to 100% probability in the next year, or at least one chance in 10 years.
- **Highly Likely (3):** Near 100% probability in the next year.

Criteria for Impact/Land Area Affected

- **Small (1):** Less than 10% of the city affected.
- **Medium (2):** 10% to 50% of the city affected.
- **Large (3):** More than 50% of the city affected.

Criteria for Magnitude/Severity Categorization (Based on Past Hazard Events)

- **Negligible (0):** Injuries and/or illnesses are treatable with first aid; minor quality of life lost; shutdown of critical facilities and services for 24 hours or less; property severely damaged < 10%.
- **Limited (1):** Injuries and/or illness do not result in permanent disability; complete shutdown of critical facilities for more than one week; property severely damaged < 25% but > 10%.

- **Critical (2):** Injuries and/or illness result in permanent disability. Complete shutdown of critical facilities for at least two weeks; property severely damaged < 50% but > 25%.
- **Catastrophic (3):** Multiple deaths; complete shutdown of critical facilities for 30 days or more; property severely damaged or destroyed > 50%.

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Table 3-1 Risk Assessment Matrix

Vulnerable Area	Location	Ownership	Hazard	Primary Problem/Effect	Mitigation Objective	Risk Historical (H) Potential (P)
Coastal Areas	All Coastal Locations	Public/Private	Flooding/Wind/Infrastructure Failure/ACOE Hurricane Barrier Failure	Compromised public health, safety and welfare/Impacts to public and private property	Improved public health, safety and welfare/Reduced damages to property/Improved resilience	H and P
Critical Facilities/Vulnerable Populations Data	Citywide	Public/Private	All Hazards	Impacts to public and private property/Compromised public health, safety and welfare/Recovery disruptions	Reduced damages to property/Improved public health, safety and welfare/Accelerated recovery/Improved resilience	H and P
Cultural Sites/Assets	Citywide	Public/Private	All Hazards	Loss of cultural assets/Economic impacts to tourism	Protection of cultural resources/Continuity of cultural and tourism assets/Improved resilience	H
Dams	High Hill Reservoir Dam/New Bedford Reservoir Dam/Turner Pond Dam/Buttonwood Park Dam	Public	Flooding/Dam Failure/Earthquakes	Impacts to public and private property/Compromised public health, safety and welfare/Recovery disruptions	Reduced damages to property/Improved public health, safety and welfare/Accelerated recovery/Improved resilience	P
Debris Management	Citywide	Public/Private	All Hazards	Compromised public health, safety and welfare/Disruption to municipal services/Recovery disruptions	Continuity of municipal services/Accelerated recovery/Improved public health, safety and welfare/Improved resilience	H and P

Table 3-1 Risk Assessment Matrix

Vulnerable Area	Location	Ownership	Hazard	Primary Problem/Effect	Mitigation Objective	Risk Historical (H) Potential (P)
Emergency Response	Citywide	Public/Private	All Hazards	Compromised public health, safety and welfare/Disruption in emergency response and recovery	Improved public health, safety and welfare/Continuity of emergency response/Accelerated recovery/Improved resilience	H and P
Localized Areas Subject to Flooding	Citywide	Public/Private	Flooding/Wind/Changes in Groundwater	Impacts to public and private property/Compromised public health, safety and welfare	Reduced damages to property/Improved public health, safety and welfare/Improved resilience	H and P
Municipal Communications	Citywide	Public	All Hazards	Disruption in communications/Uninformed public/Compromised public health, safety and welfare	Continuity in communications, coordination and preparedness/Improved public health, safety and welfare/Improved resilience	P
Municipally-owned Infrastructure	Citywide	Public	All Hazards	Disruption in municipal services/Potential for contamination of natural resources/Compromised public health, safety and welfare	Continuity of municipal services/Protection of natural resources/Improved public health, safety and welfare/Improved resilience	H and P

Table 3-1 Risk Assessment Matrix

Vulnerable Area	Location	Ownership	Hazard	Primary Problem/Effect	Mitigation Objective	Risk Historical (H) Potential (P)
Natural Resources	Citywide	Public	Flooding/Extreme Heat/Changes in Groundwater/ Invasive Species/Infrastructure Failure/Hazardous Materials Accident and Spill	Compromised public health, safety and welfare/Potential for contamination of natural resources/Loss of habitat	Improved public health, safety and welfare/Protection of natural resources and habitat/Reduced damages to property/Improved resilience	H and P
Port Operations	Port	Public and Private	Flooding/Wind/ Infrastructure Failure/ACOE Hurricane Barrier Failure	Compromised public health, safety and welfare risks/Impacts to public and private property	Improved public health, safety and welfare/Reduced damages to property/Improved resilience	H and P
Property Protection	Citywide	Public and Private	All Hazards	Impacts to public and private property/Compromised public health, safety and welfare	Reduced damages to property/Improved public health, safety and welfare/Improved resilience	H and P
Public Health, Safety and Welfare	Citywide	Public and Private	All Hazards	Compromised public health, safety and welfare	Improved public health, safety and welfare/Improved resilience	H and P
Resilience	Citywide	Public and Private	All Hazards	Reduced resilience/Recovery disruption	Improved resilience/Accelerated recovery	H and P
Transportation Network	Citywide	Public and Private	All Hazards	Disruption to transportation network and evacuation	Continuity of transportation network and evacuation/Improved resilience	H and P

Table 3-2 Natural Hazard Index New Bedford, Massachusetts 2025 update

Hazard	2016 Frequency (i.e. Unlikely, Possible, Likely, Highly Likely)	2025 Frequency (i.e. Unlikely, Possible, Likely, Highly Likely)	2016 Location (i.e. Small/Local, Medium/Regional, Large/Multiple communities)	2025 Location (i.e. Small/Local, Medium/Regional, Large/Multiple communities)	2016 Severity (i.e. Negligible, Limited, Critical, Catastrophic)	2025 Severity (i.e. Negligible, Limited, Critical, Catastrophic)	2016 Hazard Index (i.e. ranked by combining frequency and severity; 10 - high, 1 - low)	2025 Hazard Index (i.e. ranked by combining frequency and severity; 10 - high, 1 - low)
Flood-Related Hazards								
- Riverine/Flash Flooding	2	2	1	1	1	1	4	4
- Inland/Urban Flooding, Heavy Rain ¹	N/A	3	N/A	2	N/A	2	N/A	7
- Dam Failure ¹	1	1	1	1	1	1	3	3
- Coastal Flooding/Erosion ¹	2	3	1	2	1	1	4	6
Winter-Related Hazards								
- Blizzards/Snow/Nor' easter ¹	3	3	1	3	1	1	5	7
- Extreme Cold	3	3	3	3	0	0	6	6
Wind-Related Hazards								
- Hurricanes/Tropical Storms	2	2	2	2	1	2	5	6
- High Winds ¹	N/A	3	N/A	2	N/A	1	N/A	6
- Tornadoes/Waterspouts	1	1	1	1	1	1	3	3
- Lightning/Thunderstorms ¹	3	3	1	1	0	1	4	5
- Hail	N/A	1	N/A	1	N/A	0	N/A	2
Geologic-Related Hazards								
- Earthquakes ¹	1	1	1	1	0	0	2	2
- Landslides ¹	1	0	1	1	0	0	2	1
- Tsunami ¹	0	0	1	1	2	0	3	1
Extreme Heat-Related Hazards								
- Extreme Heat ¹	3	3	3	3	0	2	6	8
Drought-Related Hazards								
- Drought ¹	1	2	3	3	0	1	4	6
Wildfire/Brushfire-Related Hazards								
- Wildfire/Brushfire ¹	1	2	1	1	1	0	3	3
Communicable-Related Hazards								
- Infectious Disease/Public Health Em. ¹	N/A	3	N/A	3	N/A	3	N/A	9
Invasive Species-Related Hazards								
- Multiple (aquatic plant species) ¹	N/A	3	N/A	2	N/A	1	N/A	6
Vector-Borne-Related Hazards								
- Multiple ¹	N/A	3	N/A	1	N/A	1	N/A	5
Changes in Groundwater-Related Hazards								
- Changes in Groundwater ¹	N/A	2	N/A	1	N/A	1	N/A	4

Notes:

1: Ranked by New Bedford Technical Committee (all others utilized NOAA Severe Events Database).

3.4.2. Hazard Index – Human-Caused and Technological Hazards

The New Bedford Technical Committee also considered each of the human-caused and technological hazards but used the standard methodology developed by the State of Massachusetts for scoring risks associated with the identified hazards due to data limitations. The State's standard methodology considers risk on a county basis and utilizes a range of stakeholders and data sources. Three ranking components were used to identify hazard rankings: Likelihood of hazard occurrence (probability), Likely range of impact (predicted location of impact), and Commonwealth Consequence Analysis (estimated effect including damage outcome potential).

The Consequence Analysis categories include:

- Population (injuries, deaths, impacts to first responders and access/functional needs populations)
- Government (impacts to municipal buildings/assets, lifeline services and confidence ratings)
- Built Environment (impacts critical facilities/infrastructure and private property)
- Natural Resources and the Environment (impacts to the environment)
- Economy (impacts to economic conditions, business interruption, and economic viability)

Table 3-3 Hazard Index – Human Caused and Technological Hazards for this 2025 Update utilizes criteria from the State's Hazard Index and Risk Assessment (HIRA), including:

Criteria for Probability and Likelihood of Hazard Occurrence: (Based on Past Hazard Events)

- **Unlikely (1):** Less than 1% probability in the next 12 to 60 months, or less than one chance in the next 100 years.
- **Potential (2):** Between 1% and 10% probability in the next 12 to 60 months, or one incident during the next 100 years.
- **Likely (3):** Between 10% 100% probability in the next 12 to 60 months and one incident during the next 10 years.
- **Highly Likely (4):** Near 100% probability within the next 12 to 60 months.

Criteria for Likely Location and Extent:

- **Small (1):** Less than 10% of the total jurisdictional boundaries.
- **Medium (2):** 10% to 40% of the total jurisdictional boundaries
- **Large (3):** More than 40% of the total jurisdictional boundaries.

Criteria for Magnitude/Severity Categorization: (Based on Past Hazard Events)

- **Negligible (1):**
 - Populations: Minor or no injuries including first responders
 - Government: Minor or no impacts to municipal operations for very short amount of time (minutes to several hours).
 - Built Environment: No shutdown of critical infrastructure or facilities, only scattered commercial structure damage.
 - Natural Resources/Environment: Impacts less than 5% of natural resources.
 - Economy: Minor or no impacts to business sector, very little recovery needed.

- **Limited (2):**
 - Populations: Some injuries, including first responders.
 - Government: Small impacts to municipal operations for short amount of time (multiple hours to several days).
 - Built Environment: Short shutdown of some critical infrastructure/facilities, and less than 10% residential and/or commercial property damage.
 - Natural Resources/Environment: Impacts 5% to 20% of natural resources.
 - Economy: Some impacts to business sectors, moderate damage or replacement costs, recovery lasts weeks.
- **Significant (3):**
 - Populations: Multiple deaths and severe injuries, including first responders.
 - Government: Large impacts to municipal operations for a long amount of time (multiple days to weeks), substantial Continuity of Operations Plan (COOP) and loss of services.
 - Environment: Medium or significant shutdown of some critical infrastructure, complete shutdown of facilities, 20% to 50% of residential and 10% to 25% of commercial structures severely damaged.
 - Natural Resources/Environment: Impacts more than 20% of natural resources.
 - Economy: Serious impacts to business sectors, high damage or replacement costs, recovery lasts months.

Table 3-3 Technological and Human-Caused Hazard Index New Bedford, Massachusetts 2025 update

Hazard	Probability (i.e. Unlikely, Potential, Likely, Highly Likely) 1 to 4	Location/Extent (i.e. Small, Medium, Large) 1 to 3	Cosequence Analysis 1 to 3					Consequence Analysis	2025 Hazard Index: High = 10 to 9 Moderate = 8 to 6 Low = 5 to 3	2009 Hazard Index: High = 10 to 9 Moderate = 8 to 6 Low = 5 to 3
			Populations	Government	Built Environment	Natural Resources/ Environment	Economy			
Technological Hazards										
ACOE Hurricane Barrier Failure	2	1	1	1	3	1	3	1.8	4.8	Low
Infrastructure Failure										
- Communications	4	2	1	3	2	1	1	1.6	7.6	N/A
- Emergency Services	1	1	1	1	1	1	1	1	3	N/A
- Energy	4	2	2	2	1	1	2	1.6	7.6	Moderate
- Information Technology	3	1	1	2	1	1	1	1.2	5.2	N/A
- Transportation Systems	2	1	1	1	1	1	1	1	4	Low/Moderate
- Water/Wastewater/Stormwater Systems	2	3	2	1	1	2	2	1.6	6.6	Moderate
Human-Caused (Deliberate) Hazards										
Cyber Incident	3	2	1	3	2	1	2	1.8	6.8	Low
Terrorism - Improvised Explosive Devices - Vehicle-borne IEDs - Active Shooter - Vehicle into crowds - Drones	2	2	3	2	2	1	2	2	6	Low
Urban Fire	4	1	2	1	1	1	1	1.2	6.2	High
Civil Unrest/Disobedience	2	2	1	2	2	1	1	1.4	5.4	Low
Chemical, Biological, Radiological, Nuclear Agent (CBRN)	2	1	2	1	1	1	1	1.2	4.2	Low
Human-Caused (Other/Accidental) Hazards										
Hazardous Materials Accident/Spill	4	1	2	1	1	2	1	1.4	6.4	High
Nuclear Power Plant Incident	1	1	1	1	1	1	1	1	3	Low
Major Airplane Crash	2	1	1	1	1	1	1	1	4	Moderate

Notes:

1: All Technological and Human-Caused hazards ranked by New Bedford Technical Commtee.

The hazard-specific tables included within each hazard profile represent the various hazard events that have occurred in and around the City of New Bedford, utilizing National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI) Severe Events Database²⁴ for natural hazards, and local knowledge for human-caused and technological hazards from LHMC members as the best, currently available data. All NCEI data is countywide (Bristol County) unless otherwise noted.

3.4.3. Municipal Vulnerability Preparedness (MVP) Program

As the Commonwealth advances an integrated climate change strategy per Executive Order 569, the City of New Bedford (along with many other Massachusetts cities and towns) is working to advance local and regional resiliency planning and climate preparedness efforts. After securing MVP Planning Grant funding from the Massachusetts Executive Office of Energy and Environmental Affairs, New Bedford engaged in a Community Resilience Building Workshop and produced a city-wide vulnerability assessment and action-oriented resiliency plan in June 2018. The City became an MVP-Designated community shortly thereafter, making it eligible for MVP Action Grant funding to implement identified climate adaptation actions. The MVP process and climate science projections informed the development of this 2025 Update.

3.4.4. Climate Change

Complementing the range of climate change impacts across the five sectors identified earlier in this section, a "climate change impacts on" summary is included under each natural hazard profiled to address the range of direct and indirect impacts on each specific hazard.

3.5. Natural Hazards

A "natural hazard" is defined as an event or physical condition that has the potential to cause fatalities, injuries, property and infrastructure damage, agricultural loss, damage to the environment, interruption of business, or other types of harm of loss.²⁵

3.5.1. Flood-Related Hazards

Flooding results from large-scale weather systems generating prolonged rainfall, on-shore winds, locally intense thunderstorms, dam failures, or significant snow melt. Floods are capable of undermining buildings and bridges, eroding shorelines and stream banks, uprooting trees, washing out access roads, and causing loss of life and injuries. Also, flash floods (characterized by rapid onset and high velocity waters) carry large amounts of debris that further exacerbate conditions.

Under the NFIP, FEMA is required to develop flood risk data for use in both insurance rating and floodplain management. FEMA develops this data through Flood Insurance Studies (FIS). Detailed analyses are used to generate flood risk data only for developed or developing areas of communities. For undeveloped areas FEMA uses approximate analyses to generate flood risk data. Flood hazard areas are identified in the FEMA Flood Insurance Rate Maps (FIRM). Flood

²⁴ See <http://www.ncdc.noaa.gov>.

²⁵ Eastern Research Group, Inc., *ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan*, September 2023, https://www.mass.gov/files/documents/2023/10/10/2023%20ResilientMass%20Plan_10.10.23%20508.pdf

hazard areas are divided into zones depending on the severity and type of flood threat. These zones are those areas subject to inundation (shallow or deep) by a flood (and/or velocity wave action) that has a 1% chance of occurring during any given year.

Floodplains in New Bedford are AE, VE, and X Zones (Map B-1.1 Flood Risks North, Map B-1.2 Flood Risks North Central, Map B-1.3 Flood Risks South Central, and Map B-1.4 Flood Risks South, Appendix A). AE Zones are areas that have a 1% annual chance of flooding (i.e., the 100-year flood zone). The 1% annual chance flood zone is a regulatory standard used by federal agencies and most states to administer floodplain management programs and is also used by the NFIP as the basis for insurance requirements nationwide. VE Zones are velocity zones that are subject to breaking wave action where waves greater than 2.9 feet are forecasted during the 1% annual chance flood or storm surge. X Zones are areas that have a 0.2% annual chance of flooding (i.e., the 500-year flood zone) in any given year. An additional shaded X Zone also exists that delineates areas with reduced flood risk due to levee systems, as shown on the Flood Risk map series (Appendix A). Should the barrier be decertified, then this shaded X Zone reverts to the traditional X Zone (i.e., the 500-year flood zone) which would trigger a flood insurance purchase requirement.

Table 3-4 records the various significant flood-related hazard events that have occurred in and around the City of New Bedford. Unless otherwise noted, all events are specific to Bristol County.

Table 3-4. Significant Flood-Related Hazard Events, Bristol County

Date	Level/ Description	Damages	Notes
Riverine/Flash Flood			
9/13/2022		\$1 k	Dartmouth St. at Rockdale Ave. flooded to where DPI assistance was required. Padanaram Ave. also flooded.
Inland/Urban Flooding/Heavy Rain			
3/30/2014	3" - 5"	\$20 k	Parker St. closed due to flooding. Dartmouth St. washed out/closed between Rockland and Spooner Streets.
7/1/2015		\$5 k	Minor street flooding along Route 18 by Tarkiln Hill Road/Kings Highway. Vehicle stranded in flood waters at Weld St./Route 18.
1/13/2018	up to 4"		Kempton St. flooded/impassable between Rockdale Ave./Jenny Lind St.
7/22/2019			Extreme precipitation
10/27/2019	3" - 4"		Cove Rd. closed between Stapleton St./County St. due to 2.5' flood waters. Rivet St. closed between Briggs St./Orchard St.
9/2/2021	1" – 3"	\$20 k	Several streets closed; several basements flooded.
5/23/2024			Extreme precipitation

6/30/2024			Extreme precipitation
8/8/2024			Extreme precipitation

Source: National Centers for Environmental Information, NOAA, <https://www.ncei.noaa.gov/>. Data is current through September 2024.

Riverine and Flash Flooding

Riverine or inland flooding often occurs after heavy rain, particularly in areas of Massachusetts with high water tables. These areas are also particularly susceptible to flash flooding caused by rapid runoff occurring after heavy precipitation events and in combination with spring snowmelt. Frozen ground conditions can also contribute to low rainfall infiltration and high runoff events that sometimes result in river flooding.

Massachusetts communities are experiencing more frequent and more intense storm events. New Bedford can be uniformly affected by riverine and flash flooding events, dependent upon the location (e.g., amount of impervious surface in the area), existing or incoming weather conditions, and time of year (e.g., frozen ground conditions exacerbate flooding).

Based on the likely frequency and limited severity of riverine and flash flooding events as reported by the NCEI, ranked by the Technical Committee, and confirmed by the LHMC, the City is considered at moderate risk for future riverine and flash flooding events.

Climate Change Impacts on Riverine and Flash Flooding

Riverine flooding will likely be exacerbated by increased storm intensity, as well as by increased precipitation. Most significant coastal flooding occurs with north, northeast, and easterly high winds that drive water from the ocean into the bays and up rivers. The Intergovernmental Panel on Climate Change (IPCC) identifies inland flooding in some urban regions as a “key risk” in North America, which may result disrupt people’s livelihood and result in severe health risks. It is also important to note that riverine flooding and coastal flooding due to SLR can have a coupling effect. Rising seas can set a new flood stage in riverine systems, thus increasing flood risk in inland areas adjacent to rivers.

Inland and Urban Flooding, Heavy Rain

Heavy rains that cause inland and urban flooding are often exacerbated by stormwater-related issues. Thunderstorms, winter storms, coastal storms and Nor’easters, and hurricanes all contribute to interior flood-related hazards due to the large amounts of precipitation associated with them. Development often compounds the magnitude and frequency of urban flooding by increasing impervious surfaces, also increasing the rate of drainage collection, reducing the carrying capacity of the land, and often overwhelming sewer system infrastructure.

The city experiences intermittent flooding as a result of precipitation events, particularly in areas with limited stormwater conveyance depending upon the location, existing weather conditions, and time of year.

Based on the highly likely frequency and critical severity of inland and urban flooding, and heavy rain events since the last plan as reported by the NCEI, ranked by the New Bedford Technical Committee, and confirmed by the LHMC, New Bedford is considered at high risk for future inland and urban flooding and heavy rain events.

Climate Change Impacts on Inland and Urban Flooding and Heavy Rain

Heavy precipitation events are becoming more frequent and intense in Massachusetts. Whether a hurricane, tropical storm, or extra-tropical storm (e.g., a Nor'easter), there has been a global increase in both the frequency and the intensity of heavy precipitation events. This trend is consistent with physical responses to a warming climate, such as an increased amount of moisture in the atmosphere.

MVP Climate Change Projections on Heavy Rain

The average annual precipitation in New Bedford is projected to increase up to 7% (Buzzards Bay Basin) and 9% (Taunton Basin) by the 2030s and 7% (Buzzards Bay Basin) and 11% (Taunton Basin) by the 2050s. The largest increases in precipitation are projected to occur during winter months (Buzzards Bay and Taunton Basins). **Table 3-5** includes precipitation projections beginning with a Baseline (1971 – 2000) through mid-century (2050s) for the Buzzards Bay and Taunton Basins.

Table 3-5. Precipitation Projections, Taunton Basin and Buzzards Bay Basin

Climate Parameter	Baseline 1970 - 2000	Projected Change in 2030s	Mid-Century 2050s
Total Precipitation (inches):			
Annual			
<i>Taunton Basin</i>	47.5	47.4 – 51.6	47.8 – 52.8
<i>Buzzards Bay Basin</i>	47.8	47.1 – 51.6	48.1 – 51.7
Winter			
<i>Taunton Basin</i>	12.1	11.8 – 13.6	12.2 – 14.1
<i>Buzzards Bay Basin</i>	12.6	12.3 – 14.1	12.6 – 14.5
Spring			
<i>Taunton Basin</i>	11.9	11.8 – 13.8	11.9 – 13.9
<i>Buzzards Bay Basin</i>	12.2	12.1 – 14.1	12.2 – 14.3
Summer			
<i>Taunton Basin</i>	11.0	10.4 – 12.1	10.3 – 12.7
<i>Buzzards Bay Basin</i>	11.0	10.0 – 12.1	10.1 – 12.5
Fall			
<i>Taunton Basin</i>	12.4	11.8 – 13.6	11.6 – 13.9
<i>Buzzards Bay Basin</i>	12.1	11.3 – 12.9	11.0 – 13.6
Annual Days with Precipitation over 1 inch			
<i>Taunton Basin</i>	8	9 - 10	9 - 12
<i>Buzzards Bay Basin</i>	8	9 - 11	9 - 12
Annual Days with Precipitation over 2 inches			
<i>Taunton Basin</i>	1	1	1 - 2
<i>Buzzards Bay Basin</i>	1	1 - 2	1 - 2
Annual Days with Precipitation over 4 inches			
<i>Taunton Basin</i>	0	0	0
<i>Buzzards Bay Basin</i>	<1	<1	<1

Source: MVP Program, www.resilientma.org.

Dam Failure

A dam is any artificial barrier with the ability to impound water, wastewater, or any liquid-borne material for the purpose of storage or water control. Dam failure can be a catastrophic type of failure characterized by the sudden, immediate, and uncontrolled release of impounded water, or the likelihood of such an uncontrolled release with secondary impacts to downstream structures within the inundation zone.

A dam failure event includes the potential for a range of impacts on both residents and the built environment, including injury and loss of life, short- and long-term displacement, financial needs, and emotional and psychological trauma. A dam failure event can also impact a community's critical facilities and infrastructure including structural and equipment damage at municipal buildings, disruptions to normal operations (e.g., water supply, sewer conveyance and treatment, and communications), and transportation disruptions. Dam failure events can also impact the environment by way of displacing wildlife, carrying pollutants and hazardous materials into natural habitats, and disrupting natural ecological processes.

It is important to note that extreme natural hazard events are often interconnected and can have cascading impacts on dams. For example, wildfires are the result of periods of drought and record high temperatures. In turn, charred landscapes are more vulnerable to flooding and landslides due to compromised soil integrity. The onset of heavy precipitation from severe storm events can exacerbate these resultant conditions, causing a chain of adverse impacts on dams that may affect upstream and downstream flooding potential.

Inventoried jurisdictional dams are classified by the hazard, which relates to the probable consequences of failure or mis-operation of the dam; it does not relate to the current condition or the likelihood of failure of the dam. A three-tiered hazard classification rates each dam based upon the probable consequences of failure or miss operation of the dam:

- **High Hazard Dam:** A dam where failure or miss operation will result in a probable loss of human life.
- **Significant Hazard Dam:** A dam where failure or miss operation results in no probable loss of human life but can cause major economic loss, disruption of lifeline facilities, or impact other concerns detrimental to the public's health, safety, or welfare. Examples of major economic loss include but are not limited to washout of a state or federal highway, washout of two or more municipal roads, loss of vehicular access to residences (e.g., a dead-end road whereby emergency personnel could no longer access residences beyond the washout area), or damage to a few structures.
- **Low Hazard Dam:** A dam where failure or miss operation results in no probable loss of human life and low economic losses.

On February 10, 2017, Massachusetts Dam Safety Regulations were modified to require owners of significant hazard dams to prepare Emergency Action Plans (EAPs) for their dams. This requirement became effective on February 10, 2017, when the Massachusetts Department of Conservation & Recreation (DCR) Office of Dam Safety (ODS) promulgated regulatory changes mandated by amended General Laws Part 1-Title II, Chapter 21, Section 65 (b)-Emergency Action Plans for high and significant hazard dams.

Since the City of New Bedford was not in possession of any records, a public records request was made via email by to DCR ODS for all of the dams located in New Bedford or owned by the

City of New Bedford. Several Phase I Inspection Reports (for High Hill Reservoir Dam, New Bedford Reservoir Dam, Turner Pond Dam, and Buttonwood Pond Dam), one Phase II Inspection Report (Buttonwood Pond Dam), one follow-up Phase I Inspection report (Buttonwood Pond Dam), and one EAP (New Bedford Reservoir Dam) were location, with pertinent information recorded here. The City of New Bedford also provided a reclassification letter from DCR for the New Bedford Reservoir Dam (October 28, 2013) which concluded the dam has been reclassified from a high hazard to a significant hazard structure. Deficiencies in Dam Safety Regulations were noted and mitigation actions were identified and included later in Section 5.3.

The DCR ODS is responsible for monitoring the condition of the state's dams. There are four dams owned by the City of New Bedford (**Table 3-6**), all of which are classified as significant hazard dams. Only two are physically located within the City, Turner Pond Dam (half in New Bedford, half in Dartmouth) and Buttonwood Park Dam, with High Hill Reservoir Dam located in Dartmouth and the New Bedford Reservoir Dam located in Acushnet.

Table 3-6. Inventoried Dams in New Bedford, MA

Name	MA ID #	Ownership	Regulatory Authority	Hazard	Water Body/Tributary
High Hill Reservoir Dam	MA00772	New Bedford	ODS	Significant	High Hill Reservoir
New Bedford Reservoir Dam	MA01014	New Bedford	ODS	Significant	Acushnet River
Turner Pond Dam	MA01152	New Bedford	ODS	Significant	Paskamanset River
Buttonwood Park Dam	MA03067	New Bedford	ODS	Significant	Buttonwood Brook

Source: MassGIS, New Bedford LHMC, 2023

High Hill Reservoir Dam²⁶

High Hill Reservoir Dam is owned by the City of New Bedford and is classified as a significant hazard structure. The dam impounds water for water supply purposes (for the City of New Bedford and as a backup water supply for the Town of Dartmouth) and is physically located in Dartmouth, MA.

Owner: City of New Bedford

NID #: MA00772

Type: Earthen Embankment

Tributary: Unknown

Height: 25 feet

Storage Capacity: 250 ac/ft

Last Inspection: April 21, 2023

Hazard Classification: Significant

EAP: None available

O&M: None available

The most recent Phase 1 Inspection (April 21, 2023) rated the overall physical condition of the dam as satisfactory, meaning minor operational and maintenance deficiencies are present. Infrequent hydrologic events would probably result in deficiencies.

²⁶ High Hill Reservoir Dam Phase 1 Inspection/Evaluation Report, Tighe & Bond April 21, 2023.

The consultants (Tighe & Bond, Inc.) who performed the inspection made several recommendations. Since then, the New Bedford DPI updated the remaining recommendations to be completed (January 2025), including:

Studies and Analyses

- Prepare a formal Operation and Maintenance (O&M) Plan. Ensure assets are assigned in City's Asset Management System. GPS locate all equipment.
- Prepare and then update the EAP annually.

Recurrent Maintenance Recommendations

- Regularly monitor the embankment for animal burrows, localized depressions, bare spots, and any other type of unusual activity.
- Regularly mow (minimum of three times per year) the embankment, abutments, and within 20 feet of the dam to control tree and brush growth which inhibits visual observations of the dam.
- Exercise the inlet and outlet valves at least twice annually (quarterly is preferred).
- Repair concrete cracks and spalls as they develop.
- Clean out stormwater collection manholes on the embankment crest periodically and keep inlets free of vegetation and debris.

Recommended Minor Repairs

- Establish grass cover in localized bare spots due to erosion.
- Fill animal burrows with structural fill and cover with loam and seed.
- Remove vegetation at the stormwater manholes inlets along the embankment crest and clean out any debris within the manholes.
- A mitigation action has been included in Section 5.3 for the City to complete the recommended improvements identified in the most recent Phase I Inspection Report, develop an EAP (unable to obtain reports at the City or State level), and coordinate with the Town of Dartmouth (where the dam is located).

New Bedford Reservoir Dam²⁷

New Bedford Reservoir Dam is owned by the City of New Bedford and is classified as a significant hazard structure. The dam impounds water for recreation and irrigation by a nearby garden nursery and cranberry farmers and is located in Acushnet, MA. The inundation area includes a 15-foot-wide clear path between the toe and adjacent wooded area. Beyond this point is a heavily wooded and generally inaccessible area. The most recent Phase 1 Inspection (July 16, 2020) rated the overall physical condition of the dam as fair, meaning significant operational and maintenance deficiencies are present but no structural deficiencies. Potential deficiencies exist under unusual loading conditions that may realistically occur. It can be used when uncertainties exist as to critical parameters.

Owner: City of New Bedford
NID #: MA01014
Type: Earthen Embankment

Storage Capacity: 2,265 ac/ft
Last Inspection: July 16, 2020
Hazard Classification: Significant Hazard

²⁷ *New Bedford Reservoir Dam Phase 1 Inspection/Evaluation Report*, CDM Smith, July 16, 2020.

Tributary: Acushnet River
Height: 10 feet

EAP: August 2007
O&M: None available

The consultants (CDM Smith Inc.) who performed the inspection made several recommendations. Since then, the New Bedford DPI updated the remaining recommendations to be completed (January 2025), including:

Studies and Analysis

- Regularly monitor the embankment for animal burrows, localized depressions, bare spots, and any other type of unusual activity.
- Regularly mow (minimum of three times per year) the embankment, abutments, and within 20 feet of the dam to control tree and brush growth which inhibits visual observations of the dam.
- Update the EAP annually.
- An investigation of the current condition of the outlet structure (former gate house), the low-level outlet, and the downstream diversion structures.
- Work with the Buzzards Bay Coalition (current owner of the farm the City needs to cross to access the dam) to acquire an access easement to the Dam.

Remedial Modification Recommendations

- Obtain the required permits and remove all root balls associated with trees and stumps larger than six inches in diameter and fill the resulting voids with compacted structural fill. The tree root removal should only be done under the direction of a registered professional engineer.
- Install riprap in missing areas along the upstream slope between the former gate house and the right abutment. Establish limits of the current downstream seepage areas and monitor for changes during monthly inspections
- Add a staff gauge or level sensor to measure reservoir levels.
- Re-grade crest and downstream slope and add topsoil, and seed to establish healthy grass vegetation.

A mitigation action has been included in Section 5.3 for the City to complete the recommended improvements identified in the most recent Phase I Inspection Report, annually update the EAP, and coordinate with the Town of Acushnet (where the dam is located). The mitigation action also notes that an updated Phase I Inspection Report is required by July 16, 2025.

Turner Pond Dam²⁸

Turner Pond Dam is owned by the City of New Bedford and is classified as a significant hazard structure. The dam impounds water for recreation and conservation purposes and is physically located in New Bedford and Dartmouth, MA.

Owner: City of New Bedford
NID #: MA01152
Type: Earthen Embankment
Tributary: Paskamanset River

Storage Capacity: 2,785 ac/ft
Last Inspection: December 9, 2021
Hazard Classification: Significant Hazard
EAP: None available

²⁸ *Turner Pond Dam Phase 1 Inspection/Evaluation Report*, Tighe & Bond, December 9, 2021.

Height: 14 feet

O&M: None available

The most recent Phase 1 Inspection (December 9, 2021) rated the overall physical condition of the dam as fair, meaning significant operational and maintenance deficiencies are present but no structural deficiencies. Potential deficiencies exist under unusual loading conditions that may realistically occur. It can be used when uncertainties exist as to critical parameters.

The consultants (Tighe & Bond, Inc.) who performed the inspection made several recommendations. Since then, the New Bedford DPI updated the remaining recommendations to be completed (January 2025), including:

Studies and Analyses

- Update the EAP annually. Utilize existing information from the City of New Bedford's Comprehensive Emergency Management Plan where appropriate.
- Formalize an O&M Manual.
- Update 2016 Hydrologic and Hydraulic analysis to inform installation of low-level outlet.
- Develop an approach for possible installation of a fish passage ladder.

Recurrent Maintenance Recommendations

- Regularly monitor the embankment for animal burrows, localized depressions, bare spots, and any other type of unusual activity.
- Regularly mow (minimum of three times per year) the embankment, abutments, and within 20 feet of the dam to control tree and brush growth which inhibits visual observations of the dam.

Recommendations, Maintenance, and Minor Repairs

- Remove trees and brush on the embankment, abutments, and within 20 feet of the dam in accordance with the ODS's Policy on Trees on Dams. It is recommended that stumps and roots be removed in their entirety, as roots can shrink as they decay, which could cause preferential seepage paths. Backfill all voids with appropriate material, which would vary based on the location of the dam.
- Remove sediment buildup and vegetation upstream of spillway and stoplog structures.
- Remove concrete surfaces and cracks on spillway and stoplog structure.
- Repair sedimentation and erosion issues with stormwater drainage outlets.

Remedial Modification Recommendations

- Install riprap armor on upstream slope.
- Replace the existing stoplogs with new removable stoplogs and a low-level outlet gate/valve and operator.
- Replace concrete access platform.
- Install stairs, railing, safety fencing to spillway access platform.
- Install armored drainage path along embankments for flows exiting stormwater drainage outlets.
- Repair stone masonry wall along discharge channel.
- Rehabilitate stop log structure based on results of updated Hydrologic and Hydraulic analysis.

- Rehabilitate and/or replace emergency spillway.

A mitigation action has been included in Section 5.3 for the City to complete the recommended improvements identified in the most recent Phase I Inspection Report, develop an EAP, formalize and update the draft O&M Manual, and coordinate with the Town of Dartmouth (the dam is located in both Dartmouth and New Bedford).

*Buttonwood Park Pond Dam*²⁹

Buttonwood Park Pond Dam is owned by the City of New Bedford and is classified as a significant hazard structure. The dam impounds water for recreation purposes and is physically located in New Bedford.

Owner: City of New Bedford

NID #: MA03067

Type: Earthen Embankment

Tributary: Buttonwood Park Pond

Height: 8 feet

Storage Capacity: 31 ac/ft

Last Inspection: December 9, 2021

Hazard Classification: Significant Hazard

EAP: May 2009

O & M: None available

The most recent Phase 1 Inspection (December 9, 2021) rated the overall physical condition of the dam as poor, meaning significant structural, operational, and maintenance deficiencies are clearly recognized under normal loading conditions. Routine 6-month inspections indicate no significant change in dam condition over time since completion of the 2021 Phase I Inspection.

The consultants (Tighe & Bond Inc.) who performed the inspection made several recommendations. Since then, the New Bedford DPI updated the remaining recommendations to be completed (January 2025), including:

Studies and Analysis

- Regularly monitor the embankment for animal burrows, localized depressions, bare spots, and any other type of unusual activity.
- Regularly mow (minimum of three times per year) the embankment, abutments, and within 20 feet of the dam to control tree and brush growth which inhibits visual observations of the dam.
- Update the EAP annually.
- Update the Tree Monitoring Plan annually.

Recurrent Maintenance Recommendations

- Remove trees and brush on the embankment, abutments, and within 20 feet of the dam in accordance with the ODS's Policy on Trees on Dams. It is recommended that stumps and roots be removed in their entirety, as roots can shrink as they decay, which could cause preferential seepage paths. Backfill all voids with appropriate material, which would vary based on the location of the dam.
- A certified arborist should be retained or the City's arborist should conduct yearly inspections of the large trees located on the crest of the dam and pruned of dead/damaged limbs, in accordance with the approved tree monitoring plan. Those trees

²⁹ *Buttonwood Park Pond Dam Phase 1 Inspection/Evaluation Report*, Tighe & Bond, December 9, 2021.

determined to be compromised should be removed along with the root ball and backfilled with compacted soil. Once removed, it is not recommended that trees be replaced.

- Plant and maintain a healthy stand of grass on bare spots and areas that are cleared of trees and brush.
- Replace downstream discharge channel training walls.
- Repoint downstream masonry wall where needed.

Remedial Modification Recommendations

- Remove vegetation in and on the upstream stone masonry wall and buttress the upstream with large stone riprap placed at a 1.5H:1V slope or flatter. If a wall is desired for aesthetics or to reduce environmental impacts, remove the upstream stone masonry wall and replace with a stone-faced, cast-in-place concrete wall. Note this option will require construction of cofferdams and will likely be more expensive.
- Rehabilitate the existing brick culvert under Fuller Parkway and downstream concrete spillway. Structural rehabilitation methods for the culvert may include repointing/replacing bricks and mortar, lining, or slip lining.
- Repair and/or replace existing fence on upstream and downstream sides of the dam. Add railing to prevent access to spillway.
- Repoint downstream walls
- Replace concrete training walls
- Replace spillway and implement alternatives in the Phase 2 Report to address overtopping during the Sunny Day Failure.
- Pond dredging with bank stabilization to remove accumulated sediment and restore storage capacity. Coordinate dredging with water quality improvements.

A mitigation action has been included in Section 5.3 for the City of New Bedford to complete the recommended improvements identified in the most recent Phase I Inspection Report and to update the EAP annually.

The City of New Bedford is most at risk to dam failure at the site of the dam and within the downstream inundation zone should a dam be breached. Based on review of NOAA's NCEI and coordination with the LHMC, there were no available records of dam failure-related events for Bristol County/New Bedford since 2016. Due to the possible frequency and limited severity of dam failures as ranked by the Technical Committee and confirmed by the LHMC, the City is considered at low risk for future dam failures.

Climate Change Impacts on Dams

The increase in precipitation and frequency of intense rainfall events, which will cause an increase in river discharge and peak flows, may also lead to overtopping (in particular Buttonwood Park Dam) and damage of aging dams or structures in need of repair and maintenance. Heavy precipitation events may also impact local water levels.

Coastal Flood Hazards

The IPCC continues to better understand the science and implications of climate change and SLR. Rising sea levels, as a direct result of warmer temperatures and glacial ice melt, threaten low-lying coastal areas through coastal flooding, coastal erosion, wetland inundation, and saltwater intrusion. Localized land subsidence is also occurring and contributes to accelerated impacts of SLR in the region. Over the last 100 years, sea levels have risen 0.56 feet globally.

The average rate of rise between 1961 and 2003 was 0.07 inches per year; however, that rate nearly doubled to 0.12 inches per year between 1993 and 2003.³⁰ Although the rate of SLR is accelerating, it is not expected to be globally uniform and some areas will be more substantially inundated than others.

HW utilized the Massachusetts Coast Flood Risk Model (MC-FRM), developed by the Woods Hole Group to evaluate the City's overall SLR and coastal flood risk vulnerability. The data model dynamically considers the effect of tides, waves, storm surge, winds, sea level rise, and other factors to present a more accurate picture of coastal flood risk, utilized as a best management practice. HW used the 1% coastal flood exceedance probability MC-FRM data for 2030, 2050, and 2070 (high SLR scenario), which maps areas in which there is a 1% annual chance that flooding will occur due to a coastal storm event.

Based on review of NOAA's NCEI and coordination with the LHMC, there were no coastal flood hazard-related events since 2016. Due to the highly likely frequency and limited severity of coastal flood hazards as ranked by the Technical Committee and confirmed by the LHMC, the City is considered at moderate risk for future impacts of coastal flood hazards.

Coastal Erosion

Coastal erosion is caused by scour from wave action against sandy beaches and dune along the coast line. Wave action causes the loss (erosion) and gain (accretion) of coastal land. Coastal storms, such as hurricanes, tropical storms and Nor'easters, can cause shoreline erosion and accretion. Thus, storms are the most significant factor in coastal erosion.

Coastal land within the hurricane barrier is protected from coastal erosion. For areas outside the hurricane barrier, coastal erosion exists along the south, east and west coastal areas of the peninsula. The limited beach areas along East and West Rodney French Boulevard between jetties from the hurricane barrier to the seawall structures at Fort Taber, are subject to erosion and accretion, depending upon the storm intensity and direction. The southern tip of the peninsula is exposed with rocky shoreline and sea wall with no protection from beach or jetty areas. After large storms, coastal erosion has required direct beach nourishment by the addition of sand obtained by the City by direct purchase of comparable aggregate materials. Overall, the effect has been a net loss in beach sand into the near waters off the coast as a result of erosion due to hurricanes and major coastal storms. The damage from coastal erosion has been limited to the beach areas and has not affected roads or structures along the beaches and the overall effects have been of a minor nature, enabling the City to perform the recovery efforts internally using DPI equipment and labor resources, occasionally requiring excavator machine work to redistribute and spread blown sand or spread newly deposited sand.

Recent inspections of existing piers, sea walls, and jetties have shown deterioration. This is particularly true at the entrance to Fort Rodman and the WWTP, the sea wall along West Rodney French Boulevard, The Irish Monument Sea Wall along East Rodney French Boulevard,

³⁰ IPCC. (2007). *Climate Change 2007: The Physical Science Basis. Summary for Policymakers. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Geneva, Switzerland: UNEP.

Monkey's Island Pier, and the southerly sea wall adjacent to historic Fort Rodman and the City's WWTP

Because of the hurricane barrier, the City is less at risk from the effects of coastal erosion compared to other coastal communities that have no such protection. Thus, while coastal erosion is likely in the coastal areas outside the hurricane barrier, the impact is generally small and the severity is negligible.

Property/People at Risk from Flood-Related Hazards

New Bedford is subject to localized urban or street flooding connected to the inability of existing drainage systems to handle the flows from frequent, severe storm events, including at:

- Wamsutta Street at Acushnet Avenue and at times affecting the Route 18 Bypass highway immediately adjacent to this intersection
- Brownell Avenue and Hawthorn Street
- The Fuller Memorial Parkway along Buttonwood Pond
- Maple and Chancery Streets
- Deane, Sawyer, and Coggeshall Streets where these streets intersect and pass under the railway bridges just east of Purchase Street

Some areas prone to chronic street flooding because of insufficient combined sewer capacity include:

- Belleville Avenue from Hatch Street to Covell Street
- Route 18 at Wamsutta Street
- Belleville Avenue from Sawyer Street to Coffin Avenue
- Purchase Street and County Street between Coggeshall Street and Deane Street
- Washburn Street at Kilburn Street
- North Front Street at Wamsutta Street
- Bonney Street at Thompson Street
- Swift Street at Orchard Street
- Fair Street at Orchard Street
- Maple Street at Chancery Street

This flooding is connected to the inability of existing drainage systems to handle the flow from certain storm events. This is likely due to the initial sizing of the pipes and the increased amounts of impervious surface in the City and/or the size of individual storms. In addition, the spacing of storms can affect the capacity of the drainage system to move stormwater away from infrastructure and property. The City has undertaken several multi-year sewer separation projects to increase storm drainage capacity. Within New Bedford, there are at least a half-dozen highly traveled intersections that experience flooding and temporary closure to vehicular traffic during heavy rain events. These heavy rains may also flood basements and cause damage to heating systems and other utilities.

HW performed several Vulnerability Analyses that considered those areas in the City impacted by the various FEMA Flood Zones and coastal flood risk according to land use type and critical infrastructure (i.e., critical facilities, vulnerable populations and environmental justice areas, roadways, and bridges).

Critical facilities are those public or private facilities that possess added value to the community and deserve additional consideration when determining mitigation strategies to protect these resources from natural hazard risks. Vulnerable populations are those public or private facilities that are host to vulnerable residents, such as children in daycare or schools, seniors living in congregate care settings, or disabled residents living independently in the community. A list of the critical facilities and vulnerable populations was developed and updated by the LHMC and HW.

Section 3.7.3 (Economic Vulnerability) includes breakdowns of the number of parcels (by land use type) impacted by the various FEMA Flood Zones and 1% coastal flood exceedance probability for 2030, 2050, and 2070, complemented by the potential economic impacts of each. Below is a breakdown of the critical infrastructure (critical facilities, vulnerable populations/environmental justice areas, roadways, and bridges) for the same.

The 1% coastal flood exceedance probability (MC-FRM data) for 2030, 2050, and 2070, maps those areas in which there is a 1% annual chance that flooding will occur due to a coastal storm event over the applicable planning horizons (Map 2-9, Appendix A).

MC-FRM Annual Coastal Flood Exceedance Probability

- Map K-1.1 MC-FRM Annual Coastal Flood Exceedance Probability (2030): Clarks Cove
 - Refers to the likelihood of a coastal flood occurring in a given year, as calculated by the Massachusetts Coast Flood Risk Model.
 - A higher percentage of probability signifies a greater chance of coastal flooding in a given year, represented by the darker color gradients.
 - The model uses sea level rise projections, storm surge information and historical flood records data to calculate the probability.
 - No City facilities are located within or adjacent to areas with notable probabilities projected for 2030.

MC-FRM Flood Depths for 1% Annual Coastal Flood Exceedance Probability

- Map K-1.2 MC-FRM Flood Depths for 1% Annual Coastal Flood Exceedance Probability (2030): Clarks Cove
 - Refers to the 1% chance that a flood of this magnitude will occur in any given year, as calculated by the Massachusetts Coast Flood Risk Model.
 - Flood depths refer to the vertical height of water above ground level during a flood event which can be visualized as different color gradients indicating varying flood depths across coastal areas.
 - Locations most susceptible to significant coastal flooding are represented by the darker color gradients and should be used to help determine appropriate future mitigation actions based on anticipated flood depths.
 - No City facilities are located within or adjacent to significant areas of risk projected for 2030 that are not already protected by flood protection measures.

FEMA 1-Percent Annual Chance Flood (a.k.a. Zone A/AE and/or 100-Year Flood Zone)

Critical Facilities Affected

- Waterfront Cold Storage (Fish Island)
- Brittany Global Technologies Corp./ATI Allegheny Ludlum, Inc. (East Rodney French Boulevard)

- Crystal Ice Company, Inc. (Front Street)
- Rite Aid Pharmacy (Cove Road)
- USACE Hurricane Barrier System Harbor Segment (Harbor Side) (Gifford Street)
- Popes Island Wastewater Pump Station (Popes Island)
- Wamsutta Street Wastewater Pump Station
- Cove Road Wastewater Pump Station
- State Pier
- New Bedford-Fairhaven Bridge
- Wood Street Bridge
- Main Street Bridge
- Coggeshall Street Bridge
- Taber Park Pier
- Irish Monument Sea Wall (East Rodney French Boulevard)
- Port Authority Facilities – Piers and Bulkheads (Pier 3)
- Port Authority Facilities – Piers and Bulkheads (Steamship Pier)
- Port Authority Facilities – Piers and Bulkheads (Leonard's Wharf)
- Port Authority Facilities – Piers and Bulkheads (Homer's Wharf)
- North Terminal Pier Facilities
- South Terminal Pier Facilities
- Sea Fuels Marine Services, Inc. (Co-op Wharf)
- Northern Pelagic Group LLC (Fish Island)
- Colonial Air Inc. (Shawmut Avenue)
- NB Yard (Welby Road)
- North Coast Seafoods (Blackmer Street)
- Sea Watch International – NB Plant (Antonio Costa Boulevard)
- Ice Cube Maritime (Macarthur Drive)
- Eversource Station 607/611 (Pine Street)
- Brodeur Machine Co., Inc. (Wood Street)
- Northern Wind LLC (Macarthur Drive)
- Pier Fish Company Inc. (Conway Street)
- Eversource Station 681 (Bolton Street)
- Offshore Substation (Wright Street)

Vulnerable populations/Environmental Justice areas affected:

- UMASS Dartmouth School for Marine Science & Technology (South Rodney French Boulevard)
- DeValles Daycare Program (Crapo Street)
- Lara-Bianco In-home Daycare (Cove Road)
- Blessed Angels Academy (Cove Road)
- Census Tract 6503/Block Group 2/EJ Criteria: Minority
- Census Tract 6518/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6518/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6519/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6504/Block Group 1/EJ Criteria: Minority
- Census Tract 6506/Block Group 1/EJ Criteria: Minority, Income

- Census Tract 6510.01/Block Group 1/EJ Criteria: Minority
- Census Tract 6501.02/Block Group 3/EJ Criteria: Minority
- Census Tract 6502.01/Block Group 2/EJ Criteria: Minority
- Census Tract 6502.01/Block Group 3/EJ Criteria: Minority
- Census Tract 6503/Block Group 3/EJ Criteria: Minority
- Census Tract 6507/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6524/Block Group 2/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6525/Block Group 1/EJ Criteria: Minority
- Census Tract 6512/Block Group 1/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6512/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6513/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6525/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6526/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6527/Block Group 3/EJ Criteria: Minority, Income
- Census Tract 6524/Block Group 1/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6526/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6527/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6527/Block Group 2/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6527/Block Group 4/EJ Criteria: Minority, Income

FEMA 0.2-Percent Annual Chance Flood (a.k.a. Zone X/500-Year Flood Zone)

Critical facilities affected:

- NB Marine Commerce Terminal (Wright Street)
- Eversource Station 682 (Bonney Street)
- T-Mobile NEH0011A DAS (Bonney Street)
- Finicky Pet Food Inc. (Blackmer Street)
- Eversource Station 694 (S. Second Street)
- Ice Cube Cold Storage State Pier
- Eastern Fisheries (Hervey Tichon Avenue)
- Eversource Station 685 Depot (Pearl Street)
- Ryder Transportation Services #1122A (Acushnet Avenue)
- Eversource Station 695 (River Road)

MC-FRM 1% Annual Exceedance Probability 2030

Critical facilities affected:

- USACE Hurricane Barrier System Harbor Segment (Clarks Cove)
- Brittany Global Technologies Corp/ATI Allegheny Ludlum, Inc. (East Rodney French Boulevard)
- Crystal Ice Co., Inc. (Front Street)
- Maritime Terminal Inc. (Macarthur Drive)
- Northern Wind Inc. (Hassey Street)
- USACE Hurricane Barrier System Harbor Segment (Harbor Side)
- Popes Island Wastewater Pump Station (Popes Island)
- New Bedford – Fairhaven Bridge
- Wood Street Bridge

- Coggeshall Street Bridge
- Irish Monument Sea Wall (East Rodney French Boulevard)
- Port Authority Facilities Pier and Bulkheads (Pier 3)
- Port Authority Facilities Pier and Bulkheads (Steamship Pier)
- Port Authority Facilities Pier and Bulkheads (Leonard's Wharf)
- Port Authority Facilities Pier and Bulkheads (Homer's Wharf)
- South Terminal Pier Facilities
- Eversource Station 695 (River Road)
- Ice Cube Maritime (Macarthur Drive)

Vulnerable populations/Environmental Justice areas affected:

- Census Tract 6503/Block Group 2/EJ Criteria: Minority
- Census Tract 6518/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6518/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6519/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6518/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6518/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6504/Block Group 1/EJ Criteria: Minority
- Census Tract 6518/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6518/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6506/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6518/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6518/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6503/Block Group 3/EJ Criteria: Minority, Income
- Census Tract 6507/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6524/Block Group 2/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6512/Block Group 1/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6512/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6513/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6525/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6526/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6527/Block Group 3/EJ Criteria: Minority, Income
- Census Tract 6526/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6527/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6527/Block Group 2/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6527/Block Group 4/EJ Criteria: Minority, Income

MC-FRM 1% Annual Exceedance Probability 2050

Critical facilities affected:

- Waterfront Cold Storage (Fish Island)
- Port Authority Facilities Pier and Bulkheads (Pier 3)
- Port Authority Facilities Pier and Bulkheads (Steamship Pier)
- North Terminal Pier Facilities

MC-FRM 1% Annual Exceedance Probability 2070

Critical facilities affected:

- Acushnet Rubber Co. – Building B (Belleville Avenue)
- NSTAR – New Bedford Service Center (Macarthur Drive)
- Sprague New Bedford Terminal (Pine Street)
- New Bedford Marine Commerce Terminal
- Wamsutta Street Wastewater Pump Station
- East Rodney French Boulevard Wastewater Pump Station
- Howard Avenue Wastewater Pump Station
- State Pier
- New Bedford Marine Commerce Terminal (Wright Street)
- Sea Fuels Marine Services Inc. (Co-op Wharf)
- Northern Palegic Group LLC (Fish Island)
- Eversource Station 607/611 (Pine Street)

Vulnerable populations/Environmental Justice areas affected:

- Whaler's Cove Assisted Living Facility (Riverside Avenue)
- Census Tract 6504/Block Group 3/EJ Criteria: Minority, Income

Overview Summary of Flood-Related Hazard Impacts:

Social/Economic vulnerabilities include:

- All flood-related hazards profiled here can impact public health, safety and welfare by way of inundation contaminating drinking water and spreading waterborne diseases, often resulting in temporary/permanent displacement and causing emotional/psychological stress.

Environmental vulnerabilities include:

- All flood-related hazards profiled here can impact the environment/ecosystems by way of inundation displacing wildlife, carrying pollution/hazardous materials into natural habitats, and disrupting natural ecological processes.

Infrastructure/Built Environment vulnerabilities include:

- All flood-related hazards profiled here can impact a community's critical facilities/infrastructure by way of inundation including structural and equipment damage at public/private buildings, disruptions to normal/daily actions (water supply, sewer conveyance/treatment, and communications), and transportation network disruptions.

Probability of Future Occurrence of Flood-Related Hazards

As new development continues, with the increase of impervious surfaces increasing the rate of drainage collection and reducing the carrying capacity of the land, it is likely flooding and stormwater runoff events will also increase on a more frequent basis with even lower storm events. Given the continuing increase in frequency and severity of various flood-related hazard events, the city is considered to be at moderate risk for future impacts from riverine and flash flooding events, high risk for future impacts from inland and urban flooding and heavy rain events, low risk for future impacts from dam failures, and moderate risk for future impacts from coastal flood and erosion hazards.

3.5.2. Winter-Related Hazards

Winter weather events can include heavy snowfall, ice, and extreme cold and can affect the entire City of New Bedford. Heavy snow can bring the community to a standstill by inhibiting mobility (i.e., transportation networks, pedestrian travel), knocking down trees and utility lines, and cause structural collapses in older buildings. Ice buildup can down utility lines and communication towers. The impacts of both events can cause indirect issues such as freezing/rupturing pipes from lack of heat, while also changing the ground's frost level, creating problems for underground infrastructure.

Table 3-7 records the various significant winter-related hazard events that have occurred in and around the City of New Bedford. Unless otherwise noted, all events are specific to Bristol County.

Table 3-7. Significant Winter-Related Events, Bristol County

Date	Level/ Description	Damages	Notes
Extreme Cold/Wind Chill			
2/14/2016			29 degrees below 0
Blizzards/Heavy Snow/Nor'easter			
1/2/2014	7" - 11"		
1/21/2014	5" - 11"		
2/15/2014	7" - 10"	\$5 k	Branches and wires down.
1/26/2015	16" - 26"		Near blizzard conditions at New Bedford Airport
2/8/2015	6" - 10"		
2/14/2015	17" - 23"		Several vehicles stuck in snow banks/two deaths
3/1/2015	4" - 5"		
3/5/2015	7" - 11"		
1/23/2016	2" - 10"		
4/4/2016	3" - 8"		
12/17/2016	2" - 3"		
1/7/2017	11" - 17"		
2/9/2017	9" - 14"		
3/10/2017	5" - 7"		
12/23/2017		\$20 k	Icy roads/down trees and wires.
12/17/2017			
1/4/2018	8" - 16"	\$3 k	Tree down on Cedar St.
1/30/2018	5" - 9"		
3/13/2018		\$65 k	Tree fell onto house roof on New Plainville Rd./tree down on Ocean St./tree fell onto house on Phillips Rd.
3/3/2019	2" - 6"		
12/16/2020	3" - 7"		

Date	Level/ Description	Damages	Notes
2/7/2021	5" - 7"	\$500	
1/28/2022	17"- 22"		New Bedford airport met blizzard criteria for 2.5 hours.

Source: National Centers for Environmental Information, NOAA, <https://www.ncei.noaa.gov/>. Data is current through June 2023.

Winter Storms, Blizzards, Snow, and Nor'easters

Winter storms often include natural hazards such as extreme winds, coastal erosion and flooding. Utility and power lines can break from the weight of snow or ice coupled with strong winds. This could put residents at risk of losing heat, electricity, and water (if using well water). Snow melting poses problems as well such as road flooding in low lying areas. The City has experienced heavy snow, ice, and winter storms which have become more frequent over the past several years.

New Bedford falls within a band of average annual snowfall of 36 to 48 inches per year (Map F-1, Appendix A). While melting snow adds to flooding, snowfall also presents a non-flooding hazard as access to critical facilities may be compromised by large amounts of snowfall. Variations on this hazard are a snowstorm in combination with rain that produces a very heavy wet snow or ice storms both of which weigh down trees and power lines.

The Northeast Snowfall Impact Scale (NESIS) developed by Paul Kocin of The Weather Channel and Louis Uccellini of the National Weather Service (NWS) (Kocin and Uccellini, 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 (**Table 3-8**). The index differs from other meteorological indices in that it uses population information in addition to meteorological measurements. Thus, NESIS gives an indication of a storm's societal impact.

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 aerial distribution of snowfall and population information are combined in an equation that calculates a NESIS score which varies from around one for smaller storms to over ten for extreme storms. The raw score is then converted into one of the five NESIS categories. The largest NESIS values result from storms producing heavy snowfall over large areas that include major metropolitan centers. Since 2015, there have been 14 snowstorms that resulted in snowfalls in New Bedford of at least 10 inches (**Table 3-9**).

Table 3-8. NESIS Snowfall Impact Scale

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

Source: <https://www.ncei.noaa.gov/access/monitoring/rsi/nesis>.

Table 3-9. Winter Storms Producing over 10 Inches of Snow, New Bedford

Date	NESIS Value	NESIS Category	NESIS Classification
1/25/2015	2.62	2	Significant
2/8/2015	1.32	1	Notable
2/20/2015	1.31	1	Notable
3/3/2015	1.66	1	Notable
1/22/2016	7.66	4	Crippling
1/4/2017	2.52	2	Significant
2/9/2017	1.87	1	Notable
3/12/2017	5.03	3	Major
1/3/2018	2.27	1	Notable
3/11/2018	3.16	2	Significant
3/3/2019	1.29	1	Notable
12/14/2020	3.21	2	Significant
1/30/2021	4.93	3	Major
1/28/2022	1.73	1	Notable

Source: <https://www.ncei.noaa.gov/access/monitoring/rsi/nesis>.

Nor'easters can occur between October and April in New England, but most typically occur in late fall and early winter. Nor'easters often produce high winds, heavy snow, rain, and waves that crash onto beaches, often resulting in beach erosion and structural damage. Many southeastern Massachusetts communities have flooding associated with the heavy precipitation of Nor'easter storms. Problems can be exacerbated when the rainfall and the melting of snow and ice are added to the flow. The large chunks of ice that are freed can clog drainage passages and increase localized flooding. This flooding can affect private residences, businesses, and public infrastructure such as roadways and storm drains.

Overall, Nor'easters are highly likely in New Bedford, but they have a small impact on the area and limited severity. However, as a coastal community, New Bedford is more vulnerable to the effects of flooding compared to non-coastal communities because of the potential for a storm surge during a Nor'easter. The extent of flooding associated with a Nor'easter would be similar to that for a hurricane. The extent of wind damage and snowfall would be generally equal throughout the City with snowfall depths for a typical Nor'easter ranging between 12 and 30 inches and wind speeds at hurricane force.

Winter storms include ice storms, which are defined as events where rain freezes on contact with cold objects, creating ice build-ups. Ice storms can create dangerous walking and driving conditions and cause power failures. Ice storms occur most frequently in late December and early January but can occur anytime between November and March.

Heavy snow affects the entire state, but the highest amounts typically occur in the northern and northwestern areas of the state. Usually, the impact and vulnerability of winter weather is measured in terms of the financial costs associated with preparing for, responding to, and recovering from the event. The City uniformly continues to experience heavy snow and winter storms with greater frequency and severity as reported by the NCEI and confirmed by the Technical Committee and LHMC. The City is considered at high risk for heavy snow, blizzards, winter storms, and Nor'easters.

Climate Change Impacts on Winter Storms, Snow, Ice, and Nor'easter Events

Climate change will result in increased average global temperatures. These impacts are already being felt in New England, as average winter temperatures in the region have risen 3.8°F in the last 30 years. Although at first glance this would appear to make winters less severe, the Northeast has experienced the largest increase in extreme precipitation events in the country, which often fall as heavy wet snow in the winter.

Extreme Cold

Extreme cold events often accompany winter storms, may be left in their wake, or occur without any associated storm activity, and can lead to hypothermia and frostbite. Extreme cold temperatures vary dependent on the normal climate of the region; however, New Bedford can expect to be uniformly affected. For Massachusetts, extreme cold typically means temperatures below 0°F. Extreme cold can adversely affect people, though some populations, the homeless, infants, and residents 65 years of age or older are especially vulnerable.

Wind chill temperature is the temperature that people and animals feel when outside and is measured based on the rate of heat loss from exposed skin by the effects of wind and cold. The wind chill chart (**Figure 3-5**) shows three shaded areas of frostbite danger. Each shaded area shows how long a person can be exposed before frostbite develops. In Massachusetts, a wind chill warning is issued by the NWS Taunton Forecast Office when the Wind Chill Temperature Index, based on sustained wind, is -25°F or lower for at least three hours.

Figure 3-5. Wind Chill Temperatures

		Temperature (°F)																	
Calm		40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
Wind (mph)	5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
	10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
	15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
	20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
	25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
	30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
	35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
	40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
	45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
	50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
	55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
	60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98
Frostbite Times		30 minutes			10 minutes			5 minutes											

Frostbite Times 30 minutes 10 minutes 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T=Air Temperature(°F) V=Wind Speed (mph)

Effective 11/01/01

Source: https://www.weather.gov/media/ajk/brochures/Wind_Chill_Temperature_Index.pdf.

NOAA's NCEI database included a limited number of recorded previous events since 2016. Based on the highly likely frequency and negligible severity of extreme cold events over time as

confirmed by the Technical Committee and LHMC, New Bedford is considered at moderate risk to extreme cold.

Climate Change Impacts on Extreme Cold Temperatures

Climate change will result in increased average global temperatures, which will likely decrease the number of extremely cold days. Climate change is also impacting Arctic air flows by causing the polar jet stream to weaken leading to more extreme weather events. This decrease in extremely cold days has already been documented and is expected to continue into the near future.

MVP Climate Change Projections on Extreme Cold Temperatures

As mentioned above, climate change impacts will result in increased average temperatures, so the number of extreme cold days is expected to decrease. New Bedford should experience far fewer days with temperatures below freezing, and thus, will expend less energy on heating in the winter months. **Table 3-10** includes temperature projections (Annual and Winter) with a Baseline (1971 – 2000) through mid-century (2050s) for the Taunton and Buzzards Bay Basins.

Table 3-10. Extreme Cold Temperature Projections, Taunton and Buzzards Bay Basins

Climate Parameter	Baseline 1970 - 2000	Projected Change in 2030s	Mid-Century 2050s
Average Annual Temperature (°F) <i>Taunton Basin</i> <i>Buzzards Bay Basin</i>	49.9 50.7	51.9 – 53.6 52.6 – 54.3	52.5 – 55.8 53.2 – 56.5
Average Winter Temperature (°F) <i>Taunton Basin</i> <i>Buzzards Bay Basin</i>	30.0 31.3	32.2 – 34.4 33.4 – 35.4	32.9 – 36.7 34.0 – 37.7
Minimum Annual Temperature (°F) <i>Taunton Basin</i> <i>Buzzards Bay Basin</i>	39.4 41.8	41.6 – 43.4 43.9 – 45.5	42.3 – 45.5 44.6 – 47.8
Minimum Winter Temperature (°F) <i>Taunton Basin</i> <i>Buzzards Bay Basin</i>	20.5 22.3	23.0 – 25.2 25.1 – 27.2	23.8 – 27.8 25.9 – 29.7
Annual Days with Minimum Temperature Below 32 (°F) <i>Taunton Basin</i> <i>Buzzards Bay Basin</i>	130 111	117 - 110 91 - 67	111 - 86 86 - 44
Winter Days with Minimum Temperature Below 32 (°F) <i>Taunton Basin</i> <i>Buzzards Bay Basin</i>	78 73	74 - 69 68 - 62	73– 62 67 - 54
Annual Heating Degree-Days (Base 65 °F) <i>Taunton Basin</i> <i>Buzzards Bay Basin</i>	6,130 5,866	5,620 – 5,129 5,861 – 4,894	5,420 – 4,651 5,159 – 4,411
Winter Heating Degree-Days (Base 65 °F) <i>Taunton Basin</i> <i>Buzzards Bay Basin</i>	3,169 3,056	2,970 – 2,766 2,866 – 2,672	2,914 – 2,553 2,809 – 2,466

Source: MVP Program, www.resilientma.org.

Property/People at Risk from Winter-Related Hazards

New England experiences winter storms in more extreme ways than most of the rest of the country. Hazards include flooding during snow melt and treacherous roadways due to ice, snow and downed wires and trees making roadways impassable, particularly for emergency vehicles.

Overview Summary of Winter-Related Hazard Impacts:

Social/Economic vulnerabilities include:

- Extreme cold temperatures can present significant challenges to the homeless, the elderly and those with disabilities/medical conditions and heightened risks of frostbite and hypothermia.
- Extended power outages can lead to a surge in alternative heating sources and the risk of carbon monoxide poisoning and fires.
- School closures/delays can disrupt student learning and working families in general with child care needs.
- Power outages can result in business closures resulting in loss of revenue.

Environmental vulnerabilities include:

- Extended power outages can lead to disruptions in municipal wastewater services leading to potential contamination concerns.

Infrastructure/Built Environment vulnerabilities include:

- Transportation network impacts include slick/treacherous roads leading to travel disruptions (including emergency response) and accidents.
- Public transportation impacts can limit residents' mobility forcing residents to travel on-foot in adverse weather conditions.
- Bridge/Overpasses freeze before other surfaces/pavements leading to accidents.
- Ice can accumulate on antennas, cell towers, and communications lines leading to interruptions/loss of power and communications.
- Extreme cold temperatures can damage roads, buried or exposed utilities, and railways, while also impairing the functioning of emergency equipment.

Probability of Future Occurrence of Winter-Related Hazards

According to history and climatic conditions, and the inability to predict extreme snow and temperature events, the City is considered at high risk for blizzards, snow, and Nor'easters, and moderate risk for extreme cold events.

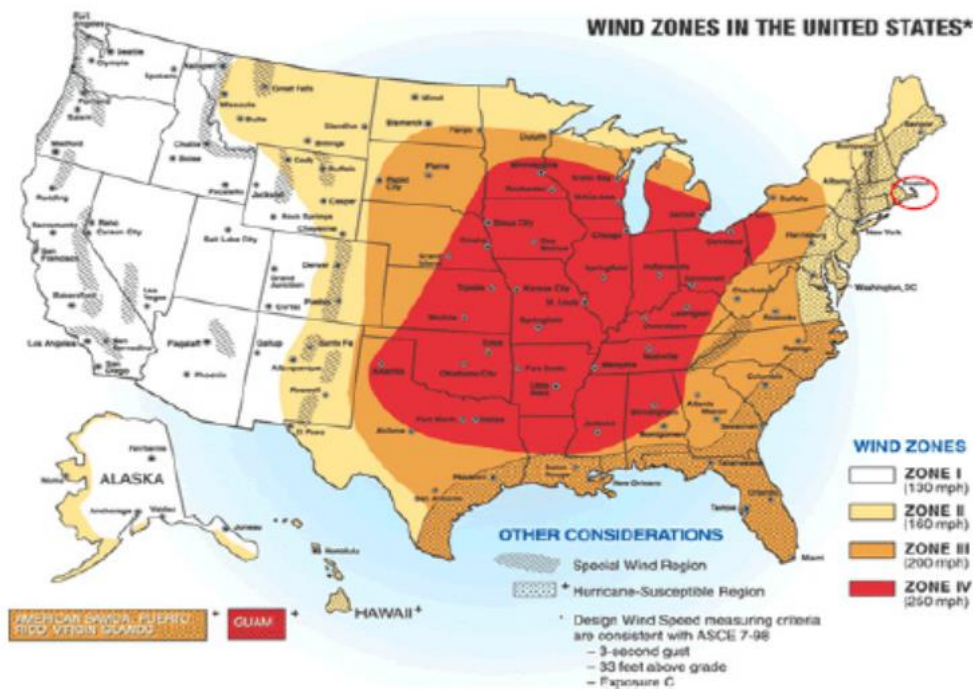
3.5.3. Wind-Related Hazards

Wind is the movement of air caused by a difference in pressure from one place to another. Local wind systems are created by the immediate geographic features in any given area, such as mountains, valleys, or large bodies of water. Wind effects can include blowing debris, interruptions in elevated power and communications utilities, and intensification of the effects of other hazards related to winter weather and severe storms.

Massachusetts is susceptible to high wind events from several types of weather events, including before and after frontal systems, hurricanes and tropical storms, severe thunderstorms and tornadoes, and Nor'easters. Based on historical tornado and hurricane data, FEMA has produced a map that depicts maximum wind speeds for design of safe rooms. The Commonwealth is located within Wind Zone II, with speeds up to 160 mph (**Figure 3-6**). The

entire Commonwealth is also located within the hurricane-susceptible region. Massachusetts wind events can produce damage often associated with thunderstorms or tornadoes.

Figure 3-6. Wind Zones in the United States



Source: FEMA.

Table 3-11 records the various significant wind-related hazard events that have occurred in and around the City of New Bedford. Unless otherwise noted, all events are specific to Bristol County.

Table 3-11. Significant Wind-Related Events, Bristol County

Date	Level/Description	Damages	Notes
High/Strong Winds			
10/22/2014	35 kts	\$5 k	Tree down onto car Acushnet Ave.
1/11/2014	43 kts	\$5 k	
11/2/2014	43 kts	\$43 k	Tree onto roof of Campbell Elementary School
1/27/2015	56 kts	\$15 k	One death.
3/17/2015	45 kts	\$20 k	Trees down intersection of Grove/Ash Streets/tree onto car on Acushnet Ave.
4/4/2015	29 kts	\$5 k	
6/28/2015	50 kts	\$35 k	
9/30/2015	40 kts	\$15 k	
10/29/2015	44 kts	\$20 k	Tree down Route 140
1/10/2016	40 kts	\$20 k	Tree down/blocking Grove St.
1/13/2016	40 kts	\$5 k	

Date	Level/ Description	Damages	Notes
1/23/2016	36 kts		
2/16/2016	56 kts	\$45 k	
2/24/2016	50 kts	\$15 k	
9/5/2016	40 kts	\$52 k	Branches down/wires down on Briarwood Rd./Nash Rd.
10/9/2016	40 kts	\$500	Tree down Garner St.
10/22/2016	44 kts	\$500	
12/15/2016	50 kts	\$1 k	Tree down/blocking Milford St.
12/18/2016	40 kts	\$1.6 k	Tree down Route 140.
12/27/2016	42 kts	\$2.2 k	Tree down/blocking Holyoke St./Large limb down/blocking Monmouth St.
3/2/2017	43 kts	\$1 k	
3/14/2017	62 kts	\$10 k	
4/6/2017	40 kts	\$500	Wires down Bates St.
10/24/2017	50 kts		
10/29/2017	66 kts	\$15 k	Tree/wires down Summer St.
12/5/2017	48 kts	\$2 k	
12/25/2017	56 kts	\$25 k	
1/12/2018	51 kts	\$5.5 k	
3/2/2018	59 kts	\$60 k	Widows walk blown off roof/roof damage.
10/15/2018	40 kts	\$1 k	Tree down Roseanne St.
10/27/2018	41 kts	\$1.3 k	
11/3/2018	51 kts	\$2.5 k	
11/16/2018	43 kts	\$300	
12/18/2018	40 kts	\$1 k	
1/1/2019	40 kts	\$1.5 k	
1/24/2019	56 kts	\$1.5 k	
1/30/2019	50 kts	\$1 k	
2/25/2019	53 kts	\$20 k	
4/15/2019	42 kts	\$500	
10/10/2019	45 kts	\$500	
10/11/2019	45 kts	\$500	
10/16/2019	35 kts		
10/17/2019	73 kts		
11/2/2019	57 kts	\$1 k	Tree down Ash St.
1/16/2020	43 kts	\$300	
2/7/2020	63 kts	\$20 k	
4/9/2020	54 kts	\$4 k	
4/13/2020	37 kts		
4/21/2020	37 kts		

Date	Level/ Description	Damages	Notes
5/9/2020	42 kts	\$1.8 k	Power lines down on Park St./East Clinton St.
9/30/2020	46 kts	\$1.5 k	
10/10/2020	39 kts	\$800	
11/15/2020	51 kts	\$300	
11/30/2020	56 kts	\$12.8 k	
12/5/2020	44 kts	\$5 k	Tree down Clark St.
12/25/2020	50 kts	\$1 k	
3/1/2021	44 kts	\$1 k	Tree down Purchase St.
4/30/2021	43 kts	\$7.5 k	
5/29/2021	46 kts	\$500	
10/26/2021	75 kts	\$1 m	
11/12/2021	75 kts	\$100	
12/6/2021	40 kts	\$8 k	
1/17/2022	39 kts	\$2 k	
2/18/2022	39 kts	\$9 k	
4/19/2022	35 kts	\$9 k	
10/14/2022	60 kts		
11/12/2022	41 kts	\$3 k	
11/30/2022	43 kts	\$300	
9/15/2023			Hurricane Lee
Lightning/Thunderstorms			
4/6/2017		\$1 k	

Source: National Centers for Environmental Information, NOAA, <https://www.ncei.noaa.gov/>. Data is current through September 2023.

Hurricanes and Tropical Storms

Hurricanes are defined as a large circulating windstorm covering hundreds of miles that forms over warm ocean water. To be officially classified as a hurricane, the wind speeds must exceed 74 mph. In the northern hemisphere winds circulate in a counterclockwise direction. A great dome of water as much as fifty miles in diameter (called the “storm surge”) is pushed ahead of the storm by its winds. In some coastal locations, this can result in tides 20 feet higher than usual. Occasionally, storm surge is responsible for damage to property and potential deaths.

The winds that accompany hurricanes have the potential to cause serious damage. Downed power lines leave residents without electricity and can impede business for days. Fallen trees can damage buildings and block roadways. Unsecured building components including gutters, screened enclosures, roof coverings, shingles, car ports, porch coverings, overhangs, siding, decking, windows, walls, gables can be blown off structures and carried by the wind to cause damage in other places. Wind driven rain often causes water damage in roof and wall envelopes. Hurricanes are tropical storms that obtain wind speeds of 74 mph or greater and are accompanied by heavy rainfall. Hurricanes are classified based on wind speed, barometric pressure and storm surge.

Measuring the Intensity of a Hurricane

Hurricane damages come from wind, rain, tornadoes, floods/storm surge, and the effects of very low air pressure. The Saffir-Simpson Hurricane Wind Scale (SSHWS) intensity category system was developed in the 1970s to characterize a hurricane's destructive potential by indicating wind speeds and range of damage (**Table 3-12**). The SSHWS category system measures sustained wind speed, central pressure, storm surge height, and coastal damage potential within five intensity categories.

Table 3-12. Saffir-Simpson Hurricane Wind Scale

Scale No. (Category)	Wind (mph)	Potential Damage
1	74 - 95	Minimal: Damage is primarily to shrubbery and trees, mobile homes, and some signs. No real damage is done to structures.
2	96 – 110	Moderate: Some trees topple, some roof coverings are damaged, and major damage is done to mobile homes.
3	111 – 130	Extensive: large trees topple, some structural damage is done to roofs, mobile homes are destroyed, and structural damage is done to small homes and utility buildings.
4	131 – 155	Extreme: Extensive damage is done to roofs, windows and doors; roof systems on small buildings completely fail; and some curtain walls fail.
5	> 155	Catastrophic: Roof damage is considerable and widespread, window and door damage are severe, there are extensive glass failures, and entire buildings could fail.
Additional Classifications: Tropical Storm 39 – 73, Tropical Depression < 38		

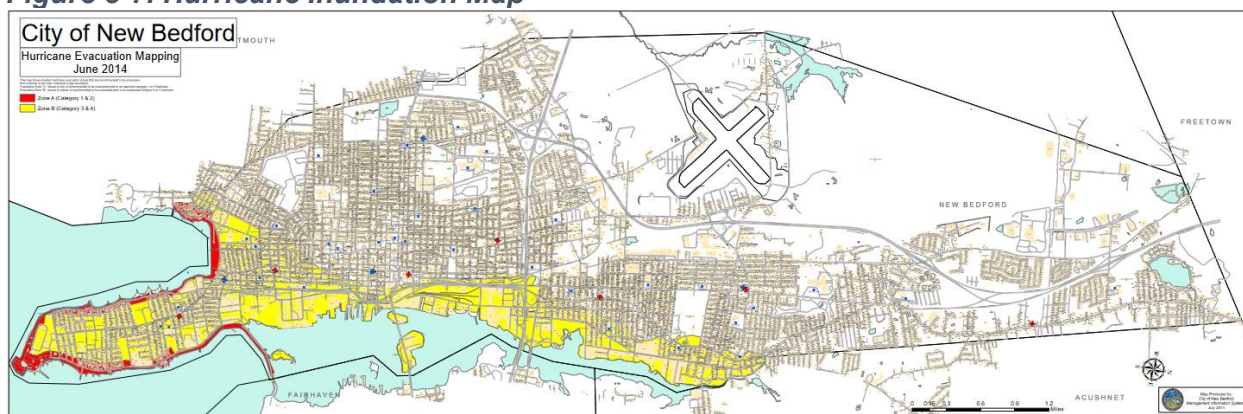
Source: NOAA.

The NWS will issue a hurricane warning when sustained winds of 74 mph or higher are reached and expected within a coastal area within 24 hours. On average, there are approximately 10 named tropical storms along the East Coast each year, six of which are likely to develop into hurricanes, with only two or three likely to reach Category 3 on the SSHWS. The SSHWS has undergone a minor modification for 2012 to resolve awkwardness associated with conversions among the various units used for wind speed in advisory products. The change broadens the Category 4 wind speed range by one mph at each end of the range, yielding a new range of 130-156 mph.

The USACE, working with the Massachusetts Emergency Management Agency (MEMA) and local officials, has also created Hurricane Evacuation Maps for all of Massachusetts's coastal communities and communities along rivers or other waterways that are connected to the ocean (**Figure 3-7**). For most coastal communities there are two Evacuation Zones: Zone A for Category 1 and 2 hurricanes, and Zone B for Category 3 and 4 hurricanes.

These maps are designed to be tools for local public officials to make local evacuation decisions as a hurricane approaches, and to provide critical information to citizens who live or work in areas that may need to be evacuated as a hurricane approaches. People who live or work in a Hurricane Evacuation Zone *may* be asked or ordered to evacuate the zone prior to a hurricane making landfall in the area.

Figure 3-7. Hurricane Inundation Map



Source: <https://www.newbedford-ma.gov/emergency-management/hurricane-maps/>.

NOAA's NCEI database included limited records for previous occurrences of hurricanes and tropical storms. As a coastal community, the entirety of the City is at risk of future hurricanes and tropical storms, however, the presence of the hurricane barrier significantly decreases this vulnerability. Based on the likely frequency and critical severity of hurricane and tropical storm events over time, as confirmed by the Technical Committee and LHMC, New Bedford is considered at moderate risk to future hurricanes and tropical storms.

Climate Change Impacts on Hurricanes

Climate change is expected to result in the increased frequency and intensification of hurricanes and tropical storms worldwide. Rising sea levels, coupled with potentially higher hurricane wind speeds, rainfall intensity, and storm surges will combine to create more intense hurricanes, resulting in increased impacts to coastal communities. Research predicts a global increase in the intensity of such storms on average, by 2% to 11%, based on the IPCC mid-range emission scenario projections, as well as a poleward expansion in the latitude at which storms will reach their highest intensity. Some experts have noted that the three massive storms from the 2017 hurricane season (Harvey, Irma, and Maria) are consistent with this expected intensification.

Hurricanes and tropical storms are expected to result in more rainfall. This increase has been observed and is expected both globally (IPCC 2014) and for the Atlantic basin, including the U.S. East Coast. Based on a synthesis of current science, NOAA predicts that Atlantic hurricanes and tropical storms in the coming century will have higher rainfall rates than present storms, especially near the center of the storm. Hurricane Harvey, which resulted in a record 51.9 inches of rainfall at one station west of Houston, Texas, is one recent example of this trend.

High Winds

Wind is the motion of air past a given point caused by a difference in pressure from one place to another. Severe wind poses a threat to Massachusetts in many forms, including that produced by severe thunderstorms and tropical weather systems. The effects can include blowing debris, interruptions in elevated power and communications utilities and intensified effects of winter weather. Harm to people and animals as well as damage to property and infrastructure may be the result. Two basic types of damaging wind events other than tropical systems affect Massachusetts: synoptic-scale winds and thunderstorm winds. Synoptic-scale winds are high winds that occur typically with cold frontal passages or Nor'easters. When thunderstorm winds exceed 58 mph the thunderstorm is considered severe, and a warning is issued. "Downbursts"

cause the high winds in a thunderstorm. Downburst winds result from the sudden descent of cool or cold air toward the ground. As the air hits the ground, it spreads outward, creating high winds. Unlike tornadoes, downburst winds move in a straight line, without rotation. The term “microburst” refers to a small downburst with damaging winds up to 168 mph and less than 2.5 miles in length. The term “macroburst” refers to a large downburst that can extend greater than 2.5 miles with winds up to 134 mph and can last 5 to 30 minutes.

Dependent upon the direction and track of a storm, the City is uniformly vulnerable to high wind events. Based on the highly likely frequency and limited severity of high wind events as reported by NOAA’s NCEI and confirmed by the Technical Committee and LHMC, the City of New Bedford is considered at moderate risk to future high wind events.

Tornadoes and Waterspouts

Tornadoes are violently rotating columns of air in contact with and extending between a cloud and the surface of the earth. Generally, winds in most tornadoes are 100 mph or less, but can exceed 250 mph in the most violent and least frequent tornadoes. Several conditions are required for the development of tornadoes and associated thunderstorm clouds, including abundant low-level moisture to contribute to the development of a thunderstorm, along with a trigger/cold front to lift the moist air. Tornadoes usually form in areas where strong winds are turning in a clockwise direction and can be in the traditional funnel shape, or in a slender rope-like form. They typically begin in a supercell (severe thunderstorm), primarily in the month of May. A waterspout is a tornado over a water surface, such as a bay or ocean.

Measuring the Intensity of a Tornado

Typically, tornadoes are categorized by frequency values from historic data and area impacted based on the length and width of the damage path. Tornado damage severity is measured by the Fujita Tornado Scale, where wind speed is estimated from the amount of damage. As of February 1, 2007, the NWS began rating tornadoes using the Enhanced Fujita-scale (**Table 3-13**). The Enhanced Fujita scale is more complicated than the original F-scale, allowing for more precise assessments of tornado severity.

Table 3-13. Enhanced Fujita Scale

Fujita Scale			Derived		Operational EF Scale	
F Number	Fastest $\frac{1}{4}$ mile (mph)	3-second gust (mph)	EF Number	3-second gust (mph)	EF Number	3-second gust (mph)
0	40 - 72	45 - 78	0	65 - 85	0	65 - 85
1	73 - 112	79 - 117	1	86 - 109	1	86 - 110
2	113 - 157	118 - 161	2	110 - 137	2	111 - 135
3	158 - 207	162 - 209	3	138 - 167	3	136 - 165
4	208 - 260	210 - 261	4	168 - 199	4	166 - 200
5	261 - 318	262 - 317	5	200 - 234	5	Over 200

Source: NOAA.

Historic tornado and/or waterspout events in New Bedford include a tornado recorded for downtown New Bedford on September of 1972 with an F0 rating and a waterspout on August 28, 1970, off the coast of New Bedford with an F2 rating (Map H-1, Appendix A).

Based on review of NOAA's NCEI and coordination with the LHMC, there were no available records of tornado or waterspout events since 2016. Impacts from these types of events are typically specific to the track, location, and time of day the event occurs, making it difficult to predict where they may strike. Due to the possible frequency and limited severity of tornadoes and waterspouts over time as confirmed by the Technical Committee and LHMC, the City of New Bedford is considered at low risk to future tornadoes and waterspouts.

*Climate Change Impacts on Tornadoes and Waterspouts*³¹

Current climate models predict an increase in severe thunderstorms, which have the potential to produce tornadoes. However, it is unclear if tornado frequency will increase with climate change. Some studies suggest there will be a decrease in the number of tornado days, but an increase in the number of tornadoes per day.

Lightning and Thunderstorms

Thunderstorms are formed when the right atmospheric conditions combine to provide moisture, lift, and warm unstable air that can rise rapidly. Thunderstorms occur any time of the day and in all months of the year but are most common during summer afternoons and evenings and in conjunction with frontal boundaries. Thunderstorms affect a smaller area compared with winter storms or hurricanes, but they can be dangerous and destructive for a number of reasons. Storms can form in less than 30 minutes, giving very little warning; they have the potential to produce lightning, hail, tornadoes, powerful straight-line winds, and heavy rains that produce flash flooding.

NOAA characterizes a thunderstorm as severe when it produces one or more of the following:

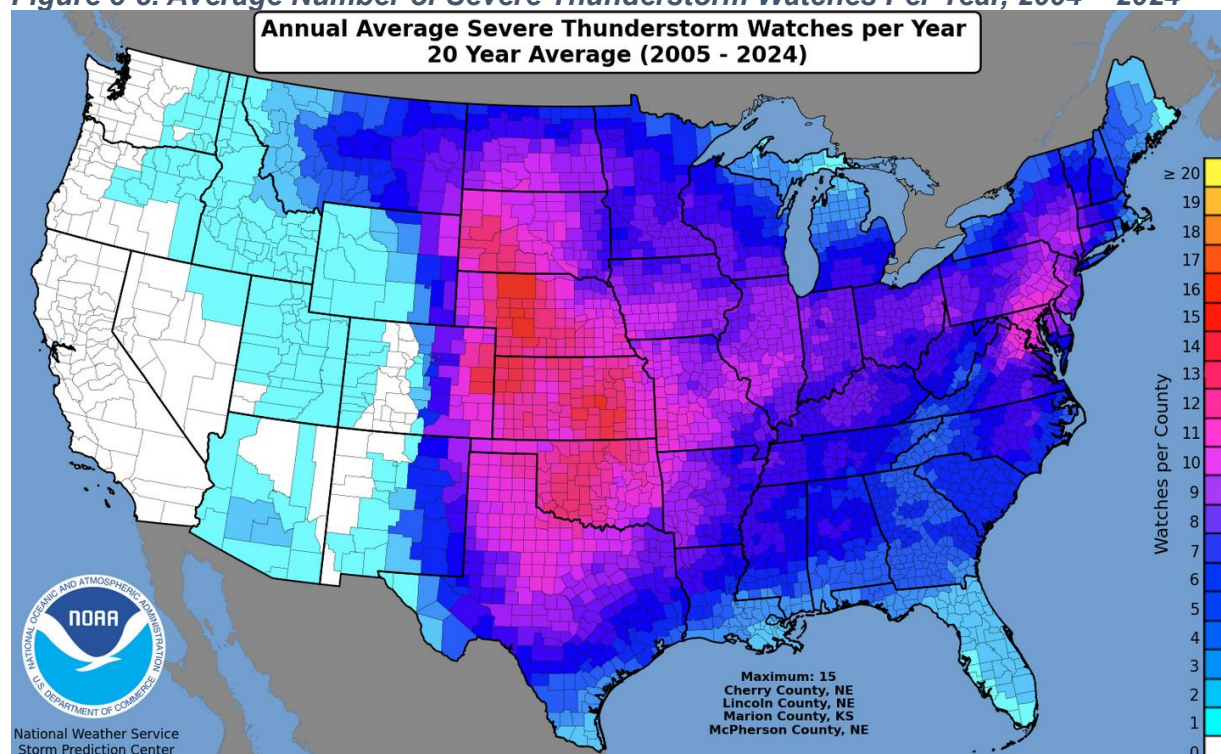
- Hail of one inch in diameter or larger
- Wind gusts to 58 mph or greater
- One or more tornadoes

NOAA's Storm Prediction Center, along with the NWS, tracks the annual average of severe thunderstorm watches per year by county (**Figure 3-8**), and can issue advisory messages based on forecasts and observation, including:

- **Severe Thunderstorm Watch:** Issued to alert people to the possibility of a severe thunderstorm developing in the area. The expected timeframe for these storms is three to six hours.
- **Severe Thunderstorm Warning:** Issued when severe thunderstorms are imminent. The warning is highly localized and covers parts of one to several counties.

³¹ Eastern Research Group, Inc., *ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan*, September 2023, https://www.mass.gov/files/documents/2023/10/10/2023%20ResilientMass%20Plan_10.10.23%20508.pdf

Figure 3-8. Average Number of Severe Thunderstorm Watches Per Year, 2004 – 2024

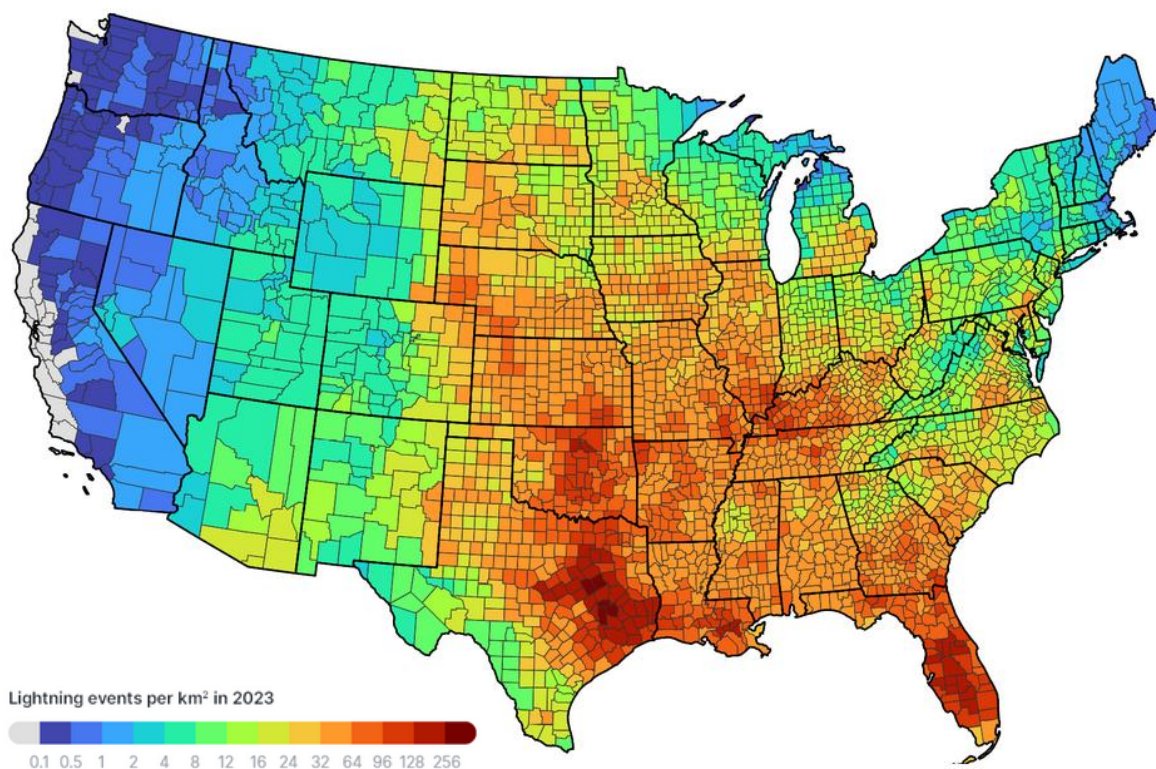


Source: <https://www.spc.noaa.gov/wcm/20ysvra.png>.

All thunderstorms produce lightning, and therefore all thunderstorms are dangerous. Lightning often strikes outside of areas where it is raining and may occur as far as 10 miles away from rainfall. It can strike from any part of the storm and may even strike after the storm has seemed to pass. Hundreds of people across the nation are injured annually by lightning, most commonly when they are moving to a safe place but have waited too long to seek shelter. The City of New Bedford can be uniformly affected by lightning and thunderstorms, dependent upon the time of day, existing and incoming weather conditions, and time of year.

Vaisala, a global leader in weather, environmental, and industrial measurements, publishes Annual Lightning Reports. The data comes from the Vaisala U.S. National Lightning Detection Network, the longest continuously operating and most scientifically valid lightning detection network in the world. **Figure 3-9** shows the average number of recorded lightning events over the period covered.

Figure 3-9. Lightning Events per kilometer (km)², 2016 – 2023



Source: <https://www.vaisala.com/en/press-releases/2024-01/report-reveals-most-lightning-prone-us-metropolitan-areas-and-risk-wind-farms>.

Building construction, location, and nearby trees or other tall structures will have a large impact on how vulnerable an individual facility is to a lightning strike. A rough estimate of a structure's likelihood of being struck by lightning can be calculated using the structure's ground surface area, height, and striking distance between the downward-moving tip of the stepped leader (negatively charged channel jumping from cloud to earth) and the object. In general, buildings are more likely to be struck by lightning if they are located on high ground or if they have tall protrusions such as steeples or poles which the stepped leader can jump to. Electrical and communications utilities are also vulnerable to direct lightning strikes. Damage to these lines has the potential to cause power and communications outages for businesses, residences, and critical facilities.

Based on the highly likely frequency and limited severity of lightning and thunderstorm events over time, as confirmed by the Technical Committee and LHMC, the risk of lightning and thunderstorms is considered moderate in New Bedford.

Hail

Hail is formed in towering cumulonimbus clouds (thunderheads) when strong updrafts carry water droplets to a height at which they freeze. Eventually, these ice particles become too heavy for the updraft to hold up, and they fall to the ground at speeds of up to 120 mph. Hail falls along paths called swaths, which can vary from a few square acres to up to 10 miles wide and 100

miles long. The City of New Bedford can be uniformly affected by hail, dependent upon the existing and incoming weather conditions, and time of year.

The Tornado and Storm Research Organisation (TORRO) developed the TORRO Hailstorm Intensity Scale in 1986 to measure the intensity of hailstorms. **Table 3-14** categorizes hail by size code, description and typical damage.

Table 3-14. TORRO Hail Intensity Scale

Scale	Intensity Category	Description	Typical Diameter (inches)	Typical Damage Impacts
H0	Hard Hail	Pea	0.25	No damage
H1	Potentially Damaging	Mothball	0.50	Slight general damage to plants, crops
H2	Significant	Marble/Grape	0.75	Significant damage to fruit, crops, vegetation
H3	Severe	Walnut	1.25	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	Pigeon's egg > Squash ball	1.50	Widespread glass damage, vehicle bodywork damage
H5	Destructive	Golf ball > Pullet's egg	1.75	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	Hen's egg	2.0	Bodywork of grounded aircraft dented; brick walls pitted
H7	Destructive	Tennis ball > Cricket ball	2.5	Severe roof damage, risk of serious injuries
H8	Destructive	Large orange > softball	2.75	Severe damage to aircraft
H9	Super Hailstorms	Grapefruit	3.0	Extensive structural damage. Risk of seven even fatal injuries to persons caught in the open
H10	Super Hailstorms	Melon	4.0	Extensive structural damage. Risk of seven even fatal injuries to persons caught in the open

Source: TORRO.

Structure vulnerability to hail is determined mainly by construction and exposure. Metal siding and roofing is better able to stand up to the damages of a hailstorm than many other materials, although it may also be damaged by denting. Exposed windows and vehicles are also susceptible to damage. Crops are extremely susceptible to hailstorm damage, as even the smallest hail stones can rip apart unsheltered vegetation.

Review of NOAA's NCEI did not include any known records for hail events since 2016. Based on the possible frequency and negligible severity of hail events over time, as confirmed by the Technical Committee and LHMC, the risk of hail is considered low in New Bedford.

Property/People at Risk from Wind-Related Hazards

Wind events are quite normal in New England and happen regularly each year. In the winter months, the City is susceptible to high winds from Nor'easters and winter storms. Spring and summer usually bring a number of severe thunderstorms to the region. During the late summer and fall seasons, the area is at risk from a hurricane or tropical storm event.

Hurricane surge inundation areas for Categories 1 through 4 hurricanes striking the coast were developed by NOAA using the Sea Lake and Overland Surge from Hurricanes (SLOSH) Model. Map 2-6 (Appendix A) shows those areas expected to be inundated by Categories 1 through 4 hurricanes.

HW performed several Vulnerability Analyses that considered those areas located within the worst-case hurricane surge areas for Categories 1 through 4 hurricanes (SLOSH) Model. Section 3.7.3 (Economic Vulnerability) includes breakdowns of the number of parcels (by land use type) impacted by the various SLOSH categories, complemented by the potential economic impacts of each. Below is a breakdown of the critical facilities and vulnerable populations/environmental justice areas for the same.

Category 1 Hurricanes

Critical facilities affected:

- Irish Monument Sea Wall (East Rodney French Boulevard)

Vulnerable populations/Environmental Justice areas affected:

- Census Tract 6525/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6526/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6527/Block Group 3/EJ Criteria: Minority, Income
- Census Tract 6526/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6527/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6527/Block Group 2/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6527/Block Group 4/EJ Criteria: Minority, Income

Category 2 Hurricanes

Critical facilities affected:

- Brittany Global Technologies Corp./ATI Allegheny Ludlum, Inc. (East Rodney French Boulevard)

Category 3 Hurricanes

Critical facilities affected:

- Eversource Station 681 (Bolton Street)

Vulnerable populations/Environmental Justice areas affected:

- Census Tract 6519/Block Group 1/EJ Criteria: Minority, Income

Category 4 Hurricanes

Critical facilities affected:

- MA Environmental Police/Seastreak Ferry Terminal (State Pier)

- Fire Station No. 6 (Purchase Street, Emergency Management Department Office)
- New Bedford Waste Water Treatment Plant (South Rodney French Boulevard)
- New Bedford Cable Access (South Rodney French Boulevard)
- U.S. Coast Guard Marine Safety Office (South Rodney French Boulevard)
- U.S. Post Office South (Orchard Street)
- Environmental Protection Agency/USACE Dewatering Facility (Sawyer Street)
- USACE Hurricane Barrier System - Harbor Segment (Clarks Cove)
- Acushnet Company – Ball Plant C (Belleville Avenue)
- Acushnet Rubber Company – Building B (Belleville Avenue)
- Store Capitol (Herman Melville Boulevard)
- Waterfront Cold Storage (Fish Island)
- Coyne Textile Services (Howard Avenue)
- Crystal Ice Company, Inc. (Front Street)
- Foley Fish/M. F. Foley, Inc. (Wright Street)
- Maritime Terminal Inc. (Macarthur Drive)
- North East Silicon Technologies, Inc. (David Street)
- Northern Wind, Inc. (Hasset Street)
- NSTAR – New Bedford Service Center (Macarthur Drive)
- New Bedford Foss Marine Terminal (Pine Street)
- Southcoast Plating Inc. (Coffin Avenue)
- Maritime West (Macarthur Drive)
- Standard Times (Elm Street)
- Pricerite (Elm Street)
- Market Basket (Sawyer Street)
- Save-A-Lot Food Stores (Cove Road)
- A & J Seabra Supermarket (Rockdale Avenue)
- CVS Pharmacy (Acushnet Avenue)
- PharmaHealth Pharmacy (Acushnet Avenue)
- Rite Aid Pharmacy (Cove Road)
- Rite Aid Pharmacy (Acushnet Avenue)
- USACE Hurricane Barrier System Harbor Segment (Harbor Side)
- Popes Island Wastewater Pump Station (Popes Island)
- Wamsutta Street Wastewater Pump Station
- East Rodney French Boulevard Wastewater Pump Station
- Front Street Wastewater Pump Station
- Coggeshall Street Wastewater Pump Station
- Belleville Avenue Wastewater Pump Station
- Howard Avenue Pump Station
- Cove Road Wastewater Pump Station
- State Pier
- Elm Street Bridge (Macarthur Drive)
- Howland Street Wastewater Pump Station
- New Bedford Marine Commerce Terminal (Wright Street)
- North Terminal Pier Facility (Hervey Tichon Avenue)
- Port Authority Facilities – Piers and Bulkheads (Pier 3)

- Port Authority Facilities – Piers and Bulkheads (Steamship Pier)
- Port Authority Facilities – Piers and Bulkheads (Leonard’s Wharf)
- Port Authority Facilities – Piers and Bulkheads (Homer’s Wharf)
- Route 18 Pedestrian Bridge
- SCR/MBTA Track Facilities and Stations (Whale’s Tooth)
- SCR/MBTA Layover Facility (Wamsutta Avenue)
- North Terminal Pier Facilities
- South Terminal Pier Facilities
- Eliot New Bedford Emergency Residence (Acushnet Avenue)
- New Bedford WWTP - Veolia Water NE LLC (South Rodney French Boulevard)
- Sea Fuels Marine Services, Inc. (Co-op Wharf)
- NB Marine Commerce Terminal (Wright Street)
- Eversource Station 682 (Bonney Street)
- T-Mobile NEH0011A DAS (Bonnet Street)
- Finicky Pet Food, Inc. (Blackmer Street)
- Eversource Station 694 (Second Street)
- Ice Cube Cold Storage State Pier (State Pier)
- Northern Pelagic Group LLC (Fish Island)
- Eastern Fisheries (Hervey Tichon Avenue)
- Eversource Station 685 Depot (Pearl Street)
- Ryder Transportation Services #1122A (Acushnet Avenue)
- Eversource Station 695 (River Road)
- North Coast Seafoods (Blackmer Street)
- Sea Watch International-NB Plant (Antonio Costa Boulevard)
- Ice Cube Maritime (Macarthur Boulevard)
- Eversource Station 607/611 (Pine Street)
- Brodeur Machine Co., Inc. (Wood Street)
- Northern Wind LLC (Macarthur Boulevard)
- Pier Fish Company, Inc. (Conway Street)
- Offshore Substation (Wright Street)

Vulnerable populations/Environmental Justice areas affected:

- Alma del Mar Charter School (Medeira Avenue)
- DeValles School (Katherine Street)
- Gomes School (S. Second Street)
- Roosevelt Middle School (Frederick Street)
- UMASS Dartmouth School for Marine Science and Technology (South Rodney French Boulevard)
- Boa Vista Towers (S. Second Street)
- Harborview Towers East (S. Second Street)
- Tripp Towers Apartment (Ruth Street)
- Whaler’s Cove Assisted Living Facility (Riverside Avenue)
- There is a Solution, Inc. – Tyler’s Home (Jouvette Street)
- WRAP House (County Street)
- There is a Solution, Inc. – Max & Caleb’s Home (Rockland Street)

- Fairfield Inn & Suites (Macarthur Drive)
- 162 Sawyer Street Lodging
- Ellen's House (Belleville Avenue)
- Tarkiln Hill Lodging
- New Life Food Pantry (Cove Road)
- 21 Galleon Avenue (County Street)
- PECUSA Saint Martin's Food Pantry (County Street)
- Pentecostal Assembly (Sawyer Street)
- There is a Solution, Inc. – Ashley's Home (Rivet Street)
- Castillo In-home Daycare (Orchard Street)
- DeValles Daycare Program (Crapo Street)
- Lara-Bianco In-home Daycare (Cove Road)
- Blessed Angels Academy (Cove Road)
- Crayon Campus – Howland (Orchard Street)
- North Star LC – Schooner Program (Rockdale Avenue)
- Sunshine's Place, Inc. (Acushnet Avenue)
- New Bedford YMCA Preschool & School Age (Water Street)
- Dennison Memorial School Age Daycare (S. First Street)
- Census Tract 6503/Block Group 2/EJ Criteria: Minority
- Census Tract 6511/Block Group 1/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6518/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6518/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6519/Block Group 2/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6520/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6520/Block Group 3/EJ Criteria: Minority, Income
- Census Tract 6504/Block Group 1/EJ Criteria: Minority
- Census Tract 6506/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6503/Block Group 3/EJ Criteria: Minority, Income
- Census Tract 6504/Block Group 3/EJ Criteria: Minority, Income
- Census Tract 6504/Block Group 4/EJ Criteria: Minority
- Census Tract 6506/Block Group 3/EJ Criteria: Minority, Income
- Census Tract 6507/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6507/Block Group 2/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6521/Block Group 3/EJ Criteria: Minority
- Census Tract 6512/Block Group 1/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6525/Block Group 1/EJ Criteria: Minority
- Census Tract 6512/Block Group 1/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6512/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6513/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6524/Block Group 1/EJ Criteria: Minority, Income, English Isolation

Overview Summary of Wind-Related Hazard Impacts:

Social/Economic vulnerabilities include:

- School closures/delay can disrupt student learning and working families in general with child care needs.

- Power outages can result in business closures resulting in loss of revenue.
- Lightning and hail can directly strike individuals causing injuries/death.
- Mental health impacts can result from the experience of a tornado, the loss of personal belongings, and the loss of loved ones.

Environmental vulnerabilities include:

- Extended power outages can lead to disruptions in municipal wastewater services leading to potential contamination concerns.
- Water-related elements of hurricanes can cause flooding.

Infrastructure/Built Environment vulnerabilities include:

- Transportation network impacts include blocked roadways from wind-blown debris/downed trees and wires leading to travel disruptions (including emergency response) and accidents.
- Downed trees/wires can lead to interruptions/loss of power and communications.
- Water-related elements of hurricanes can cause flooding.
- High winds and lightning can cause impacts such as downed trees onto structures, vehicles, roadways, and power lines resulting in disruptions in travel, communications, and vital services.
- Hail alone can cause significant property damage to structures, roofs, and windows.
- Wind-related elements of hurricanes can impact older buildings damaging roofs, windows, and cause structural failure.

Probability of Future Occurrence of Wind-Related Hazards

As previously stated, wind events are quite normal in New England, as evidenced throughout the year. Given the increase in frequency and severity of high wind events realized over the last several years, the City is considered to be at moderate risk for future impacts from hurricanes and tropical storm events, moderate risk for future impacts from high wind events, low risk for future impacts from tornadoes and waterspouts, moderate risk for future impacts from lightning and thunderstorms, and low risk for future impacts from hail events.

3.5.4. Geologic Related Hazards

The hazards that present the least risk to southeastern Massachusetts are geologic hazards such as earthquakes, landslides, and tsunamis.

Earthquakes

An earthquake is the sudden release of strain energy in the Earth's crust, resulting in energy waves that radiate outward from the earthquake source. The point on the Earth's surface directly above the focus is called the earthquake epicenter. The severity of earthquake effects is dependent upon magnitude of energy released, proximity to the epicenter, depth to the epicenter, duration, geologic characteristics, and type of ground motion.

When earthquakes occur, much of the damage is a result of structures falling under the stress created by the ground movement. Another significant effect is damage to the public and private infrastructure (i.e., water service, communication lines, drainage system). Because earthquakes are highly localized it is difficult to assign regional boundaries that share the same relative degree of risk. The United States Geological Service (USGS) lists the region as one of low risk for earthquakes, although small-scale earthquakes (under 3.5 on the Richter Scale) are common in the region.

Measuring the Intensity of an Earthquake

An earthquake's severity can be expressed in terms of intensity and magnitude. Intensity is defined by the observed effects of ground shaking on people, buildings, and the natural environment, which varies dependent-upon the location of the observer with respect to the epicenter. Currently in the U.S., the Modified Mercalli (MMI) Intensity Scale is used to evaluate the effects of earthquakes; specifically, it describes how strongly an earthquake was felt at a particular location (**Table 3-15**). Magnitude is defined by the amount of seismic energy released at the hypocenter of the earthquake, based on the amplitude of the earthquake waves recorded on seismographs (using the Richter Magnitude Scale, **Table 3-16**). Another measure of the relative strength of an earthquake is the expanse of area the shaking is noticed.

Table 3-15. Modified Mercalli Intensity Scale

Mercalli Intensity	Description
I	Felt by very few people, barely noticeable.
II	Felt by few people, especially on upper floors.
III	Noticeable indoors, especially on upper floors, but may not be recognized as an earthquake.
IV	Felt by many indoors, few outdoors. May feel like passing truck.
V	Felt by almost everyone, people have trouble standing. Small objects move, trees and poles may shake.
VI	Felt by everyone, people have trouble standing. Heavy furniture can move, plaster can fall off walls. Chimneys may be slightly damaged.
VII	People have difficulty standing. Drivers feel cars shaking. Some furniture breaks. Loose bricks fall from buildings. Damage is slight to moderate in well-built buildings; considerable in poorly built buildings.
VIII	Buildings suffer slight damage if well-built; severe damage if poorly built. Some walls collapse.
IX	Considerable damage to specially built structures; buildings shift off their foundations. The ground cracks. Landslides may occur.
X	Most buildings and their foundations are destroyed. Some bridges are destroyed. Dams are seriously damaged. Large landslides occur. Water is thrown on the banks of canals, rivers, and lakes. The ground cracks in large areas.
XI	Most buildings collapse. Some bridges are destroyed. Large cracks appear in the ground. Underground pipelines are destroyed.
XII	Almost everything is destroyed. Objects are thrown into the air. The ground moves in waves or ripples. Large amounts of rock may move.

Source: USGS, 2012

Table 3-16. Richter Magnitude Scale

Richter Magnitude	Earthquake Effects
2.5 or less	Not felt or felt mildly near the epicenter, but can be recorded by 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 a lot of damage in very populated areas
7.0 to 7.9	Major earthquake; serious damage
8.0 or greater	Great earthquake; can totally destroy communities near the epicenter

Source: USGS, 2012

There have been no recorded earthquakes in New Bedford since 2016. Map I-1 Earthquake Incidence indicates that there were three recorded earthquakes in New Bedford for the period 1989 – 2014. Since 2014, there have also been four recorded earthquakes with epicenters located outside of New Bedford:

- January 9, 2014, Freetown, MA/1.9 magnitude
- May 3, 2014, Acushnet, MA/1.1 magnitude
- May 9, 2014, Dartmouth, MA/1.6 magnitude
- October 1, 2017, Acushnet, MA/1.2 magnitude

Also indicated on Map I-1 is New Bedford's classification within Peak Ground Acceleration (PGA) zones. The entire City falls within the 1 to 3% PGA classified as "light shaking, no damage." The PGA zones are based on modeling data that indicates areas where there is a 10% chance in the next fifty years of an earthquake exceeding the PGA for that zone. 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 actual risk is high because of how old the buildings are and because few structures have been built to withstand earthquakes. Critical infrastructure such as bridges and dams would be vulnerable. The City is equally at risk for earthquakes compared to other Massachusetts communities.

Based on the possible frequency and negligible severity of earthquake events over time, as confirmed by the Technical Committee and LHMC, the risk of earthquakes is considered low in New Bedford.

Climate Change Impacts on Earthquakes³²

Research does not identify effects of climate change on the earthquake hazard in Massachusetts.

Landslides

Landslides include a wide range of ground movements, including rock falls, deep failure of slopes, and shallow debris flows. Often caused by a combination of unfavorable geologic conditions (silt clay or thick till deposits), the most common types in Massachusetts include transitional debris slides, rotational slides, and debris flows. Landslides are often caused by other natural hazards, such as earthquakes, heavy rain, floods, and wildfires. Landslides are more likely during periods of higher-than-average rainfall because the ground becomes

³² Eastern Research Group, Inc., *ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan*, September 2023, https://www.mass.gov/files/documents/2023/10/10/2023%20ResilientMass%20Plan_10.10.23%20508.pdf

saturated. Variables that influence landslides include soil properties, topography, slope, and historical incidence. New Bedford does not have a record of any landslides in the City.

There have been no recorded landslides in New Bedford since 2016. Based on the unlikely frequency and negligible severity of landslides over time, as confirmed by the Technical Committee and LHMC, the risk of future landslides is considered low in New Bedford.

*Climate Change Impacts on Landslides*³³

More frequent and intense storms will result in soil saturation, leading to more frequent landslides and mudflows. The projected increased risk of frequency and intensity of drought and wildfires will reduce the vegetation cover in the Commonwealth, which leads to loss of soil stability and an increase in the probability of landslides.

Tsunamis

A tsunami is a series of ocean waves, typically caused by movement in the ocean floor generated by seismic or volcanic activity or by underwater landslides. Although all coastal areas of Massachusetts are exposed to the threat of tsunamis, the probability is very low. No significant tsunami has ever struck the Massachusetts coast.³⁴

There have been no recorded tsunamis in New Bedford since 2016. Based on the unlikely frequency and negligible severity of tsunami events over time, as confirmed by the Technical Committee and LHMC, the risk of future tsunamis is considered low in New Bedford.

Climate Change Impacts on Tsunamis

Sea level rise and rising temperatures will accelerate ice melts and collapse glaciers across the world, which may cause massive landslides (or glacial earthquakes) that may trigger tsunamis.³⁵

Property/People at Risk from Geologic-Related Hazards

Because earthquakes have been detected all over New England, seismologists suspect that a strong earthquake could be centered anywhere in the region. Massachusetts is not near tectonic plate boundaries, but it is still susceptible to earthquakes that can occur within the interior North American Plate.³⁶

All structures in New Bedford are potentially vulnerable to seismic ground shaking. The most vulnerable are historic buildings constructed of unreinforced masonry. Other critical facilities or infrastructure at risk are unknown; their construction determines their ability to withstand seismic shaking. Since building codes do not require seismic proofing, the impact would be expected to be severe if an earthquake were to hit the City. The City of New Bedford can be uniformly affected by earthquakes.

The City of New Bedford is not without terrain differential but for the most part the underlying soil layers are stable throughout the city and have remained so for many decades. The greatest threat for landslides is likely to be associated with retaining walls that could reach a point of deterioration that failure is a possibility. Such failures may result in limited landslides affecting

³³ Ibid.

³⁴ Ibid.

³⁵ Ibid.

³⁶ Ibid.

the area in proximity to the retaining wall, perhaps prompting the need for periodic inspection of significant retaining wall structures throughout the City.

The State defines the area exposed to tsunami hazards as a one-mile buffer along the coast and inland. The populations most vulnerable to a tsunami are the elderly, disabled, and very young who reside in low-lying coastal areas. Tsunami exposure along the Commonwealth's coast is unlikely; however, if an event were to occur, it could have extensive and prolonged impacts to the economy, coastal ecosystems, and residents living along the coastline.³⁷

Overview Summary of Geologic-Related Hazard Impacts:

Social/Economic vulnerabilities include:

- All geologic-related hazards can cause displacement of individuals as homes and workplaces become uninhabitable.

Environmental vulnerabilities include:

- All geologic-related hazards can trigger cascading hazards such as the release of hazardous materials.

Infrastructure/Built Environment vulnerabilities include:

- All geologic-related hazards can cause transportation network impacts including compromised roads and bridges resulting in disruptions to residents' mobility, emergency services, and supply chains.
- All geologic-related hazards can cause disruptions to municipal services (i.e., water service, communications, and drainage systems).

Probability of Future Occurrence of Geologic-Related Hazards

The Commonwealth has a 2% chance that an earthquake with a peak horizontal acceleration of 50 km above magnitude will occur within the next 50 years. A "G" is the average acceleration produced by gravity at the earth's surface (9.80665 meters per second squared). This measurement describes ground shaking during earthquakes. New England is not considered to be a hot spot for earthquakes, especially when compared to the western United States. The City is considered to be at low risk for shaking from future earthquakes. Since landslides are often triggered by other natural hazard events, their frequency is also related to the frequency of those other hazards. The City is considered to be at low risk for landslides. Because the frequency of tsunamis is very low and the area impacted considered to be relatively small, the City is considered to be at low risk for tsunamis.

3.5.5. Extreme Heat-Related Hazards

Extreme heat occurs when a system of high atmospheric pressure moves into an area. In such a high-pressure system, air from upper levels of the atmosphere is pulled toward the ground, where it becomes compressed and increases temperatures. This high concentration of pressure makes it difficult for other weather systems to move into the area, which is why periods of extreme heat can last for several days, or even weeks. The longer the system stays in an area, the hotter temperatures become. The high pressure inhibits winds, making them faint to almost non-existent. Because the high-pressure system also prevents clouds from entering a region, sunlight can become punishing, increasing temperatures even more. The combination of all

³⁷ Ibid.

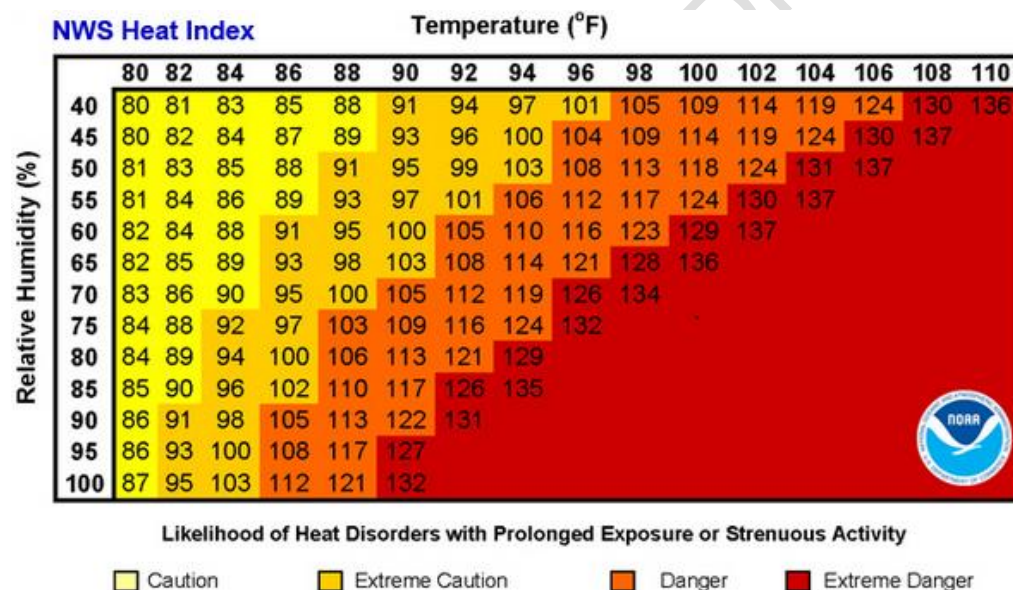
these factors come together to create what is known as a heat wave. Typically, a heat wave can last two or more days with significant impacts on human health and/or infrastructure. Heat waves can also cause catastrophic crop failures, cause roads to crumble, and can cause the ground around residences to dry out, leaving them susceptible to subsidence.

There were no extreme-heat events reported to the NOAA NCEI severe events database. However, more intense and prolonged heat waves have been experienced more recently and are predicted, associated with climate change. The City of New Bedford can expect to be uniformly affected by extreme heat-related conditions

NOAA's NWS maintains a Heat Index (**Figure 3-10**), which is a measure of how hot it really feels when relative humidity is also factored in with actual air temperatures. As an example, if the air temperature is 96°F and the relative humidity is 65%, the heat index, how hot it feels, is 121°F. The NWS also initiates alert procedures when the Heat Index is expected to exceed 105° to 110°F (depending on local climate) for at least two consecutive days:

- **Caution:** Fatigue possible
- **Extreme Caution:** Sunstroke, muscle cramps, and/or heat exhaustion possible
- **Danger:** Sunstroke, muscle cramps, and/or heat exhaustion likely
- **Extreme Danger:** Heat stroke or sunstroke highly likely

Figure 3-10. NOAA's National Weather Service Heat Index



Source: <https://www.weather.gov/phi/heatcond>.

Populations most vulnerable to extreme temperatures include the elderly due to age, health conditions and limited mobility; infants and children up to four years old; individuals who are physically ill; people unable to afford proper heating and cooling; and people who overexert during extreme temperatures or experience hypothermia during cold weather.

Based on the highly likely frequency and critical severity of extreme heat events, as confirmed by the Technical Committee and LHMC, the risk of extreme heat is considered high in New Bedford.

Climate Change Impacts on Extreme Heat

More intense and prolonged heat waves are predicted with climate change. The frequency of days with high temperatures at or above 90°F has already increased (Vallee and Giuliano, 2014). For summer, the number of days expected to be above 90°F doubles (low scenario) or triples (high scenario) from the Baseline (1970 – 2000) to 2030s for the Taunton and Buzzards Bay Basins. Extreme heat events (i.e., heat waves) will increase, endangering those who work outdoors, the elderly, the homeless, those with chronic health conditions, and people who cannot afford air conditioning.

MVP Climate Change Projections on Extreme Heat

As mentioned previously, climate change impacts will result in increased average temperature, so the number of extreme heat days is expected to increase. New Bedford should experience more days with warmer temperatures, particularly days over 90°F, and thus, will expend more energy on cooling. **Table 3-17** includes temperature projections (Annual and Summer) with a Baseline (1971 – 2000) through mid-century (2050s) for the Taunton and Buzzards Bay Basins.

Table 3-17. Extreme Heat Temperature Projections, Taunton and Buzzards Bay Basins

Climate Parameter	Baseline 1970 - 2000	Projected Change in 2030s	Mid-Century 2050s
Average Annual Temperature (°F) <i>Taunton Basin</i> <i>Buzzards Bay Basin</i>	49.9 50.7	51.9 – 53.6 52.6 – 54.3	52.5 – 55.8 53.3 – 56.5
Average Summer Temperature (°F) <i>Taunton Basin</i> <i>Buzzards Bay Basin</i>	69.6 70.1	71.3 – 73.2 71.7 – 73.8	72.8 – 76.0 72.2 – 76.2
Maximum Annual Temperature (°F) <i>Taunton Bay Basin</i> <i>Buzzards Bay Basin</i>	60.3 59.5	62.2 – 64.0 61.4 – 63.2	62.7 – 66.2 61.9 – 65.3
Maximum Summer Temperature (°F) <i>Taunton Basin</i> <i>Buzzards Bay Basin</i>	80.5 79.2	82.1 – 84.3 80.6 – 82.8	82.6 – 86.7 81.1 – 85.2
Annual Days with Maximum Temperature Over 90 °F <i>Taunton Basin</i> <i>Buzzards Bay Basin</i>	7 4	13 - 22 8 - 14	15 - 37 7 - 25
Summer Days with Maximum Temperature Over 90 °F <i>Taunton Bay Basin</i> <i>Buzzards Bay Basin</i>	7 4	11 - 19 7 - 13	13 - 32 8 - 23
Annual Cooling Degree-Days (Base 65 °F) <i>Taunton Basin</i> <i>Buzzards Bay Basin</i>	580 622	782 - 991 813 – 1,026	840 – 1,285 864 – 1,305
Summer Cooling Degree-Days (Base 65 °F)	505 537	631 - 817 657 – 840	665 – 1,022 690 – 1,049

Property/People at Risk from Extreme Heat-Related Hazards

The City is uniformly vulnerable to extreme heat with varying impacts based on the degree of moisture deficiency, the duration, and the size and location of the affected area.

Overview Summary of Extreme Heat-Related Hazard Impacts:

Social/Economic vulnerabilities include:

- Impacts on vulnerable populations (e.g., elderly, people experiencing homelessness, people with special needs, and people with chronic health conditions) will be exacerbated. Extreme heat-related conditions are associated with the potential for cardiovascular and respiratory complications.
- It can endanger those who work outdoors.
- Increased demand for comfort and/or cooling stations (emergency services).
- Stressors (mental health) on those who do not have access to and/or are unable to afford air conditioning.
- Increased demands on emergency personnel and medical facilities.

Environmental vulnerabilities include:

- Particularly damaging to agriculture (crops/livestock), which can stress water supply sources and lead to economic impacts and food security concerns.
- Excessively dry ground conditions can be susceptible to subsidence and exacerbate stormwater runoff.
- Compromised air quality conditions can result in increased hospital admissions for heat-related illnesses.
- Potential for drought(s) to exacerbate conditions for brushfires and wildfires.

Infrastructure/Built Environment vulnerabilities include:

- Increased electricity demand for cooling, which can lower the ability of transmission lines to carry power.
- Impacts on transportation systems, as higher temperatures can:
 - Cause pavement to soften and expand, causing rutting and potholes.
 - Stress bridge joints.
 - Limit construction activities outdoors.
- Disruptions to water distribution systems due to limited supply of water sources and/or impacts to the quality of water sources.

Probability of Future Occurrence of Extreme Heat-Related Hazards

For this update, New Bedford is considered at high risk for future extreme heat-related events.

3.5.6. Drought Related Hazards

Drought is a temporary irregularity characterized by long durations of below normal precipitation. Drought occurs in virtually all climatic zones yet varies significantly from one region to another, due to its relationship to normal precipitation in that specific region. Drought can affect agriculture, water supply, aquatic ecology, wildlife, and plant life.

Drought can be defined or grouped by the following:

- Meteorological drought is a measure of departure of precipitation from normal, defined solely on the degree of dryness.
- Agricultural drought links various characteristics of meteorological (or hydrological) drought to agricultural impacts with a focus on precipitation shortages, differences between actual and potential evapotranspiration, soil water deficits, reduced groundwater or reservoir levels, etc.
- Hydrological drought is associated with the effects of precipitation (including snowfall) shortfalls on surface or subsurface water supply and when water supplies are below normal.
- Socioeconomic drought is associated with the supply and demand of some economic goods with elements of meteorological, hydrological, and agricultural drought.

Table 3-18 records the various significant drought-related hazard events that have occurred in and around the City of New Bedford. Unless otherwise noted, all events are specific to Bristol County.

Table 3-18. Significant Drought-Related Events, Bristol County

Date	Level/ Description	Damages	Notes
Drought			
8/23/2016	D2		
9/1/2016	D3		
10/1/2016	D3		
11/1/2016	D1		
12/1/2016	D1		

Source: NOAA National Centers for Environmental Information, www.ncdc.noaa.gov. Data is current through June 2023.

The U.S. Drought Monitor includes five classifications for drought, including:

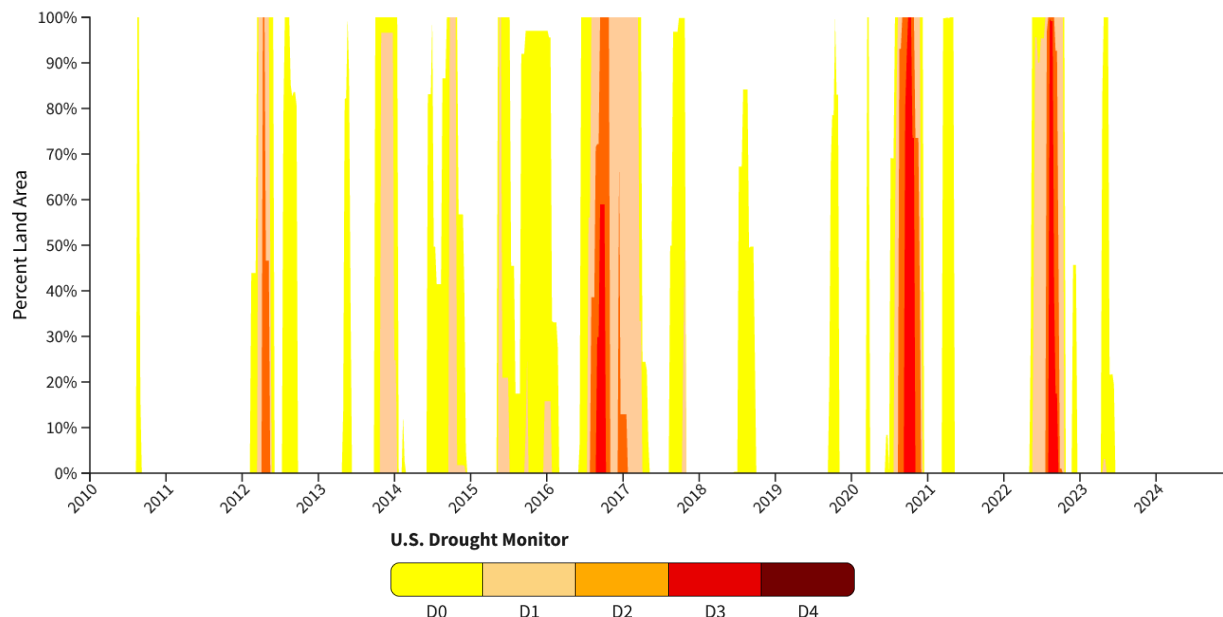
- **DO (Abnormally Dry):** Short-term dryness slowing plant and crop progress
- **D1 (Moderate Drought):** Some damage to crops, voluntary water use restrictions requested
- **D2 (Severe Drought):** Crop and pasture losses likely, water restrictions imposed
- **D3 (Extreme Drought):** Major crop and pasture losses, widespread water restrictions
- **D4 (Exceptional Drought):** Widespread crop and pasture losses, water shortages creating emergencies

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 water users such as golf courses or industrial processes. Drought can also affect groundwater sources and surface water reservoir supplies. The New Bedford municipal water system has not experienced a major drought or even instituted a water ban, but, under the Massachusetts Water Management Act, has prepared a drought plan. Overall, all of New Bedford is equally at risk for experiencing the effects of a drought.

The extent of a drought in New Bedford would vary, depending on the severity and timing of the drought. A minor drought may require outdoor watering restrictions, while a major drought could result in drinking water shortages, damage to plants and wildlife and increased wildfire risk. The

extended drought in 2016 – 2017 was the most significant drought in recent years. The U.S. Drought Monitor shows that Bristol County has experienced several drought events across a range of intensities, particularly in 2016 – 2017, 2020, and 2022 (**Figure 3-11**).

Figure 3-11. Drought Occurrences, Bristol County 2010 – 2024



Source: <https://www.drought.gov/states/massachusetts/county/Bristol>.

Based on the likely frequency and limited severity of drought events more recently as reported by NOAA's NCEI and confirmed by the Technical Committee and LHMC, the risk of drought is considered moderate in New Bedford.

Climate Change Impacts on Drought-Related Hazards³⁸

Rising temperatures and changes in precipitation patterns are expected to increase the length, frequency, and intensity of droughts. Reduced snowpack will affect the ability of groundwater supplies to recharge and the availability of water for the growing period.

Property/People at Risk from Drought-Related Hazards³⁹

The entire Commonwealth is exposed to drought. The most at risk assets include agriculture, natural lands and waters, and groundwater and aquifers.

Overview Summary of Drought-Related Hazard Impacts:

Social/Economic vulnerabilities include:

- Agricultural operations experience loss of revenue.

Environmental vulnerabilities include:

- Agricultural operations/trees/landscaping become stressed and susceptible to insects.

³⁸ Ibid.

³⁹ Ibid.

- Irrigation use increases impacting water supplies.

Infrastructure/Built Environment vulnerabilities include:

- Fire danger (wildfires/brushfires) is elevated.

Probability of Future Occurrence of Drought-Related Hazards

Although Massachusetts is relatively small, it has several distinct regions that experience significantly different weather patterns and react differently to the amounts of precipitation they receive.⁴⁰ Outside of 2016, very few drought events have occurred in Bristol County. For this 2025 Update, New Bedford is considered at moderate risk for future drought-related events.

3.5.7. Wildfire/Brushfire-Related Hazards

Wildfires and brushfires are defined as any non-structural fire that occurs in the vegetative wildland, including grass, shrub, leaf litter and debris, and forested tree fuels. Most susceptible to the hazard are pitch pine, scrub oak, and oak forests, which are the most flammable vegetative fuels. Small wildfires are common throughout Massachusetts, especially when drought or near-drought conditions warrant, and the potential for spreading wildfires is real.

Historically, the New Bedford Fire Department has only responded to a limited number of smaller-scale wildfire and brushfire incidents (**Table 3-19**). Open burning is illegal in New Bedford, so the Fire Department will respond when there are reports of illegal burning. The Fire Department also responds to brushfires in surrounding towns on a mutual aid basis.

Table 3-19. Significant Wildfire/Brushfire-Related Events, Bristol County

Year	Number of Events
2016	38
2017	33
2018	19
2019	22
2020	25
2021	19
2022	22
2023	15
2024	10

Source: New Bedford Fire Department, data current through September 30, 2024.

Wildfires are a natural part of the southeastern Massachusetts ecosystem. Fires keep the forest floor clean of debris, encourage the growth of grasses that serve as wildlife feed, and ensure that trees have plenty of room to grow. Natural fires, recurring in a cyclical manner, can recycle nutrients and create a diversity of natural habitats. In these ways, wildfires that occur in isolated areas can be a positive force. Increasingly, however, development is encroaching into isolated areas and wildfires present a danger to human life and manmade facilities. Forest fires that might have occurred in remote areas are now potential forest fires in people's backyards. The dual issues of human suppression of forest fires and human encroachment into forest areas has increased the risks associated with wildfire. Portions of southeastern Massachusetts are classified as "pine barrens." These are areas where the vegetation is predominately pitch pine

⁴⁰ Ibid.

with an understory of scrub oak and black huckleberry. The ecosystem of the pine barrens relies on periodic fire to perpetuate the barrens and is extremely flammable.

The Commonwealth's Wildland Urban Interface (WUI)—the area where structures and human development meet and intermingle with undeveloped wildland—creates an environment in which fire can move readily between structural and vegetative fuels as mapped in yellow (Map J-1.1 Wildland Urban Interface North, Map J-1.2 Wildland Urban Interface North Central, Map J-1.3 Wildland Urban Interface South Central, and Map J-1.4 Wildland Urban Interface South). The Commonwealth's WUI includes the Intermix WUI, or areas where housing and vegetation intermingle⁴¹ (mapped in red on the same WUI map series).

The Northwest Fire Science Consortium has classifications for 3 different classes of wildfires⁴²:

- Surface fires are the most common type of wildfire, with the surface burning slowly along the floor of a forest, killing or damaging trees.
- Ground fires burn on or below the forest floor and are usually started by lightning.
- Crown fires move quickly by jumping along the tops of trees. A crown fire may spread rapidly, especially under windy conditions.

Based on the likely frequency and negligible severity of wildlife and brushfire events as reported by the New Bedford Fire Department and confirmed by the Technical Committee and LHMC, the risk of wildfire and brushfire is considered low in New Bedford.

Climate Change Impacts on Wildfire/Brushfire

Climate scenarios project summer temperature increases between 2°C and 5°C and precipitation decreases of up to 15%. Such conditions would exacerbate summer drought and further promote high-elevation wildfires, releasing stores of carbon and further contributing to the buildup of greenhouse gases. Forest response to increased atmospheric carbon dioxide—the so-called “fertilization effect”—could also contribute to more tree growth and thus more fuel for fires, but the effects of carbon dioxide on mature forests are still largely unknown. Climate change is also predicted to bring increased wind damage from major storms, as well as new types of pests to the region. Both increased wind and the introduction of new pests could potentially create more debris in wooded areas and result in a larger risk of fires.

Property/People at Risk from Wildfire/Brushfire-Related Hazards

Perhaps the greatest hazard risk with respect to wildfire for the City of New Bedford would occur as a result of the confluence of contributing conditions. If one or more of the pitch pine or scrub oak forest areas located in the Great Cedar Swamp area north of New Plainville Road were to be ignited by a lightning strike during a high wind storm condition and during the height of a summer drought period, the developed area bordering Route 140 to the east of the Great Cedar Swamp area would definitely be threatened. In a wind condition predominantly blowing from the west northwest, such a wild fire might be able to propagate sufficiently to ignite other non-contiguous pitch pine forest areas and spread through the New Bedford Industrial Park and the

⁴¹ Radeloff, V.C., R.B. Hammer, S.I. Stewart, J.S. Fried, S.S. Holcomb, and J.F. McKeefry. 2005. The Wildland Urban Interface in the United States. *Ecological Applications* 15:799-805.

⁴² <https://www.nwfirescience.org/sites/default/files/publications/Types%20of%20Fire.pdf>.

various residential areas in the far north end of New Bedford. It is possible under such a worst-case scenario that over 840 acres could be expected to be burned.

Overview Summary of Wildfire/Brushfire-Related Hazard Impacts:

Social/Economic vulnerabilities include:

- Compromised air quality impacts.

Environmental vulnerabilities include:

- Loss of natural resources, critical habitat and displacement/migration of species to other areas.

Infrastructure/Built Environment vulnerabilities include:

- The spread to buildings/built environment can result in significant financial impacts/loss of structure/assets.

Probability of Future Occurrence of Wildfire/Brushfire-Related Hazards

The best hazard mitigation strategy with regards to wildfires and brushfires involves changing human behavior. The MA Fire Service disseminates extensive Public Service Announcements (PSAs) on this topic and changed laws in Massachusetts that only allow the purchase of “fire safe cigarettes,” however, these types of fires still routinely occur.

Wildfire season in Massachusetts begins in late March and typically ends in early June, which also corresponds with the driest live fuel moisture periods of the year. For this 2025 Update, New Bedford is considered at low risk for future brushfire/wildfire-related events.

3.5.8. Communicable (Infectious) Disease-Related Hazards

An infectious disease is an illness due to a specific infectious agent or its toxic products that arises through transmission of that agent or its products from an infected person, animal, or inanimate source to a susceptible host, either directly or indirectly through an intermediate plant or animal host, through a vector, or through contact with the inanimate environment. Diseases such as pertussis, and most recently, Coronavirus disease (COVID-19), are examples of infectious diseases that can pose a threat to a community’s population. To gauge the potential impact of disease on the state’s human population, it is helpful to classify disease occurrences according to the following:

- **Isolated case of a high-consequence disease:** One or more cases of a particularly serious disease where further spread is unlikely yet places a significant strain on resources that are required to isolate and provide treatment.
- **Institutional outbreak:** Two or more cases of a similar illness with a similar exposure within an institution.
- **Epidemic:** A sudden increase in the number of cases of a disease above what is normally expected in the population.
- **Pandemic:** An epidemic that has spread over several countries or continents affecting many people.

The extent of an infectious disease’s impact varies greatly on several factors, including:

- The disease’s transmissibility, virulence, and pathogenesis,
- Existing environmental conditions,
- Methods of transmission,

- Individuals' vulnerability factors, such as population densities and/or underlying medical conditions or comorbidities,
- Quality, availability, and equity of healthcare services,
- Individuals' immunization history, and
- Availability and accessibility of medical treatment to protect against and treat the disease.

Table 3-20 presents data from the New Bedford Health Department's top infectious diseases for 2023. According to the Public Health Nursing Department, COVID-19 had the most significant impact in 2023 at 3,210 cases.

Table 3-20. Top Infectious Diseases New Bedford, MA 2023

Category	Total Number of Cases
Enteric	47
Vaccine Preventable Diseases	39
Tuberculosis (LTBI & Active)	208
Respiratory: Influenza	231
Respiratory: COVID-19	3,210
Mosquito-borne	0 ¹
Tick-borne	168

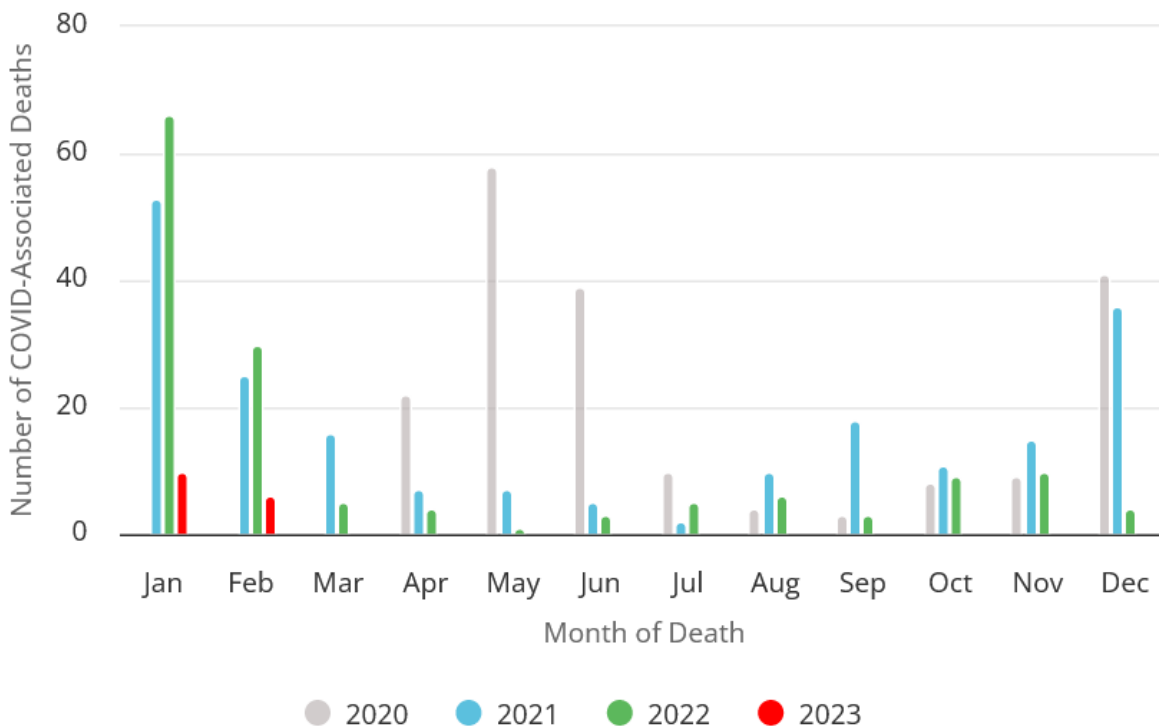
Source: L. Rebello, Director of Public Health Nursing/City of New Bedford.

¹ Mosquito-borne disease activity varies greatly from year to year. Previous season activity is not indicative of future trends.

More recently (January 2020) the COVID-19 pandemic circulated the world. The first confirmed case of COVID-19 was reported in the Commonwealth of Massachusetts on February 1, 2020, with the number of cases increasing rapidly by March 5, 2020. On March 10, 2020, Governor Baker declared a state of emergency. On March 15, 2020, schools and businesses began to close, with a stay-at-home advisory ordered on March 23, 2020, through April 7, 2020 (later extended). A second wave of COVID-19 cases began with a large spike in cases in October 2020, requiring the roll back to Phase 3, Step 1 of the state's reopening plan, continuing into 2021. By the end of the first week of February 2021, Massachusetts was averaging over 2,000 confirmed new cases and approximately 50 confirmed deaths per day. New Bedford experienced a large percentage of COVID-19-related deaths from April – June, and again in December of 2020 followed by additional spikes in deaths during January of 2021, 2022, and January 2023 (**Figure 3-12**).

By the end of February 2021, the death toll from COVID-19 had surpassed 500,000 across the U.S. when the U.S. Food Drug Administration (FDA) granted emergency authorization for the first single-dose COVID-19 vaccine. In August 2021 the FDA granted full approval of the Pfizer/BioNTech COVID-19 vaccine followed by several booster doses. May 2023 marked the national end of the federal public health emergency.

Figure 3-12. COVID-19-Associated Deaths by Month, 2020 – 2023, New Bedford, MA



Source: City of New Bedford, Health Department, <https://www.newbedford-ma.gov/health-department/coronavirus/>.

In response to the COVID-19 pandemic, the Massachusetts Department of Health implemented the COVID-19 Vaccine Equity Initiative (February 2021) to work with populations and communities hardest hit by COVID-19 to increase awareness and acceptance of the vaccine, access to vaccine locations, and vaccine administration rates. Consideration of case rates and the social determinants of health and the disproportionate impact of COVID-19 on Black, Indigenous, and People of Color, New Bedford met the Center for Disease Control's Social Vulnerability Index. During the period when vaccine supply was limited (March 3, 2021 – July 30, 2021), New Bedford received additional COVID-19 vaccine allocations for priority populations, separate and apart from weekly allocations coming from the state and federal government.

In total, 22 organizations serving New Bedford received \$3,149,352 and were allocated a total of 8,700 equity vaccine doses. Additional COVID-19 support included:

- \$223,687 to support vaccine clinics and promoting vaccine acceptance.
- \$354,028 to meet immediate personnel and equipment needs to respond to the COVID-19 pandemic.
- \$209,288 towards the Greater New Bedford Community Health Center to expand vaccination infrastructure.
- Funding towards community, faith-based, and grassroots outreach and education.
- Support for mobile vaccination clinics.

Based on the highly likely frequency and catastrophic severity, and extended warning time of communicable (infectious) disease-related events, in addition to the appearance of ongoing

COVID strains, as confirmed by the Technical Committee and LHMC, the City of New Bedford is considered at high risk for future communicable (infectious) disease-related hazards.

Climate Change Impacts on Communicable (Infectious) Disease-Related Hazards

Climate change will likely impact the public's general health differently across a range of socioeconomic factors, including age (children and the elderly), gender (particularly pregnant women), and social marginalization (poverty). Many infectious diseases, including water-borne illnesses, are extremely sensitive to changing climate conditions. Warming temperatures will also extend the transmission season and geographical range of many diseases. Projections for increased warming such as more days with increased temperatures and heat waves can also impact the cardiovascular and respiratory health of people.

People at Risk from Communicable (Infectious) Disease-Related Hazards

The entire City of New Bedford is susceptible to the spread of infectious diseases; however, transmission can be exacerbated in crowded areas and urban centers where people are in close-proximity and contact with one another.

Overview Summary of Communicable (Infectious) Disease-Related Hazard Impacts:

Social/Economic vulnerabilities include:

- Health consequences including widespread illness and increased mortality rates.
- Post-recovery health concerns including long-term organ damage and/or chronic illnesses.
- Mental health concerns (i.e., post-traumatic stress disorder, depression, anxiety disorders).
- Social disruption due to isolation/quarantine measures and social distancing.

Environmental vulnerabilities include:

- Impacts to open space resources due to increased activity.

Infrastructure/Built Environment vulnerabilities include:

- Healthcare resource strains (i.e., hospital beds, medical staff, and emergency services).

Probability of Future Occurrence of Communicable (Infectious) Disease-Related Hazards

The probability of incidents that result from infectious disease occurring in New Bedford is difficult to predict; however, with such incidents occurring every year, the probability of an incident over the next year has a significant probability. The probability of an event progressing to the epidemic or pandemic stage within the same time period is less clear.

3.5.9. Invasive Species-Related Hazards

For this 2025 Update, invasive species (existing and early detection/emergent aquatic plant species) for New Bedford have been incorporated as a hazard impacting the community.

Invasive species are non-native species that can impact the environment, economy, and human health. Typically, they have the potential to cause or contribute to the following:

- Habitat loss/degradation
- Loss of native fish, wildlife, and tree species
- Loss of recreational opportunities and income
- Crop damage/diseases in humans

The following is a list of invasive plant species currently impacting New Bedford:

- Beach Rose (*Rosa rugosa*)
- Bell's Honeysuckle (*Lonicera x bella*)
- Black Locust (*Robinia pseudoacacia*)
- Black Swallow-wort (*Cynanchum louiseae*)
- Border Privet (*Ligustrum obtusifolium*)
- Broad-leafed Pepperweed (*Lepidium latifolium*)
- Creeping Buttercup (*Ranunculus repens*)
- Common Buckthorn (*Rhamnus cathartica*)
- Common Reed (*Phragmites australis*)
- Dame's Rocket (*Hesperis matronalis*)
- European Barberry (*Berberis vulgaris*)
- European Buckthorn/Glossy Buckthorn (*Frangula alnus*)
- Forget-me-not (*Myosotis scorpioides*)
- Horned Poppy (*Glaucium flavum Crantz*)
- Japanese Barberry (*Berberis thunbergia*)
- Japanese Honeysuckle (*Lonicera japonica*)
- Japanese Knotweed (*Polygonum cuspidatum*)
- Leafy Spurge/Wolf's Milk (*Euphorbia esula*)
- Morrow's Honeysuckle (*Lonicera morrowii*)
- Multiflora Rose (*Rosa multiflora*)
- Norway Maple (*Acer platanoides*) (ROWS)
- Oriental Bittersweet (*Celastrus orbiculatus*)
- Plume Grass (*Miscanthus sacchariflorus*)
- Porcelain Berry (*Ampelopsis brevipedunculata*)
- Purple Loosestrife (*Lythrum salicaria*)
- Reed Canary Grass (*Phalaris arundinacea*)
- Spotted Knotweed (*Centaurea biebersteinii*)
- Sycamore Maple (*Acer pseudoplatanus*)
- Tansy Ragwort (*Senecio jacobaea*)
- Tree of Heaven (*Ailanthus altissima*) (Beaches/ROWS)
- Tatarian Honeysuckle (*Lonicera tatarica*)
- Wineberry (*Rubus phoenicolasius*)
- Winged Euonymus/Burning Bush (*Euonymus alatus*)
- Yellow Iris (*Iris pseudacorus*)

The following is a list of aquatic plant invasive species currently impacting New Bedford:

- Carolina Fanwort (*Cabomba caroliniana*)
- European Milfoil (*Myriophyllum spicatum*)
- Garlic Mustard (*Alliaria petiolata*)
- Hydrilla/Water Thyme (*Hydrilla verticillate*)
- Water Milfoil (*Myriophyllum heterophyllum*)

The following management operations are utilized to address specific invasive species:

- Beach Rose: Hand cut using staff and volunteers from beaches, dunes, and mechanically cut from rights-of-way when possible. More needs to be done to manage/eradicate this species.
- Norway Maple: Urban forest management carried out by DPI actively removes Norway Maples that pose safety risks to persons or property along rights-of-way. No longer planted/encouraged.
- Oriental Bittersweet: Mechanically cut by City staff when applicable.
- Tree of Heaven: Hand cut using staff and volunteers from beaches, dunes, and mechanically cut from rights-of-way when possible. More needs to be done to manage and eradicate.

Based on the highly likely frequency and limited severity, as confirmed by the Technical Committee and LHMC, City of New Bedford is considered at moderate risk for future invasive species-related hazards.

Climate Change Impacts on Invasive Species-Related Hazards⁴³

Climate change is predicted to increase the abundance of invasive species and expand their habitat ranges. Species hierarchies in ecosystems that are stressed (due to climate change associated drought, increased temperatures, wildfires, etc.) will be more susceptible to invasive species.

Property/People at Risk from Invasive Species-Related Hazards

Invasive species typically harm native species through predation, habitat degradation and competition for shared resources. Negative consequences can be far-reaching, considering they can spread at astonishing rates and can affect property values, agricultural productivity, public utility operations, native fisheries, tourism, outdoor recreation, and the overall health of an ecosystem. Dependent upon the species, invasives often thrive along roadsides, forested and understory areas, lakes, ponds, rivers, streambanks, pond margins and along the coast.

In New Bedford, the most significant challenges with invasives have been with phragmites clogging drains at the airport and culverts along Copper Brook. It is also established around Little Quittacas, including at the water intake structure, and Nash Road/Copper Brook watercourse and drainage infrastructure. Other locations include along rights-of-way, beaches, Sassaquin Pond, and Victory Park.

Overview Summary of Invasive Species-Related Hazard Impacts:

Social/Economic vulnerabilities include:

- Loss of recreational opportunities/resources.

Environmental vulnerabilities include:

- Habitat loss and degradation.
- Loss of native fish/wildlife/plant species.
- Agricultural impacts/loss.

⁴³ Eastern Research Group, Inc., *ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan*, September 2023, https://www.mass.gov/files/documents/2023/10/10/2023%20ResilientMass%20Plan_10.10.23%20508.pdf

- Impacts to potable water supply.

Infrastructure/Built Environment vulnerabilities include:

- Compromised drainage systems/components.

Probability of Future Occurrence of Invasive Species-Related Hazards

Eradication involves both chemical and mechanical methods, combined with ongoing monitoring. Often, due to limited staffing and diminished municipal budgets, limited controlled stands are typically realized at best. Because most invasives are considered more of a nuisance hazard and not directly associated with any primary impacts of other weather-related hazards such as loss of life, limited evacuation, or property damage, New Bedford is considered at moderate risk for future impacts of invasive species (aquatic plant species).

3.5.10. Vector-Borne Related Hazards

A vector-borne disease results from an infection transmitted to humans and other animals by blood-feeding arthropods such as mosquitos and ticks.

Arboviruses⁴⁴

The Northeast region is home to over 60 mosquito species.⁴⁵ Mosquitos live and breed in a variety of habitats, including:

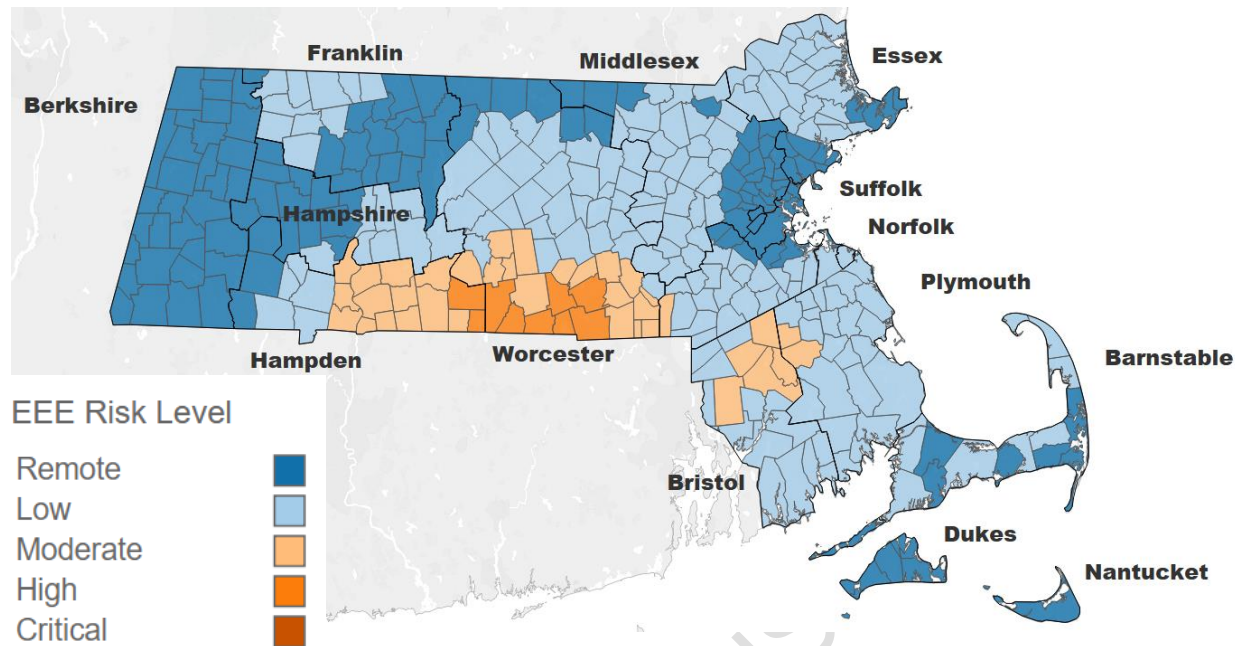
- Containers in urban and suburban areas
- Pastureland and open fields
- Dry woodland and tree holes
- Salt marshes
- Swamps and wet woodlands

The Massachusetts Department of Public Health, Bureau of Infectious Disease and Laboratory Sciences (MA DPH) conducts surveillance for West Nile and Eastern Equine Encephalitis (also called arboviruses) that are spread by mosquitoes in Massachusetts. This surveillance consists of routine testing of mosquitoes and tracking cases in humans and provides information about when and where people could be at risk. In 2020, there were five cases (one in Bristol County) of Eastern Equine Encephalitis with one death in Massachusetts. The risk level as of October 11, 2023, was 'Low' for New Bedford (**Figure 3-13**). Also in 2020, there were 11 cases (one in Bristol County) of West Nile Virus in Massachusetts. The risk level as of October 11, 2023, was 'Moderate' for New Bedford (**Figure 3-14**).

⁴⁴ Massachusetts Department of Public Health, Bureau of Infectious Disease and Laboratory Sciences. *Arbovirus Disease Surveillance Summary*, <https://www.mass.gov/lists/arbovirus-surveillance-plan-and-historical-data#current-data->.

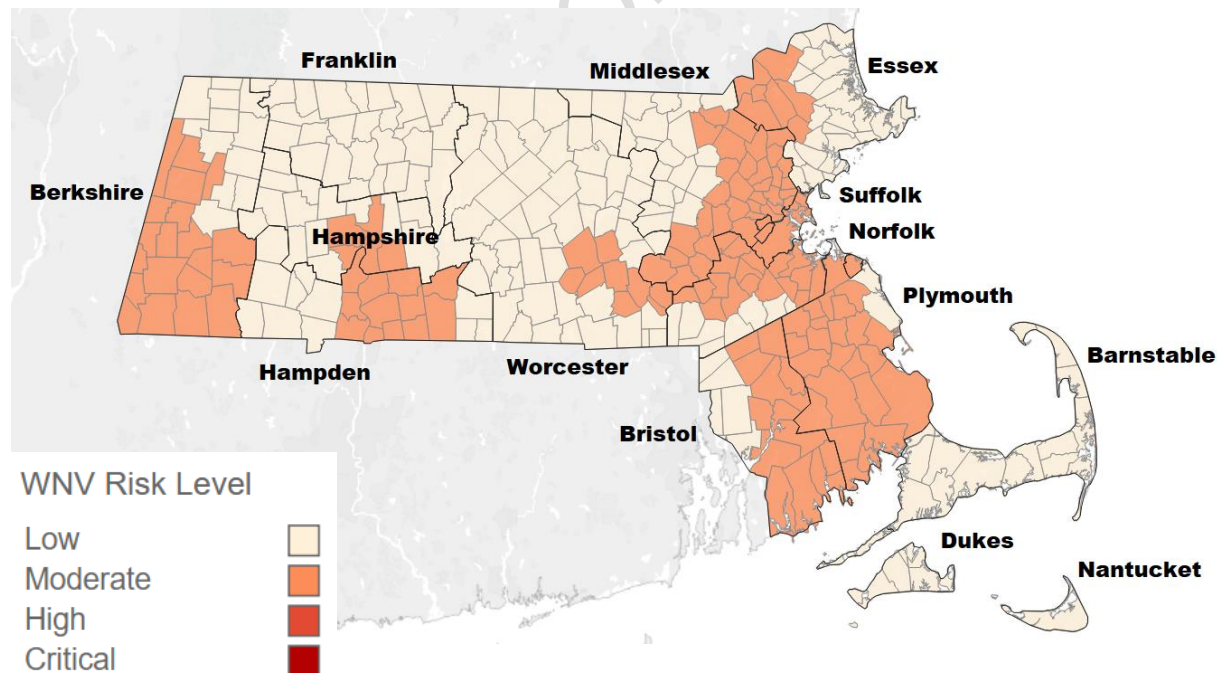
⁴⁵ Northeast Regional Center for Excellence in Vector-Borne Diseases, <https://www.neregionalvectorcenter.com/mosquitoes>.

Figure 3-13. Eastern Equine Encephalitis Risk Level by City/Town, Massachusetts, October 11, 2023



Source: MD DPH Arbovirus Disease Surveillance Summary.

Figure 3-14. West Nile Virus Risk Level by City/Town, Massachusetts, October 11, 2023



Source: MD DPH Arbovirus Disease Surveillance Summary.

Tickborne Disease⁴⁶

Tickborne diseases are also tracked by the MA DPH and include a subset of four tickborne diseases, as well as Lyme Disease:

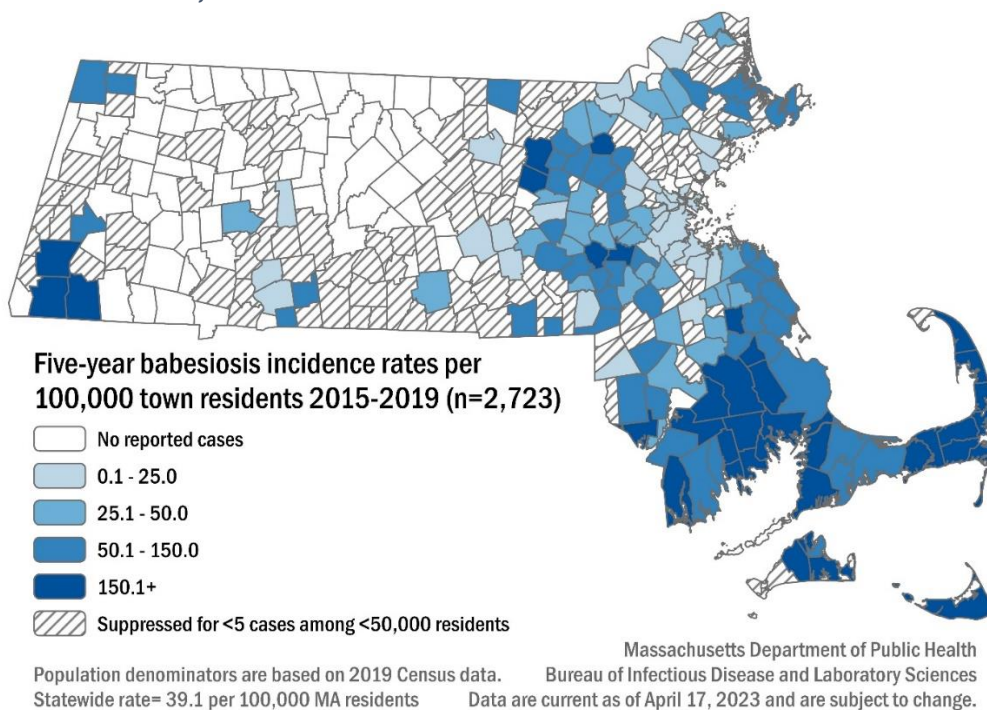
- Babesiosis: A disease caused by a microscopic parasite (*Babesia microti*) that infects red blood cells. In 2019, there were 109 confirmed cases in Bristol County.
- Human Granulocytic Anaplasmosis (HGA): A disease caused by the bacterium *Anaplasma phagocytophilum*. In 2019, there were 53 confirmed and probable cases in Bristol County.
- *Borrelia miyamotoi* infection: A type of spiral-shaped bacteria that is closely related to the bacteria that cause tickborne relapsing fever. Infection is often referred to as borreliosis. In 2019, there were four confirmed cases in Bristol County.
- Powassan virus infection: There are two types of Powassan virus in Massachusetts. Type one is found in ticks that feed on woodchucks (groundhogs) while type two is carried by black-legged ticks. There were no confirmed cases reported in Bristol County 2013 – 2019.
- Lyme: A disease caused by the bacterium *Borrelia burgdorferi* and rarely *Borrelia mayonii*. In 2014, there were 479 confirmed cases and 194 probable cases in Bristol County.

Figures 3-15 through 3-19 show the five-year incidence rates for the tickborne diseases discussed above. Numbers are per 100,000 population by city/town. The incidence rates over the five-year period for New Bedford fall under the following ranges:

- Babesiosis: 50.1 – 150.0
- Human Granulocytic Anaplasmosis (HGA): 25.1 – 50.0
- *Borrelia miyamotoi* infection: 11 - 25
- Powassan virus infection: No reported cases
- Lyme: ≤ 100

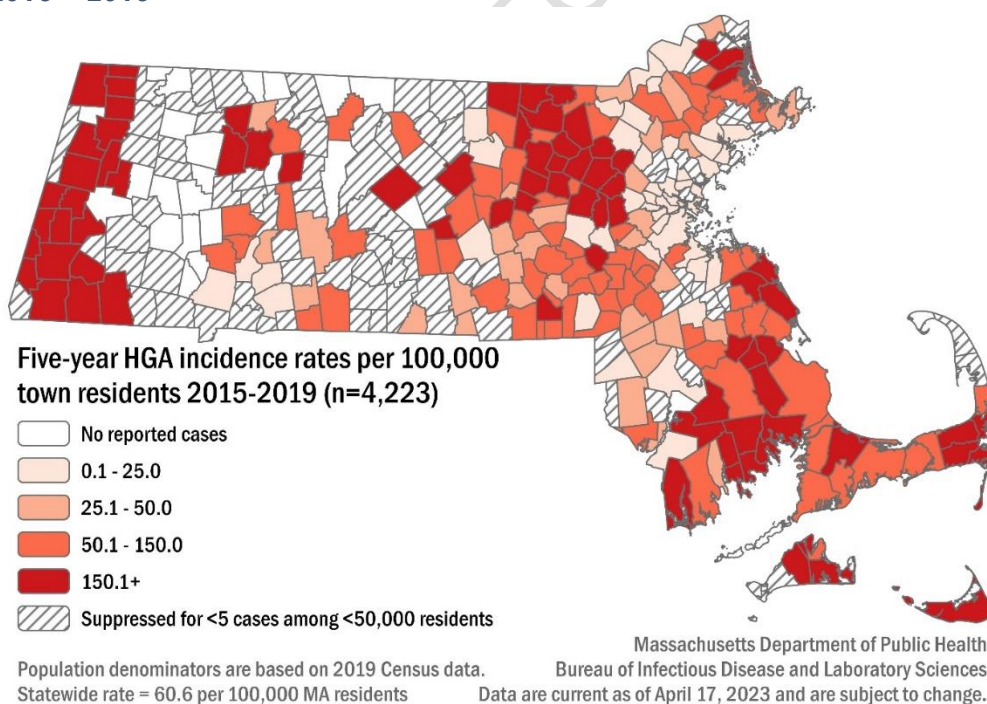
⁴⁶ Massachusetts Department of Public Health, Bureau of Infectious Disease and Laboratory Sciences. *Tickborne Disease Surveillance Summary, 2019*. <https://www.mass.gov/lists/tick-borne-disease-surveillance-summaries-and-data>.

Figure 3-15. Five-Year Babesiosis Incidence Rates per 100,000 Population by City/Town, Massachusetts, 2015 – 2019



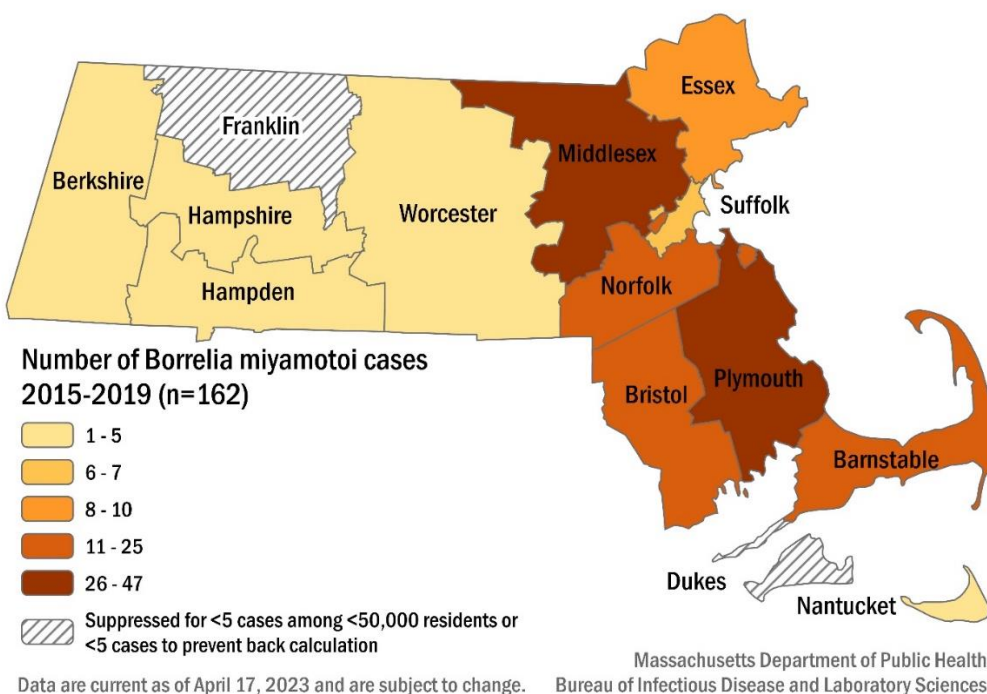
Source: MD DPH Tickborne Disease Surveillance Summary.

Figure 3-16. HGA Incidence Rates per 100,000 Population by City/Town, Massachusetts, 2015 – 2019



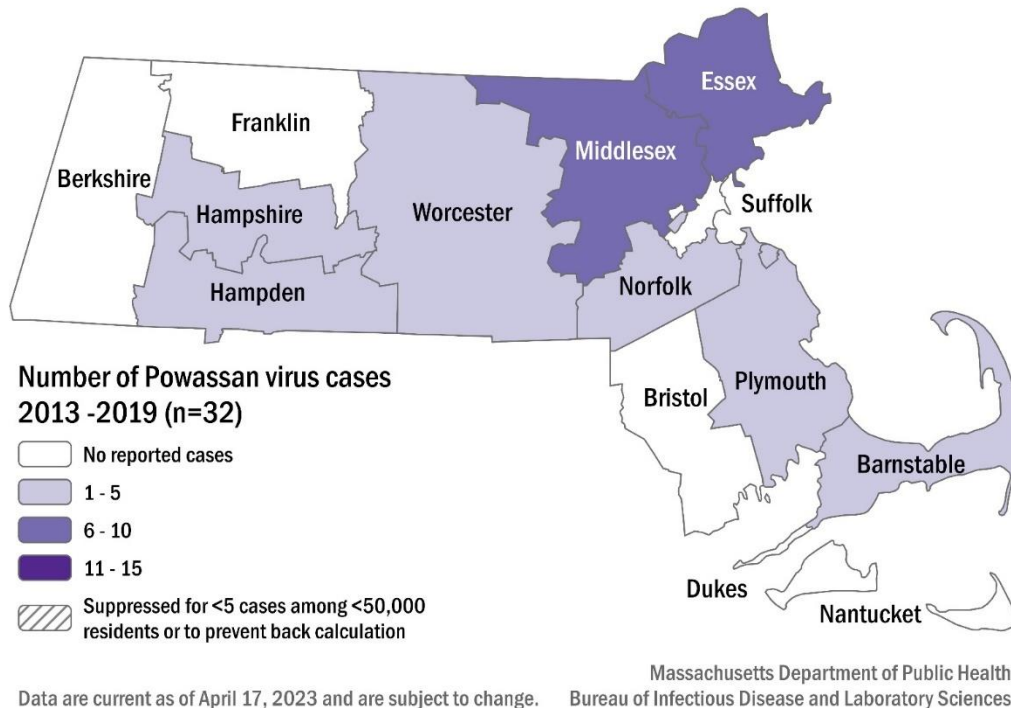
Source: MD DPH Tickborne Disease Surveillance Summary.

Figure 3-17. *Borrelia Miyamotoi* Cases by City/Town, Massachusetts, 2015 – 2019



Source: MD DPH Tickborne Disease Surveillance Summary.

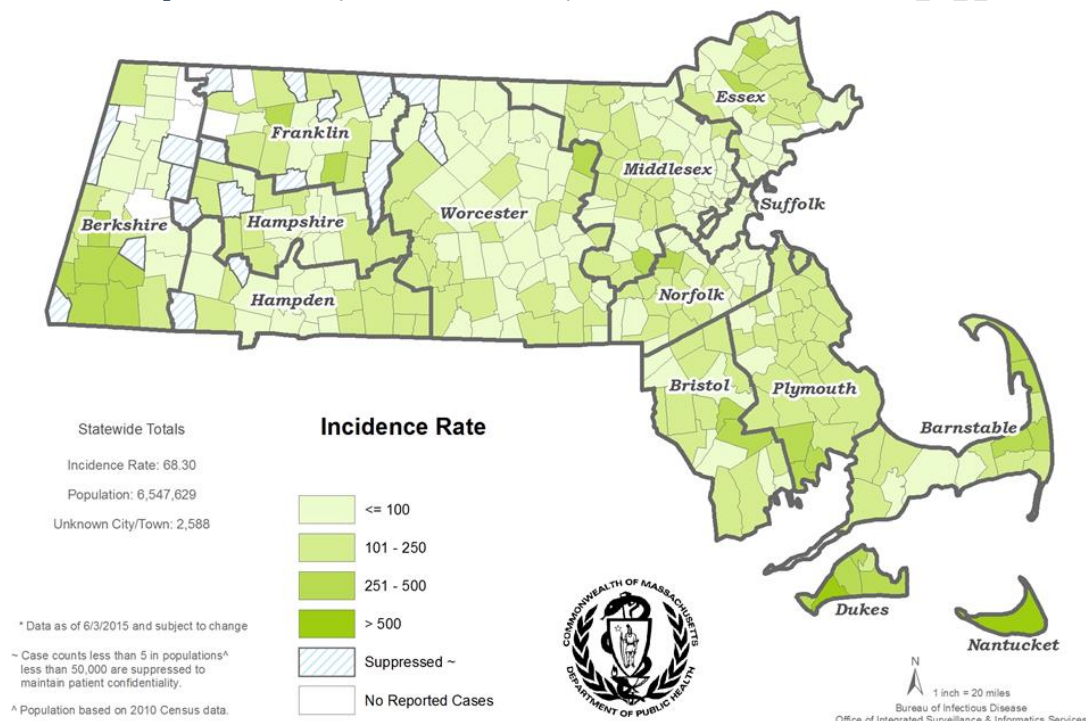
Figure 3-18. Powassan Virus Cases by City/Town, Massachusetts, 2013 – 2019



Source: MD DPH Tickborne Disease Surveillance Summary.

Babesiosis, HGA, and *Borrelia miyamotoi* are tickborne diseases that are endemic to the Commonwealth. Powassan virus is a rare tick-borne flavivirus that can cause neuroinvasive disease in humans. Transmission of all four diseases can happen when an individual is bitten by a black-legged tick (*Ixodes scapularis*). Powassan virus can also be transmitted by the woodchuck tick (*Ixodes cookei*). Most infections occur in the warm spring and summer months when young (nymph) ticks are most active, though adult ticks may feed on humans and transmit disease year-round if temperatures are above freezing. Black-legged ticks are most commonly found in grassy or wooded areas where deer and mice are present. Because these diseases (and others including Lyme disease) are all transmitted by the same species of tick, there is risk of co-infection with multiple pathogens from the same bite.

Figure 3-19. Lyme Disease Incidence Rates per 100,000 Population for Confirmed and Probable Lyme Disease, Massachusetts, 2010 - 2014



Source: MD DPH Tickborne Disease Surveillance Summary.

The MA DPH and New Bedford Health Department have provided records for previous vector-borne-related hazards at both the state and regionally scales. Based on the highly likely frequency and limited severity of vector-borne-related diseases, confirmed by the Technical Committee and LHMC, the risk of vector-borne disease is considered moderate in New Bedford.

Climate Change Impacts on Vector-Borne Related Hazards⁴⁷

The IPCC reported with high confidence that the prevalence of vector-borne diseases has increased in recent decades and that the prevalences of malaria, dengue, Lyme disease, and

⁴⁷ Eastern Research Group, Inc., *ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan*, September 2023,

West Nile virus infection in particular are expected to further increase during the next 80 years if measures are not taken to adapt and strengthen control strategies.⁴⁸

People at Risk from Vector-Borne-Related Hazards

The entire City of New Bedford is susceptible to vector-borne illnesses. Late summer and fall are prime seasons for the spread of arboviruses. Most tickborne infections occur in the warm spring and summer months when young (nymph) ticks are most active, though adult ticks may feed on humans and transmit disease year-round if temperatures are above freezing.

Overview Summary of Vector-Borne-Related Hazard Impacts:

Social/Economic vulnerabilities include:

- Health consequences including widespread illness and increased mortality rates.
- Post-recovery health concerns including long-term organ damage and/or chronic illnesses.
- Mental health concerns (i.e., post-traumatic stress disorder, depression, anxiety disorders).

Environmental vulnerabilities include:

- Very limited impacts.

Infrastructure/Built Environment vulnerabilities include:

- Very limited impacts.

Probability of Future Occurrence of Vector-Borne-Related Hazards

As stated above, the prevalences of many vector-borne diseases are expected to continue to increase over the next 80 years unless measures are not taken to adapt and strengthen control strategies.

3.5.11. Changes in Groundwater-Related Hazards

There are three primary risks associated with groundwater in Massachusetts: increases in groundwater levels, groundwater resource depletion, and contamination of groundwater by pollution and salinity changes from sea level rise and flooding.⁴⁹ New Bedford receives its water from the APC bordered by the Towns of Freetown, Lakeville, Middleboro, and Rochester. The water treatment plant is located in the Town of Rochester on the shore of Little Quittacas Pond. Treated water from this facility is pumped directly to the north end of the City and to the High Hill Reservoir from which it is distributed.

Watershed Overview⁵⁰

The APC consists of five interconnected ponds arranged in a horseshoe shape (**Figure 3-20**). Long Pond is the western prong of the complex, with intensive development along its shores

https://www.mass.gov/files/documents/2023/10/10/2023%20ResilientMass%20Plan_10.10.23%20508.pdf

⁴⁸ <https://www.nejm.org/doi/full/10.1056/NEJMra2200092>.

⁴⁹ Eastern Research Group, Inc., *ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan*, September 2023,

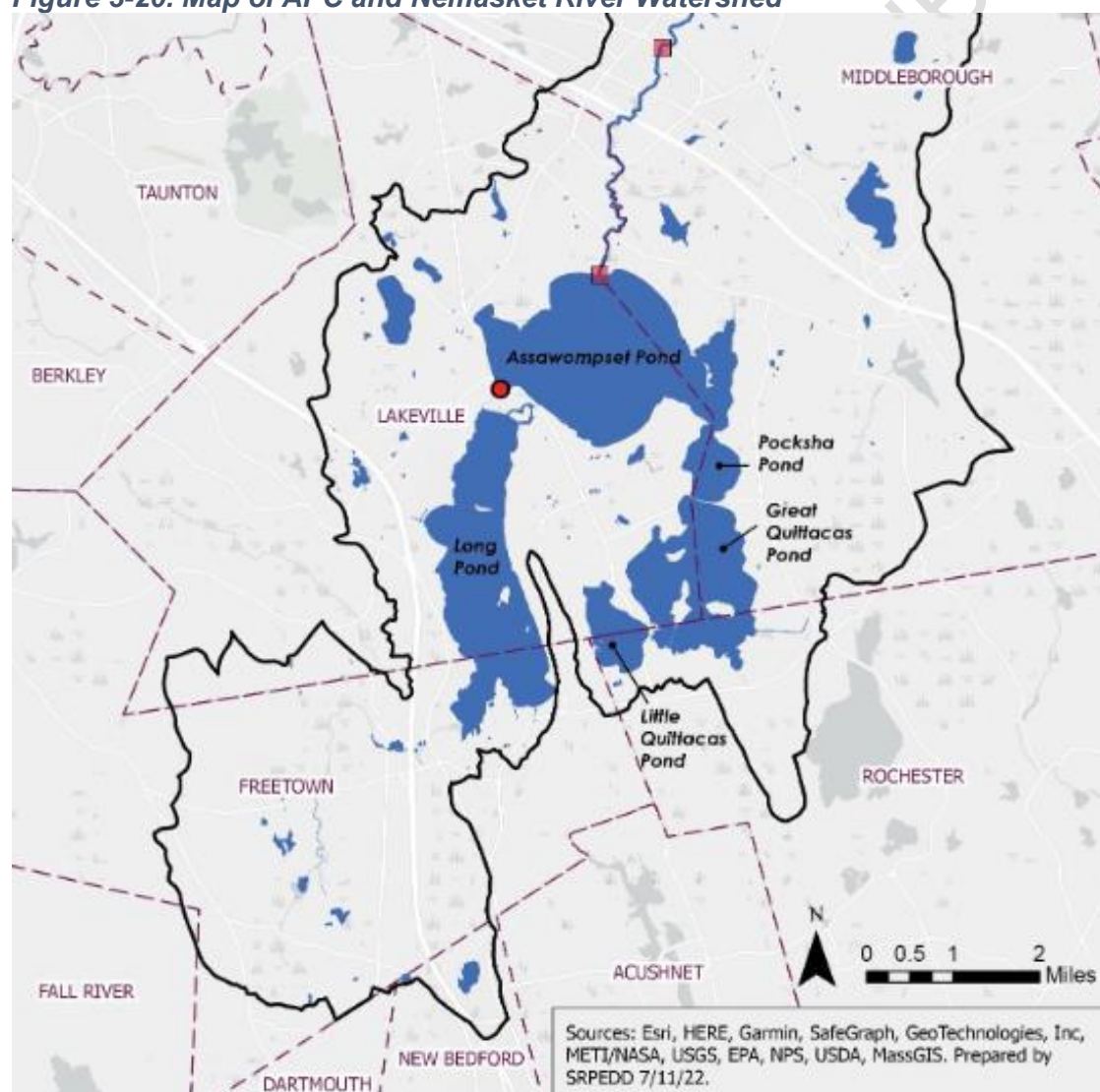
https://www.mass.gov/files/documents/2023/10/10/2023%20ResilientMass%20Plan_10.10.23%20508.pdf.

⁵⁰ *APC and Nemasket Watershed Management and Climate Action Plan*, August 1, 2022.

and allowances for water-based recreation. Assawompset Pond, in the middle of the complex, is the largest of the ponds and is the location of water supply withdrawal infrastructure for the City of Taunton and is the immediate location of the complex's main outlet at the APC Dam, serving as headwaters of the Nemasket River. From north to south Pocksha Pond, Great Quittacas Pond, and Little Quittacas Pond make up the eastern prong of the complex. Little Quittacas is the location of water supply withdrawal infrastructure for the City of New Bedford. The APC is the largest naturally occurring body of fresh water in Massachusetts. Supporting a diversity of plant and animal life, the APC drains into the Nemasket River, which flows for 11 miles to its confluence with the federally designated Wild and Scenic Taunton River, which then flows southwest to Mount Hope Bay on the Rhode Island border.

A relatively small portion of the southern extent of the watershed lies in New Bedford, the most intensively developed community in the watershed. The portion of the city that lies within the watershed is zoned for residential and business uses.

Figure 3-20. Map of APC and Nemasket River Watershed



Source: APC and Nemasket Watershed Management and Climate Action Plan, August 1, 2022.

There were no records of any significant changes in groundwater available. Based on the likely frequency and limited severity of changes in groundwater-related hazards, confirmed by the Technical Committee and LHMC, the risk of changes in groundwater is considered moderate in New Bedford.

Climate Change Impacts on Changes in Groundwater Related Hazards⁵¹

SLR, extreme heat, drought, extreme precipitation, and a reduction in snow are all climate change impacts that will affect groundwater. Risks will vary by season and location and type of change.

Property/People at Risk from Changes in Groundwater-Related Hazards

Water quantity and quality concerns are closely linked, thus the interaction between increased precipitation, significant fluctuations in the water table, and improper septic management pose increasing risks to changes in groundwater and public health overall. The City's dependence on the APC, and Little Quittacas Pond specifically, puts New Bedford at a unique disadvantage for groundwater protection given the fact that the majority of which is located outside of the City limits. The City, in addition to taking care of its own needs, supplies water to varying degrees to the neighboring Towns of Fairhaven, Dartmouth, Acushnet, and Freetown, who are all also at risk to changes in groundwater hazards. New Bedford should continue to monitor and coordinate with these neighboring communities to minimize potential impacts to groundwater areas/supplies.

Overview Summary of Changes in Groundwater-Related Hazard Impacts:

Social/Economic vulnerabilities include:

- Loss of recreational opportunities/resources.

Environmental vulnerabilities include:

- Habitat loss and degradation.
- Agricultural impacts/loss.

Infrastructure/Built Environment vulnerabilities include:

- Compromised water supply for fire suppression.
- Impacts to potable water supplies.

Probability of Future Occurrence of Changes in Groundwater-Related Hazards

Given the location of groundwater resources located primarily outside of the City's limits, the use of traditional septic systems in and around the APC, and increased use of fertilizers, pesticides, and herbicides, the probability of future changes in groundwater are real and a regional concern.

3.6. Human-Caused and Technological Hazards

A human-caused hazard includes any disastrous event caused directly and principally by one or more identifiably deliberate or negligent human actions, while a technological hazard is a hazard

⁵¹ Eastern Research Group, Inc., *ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan*, September 2023, https://www.mass.gov/files/documents/2023/10/10/2023%20ResilientMass%20Plan_10.10.23%20508.pdf.

originating from technological or industrial conditions, including accidents, dangerous procedures, or failures.⁵²

The term human-caused, or terrorism most often refers to intentional, criminal, malicious acts that originate from human activity. Although there is no single, universally accepted definition of terrorism, 28 CFR 0.85(I) defines terrorism as “the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.”⁵³

Human-Caused Hazards (Deliberate Acts)

3.6.1. Cyber (Security) Incident

A cybersecurity incident can be characterized as any incident that threatens the confidentiality, integrity, and accessibility of an information system or its processes, in violation of security policies and practices. Often, cybersecurity incidents require effective response to minimize loss of critical information, but also for continuity of services and security. Although cybersecurity incidents occur frequently, the type of attacks vary significantly and can be classified into three categories:

- **Hactivists/Petty Criminals:** Constitute most cyber-attacks typically by way of the Internet and conducted by a single individual or unaffiliated group using limited technical skill and sophistication.
- **Organized Crime/Cyber-terrorists:** Target a specific person or entity for the purposes of financial gain, intellectual property, or blackmail. These structured attacks tend to be more organized and planned, often relying on insider knowledge.
- **Sophisticated Nation States:** Although few in number, these attackers conduct reconnaissance over long durations, with sophisticated preparation and organization.

Risks associated with cybersecurity attacks range from data breaches, personal financial loss, and disruptive actions that carry out social and/or political objectives, including:

- **Internet of Things (IoT):** Presents unique security challenges due to the number of interconnected devices and systems present, and not necessarily created with security in mind.
- **Cyber theft:** Cyber thieves hacking customer accounts, obtaining names, credit and debit card numbers, encrypted PIN data, and card expiration dates (for targeted personal financial loss).
- **Advanced Persistent Threat (APT):** Threat actors gaining unauthorized access to computer systems and/or servers as a means of carrying out various disruptive actions to achieve political or social objectives.

⁵² Eastern Research Group, Inc., *ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan*, September 2023, https://www.mass.gov/files/documents/2023/10/10/2023%20ResilientMass%20Plan_10.10.23%20508.pdf

⁵³ 28 CFR, Section 0.85, <https://www.google.com/search?client=firefox-b-1-d&q=CFR+definition+of+terrorism>.

New Bedford has experienced only one, although significant, cyber security breach since 2016. In July 2019, The City's Management Information Systems (MIS) Department disrupted a ransomware attack using the RYUK virus. Since, the MIS Department has implemented several cyber security solutions that have greatly improved the security of the City's network, servers, and end users. With the remediation practices in place, New Bedford's network and security team along with the Managed Security Service Providers (MSSPs) and Virtual Chief Information Security Officer (VCISO) can detect and eliminate suspicious activities and malicious attacks in the form of malware, ransomware, phishing before they can cause damage.

Based on the likely probability and moderate consequence analysis ranking/score identified by the Technical Committee and confirmed by the LHMC, the City of New Bedford is considered at moderate risk to a future cyber/cybersecurity incident.

Operations/People at Risk from Cybersecurity Incident-Related Hazards

The entire population is significantly reliant on technology for daily life, albeit cell phones, tablets or computers. Public health and access to medical records, power grid failure, government operations, commercial/economic operations, and communications infrastructure are also vulnerable to cyber-attacks. Cyber incidents are not always associated with a defined geographical area therefore, the entire City is equally susceptible to a cybersecurity incident-related hazard.

Overview Summary of Cybersecurity-Related Hazard Impacts:

Social/Economic vulnerabilities include:

- Exposure of sensitive data affecting privacy and security.

Environmental vulnerabilities include:

- Very limited impacts.

Infrastructure/Built Environment vulnerabilities include:

- Exposure of sensitive data affecting operations, privacy, and security (i.e., governmental/medical/financial institutions).
- Disruption in the delivery of critical services such as emergency response, public transportation, and utility management.
- Disruptions to the service sector (i.e., education, healthcare, financial services).
- Costs of operational downtime and reputational damage control.

Probability of Future Occurrence of Cybersecurity Incident-Related Hazards

Although there have been a number of public safety, local government, medical and educational incidents throughout the state, there has only been one recent cybersecurity-related incident recorded by the City in 2019. As hackers continue to become more skilled and sophisticated, there is a likely probability of a cybersecurity incident occurring.

3.6.2. Terrorism Incident

The Federal Bureau of Investigation (FBI) defines terrorism as the "the unlawful use of force or violence against persons or property to intimidate, or coerce a government, civilian population, or any segment thereof in the furtherance of political and social objectives."⁵⁴ A more recent

⁵⁴ Federal Bureau of Investigation, 2005, Terrorism 2002 – 2005.

trend in terrorist threats is the use of weapons of mass destruction (WMD) and improvised explosive devices (IEDs) which require a relatively low level of skill to produce. Vehicle-borne improvised explosive devices (VB IED) have also become a trend in terrorist attacks.

The threat an IED poses begins with an adversary's motives and intent to do harm. It becomes a "credible" threat if and when the adversary has the "capability" of doing the intended harm, and if the target has the vulnerability that will facilitate the harmful contact. Specific to IED attacks, "capability" would include possessing the knowledge to build, place, and function an explosive device and access to materials needed to construct the device (possibly to manufacture the explosive itself). Components consistent with IED threat capabilities include financial support, physical support networks, size of cell with direct operational responsibility, amounts of constituent materials reasonably accessed for the device, gadgeteering skills in construction, technical expertise, and tactical proficiency. If the adversary possesses all the necessary capabilities to carry out the intended threat, they then become limited only by their imagination.

Acts of terrorism may also include commonly available methods including guns, edged weapons, vehicles, and an emerging trend of the use of drones.

There have been no terrorist attacks recorded in New Bedford. Based on the potential probability and high consequence analysis ranking/score identified by the Technical Committee and confirmed by the LHMC, the City is considered at moderate risk to future terrorism incidents.

Population at Risk from Terrorism-Related Incident

The entire population is equally susceptible to a terrorist attack.

Overview Summary of Terrorism-Related Hazard Impacts:

Social/Economic vulnerabilities include:

- Compromised physical safety of residents and emergency responders, with the potential for injuries/deaths.
- Psychological toll on the community (i.e., increased anxiety, fear, sense of vulnerability).
- Mental health concerns (i.e., post-traumatic stress disorder, depression, anxiety disorders).
- Social polarization and mistrust among community members.

Environmental vulnerabilities include:

- Very limited impacts.

Infrastructure/Built Environment vulnerabilities include:

- Stressed emergency services.
- Transportation networks, utilities, and public buildings could be damaged or rendered inoperative.
- Delays in recovery.

Probability of Future Occurrence of Terrorism-Related Hazards

Although it is often difficult to predict where and when a terrorist attack will be, there remains a likely probability of a terrorist attack occurring.

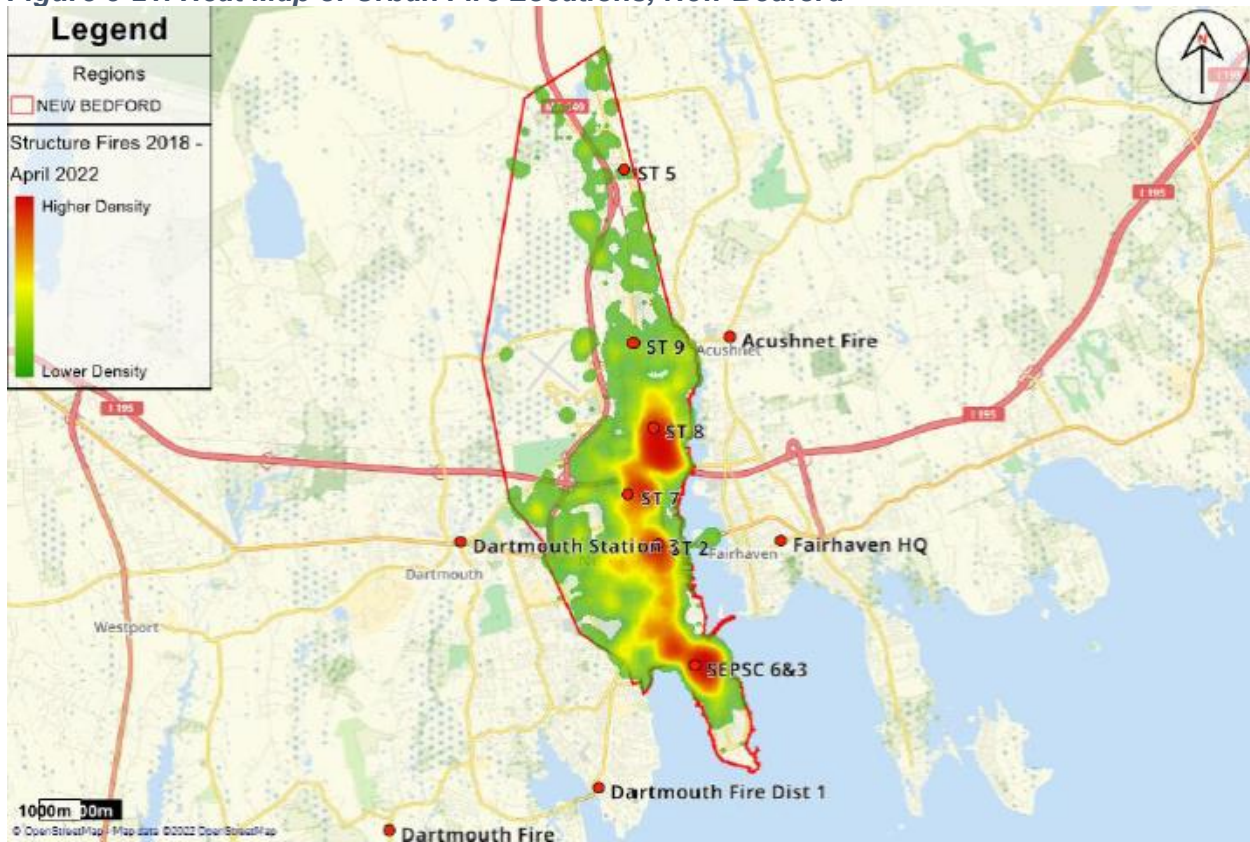
3.6.3. Urban Fire

An urban fire or conflagration is a large and occasionally uncontrollable fire that can result in significant destruction and occurs often as a result of other hazards, including storms, earthquakes, gas leaks, transportation accidents, hazardous material spills, criminal activity (i.e., arson), or terrorism. Smaller-scale, structural fires often result from everyday events such as cooking, smoking, equipment/appliance malfunctions, etc.

The National Fire Protection Association (NFPA) classifies urban areas with greater than 3,000 residents per square mile as “dense urban.” The City of New Bedford currently has about 4,200 residents per square mile and over 40,000 buildings within the City limits. Many of the most densely populated areas of the City contain multifamily residences built within several feet of each other. These densely populated areas also contain commercial occupancies. Many of the multifamily dwellings are protected by combustible exterior wall covering including vinyl siding or wood shingles.

A reported structure response consists of three engine companies, two ladder companies, and both District Fire Chiefs. This assignment brings 22 firefighters to a working structure fire which meets the compliance requirements of NFPA 1710 *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*. The New Bedford Fire Department routinely faces the challenge of protecting nearby exposed buildings which are often only located just feet from the building involved in fire. The Department’s current staffing level and apparatus placement allows for a quick arrival and response to “overwhelm” a hostile fire, preventing its extension into adjacent buildings. This deployment model also provides the manpower necessary to conduct search and rescue operations for trapped civilians while simultaneously extinguishing the fire. During 2022 – 2023 there were several multiple alarm fires where firefighters rescued over 20 trapped occupants. **Figure 3-21** below depicts the general patterns of urban fire locations throughout the City. Although the map depicts locations for 2018 – 2022, the patterns remain consistent today.

Figure 3-21. Heat Map of Urban Fire Locations, New Bedford



Source: New Bedford Fire Department, 2024.

Since 2016, the New Bedford Fire Department has responded to a range of fire types, including (Table 3-21):

- Structure Fires by Fixed Use: Residential, hotels/motels, other residential, public assembly, schools/colleges, health care/penal institutions, stores/offices, industry/utility/defense/ laboratories, storage in structures, other structures.
- Other Fires: Fires in highway vehicles/other vehicles, fires outside of structures with value/with no value, fires in rubbish, other fires.
- Incidents: Rescue/emergency medical responses, false alarm responses, mutual aid, hazmat responses, other hazardous conditions, other responses.

The Fire Department also responds to urban fires in surrounding communities on a mutual aid basis.

Table 3-21. Incident/Call Summary, New Bedford, January 1, 2016 – September 30, 2024

Year	Number of Events	Injuries	Deaths	Damages
Structure Fires by Fixed Property Use				
2016	208	6	1	\$1,621,147
2017	225	10	0	\$2,737,255
2018	212	15	3	\$3,014,685
2019	200	8	1	\$2,918,630
2020	230	10	0	\$3,659,815

Year	Number of Events	Injuries	Deaths	Damages
2021	208	15	1	\$5,232,360
2022	199	12	0	\$5,349,475
2023	157	11	2	\$4,362,550
2024	125	5	0	\$3,611,200
Other Fires				
2016	192	0	1	\$259,945
2017	225	5	0	\$421,250
2018	184	3	0	\$751,700
2019	187	0	0	\$940,875
2020	207	0	0	\$393,802
2021	173	2	0	\$5,749,981
2022	203	3	0	\$698,130
2023	151	3	0	\$723,725
2024	115	1	0	\$205,650
Incidents Conditions, Other Responses				
2016	15,815	0	0	\$136,021
2017	14,653	0	0	\$94,650
2018	15,021	0	0	\$170,451
2019	14,237	0	0	\$168,000
2020	9,469	0	0	\$297,001
2021	19,661	0	0	\$180,100
2022	11,109	0	0	\$72,000
2023	11,992	0	0	\$666,500
2024	9,579	0	0	\$2,600

Source: New Bedford Fire Department, data current through September 30, 2024. ¹

Based on the highly likely probability and moderate consequence analysis ranking/score identified by the Technical Committee and confirmed by the LHMC, the City is considered at moderate risk to future urban fire-related incidents.

Property/People at Risk from Urban Fire-Related Incident

Populations most at risk to urban fires include low-income residents and neighborhoods, senior citizens, residents with disabilities and/or mobility concerns, young children, individuals living in overcrowded housing, residents living in poorly maintained buildings, and residents with limited access to fire safety education and/or emergency services. Essentially, groups facing socioeconomic disadvantages are disproportionately impacted by urban fires due to factors like housing quality and ability to evacuate.

Overview Summary of Urban Fire-Related Hazard Impacts:

Social/Economic vulnerabilities include:

- Compromised air quality impacts.
- Risk of injuries/death.

Environmental vulnerabilities include:

- Loss of natural resources, critical habitat and displacement/migration of species to other areas.

Infrastructure/Built Environment vulnerabilities include:

- Loss of entire neighborhoods, historical assets, and critical infrastructure.

Probability of Future Occurrence of Urban Fire-Related Hazards

Given the number of EJ communities and significant density of development throughout New Bedford, the probability of future occurrence of urban fire-related incidents is moderate for New Bedford.

3.6.4. Civil Unrest/Disturbance Incident

The severity of a civil disturbance incident varies and depends on the nature of the disturbance as well as the size of the crowd gathered. A low severity disturbance often results when police are dispatched to control traffic. A moderate severity disturbance is considered when businesses are disrupted or the result of property damage, requiring police intervention to restore order. Severe disturbance incidents typically involve some form of rioting, arson, assault, and potential death, warranting aggressive police intervention.

The only records of civil unrest incidents in New Bedford since 2016 were primarily associated with the murder of George Floyd and in support of the Black Lives Matter movement in Minneapolis at the end of May 2020. In New Bedford, there were approximately 15 days of civil unrest during 2020 while individuals protested around the City, resulting in no damages or violence overall. Since 2020, police departments throughout Massachusetts have been conducting periodic in-service trainings to help departments better prepare for events like this. Based on the potential probability and moderate consequence analysis ranking/score identified by the Technical Committee and confirmed by the LHMC, the City is considered at low risk to future civil disturbance incident-related hazards.

Property/People at Risk from Civil Unrest/Disturbance-Related Incident

The entire City is vulnerable to civil unrest and disturbance-related incidents, particularly the densely populated urban core where may congregate.

Overview Summary of Civil Unrest/Disturbance-Related Hazard Impacts:

Social/Economic vulnerabilities include:

- Risk of impacts to public health, safety and welfare.
- Risk of injuries and fatalities.
- Long-term social impacts (i.e., issues of racial inequality, economic disparity, or political grievances).

Environmental vulnerabilities include:

- Very limited impacts.

Infrastructure/Built Environment vulnerabilities include:

- Transportation network disruptions due to blocked roadways (including emergency response).
- Business could experience economic losses by way of vandalism or looting.

Probability of Future Occurrence of Civil Unrest/Disturbance-Related Hazards

Civil unrest and disturbance-related incidents will continue to occur in the future.

3.6.5. Chemical, Biological, Radiological, Nuclear (CBRN) Incidents

CBRN, often referred to as weaponized agents, can result in mass casualties and mass disruptions to society.⁵⁵

Chemical Incident

A chemical incident is characterized as an unexpected uncontrolled release of a chemical from its containment and typically occur at fixed-site facilities that manufacture, store, process, or otherwise handle chemical materials. Chemical incidents can also occur along major roadways, railways, waterways, and pipelines.

Biological Incident

A biological incident can be characterized by the accidental or intentional release of naturally occurring biological diseases by way of a biological agent, including:

- **Bacteria:** Single-cell organisms that are the causative agents of anthrax, brucellosis, tularemia, plague, as well as other diseases.
- **Rickettsia:** Microorganisms that resemble bacteria in their form and structure, however, differ in that they can reproduce inside animal cells as intracellular parasites (Typhus, Rocky Mountain spotted fever, and Q fever).
- **Viruses:** Intracellular parasites that are about 100 times smaller than bacteria infecting humans, crops, and domestic animals.
- **Fungi:** Can cause severe disease in humans, such as coccidioidomycosis (valley fever) and histoplasmosis.
- **Toxins:** Poisonous substance made by a living system, or a synthetic analogue of a naturally occurring poison (ricin and botulinum toxin).

Biological agents used as weapons fall into three groups: bacteria, viruses, and toxins. Many are difficult to grow and maintain, while many become non-toxic when exposed to environmental factors such as sunlight. On the other hand, others can be very long-lived. Biological agents are deadly in and of themselves; however, the method and accuracy of their delivery determines the overall severity of their damage.

The severity of a biological incident depends on the routes of exposure and means of delivery, including:

- **Inhalation:** The biological agent is aerosolized in a particle size that could be inhaled by an individual.
- **Injection:** The introduction of an agent into an individual by penetrating the skin barrier (syringe).
- **Ingestion:** Swallowing the agent or toxin.
- **Absorption:** Absorption of an agent by an individual's body, most readily through the mucous membranes.

⁵⁵ Commonwealth of Massachusetts, *Hazard Identification and Risk Assessment (HIRA)*, February 2019.

- **Person-to-person:** Infecting an individual through a variety of means (including those listed above), with the hope of further community spread.

Radiological/Nuclear Incident

A radiological/nuclear incident can be characterized as the uncontrolled release of radioactive material that can harm people or damage environmental resources. They typically involve nuclear assemblies, research, production, or power reactors and chemical operators. The Nuclear Regulatory Commission (NRC) provides guidance on these facilities and requires the development of response priorities and processes for a radiological event. The potential impacts from a nuclear event rely heavily on the nature of the event, as well as the weather conditions experienced during the time of the event. The NRC has developed an emergency classification system to indicate the risk of a radiological incident to the public, including:

- **Notification of Unusual Event:** Events are in process or have occurred which indicate potential degradation in the level of safety of the plant (no release of radioactive material requiring offsite response or monitoring).
- **Alert:** When declared, events are in process or have occurred which involve an actual or potential substantial degradation in the level of safety of the plant (releases of radioactive material are expected to be limited to a small fraction of the EPA Protective Action Guidelines (PAG) exposure levels).
- **Site Area Emergency:** Involves events in process, or which have occurred that result in actual or likely major failures of plant functions needed for protection of the public (releases of radioactive material not expected to exceed the EPA PAG exposure levels except near the site boundary).
- **General Emergency:** Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential loss of containment integrity (releases can reasonably be expected to exceed the EPA PAG exposure levels offsite).

The City maintains radiological detection equipment available to the Police and Fire Departments. The City also performs periodic hazmat trainings to mitigate the time waiting for the State Hazardous Materials Team to arrive, to address medical needs. The City has experienced a range of chemical incident-related accidents and spills since 2016, described in detail in Section 3.6.6. There have been no recorded biological, radiological, or nuclear incidents in New Bedford.

Based on the highly likely probability and moderate consequence analysis ranking/score identified by the Technical Committee and confirmed by the LHMC, the City is considered at moderate risk to future chemical incident-related hazards. Based on the potential probability and moderate consequence analysis ranking/score identified by the Technical Committee and confirmed by the LHMC, the City is considered at low risk to future biological, radiological, and nuclear incident-related hazards.

Property/People at Risk from CBRN-Related Incident

The entire City is vulnerable to a CBRN incident-related hazard. Urban areas and locations where people gather are at greater risk.

Overview Summary of CBRN-Related Hazard Impacts:
Social/Economic vulnerabilities include:

- Can lead to immediate health hazards resulting in acute medical conditions and even fatalities.
- Large-scale evacuations can lead to disruptions to daily lives.

Environmental vulnerabilities include:

- Contamination of water supplies, soil, and air quality.

Infrastructure/Built Environment vulnerabilities include:

- Strains on healthcare systems.
- Radiological incidents can render areas of the community uninhabitable for extended periods.

Probability of Future Occurrence of Civil Unrest/Disturbance-Related Hazards

There is a potential probability of a CBRN incident occurring in New Bedford in the near future.

Human-Caused (Other/Accidental) Hazards

This section incorporates human-caused-related hazards considered to be “accidental” in nature rather than intentional (deliberate) previously discussed.

3.6.6. Hazardous Materials Accident/Spill

A hazardous materials incident is characterized as an unexpected uncontrolled release of a chemical from its containment and typically occur at fixed-site facilities that manufacture, store, process, or otherwise handle hazardous materials. Hazardous materials incidents can also occur along major roadways, railways, waterways, and pipelines.

Common routes of exposure include inhalation, ingestion, and physical contact, which may lead to respiratory distress, organ failure, burns, or death. Absorption rates vary and depend on the concentration of the chemical, the duration of the exposure, air temperature, humidity levels, and the age of the person affected. The severity of a chemical incident depends on the type and amount of the material released, proximity to populations or sensitive areas such as waterways, and environmental factors such as wind velocity and direction and sunlight exposure.

There are two Superfund sites within New Bedford: New Bedford Harbor and Sullivan’s Ledge. Due to the release of Polychlorinated Biphenyls (PCBs) and other pollutants from poor housekeeping and waste management associated with the manufacture of electrical capacitors at facilities along the Acushnet River leading to New Bedford Harbor from the early to mid-late 1900s, the entire Harbor was added to the EPA Superfund National Priorities List in July 1982 under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). EPA completed three decades of dredging of contaminated sediment New Bedford Harbor in 2024, but residual concentrations of PCBs remain in sediment and in the food chain and will take several years to attenuate. To that end, there is signage prohibiting consumption of fish and shellfish along the Harbor due to residual PCBs. The MA Department of Marine Fisheries maintains updated maps of closed shellfish areas online For Clarks Cove ([BB13.pdf](#)), New Bedford East Coastal ([BB14.pdf](#)), and New Bedford/Fairhaven Harbor ([BB15.pdf](#)).⁵⁶

⁵⁶ MA Department of Fish and Game – Division of Marine Fisheries, *Closed Shellfish Areas*, <https://www.mass.gov/orgs/division-of-marine-fisheries>, accessed February 27, 2025.

Outside of the human consumption exposure pathway, EPA deems that residual PCB levels in the Harbor are protective of human health.

Sullivan's Ledge was utilized as a quarry over decades in the early 1900s. Numerous area industries used these City-owned quarry pits for hazardous waste disposal from the 1930s to the 1970s. EPA included the site in the Superfund Program in 1984. The City and a group of responsible parties have been performing cleanup activities at Sullivan's Ledge since the late 1990s. The disposal area has been permanently capped while groundwater remediation is ongoing. Cap inspection takes place annually to ensure stability. Storm-related power outages that may temporarily halt groundwater treatment would not increase the likelihood of an exposure hazard.

Several facilities in New Bedford store, use, dispose, or handle hazardous materials on a regular basis. These facilities are commonly known as "Tier I" or "Tier II" facilities regulated by Title III of the Emergency Planning and Community Right to Know Act (EPCRA). The New Bedford Regional Airport maintains *Rules and Regulations* regarding hazmat storage/disposal and spill prevention/control. As a result, the City of New Bedford is at greater risk of a chemical incident.

The City has experienced a range of hazardous material accidents and spills since 2016 (**Table 3-22**).

Table 3-22. Hazardous Material Accidents/Spills, New Bedford, 2016 – 2024

Type	2016	2017	2018	2019	2020	2021	2022	2023	2024
Oil/Other Combustible Liquid Spill	20	17	5	8	10	17	21	15	5
Combustible/Flammable Gas/Liquid Condition	7	3	7	6	1	2	3	5	2
Overpressure Rupture/Explosion/Overheat	1	1	2	1	1	0	0	2	0
Explosive/Bomb Removal	1	0	0	1	0	1	0	1	0
Biological Hazard	1	1	2	0	24	0	1	1	0
Explosion	2	1	1	0	0	1	1	0	0
Refrigeration Leak	0	2	0	1	0	0	2	1	4

Source: New Bedford Fire Department, data current through August 6, 2024.

The City performs periodic hazmat trainings to mitigate the time waiting for the State Hazardous Materials Team to arrive and address medical needs. Based on the highly likely probability and moderate consequence analysis ranking/score identified by the Technical Committee and confirmed by the LHMC, the City is considered at moderate risk to future hazardous materials incident-related hazards.

Property/People at Risk from Hazardous Materials Accident/Spill-Related Incident

The entire City is equally susceptible to a hazardous materials release incident. Many chemical shipments move through Massachusetts annually at varying times, day or night, via roadway networks, rail, air and water, and often through urbanized areas like New Bedford.

Overview Summary of Hazardous Materials Accident/Spill-Related Hazard Impacts:

Social/Economic vulnerabilities include:

- Can lead to immediate health hazards resulting in acute medical conditions and even fatalities.
- Large-scale evacuations can lead to disruptions to daily lives.

Environmental vulnerabilities include:

- Contamination of water supplies, soil, and air quality.

Infrastructure/Built Environment vulnerabilities include:

- Strains on healthcare systems.

Probability of Future Occurrence of Hazardous Materials Accident/Spill-Related Hazards

Based on the number of facilities, the highly urbanized areas, and transportation routes in and through New Bedford, there is a highly likely probability of a hazardous materials release incident occurring.

3.6.7. Nuclear Power Plant Incident

The presence of nuclear power plants in or near Massachusetts brings the potential risk of a radiological release should an accident occur at the plant that compromises or causes safety systems to fail. A radiological release from a nuclear power plant could send particles of radiological material into the environment, posing a risk to the health of people and the environment. The particles would be spread by the wind and eventually fall to the earth. The distance that radioactive particles travel depends primarily on weather conditions. Heavier particles would fall quickly near the point of release. Strong winds could spread lighter particles over a larger area but would also contribute to greatly reducing the concentration of radiation contained in the particles. Rain would increase the rate at which the particles fall to earth, but the levels of radioactivity might be higher.

Each nuclear power plant has two designed emergency planning zones. The first, known as the Plume Exposure Pathway zone, is traditionally a 10-mile radius around the nuclear power plant. Emergency plans for this zone seek to avoid or reduce radiological dose from exposure to radioactive particulates released from the plant if an accident causes safety systems to fail. The second emergency planning zone is known as the Ingestion Pathway Zone (IPZ) zone and is traditionally a 50-mile radius around the nuclear power plant. Emergency plans for this zone seek to avoid or reduce dosages from ingestion of radiological particles released from a plant if an accident causes safety systems to fail.

New Bedford is within 50-mile IPZ of the Pilgrim Nuclear Power Station in Plymouth, Massachusetts. Pilgrim Nuclear Power Station ended power generation operations on May 31, 2019, and is currently being decommissioned. Since the Station is in progress for decommissioning, the 50-mile IPZ associated with it has been dissolved and the Commonwealth is no longer required to exercise radiological emergency response plans for the site.

There have been no nuclear power plant incidents in Massachusetts/New Bedford that have resulted in a radiological release. Based on the 2019 closure and ongoing decommissioning of the station, the Technical Committee ranked/scored the probability of a nuclear power plant incident as unlikely with a low consequence analysis also confirmed by the LHMC. The City is thus considered at low risk of future nuclear power plant failure incidents.

Property/People at Risk from a Nuclear Power Plant Station Incident

Due to the 2019 closure and ongoing decommissioning of the station, New Bedford is not vulnerable/at risk of a nuclear power plant incident.

Probability of Future Occurrence of a Nuclear Power Plant Station Incident

Based on the 2019 closure and ongoing decommissioning of the station, there is an unlikely probability of a nuclear power plant incident.

3.6.8. Major Airplane Crash

The New Bedford Regional Airport is located approximately two miles northwest of downtown New Bedford in Southeastern Massachusetts (**Figure 3-22**). Situated 78.7 feet above mean sea level, the Airport provides the City of New Bedford with aviation facilities designed to accommodate a full range of aviation services and operators including small general aviation aircraft, corporate business jets, and commercial service passenger aircraft.⁵⁷ The Airport includes two runways, an FAA Control tower, over 150 registered aircrafts, and a flight school. There are over 55,000 annual operations including takeoffs and landings at this 823-acre facility.



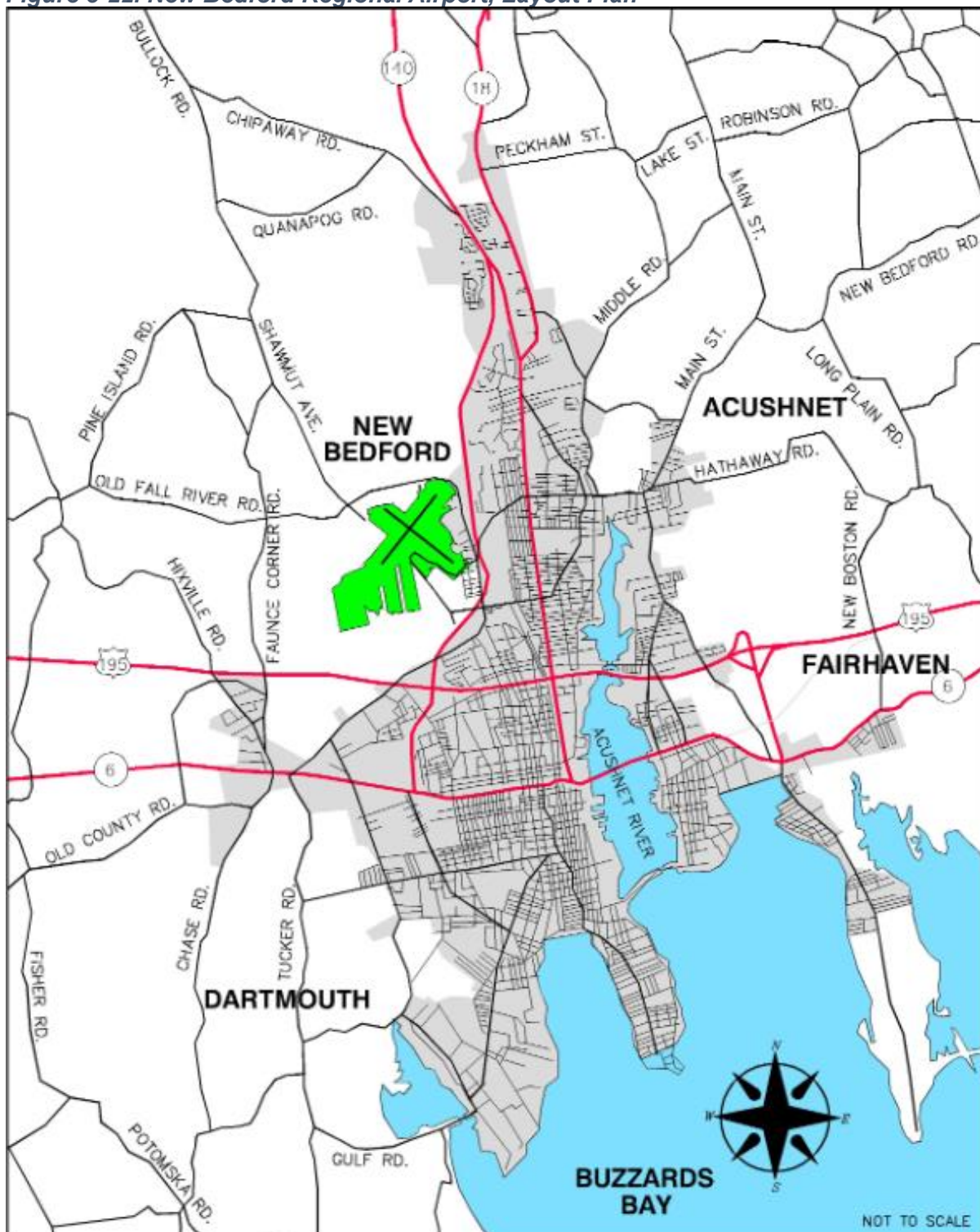
Aerial image of New Bedford Regional Airport.

A major aircraft crash event (MACE) is defined as an aircraft crash involving ten or more persons. Several smaller aircraft crashes—typically a small aircraft rolling off a runway—occurs in Massachusetts each year. This hazard focuses on a MACE, which would involve a significant crash that would include extensive damage to the aircraft involved, multiple injuries and/or deaths passengers, crew, and people in or around the crash site, and possibly property damage on the ground. A MACE may involve domestic or international civilian passenger aircraft, freight aircraft, or armed or unarmed military aircraft. The crash site may be within or outside airport boundaries, including urban, suburban, rural, or marine areas of the Commonwealth. Significant disruption may occur to local emergency response, natural resources, and the environment with the destruction of property.⁵⁸

⁵⁷ City of New Bedford, *New Bedford Regional Airport Master Plan Update*, 2013, https://newbedford-ma.s3.amazonaws.com/wp-content/uploads/sites/29/20220304114731/EWB-AMPU-Complete-FINAL-2014_06_11.pdf.

⁵⁸ Commonwealth of Massachusetts, *Hazard Identification and Risk Assessment (HIRA)*, February 2019.

Figure 3-22. New Bedford Regional Airport, Layout Plan



Source: New Bedford Regional Airport Layout Plan, <https://newbedford-ma.s3.amazonaws.com/wp-content/uploads/sites/29/20220304120543/ALP.pdf>.

There has been a range of incidents reported at the New Bedford Regional Airport since 2016 (**Table 3-23**).

Table 3-23. Incidents, New Bedford Regional Airport, 2016 – 2024

Date	Injuries/ Fatalities	Notes
3/20/2016		Aircraft landed with faulty gear indication, landed safely
3/29/2018		Aircraft landed with flat nose wheel, damage to propeller
11/4/2019	1 fatality	Fatal crash of Cessna 150 in City cemetery
11/6/2020		Landing gear failed to extend, aircraft landed without gear damaging the belly of the aircraft
11/6/2020		Aircraft reported rough engine on approach, landed without incident
3/30/2021		Taxiing aircraft struck a taxiway light, no aircraft damage
8/27/2021		Landing aircraft missed end of runway hitting runway edge light, no aircraft damage
10/27/2021		Small aircraft without an engine broke loose during a windstorm from its tiedowns, flipping over the perimeter fence to airport road, no injuries, aircraft already declared unairworthy by owner
10/27/2021		Single engine aircraft broke loose from tiedowns flipping over on its back. Fuel cleaned up and aircraft removed by Colonial Aviation. Aircraft totaled
10/27/2021		Part of the fence line on the west side of the field was blown loose by storm, fixed by airport next day
3/10/2022		Unruly passenger vandalized the Avis/Budget kiosk, no trespass order issued by airport and New Bedford Police
10/15/2022		Aircraft landed with possible collapsed nose gear, nose gear held, no injuries
11/27/2022		Unknown individual issued aircraft threats at Sandpiper Aviation and Colonial Air police removed individual from the airport and police report filed
1/17/2023		Aircraft had a high temperature reading on the engine turbo, landed without incident for repairs
5/6/2023		Aircraft landed on runway 32 with flat front tire, aircraft towed and tire fixed
5/30/2023		Motor vehicle accident with construction vehicle, accident report filed and claim paid
6/6/2023		Small aircraft landed with flat left main tire, no injuries and aircraft towed to Sandpiper Aviation where tire replaced
8/3/2023		Faulty landing gear indicator, aircraft landed without incident
8/19/2023		Turbo prop aircraft had to divert on approach to runway 32 due to large drone flying at 900 AGL, landed without incident. New Bedford Police could not locate drone operator
8/25/2023		Aircraft landed with flat nose wheel tire, towed to FBO and fixed

9/19/2023		Small single engine aircraft veered off runway 32 due to low pressure in left main wheel, no injuries/damage
1/11/2024		Small aircraft landed runway 32 with a flat tire, towed to FBO and fixed
2/4/2024		Aircraft diverted to New Bedford Airport with an auto-pilot issue, landed runway 5, taxied clear of runway reset system and departed
2/15/2024		Cape Air passenger fell boarding aircraft, copy of incident report filed with airport
7/5/2024		Small twin engine landed with rough running engine, landed without incident and taxied to Nor East Aviation for maintenance
7/19/2024		Motor vehicle hit a section of a culvert guard rail, police report filed and claim made against driver
9/3/2024		Motor vehicle hit a section of vinyl fence, police report filed and claim made against driver

Source: New Bedford Regional Airport, 2024

Based on the potential probability and low consequence analysis ranking/score identified by the Technical Committee and confirmed by the LHMC, the City is considered at low risk to future airplane crash incidents.

Property/People at Risk from an Airplane Crash incident

The entire City of New Bedford is susceptible to an airplane crash, either within or outside the airport boundaries.

Overview Summary of Airplane Crash-Related Hazard Impacts:

Social/Economic vulnerabilities include:

- Risk of injuries and fatalities.

Environmental vulnerabilities include:

- Potential contamination of water supplies, soil, and air quality (depending on scale/intensity/location of crash).

Infrastructure/Built Environment vulnerabilities include:

- Business/Transportation disruptions (depending on scale/intensity/location of crash).

Probability of Future Occurrence of an Airplane Crash Incident

Based on the potential probability and moderate consequence analysis ranking/score identified by the Technical Committee and confirmed by the LHMC, the City is considered at low risk to future airplane crash events.

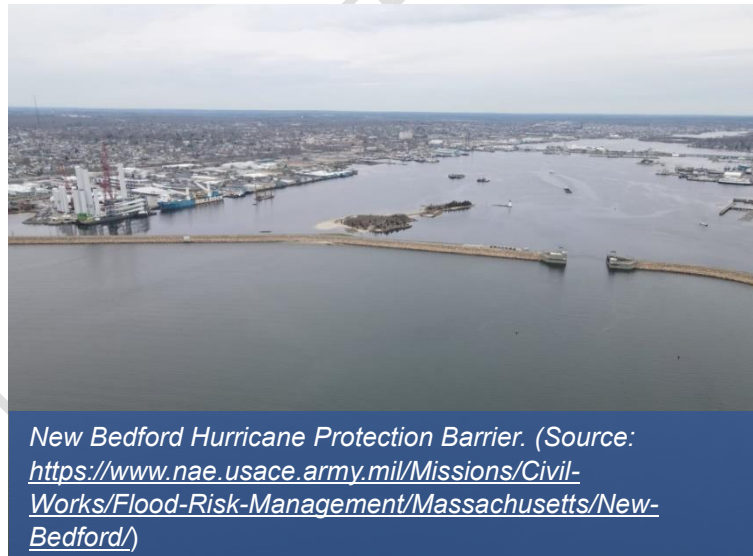
3.6.9. New Bedford – Fairhaven – USACE Hurricane Barrier System Incident/Failure⁵⁹

The New Bedford – Fairhaven – The U.S. Army Corps of Engineers (USACE) Hurricane Barrier System was constructed from 1962 to 1966 and is operated and maintained by the USACE, the City of New Bedford, and the Town of Fairhaven. The barrier system was built to provide protection from tidal and hurricane flooding for about 1,400 acres of property in New Bedford, Fairhaven, and Acushnet. It consists of three separate barrier structures; the main barrier or New Bedford Harbor Dike and Barrier, the Clarks Cove Dike and the Fairhaven Dike.

The barrier was certified by the FEMA in July 2011 following an inspection of the flood control system (s). The most recent inspection of the barrier was completed by USACE in October 2024. Barrier certification allows portions of the City, which would otherwise be requested to purchase flood insurance, to be included in a special hazard area (shaded Zone X). These areas are recognized by FEMA – and the insurance industry – as protected by the barrier as long as it remains certified.

The City is responsible for the following hurricane barrier system components:

- The New Bedford Harbor Dike and Barrier along East Rodney French Boulevard between Gifford Street and the street gate
- Clarks Cove ponding area and pumping station
- Clarks Cove Dike
- All pipelines and control gates in these portions of the barrier



New Bedford Harbor Barrier and Dike

The 9,100-foot long New Bedford Harbor Barrier and Dike consists of a 4,500-foot -long earth and rock fill barrier across the New Bedford Harbor with 150-foot-wide navigation gate plus a 3,600-foot-long earthen dike extension along the western New Bedford waterfront extending from Gifford Street to Rodney Street along East Rodney French Boulevard. The Harbor Barrier has a design crest elevation of 19.2 feet North American Vertical Datum of 1988 (NAVD88). The Dike Extension was designed with a crest elevation of 21.2 feet NAVD88. A street gate is used to provide continuous line of protection where the dike is crossed by East Rodney French Boulevard.

The dike is protected by stone armor along the full length of the seaward side, crest, and backslope. The dike is penetrated by two gated conduits in the harbor barrier plus a stormwater

⁵⁹ Long Term CSO Control and Integrated Capital Improvements Plan, City of New Bedford, Massachusetts, CDM Smith, January 2017...USACE updated February 2025.

outfall and two seawater intakes along the western dike extension. In addition, at the East Rodney French Boulevard Street gate, the East Rodney French Boulevard Collector crosses under the barrier. A gate on the collector sewer is in place in the event of tidal surge to mitigate flooding from the City's sewer system.

A twin box culvert is located along the drainage ditch between East Rodney French Boulevard and the barrier allowing stormwater to be conveyed to the backside of the barrier. USACE operates and maintains the 4,500-foot barrier across New Bedford Harbor, the navigation gates, and the two gated conduits. The City of New Bedford owns and maintains the dike extension along East Rodney French Boulevard, with street gate, stormwater outfall, sewer system gate, culvert, and intake structures.

Clarks Cove Dike

West of the New Bedford Harbor Dike and Barrier, the Clarks Cove Dike consists of a 5,800-foot-long earth and rockfill dike with stone armor. This section of the barrier is owned and maintained by the City of New Bedford. The dike was designed with a crest elevation of 21.2 feet NAVD88 transitioning to 22.2 feet along the eastern side. Two street gates cross through the barrier; one on the west end at Cove Road and one on the east end at West Rodney French Boulevard. Other penetrations of the barrier include a pumping station and outfall, three storm drain structures, and three seawater intakes.

Integral components of the Clarks Cove Dike also include a large conveyance conduit that is located at the toe of the barrier slope on the landward side, a sewer gate located on the City's Main Intercepting Sewer, the Clarks Cove pumping station, and the Cove Road ponding area.

Clarks Cove Pumping Station and Ponding Area

The Clarks Cove (Hurricane Barrier) pumping station is located at the base of the hurricane barrier, adjacent to the ponding area, and has four 55,000 gallons per minute (gpm) pumps. It conveys storm and wastewater flows to Clarks Cove when the Main Intercepting Sewer control gate is closed. The pumping station is also used during larger wet weather events occurring with a high tide to prevent sewer system flooding.

The Cove Road ponding area is a narrow, depressed strip of land between the hurricane barrier and Cove Road. The ponding area was constructed by the USACE as part of the flood control measures for the hurricane barrier. It has an estimated storage volume of approximately 1 million cubic feet.

As part of operations during a major hurricane, the following procedures are anticipated (Note: Not all procedures may be implemented, based on anticipated storm surge and storm intensity):

The hurricane barrier street gates at East Rodney French Boulevard, West Rodney French Boulevard, and Cove Road are closed.

Sluice gates along the City's Main Intercepting Sewer at Stapleton Street twin 48-inch by 36-inch gates) and West Rodney French Boulevard and Woodlawn Street (96-inch by 84-inch gate) are closed.

Gates on the Cove Road Collector at Rockdale Avenue and Cove Road and East Rodney French Boulevard at Rodney Street are closed.

Flow from the Cove Road Collector and East Rodney French Boulevard Collector is directed to local receiving waters through CSO regulators.

Flow from the City's Main Intercepting Sewer is diverted to a large conduit along Stapleton Street to an 84-inch conduit along the base of the hurricane barrier at the northern edge of Clarks Cove.

As surcharging within the Main Intercepting Sewer and 84-inch conduit rises, excess flow is allowed to relieve itself through diffusers located on the crown of the 84-inch conduit at the base of the hurricane barrier. The diffusers are located within the ponding area which is used for flood storage. As the water level in the ponding area rises, the Clarks Cove Pumping Station, located at the base of the barrier, pumps flow from the Main Intercepting Sewer and 84-inch conduit to Clarks Cove, preventing surcharging of the upstream sewer system.

The City has historically utilized the ponding area as in-system storage during larger wet weather events with high tides to reduce the volume of CSO discharges to Clarks Cove from Outfalls 003, 004 and 018. During these wet weather events, combined sewer flow from Regulators 004A, 004B, 004G, 004H and 004I discharge to the 84-inch conduit located at the base of the hurricane barrier.

Similar to a hurricane scenario, as surcharging within the 84-inch conduit increases, flow is allowed to relieve itself through the diffusers located on the 84-inch conduit. Should surcharging not exceed the maximum capacity of the ponding area, the Cove Road pumping station pumps the stored flow from the ponding area to the City's Main Intercepting Sewer when flows subside. However, if the water level within the ponding area increases to an elevation just below the top of the storage bank and tides are low enough, the City opens the gate at Outfall 004, which allows the stored flow to discharge to Clarks Cove, resulting in a CSO discharge. Should the ponding area require discharge during a high tide, the Clarks Cove Pumping Station is used to pump the flow to Clarks Cove.

This operating procedure for CSO storage was developed to minimize CSO discharges and their impact to Clarks Cove. In essence, the City was attempting to find a balance between shellfishing and recreational use in the Cove and public health risk associated with using the ponding area, a non-recreational space designated for flood control by the USACE. However, it has since been questioned whether the public health risks of using the ponding area for temporary CSO storage outweighs the water quality benefits. Therefore, the City intends to minimize the use of the ponding area for CSO storage, since there is a risk of public exposure to sewage in this above ground area. In the meantime, the City has installed a chain linked fence around the site to restrict the public from entering the ponding area.

There have been no recorded failures of the hurricane barrier system since 2016. Based on the potential probability and moderate consequence analysis ranking/score identified by the New Bedford Technical Committee and confirmed by the LHMC, the City is considered at low risk to future hurricane barrier failure incidents.

Climate Change Impacts on Hurricane Barrier System Failures

Climate change is expected to result in the increased frequency and intensification of hurricanes and tropical storms worldwide. Rising sea levels, couple with potentially higher hurricane wind speeds, rainfall intensity, and storm surges will combine to create more intense hurricanes, resulting in increased impacts to coastal communities.

Property/People at Risk from a Hurricane Barrier System Failure-Related Incident

The entire City of New Bedford is equally susceptible to a hurricane barrier system failure incident.

As New Bedford Harbor's industrial activity increases and diversifies, the Port is receiving larger vessels entering and departing the harbor at a greater frequency than it has historically. Recently, many of those vessels have been related to the emerging offshore renewable energy industry, comprising survey vessels, construction/installation/operations vessels, tug-assisted barges, and heavy lift component delivery vessels. This increased activity amplifies the ongoing concerns about potential allisions to the 60+ year old gate system and what precautions, measures, or remedies may be taken to avoid or minimize such allisions, and importantly what plans and responses have been prepared for to rapidly return the gate system to operation. Future growth in the Port will likely lead to a rise in vessel traffic of sizes beyond what has been seen traditionally. Great care will need to continue to be taken by USACE, the USCG, Pilots, and Port leadership to prudently manage vessel transits through the barrier. The City of New Bedford remains on record urging the USACE to have a plan in place – and available replacement parts and components in stock and available for immediate deployment in the event of an allision or other damage – to ensure that continuity of port operations and the City's ongoing storm protection are uninterrupted or minimized to the maximum extent possible.

Overview Summary of Hurricane Barrier System Failure-Related Hazard Impacts:

Social/Economic vulnerabilities include:

- Impacts to public health, safety and welfare by way of inundation with the potential for contaminating drinking water and spreading waterborne diseases, often resulting in temporary/permanent displacement and causing emotional/psychological stress.

Environmental vulnerabilities include:

- Impacts to the environment/ecosystems by way of inundation displacing wildlife, carrying pollution/hazardous materials into natural habitats, and disrupting natural ecological processes.

Infrastructure/Built Environment vulnerabilities include:

- Impacts to the community's critical facilities/infrastructure by way of inundation including structural and equipment damage at public/private buildings, disruptions to normal/daily actions (water supply, sewer conveyance/treatment, and communications), and transportation network disruptions.

Probability of Future Occurrence of a Hurricane Barrier System Failure-Related Incident

Although the City of New Bedford has not experienced any hurricane barrier system failure incidents, a significant failure could result in severe impacts to public health, safety, and welfare, including disruptions to emergency response efforts, and damage to public and private property. Although difficult to predict, a failure-related incident is possible within the next five years.

3.6.10. Infrastructure Failure

Infrastructure failure hazards generally refer to the critical infrastructure or utility facilities or "lifeline sectors" necessary for the safety, security, and economic wellbeing of the Commonwealth and its cities and towns. Infrastructure failure is considered any disruption to critical infrastructure that could have cascading effects that negatively impact a community's security, public health and safety, and economic vitality. The Commonwealth has designated six

lifeline sectors whose resources and assets are critical to every aspect of daily lives, in addition to their interdependence on each other and all other sectors (**Table 3-24**).

New Bedford is served by the following public utilities:

- Electricity is supplied by Eversource (NSTAR)
- Natural gas is supplied by Eversource (NSTAR)
- Drinking water is supplied by a municipal system
- Wastewater is processed by a municipal, combined sewer/stormwater system
- Telephone/Cell Phone service is provided by T-Mobile, Verizon and AT & T
- Internet/Cable service is provided by Comcast and Verizon
- Fiber lines provided by OpenCape and Externet

Table 3-24. Lifeline Sectors Impacted by Infrastructure Failure

Lifeline	Description
Communications	The communications sector includes any service that enable both routine and emergency communications, such as cell towers, phone lines, dispatch systems, radio infrastructure, and satellite communications.
Emergency Services	The emergency services, which include police, fire, emergency management, public works, and emergency medical services lifeline sectors, provide support to the public during daily response operations. The emergency services sector represents the first line of defense in the prevention and mitigation of risk from hazards such as terrorist attacks, human-caused incidents, and natural disasters. In addition, the emergency services sector has a myriad of specialized capabilities such as hazardous materials response, search and rescue, and tactical teams.
Energy	The energy sector provides power to the community, public and private sectors, government, and first responders. The energy sector is divided into three interrelated segments: electricity, oil, and natural gas.
Information Technology	The information technology sector includes all system networks, hardware, software, information technology systems and services, and the Internet.
Transportation Systems	Transportation systems include roadways (federal, state, and local managed), railway (passenger and freight), airports, and marine ports (passenger and freight). Transportation incidents include a large-scale crash, collision, or incident involving the disruption of an air, land (road), rail, or marine mode of transportation. The Commonwealth is home to major highways, airports, railroads and marine ports.
Water and Wastewater/Stormwater Systems	Water and wastewater/stormwater systems ensure the provision of clean water and the treatment of all water and wastewater/stormwater. Safe drinking water is a prerequisite for protecting public health and all human activity, properly treated wastewater is vital for preventing disease and protecting the environment, and accommodations for

Lifeline	Description
	stormwater capacity/conveyance is critical to minimizing flooding impacts.

Source: Commonwealth of Massachusetts, Hazard Identification and Risk Assessment (HIRA), February 2019.

Communications

The services that rely heavily on communications include emergency response providers and healthcare providers. Disruptions in their ability to communicate effectively can result in delays in emergency response, medical treatment, and potentially loss of life. Disruptions in the general public's communications systems can result in delays regarding the dissemination of emergency information warnings and/or alerts. There have been no significant communication failures of note since the 2016 plan.

Based on the highly likely frequency and moderate consequence analysis ranking/score identified by the Technical Committee and confirmed by the LHMC, the risk of a communications failure incident is considered moderate in New Bedford.

Climate Change Impacts on Communications

Natural hazard events can often directly contribute to communications threats primarily through the long-term loss of power. Projected increases in the frequency and severity of natural hazards, particularly wind-related events such as downed power lines, will likely impact the continuity of communications.

Emergency Services

Similar to communications, the services that rely heavily on emergency services include emergency response providers, healthcare providers, and specialized capabilities such as hazardous materials response, search and rescue, and tactical teams. Disruptions in their ability to provide services effectively can result in delays in emergency response, medical treatment, and potentially loss of life. As discussed previously in Section 3.6.3, the New Bedford Fire Department responds to a range of rescue/emergency medical calls, hazmat calls, and mutual aid calls to other communities every year. There have been no significant emergency services failure incidents since the 2016 plan.

Based on the highly likely frequency and moderate consequence analysis ranking/score identified by the Technical Committee and confirmed by the LHMC, the risk of an emergency services failure incident is considered moderate in New Bedford.

Climate Change Impacts on Emergency Services

Natural hazard events can often directly contribute to emergency services threats primarily through the long-term loss of power and temporary and/or long-term access disruptions in the transportation network. Projected increases in the frequency and severity of natural hazards, particularly flood-, winter-, and wind-related events will likely impact the continuity of emergency services.

Energy⁶⁰

The energy sector is unique in that it enables the functionality of all infrastructure sectors. Power outages, the most common type of failure, can result in negative sequential patterning to the environment and lifestyle: it can cause an overabundance of carbon monoxide due to the use of generators, grills, and similar items during an outage; food spoilage; compromised water purification systems resulting in water that may be unsafe to drink; loss of heating/air conditioning, resulting in vulnerability to extreme heat and cold; and electric shock resulting from damaged power lines and power surges when electricity is restored. There have been no significant energy sector failure incidents since the 2016 plan.

Based on the highly likely frequency and moderate consequence analysis ranking/score identified by the Technical Committee and confirmed by the LHMC, the risk of an energy sector failure incident is considered moderate in New Bedford.

Climate Change Impacts on Energy

Climate change and projected increases in warmer temperatures are likely to increase both electricity demand for cooling in the summer and decrease electricity, natural gas, heating oil, and wood demand for heating in the winter. SLR projections and increases in the frequency and intensity of intense storm events could disrupt energy production and delivery by damaging electricity infrastructure, fuel delivery infrastructure and equipment, power plants, or storage facilities.

Information Technology

Information technology systems and services include the networks, hardware, software, and the Internet that so many residents, businesses, and agencies/organizations rely on every day. Threats to information technology systems and services require effective responses to minimize loss of critical data and continuity of services and security.

As previously discussed in Section 3.6.1, New Bedford has experienced only one, although significant, cyber security breach since 2016 when the City's Information Technology Department disrupted a ransomware attack using the RYUK virus (2019). Since then, the Information Technology Department has implemented several cyber security solutions that has greatly improved the security of the City's network, servers, and end users, allowing for early detection before any damage can be done.

Based on the highly likely frequency and moderate consequence analysis ranking/score identified by the New Bedford Technical Committee and confirmed by the LHMC, the risk of an information technology failure incident is considered moderate in New Bedford.

Climate Change Impacts on Information Technology

Natural hazard events can often indirectly contribute to information technology threats through long-term loss of power, or extreme heat. Projected increases in the frequency and severity of natural hazards, particularly wind-related events such as downed power lines, will likely impact the provision for and security of information technology.

⁶⁰ Commonwealth of Massachusetts, *Hazard Identification and Risk Assessment (HIRA)*, February 2019.

Transportation Systems

The quality of the City's transportation systems (roads and highways) contributes significantly to the response during a disaster. Poor quality systems and structures can hinder access or limit ability to evacuate if necessary. Bridges are also a component of the critical infrastructure.

Highway

The City maintains 271 miles of accepted streets and 10 miles of unaccepted roadways. Additionally, Interstate 195 runs east to Cape Cod and west through Fall River and on into Providence, RI where it joins Interstate 95. Interstate 195 is paralleled by U.S. Route 6 (Kempton Street). Route 140, which starts at Route 6, travels in a generally northerly direction to Taunton and joins Route 24 towards Boston. Secondary Route 18 connects New Bedford with neighboring towns to the north. There are also 355 miles of sidewalks/walkways, 13 miles of cemetery roads, and 5,321 ADA ramps (1,580 compliant, 3,741 non-compliant).

Rail

Mass Coastal Railroad (formerly Conrail) provides freight service into New Bedford and continuing into Dartmouth and points west.

MBTA's South Coast Rail project will restore commuter rail service between Boston and southeastern Massachusetts by the spring of 2025. Taunton, Fall River and New Bedford are the only major cities within 50 miles of Boston that do not currently have commuter rail access to Boston. South Coast Rail will reconnect this region to jobs and generate economic development. Phase

Bus

New Bedford is served by two long-distance carriers providing daily passenger and package service. Bonanza/Peter Pan Bus serves points west (Providence, RI and New York City, NY) and east (Cape Cod) of the city, and DATTCO (formerly American Eagle Motor Coach) provides service to Boston. Additionally, the SRTA provides local service within the city and to neighboring communities.

Air

The New Bedford Regional Airport is served by one air carrier that provides both passenger and freight service to the islands of Martha's Vineyard and Nantucket, as well as charter service to any point in the continental United States. Additionally, there are several charter and aircraft repair services operating at the Airport. The Airport has two 5,000-foot paved runways, each 150 feet wide, and an FAA Control Tower.

Marine

New Bedford's Harbor is a deep-water port with depths of 30 feet plus. The Port has the largest USDA cold treatment facility in North America. The Port is part of the New Bedford Free Trade Zone, which provides manufacturing opportunities for duty-free importers and exporters. The Port offers a ship agency, freight forwarding, stevedoring services, blast freezing, warehouse and truck-brokering facilities all in one location. It is the largest break bulk handler of perishable items in Massachusetts and adjacent states. The Port also has a waterfront warehouse capacity that is one of the largest USDA approved cold treatment centers on the east coast. Extensive harbor and docking facilities, as well as support operations (fuel, repair, supply, etc.) are available. The Harbor is home port to over 200 fishing vessels. There are over 950 slips, including 198 at the publicly managed Pope's Island Marina.

Ferry

There is ferry service from New Bedford to Martha's Vineyard, Nantucket, and Cuttyhunk Island.

There have been no significant transportation system failure incidents since 2016. Based on the likely frequency and low consequence analysis ranking/score identified by the Technical Committee and confirmed by the LHMC, the risk of a transportation system failure incident is considered low-moderate in New Bedford

Climate Change Impacts on Transportation Systems

Natural hazard events can often indirectly contribute to transportation system threats through making roadways impassable and conditions unsafe for travel/operations. Projected increases in the frequency and severity of natural hazards such as precipitation and flooding, or wind-related events that cause downed trees or power lines will likely impact the provision for and security of transportation systems.

Water, Wastewater/Stormwater Systems

Water System⁶¹

Since the water supply system's inception in 1863, the City has made many extensions and improvements to the water distribution system, which helped provide New Bedford residents with a valuable resource of abundant potable water. As the system expanded, the City extended its service area to include customers in portions of Acushnet, Dartmouth, Fairhaven and Freetown. The system is owned by the City of New Bedford and is operated by the DPI's Water Division.

New Bedford's water supply system currently consists of five surface water ponds, two dams, raw water diversion structures, two intakes, a 45 million gallon per day (mgd) water treatment plant, about 300 miles of transmission and distribution pipes, a 75 million gallon covered finished water storage reservoir with remote disinfection facility, an elevated storage tank, two booster pumping stations and about 24,000 metered service connections. These facilities are spread across several southeastern Massachusetts communities, but the City owns, maintains, and operates all of the facilities. The Water Division is responsible for the operation and maintenance of the City's water supply system, which operates as an enterprise fund and is self-supported through water fees.

The City of New Bedford's surface water supply includes five ponds known as the APC. The five ponds are located in the towns of Freetown, Lakeville, Middleborough and Rochester and are part of the Taunton River watershed, which has two sub-watershed basins. The first sub-basin includes Long Pond, Assawompset Pond and Pocksha Pond while the second subbasin consists of Great and Little Quittacas Ponds.

The City of New Bedford owns about 3,000 acres of land around the five ponds, which was purchased in an effort to protect the watershed and the water quality in the source ponds. The watershed is very extensive and heavily wooded, with limited access via fire roads. In 2004, the City contracted with a forester to groom and maintain the forest surrounding the watershed and has subsequently developed a Forest Management Plan.

⁶¹ *Water Distribution System Evaluation and Capital Improvements Plan Update*, 2009, CDM Smith.

The City of Taunton also utilizes the APC as its source for public water supply. New Bedford's intake and water treatment plant (WTP) are located at the Little Quittacas Pond, which is the main surface water supply for New Bedford. Taunton's intake is located at Assawompset Pond, where a pumping station pumps water from Assawompset Pond to Elders Pond in Lakeville. Taunton's WTP is located in Lakeville at Elders Pond. Taunton's withdrawal is limited to only the first sub-basin, whereas a transfer station between Pocksha Pond and Great Quittacas Pond effectively allows New Bedford to withdraw from all five ponds. Previous analysis of the safe yield of the APC was conducted in accordance with American Water Works Association and New England Water Works Association approved methodologies. The safe yield of the ponds was estimated to be about 27.5 mgd. Of this safe yield, New Bedford's Water Management Act authorized withdrawal volume is about 18.27 mgd.

New Bedford's WTP is located directly adjacent to the Little Quittacas Pond and borders the towns of Freetown and Rochester, Massachusetts. With a capacity of 45 mgd, the treatment plant was constructed in 1974 and provides conventional treatment process. The water is pumped by a combination of five high lift distribution pumps from the clearwell and into two 48-inch transmission mains, which then supply the distribution system via High Hill Reservoir or a 36-inch main to the north end of the City.

The City's primary transmission system piping conveys water from the Quittacas WTP to the High Hill Reservoir and into the City's distribution system. The main transmission piping system includes five distinct sections:

- Quittacas WTP to High Hill Reservoir (twin 48-inch mains)
- High Hill Reservoir to Mount Pleasant Street (36-inch main)
- High Hill Reservoir to Nash Road (36-inch main)
- High Hill Reservoir to Park Street (42-inch main)
- Middleboro Road to New Bedford Road (48-inch main)

The above transmission mains convey water to the distribution system from either the WTP or High Hill Reservoir. Minor transmission mains called interloping mains exist within the distribution system. These are larger mains that generally convey water from the transmission system to the distribution system. One larger diameter main, a 48-inch Prestressed Concrete Cylinder Pipe main, extends from Tarkiln Hill Road to North Front Street along Belleville Avenue.

The High Hill Reservoir storage facility is a covered storage reservoir, located in the Town of Dartmouth, with a capacity of about 75 million gallons (mg) of water. High Hill, when originally built in 1899, was an open reservoir. A corrugated aluminum roof was installed in the 1970s to protect the water stored in the reservoir. It provides several days worth of storage for the City's water system. The reservoir was subsequently upgraded in 2020 to reinforce the roof, address resiliency through additional bypass piping, and install new internal reservoir valves. The City operates and maintains a chloramination facility at the reservoir, which disinfects water supplied from this storage facility as it flows by gravity to the main service zone of the distribution system.

The City's water distribution system is currently comprised of three service zones: a main low service zone (serving most of the City's customers and supplied with treated water directly from Quittacas WTP and High Hill Reservoir, and two high pressure service zones, (Hathaway Road high service area), and the North End high service area).

New Bedford currently provides potable water to the communities of Acushnet, Dartmouth, Fairhaven, and Freetown through interconnections. These interconnections are only used to supply these communities from New Bedford—New Bedford does not receive supplemental supply from any of these communities. The intermunicipal connections for Acushnet, Fairhaven and Freetown are metered through master meters in the main service zone of distribution system piping network. The Town of Dartmouth has a pumping station that takes suction directly off one of the 36-inch transmission mains downstream of the High Hill Reservoir, which is also metered by a master meter.

Climate Change Impacts on the Drinking Water System

Climate change projections indicate average air temperatures across the state will increase dramatically over the next century. Compounding warmer temperatures, more extreme rain and snow events are anticipated, which will lead to both increased flow volume of local streams and rivers and prolonged or severe droughts. Warmer temperatures will also cause sea levels to rise, which in turn will foster stronger storm surges and the possible contamination of groundwater supplies (saltwater intrusion can significantly increase treatment costs or force the closure of a well). These anticipated changes in weather will result in a variety of conditions that could negatively impact water utility operations and the quality of water in the City's reservoir system.

Wastewater/Stormwater Systems⁶²

Historically, older cities and towns—like New Bedford—built sewer systems that collected both wastewater and stormwater and conveyed these combined flows to the nearest waterbody for disposal. Some of the City's early sewers date back to the middle of the 19th century. As populations grew and the wastewater flows increased, the water quality of these receiving waters degraded.

For combined systems like the City's, regulator structures containing weirs or other flow control devices direct dry weather and some wet weather flows within the combined sewer system. During periods of wet weather when the combined sewer system becomes full, the regulator structures allow the excess flow to overflow into outfalls that discharge the combined and stormwater flows into the Acushnet River, New Bedford Harbor and Clarks Cove. Many of these outfalls remain in service today as CSO outfalls; in total 27 are still active.

New Bedford developed as a city surrounded by water, built adjacent to the Acushnet River, New Bedford Harbor, and Clarks Cove. Large areas of the southern part of the City were developed in the floodplain, and the City is protected from tidal surges by a hurricane barrier and pumping system that was constructed by the USACE. While the Acushnet River and Clarks Cove provided a pathway for commerce as the City grew, it has made the development and maintenance of wastewater and stormwater collection systems an ongoing challenge.

Wastewater treatment facilities in the City have evolved from providing no treatment at all with direct discharge to the receiving waters to basic screening of sanitary flow to primary treatment and providing secondary treatment of wet and dry weather flows at the current plant that was

⁶² *Long Term CSO Control and Integrated Capital Improvements Plan*, City of New Bedford, Massachusetts. CDM Smith, January 2017.

put into service in 1996. The development of the City's wastewater and stormwater collection systems has been partially guided and limited by the capabilities of the wastewater treatment plant (WWTP) and the City's main intercepting sewer.

In the 1930s and 1960s, significant infrastructure expansion occurred as the area in the northern section of the City was developed. Both the wastewater and stormwater systems were extended to accommodate the new residential and commercial growth in these areas. Although the wastewater and stormwater systems in this area are primarily separate and do not face the same challenges (e.g., CSO) seen in the southern areas, flooding and maintenance of the existing infrastructure continue to make demands on the City's resources. Over time, the wastewater treatment facilities, and the wastewater and stormwater collection systems have been expanded and upgraded. Significant CSO controls, including sewer separation, pumping station upgrades and cleaning of the City's Main Intercepting Sewer, have also been implemented to provide better management of wet weather flows. CSO discharges have been reduced by more than 3 billion gallons annually since 1990.

The New Bedford wastewater system serves approximately 96% of the City's population and about 69% of the land area. In addition, some service is extended to residences in Dartmouth and Acushnet. The south and central parts of the City are served with a combined sewer/stormwater system, while the northern part of the City is served by separate sanitary sewers. The system consists of approximately 266 miles of sanitary and combined gravity and pressure sewers and 29 pump stations. The secondary treatment plant is located at Fort Rodman and has a full treatment capacity of 75 mgd. There is a special flood control pumping station owned by the City that can be used during a major hurricane event to re-direct wastewater from the City's main interceptor to a discharge pipe in Clarks Cove. This pump station also acts as a flood control station that is used to pump stormwater and CSO to Clarks Cove to protect the south end of the City.

Wastewater Treatment Plant

The City's original WWTP was built in 1920 to provide screening before discharging raw wastewater to Buzzards Bay. The plant was abandoned in 1972 and demolished in 1997, after the construction of a primary WWTP at Fort Rodman. The primary WWTP provided screening, grit removal, sedimentation and chlorination, and had a treatment capacity of 30 mgd. In 1990, the average daily dry weather flow to the WWTP was 29.2 mgd; 26.4 mgd was treated at the plant and 2.8 mgd was discharged to local receiving waters at CSO regulating structures as dry weather overflows.

In 1996, the City's current secondary WWTP became operational. This plant provides preliminary/primary treatment, secondary treatment, disinfection, and solids handling. The plant treats between 22 to 24 mgd during dry weather and can treat up to 75 mgd during wet weather. The WWTP is located within the former Fort Rodman, at what is now called Fort Taber Park.

The secondary WWTP was designed with a headworks building, including an influent pumping station with adjustable sluice gates to regulate the flow into the WWTP. Preliminary/primary treatment processes include mechanical bar screens, aerated grit tanks, and primary settling tanks. Secondary treatment processes include aeration and secondary clarification. The activated sludge system was designed to achieve compliance with its secondary treatment limits (i.e., biochemical oxygen demand and total suspended solids) but was not sized to achieve nitrification (ammonia conversion to nitrite and then nitrate) at its design flows and loads. The

plant has been able to achieve nitrification a majority of the time because the actual influent loads to the plant are below the design flows and loads.

Finally, secondary treated effluent is disinfected via chlorine contact tanks; after achieving the contact time for disinfection, the effluent is dechlorinated prior to its discharge. All processes requiring tanks were covered and a primary air handling system was designed with hydrogen sulfide (H₂S) scrubbers and chemical feed systems to mitigate odors. Effluent is typically discharged to Buzzards Bay through a 3,300-foot-long, 60-inch diameter outfall; in an emergency, effluent can be discharged through a 1,000-foot-long 72-inch diameter pipe outfall. Pumping of effluent is required during certain conditions (e.g., high flows during high tide and during periods of plant maintenance).

The WWTP is owned by the City of New Bedford and operated by Veolia Water North America LLC (Veolia) under a 20-year operations contract that was signed in 2020. Residuals management is handled by Synagro Technologies Inc. (Synagro); only gravity thickening and gravity belt thickening is performed at the WWTP. The WWTP has centrifuges for sludge dewatering that are not in use. Thickened sludge is currently hauled away by Synagro to their Woonsocket, RI facility for treatment and disposal under a 20-year agreement that was signed in 2016. In the event the Woonsocket facility has operational downtime, Synagro has other regional facilities that can accept the City's sludge; however, it is becoming significantly challenging given current market conditions to dispose of the WWTP residuals.

Wastewater Collection System

New Bedford owns and operates the wastewater collection and treatment facilities that serves approximately 104,000 customers in three communities: Dartmouth, Acushnet, and New Bedford. Of the total customer base, 98,000 are located within the City, 3,500 are located within the Town of Acushnet, and 2,500 are located within the Town of Dartmouth. In total, there are more than 24,400 service connections to the sewer system. A small portion of the City's system on Pope's Island is pumped to Fairhaven. Of the 22,860 connections within the City, 92 are industrial, 1,885 are commercial, and 20,883 are residential. The industrial connections include 29 categorical and/or significant industrial users regulated under the City's Industrial Pretreatment Program, and 47 are non-categorical users. The City also has 570 food handling facilities regulated under their Fats, Oils, and Grease program.

The system consists of sanitary and combined gravity and pressure sewers, with combined sewers predominantly in the south and central parts of the City, and separate sanitary sewers predominantly in the northern portions of the City. Portions of the City's wastewater collection system date back to the mid-19th century. A network of interceptors and collector sewers convey combined, sanitary, and stormwater flows to the City's WWTP at Taber Park. In total, there are approximately 254 miles of gravity sewer pipes and 12 miles of force main conveying flow from 29 pumping stations and low-pressure sewer systems. In addition, the City system also has 13 siphons that convey gravity flow under direct invert conflicts.

A significant portion of the City's collection system—including many of its major interceptors and collectors—were constructed before upstream development and expansions, before water quality regulations and discharge permits, and before current design practices. While these pipes were originally sized to carry sewage and stormwater, continued development and intense storm events have historically taxed the capacity of the City's collection system, which cannot handle the large wet weather flows. A complex system of regulator structures, control gates, overflow

weirs, and pumping stations are utilized to optimize conveyance of sewage flows to the City's WWTP.

Surcharging of pipes—caused by flows exceeding the pipe's capacity—can result in wet weather sewer system flooding into City streets, private basements, or other areas. This creates a condition where the public could be exposed to sanitary flows. While this occurs sporadically in areas of the City during rainstorms, it would be more common without pressure relief points (i.e., CSO regulators and outfalls) at key locations in the collection system.

Flow in the City's combined sewer system is predominantly domestic, with some commercial and industrial wastewater. The City also accepts septage from surrounding communities that are serviced by private sub-surface sewage disposal systems and commercial and industrial flow from local industries in New Bedford. These neighboring communities have separate sewage and stormwater collection systems, and connect to the New Bedford system at the following locations:

- Flow from Dartmouth enters the system from the southwest through the 22-inch Cove Road Collector, which delivers flow to Cove Road Pumping Station. From here, flow is pumped to the City's Main Intercepting Sewer. In addition, there are smaller isolated side streets that convey flow to the system in the vicinity of Buttonwood Park.
- Flow from Acushnet is conveyed from the northeast through the 24-inch Belleville Avenue Collector to the Belleville Avenue Pumping Station. Flow is then pumped via the 30-inch and 36-inch Belleville Avenue Force Main to the Main Intercepting Sewer. Flow from Acushnet is also conveyed to the system at smaller side streets east of Acushnet Avenue.
- A small portion of New Bedford's wastewater is pumped to the Town of Fairhaven's sewer system. Sewers located on Pope's Island convey flow to the Pope's Island Pumping Station which conveys flow via a force main across the Fairhaven Bridge to the Town of Fairhaven's system. Flow from this station cannot be pumped to New Bedford because of the configuration of the New Bedford Fairhaven Bridge.

Infiltration and inflow (I/I) contributes a significant amount of flow to the wastewater collection system. Three major inflow sources in New Bedford include street drainage, private inflow sources such as roof leaders and sump pumps, and storm drains that discharge directly to the sewer. Infiltration, or groundwater that seeps into the sewers, commonly occurs where there are loose joints, broken pipe sections, or root intrusion. Infiltration can contribute a considerable amount of flow to a collection system, especially in areas where high groundwater exists.

Since 1983, the City has eliminated a total of 15 CSO regulators and 11 CSO outfalls. As a result, there are currently 73 regulators in the combined sewer system: 53 CSO regulators and 20 "intra-system" regulators. The intra-system regulators do not directly contribute to the CSO volume discharged to the receiving waters. Conversely, they redirect flows to other sewers within the collection system and away from CSO outfalls. The CSO regulators are tributary to 27 National Pollutant Discharge Elimination System (NPDES) permitted CSO outfalls. These outfalls convey a varying mixture of stormwater and CSO to the City's three receiving waters: Clarks Cove, the New Bedford (Inner and Outer) Harbor, and the Acushnet River.

Since 1990, the City has invested approximately \$473.4 million, which includes \$442.4 million (2024 dollars) in previous investment and approximately \$31 million in investment since 2017 in

improvements, to reduce CSO discharges to its receiving waters. Estimated annual CSO discharge volumes have been significantly reduced from an estimated 3.1 billion gallons in 1990 to approximately 181.9 mg in 2024. Similarly, the capture rate—the percentage of flow captured and retained within the system for treatment—has risen to approximately 93 %.

The increasing frequency of extreme rainfall events creates system surcharging and flooding of streets, basements and public park lands. This flooding is a public health and safety issue as it blocks roads and emergency vehicle access, can cause damage to private property and surcharging of the sewer system. The following list summarizes the most prone areas to chronic flooding because of insufficient system capacity:

- Belleville Avenue from Hatch Street to Covell Street
- Route 18 at Wamsutta Street
- Belleville Avenue from Sawyer Street to Coffin Avenue
- Purchase Street and County Street between Coggeshall Street and Deane Street
- Washburn Street at Kilburn Street
- North Front Street at Wamsutta Street
- Bonney Street at Thompson Street
- Swift Street at Orchard Street
- Fair Street at Orchard Street
- Maple Street at Chancery Street

Stormwater System

Similar to the City's wastewater collection system, the stormwater system was constructed as the City expanded and grew. There are approximately 164 miles of drains in the City with 358 permitted outfalls. Initially, the stormwater system was integrated with the wastewater collection system with the construction of combined sewers. Stormwater enters the combined sewer system by means of direct catch basin connections, gutter or roof drains, and basement drainage such as sump pumps and foundation drains. Over the last 60 years, the City has constructed only separate sanitary and stormwater conduits. In general, the north end of the City is a separate system as this portion of the system

Climate Change Impacts on Wastewater/Septic/Stormwater Systems

Climate change can significantly impact wastewater, septic, and stormwater systems due to more frequent and more intense storms resulting in overwhelmed treatment plants, potential sewage overflows, and damages to infrastructure from flooding. Rising temperatures also have the potential to disrupt treatment processes, while extended periods of drought can lead to higher pollutant levels in concentrated wastewater.

Critical infrastructure across all sectors are located throughout the City, including communications, emergency services, energy facilities, information technology, transportation systems, and water, wastewater, and stormwater facilities. The ability to predict the next infrastructure failure-related incident and precise location/sector is often difficult and generally dependent on the quality, upkeep, and maintenance of each individual component of infrastructure. New Bedford periodically experiences small scale infrastructure failures, often as secondary impacts from natural hazards such as power and communication outages. There have been no significant disruptions to critical infrastructure recorded that had cascading effects which negatively impacted the community's security, public health and safety, and economic vitality. New Bedford is considered at moderate risk of communications, energy, and

water/wastewater/stormwater failure-related incidents, and low risk of emergency services, information technology, and transportation failure-related incidents.

Property/People at Risk from Infrastructure Failure-Related Hazards

The entire City of New Bedford is equally susceptible to an infrastructure failure-related incident.

Overview Summary of Infrastructure Failure-Related Hazard Impacts:

Social/Economic vulnerabilities include:

- Potential for compromised public health, safety and welfare.

Environmental vulnerabilities include:

- Potential for contamination of natural resources (i.e., water supplies, critical habitat).

Infrastructure/Built Environment vulnerabilities include:

- Impacts to the community's critical facilities/infrastructure including structural and equipment damage at public/private buildings, disruptions to normal/daily actions (water supply, sewer conveyance/treatment, and communications), and transportation network disruptions.

Probability of Future Occurrence of Infrastructure Failure-Related Hazards

Although the City of New Bedford has not experienced recent, prolonged catastrophic infrastructure failure-related incidents, a significant failure could result in severe disruptions to public health, safety and welfare, including overall emergency response efforts. There is a likely probability of an infrastructure failure-related incident in New Bedford within the next five years.

3.7. Vulnerability

Vulnerability indicates what is likely to be damaged by the identified hazards and how severe that damage could be. After identifying types and areas of risk, a vulnerability analysis can help to determine the gaps in the community. This section examines the vulnerability of the built environment, such as structures, utilities, roads, and bridges, as well as social and environmental vulnerability. A vulnerability analysis also estimates the number of people exposed to hazards, including elderly populations and concentrated populations. This also includes such things as whether the shelter capacity is sufficient for the affected population, and whether businesses are likely to face temporary closure due to natural disasters. Historical damages are often good indicators for current exposure and potential damage.

3.7.1. Impacts of Changes in Population Patterns and Changes in Land Use/Development

Natural Hazards

Flood-Related Hazards

- Changes in Population Patterns: The population is expected to continue to expand and age with the potential to expose a growing elderly, disabled, socially vulnerable, and undocumented immigrant population to the floodplain and areas of localized flooding, as described in Section 3.5.1.
- Changes in Land Use/Development: Existing codes/regulations will help to minimize flood impacts. New development areas may produce additional flooding due to increases in impervious surfaces, except when considering adaptive reuse of former mill buildings (already existing built environment).

Winter-Related Hazards

- Changes in Population Patterns: The population is expected to continue to expand and age with the potential to expose a growing elderly, disabled, socially vulnerable, and undocumented immigrant population to severe winter storms/extreme cold temperatures, as described in Section 3.5.2.
- Changes in Land Use/Development: New Bedford shouldn't be impacted by changes in land use/development.

Wind-Related Hazards

- Changes in Population Patterns: The population is expected to continue to expand and age with the potential to expose a growing elderly, disabled, socially vulnerable, and undocumented immigrant population to hurricanes and tropical storms, as described in Section 3.5.3.
- Changes in Land Use/Development: New Bedford shouldn't be impacted by changes in land use/development.

Geologic-Related Hazards

- Changes in Population Patterns: The population is expected to continue to expand and age with the potential to expose a growing elderly, disabled, socially vulnerable, and undocumented immigrant population to additional groundwater extraction/water storage needs potentially affecting the loading on the Earth's crust/fault system, as described in Section 3.5.4/3.5.1 (although there is very little dependence of potable wells).
- Changes in Land Use/Development: Increases in development will create additional demands for groundwater extraction/storage which could in turn affect the Earth's crust/fault system and when/where earthquakes occur. In addition, a geologic -related event could impact aging, subsurface infrastructure.

Extreme Heat-Related Hazards

- Changes in Population Patterns: The population is expected to continue to expand and age with the potential to expose a growing elderly, disabled, socially vulnerable, and undocumented immigrant population to extreme heat temperatures/health impacts, as described in Section 3.5.5.
- Changes in Land Use/Development: Increases in development will exacerbate heat island effects, particularly where trees have been removed and impervious surfaces (asphalt/roofs) are added.

Drought-Related Hazards

- Changes in Population Patterns: The population is expected to continue to expand and age with the potential to expose a growing elderly, disabled, socially vulnerable, and undocumented immigrant population to future droughts, as described in Section 3.5.6.
- Changes in Land Use/Development: Increases in development will create additional demands for limited water resources.

Wildfire/Brushfire-Related Hazards

- Changes in Population Patterns: The population is expected to continue to expand and age with the potential to expose a growing elderly, disabled, socially vulnerable, and undocumented immigrant population to increased susceptibility to brushfires/wildfires, as described in Section 3.5.7.

- Changes in Land Use/Development: Development within the WUI can lead to a higher risk of brushfires/wildfires.

Communicable (Infectious) Disease-Related Hazards

- Changes in Population Patterns: New Bedford should not be impacted by population changes, as described in Section 3.5.8.
- Changes in Land Use/Development: New Bedford should not be impacted by changes in land use/development.

Invasive Species-Related Hazards

- Changes in Population Patterns: New Bedford should not be impacted by population changes, as described in Section 3.5.9.
- Changes in Land Use/Development: New Bedford should not be impacted by changes in land use/development.

Vector-Borne-Related Hazards

- Changes in Population Patterns: New Bedford should not be impacted by population changes, as described in Section 3.5.10.
- Changes in Land Use/Development: New Bedford should not be impacted by changes in land use/development.

Changes in Groundwater-Related Hazards

- Changes in Population Patterns: The population is expected to continue to expand and age with the potential to expose a growing elderly, disabled, socially vulnerable, and undocumented immigrant population to additional groundwater extraction/water storage demands and potentially affecting water supply resources, as described in Section 3.5.11.
- Changes in Land Use/Development: Increases in development will create additional demands for groundwater extraction and storage.

Human-Caused and Technological Hazards

Cyber (Security) Incident

- Changes in Population Patterns: New Bedford should not be impacted by population changes, as described in Section 3.6.1.
- Changes in Land Use/Development: New Bedford should not be impacted by changes in land use/development.

Terrorism Incident

- Changes in Population Patterns: New Bedford should not be impacted by population changes, as described in Section 3.6.2.
- Changes in Land Use/Development: New Bedford should not be impacted by changes in land use/development.

Urban Fire

- Changes in Population Patterns: New Bedford should not be impacted by population changes, as described in Section 3.6.3.
- Changes in Land Use/Development: New Bedford should not be impacted by changes in land use/development.

Civil Unrest/Disturbance Incident

- Changes in Population Patterns: New Bedford should not be impacted by population changes, as described in Section 3.6.4.
- Changes in Land Use/Development: New Bedford should not be impacted by changes in land use/development.

Chemical, Biological, Radiological, Nuclear Incidents

- Changes in Population Patterns: New Bedford should not be impacted by population changes, as described in Section 3.6.5.
- Changes in Land Use/Development: New Bedford should not be impacted by changes in land use/development

Hazardous Materials Accident/Spill

- Changes in Population Patterns: New Bedford should not be impacted by population changes, as described in Section 3.6.8.
- Changes in Land Use/Development: New Bedford should not be impacted by changes in land use/development.

Nuclear Power Plant Incident

- Changes in Population Patterns: New Bedford should not be impacted by population changes, as described in Section 3.6.7.
- Changes in Land Use/Development: New Bedford should not be impacted by changes in land use/development.

Major Airplane Crash

- Changes in Population Patterns: New Bedford should not be impacted by population changes, as described in Section 3.6.8.
- Changes in Land Use/Development: New Bedford should not be impacted by changes in land use/development.

New Bedford–Fairhaven–ACOE Hurricane Barrier System Failure

- Changes in Population Patterns: New Bedford should not be impacted by population changes, as described in Section 3.6.9.
- Changes in Land Use/Development: New Bedford should not be impacted by changes in land use/development.

Infrastructure Failure Incident

- Changes in Population Patterns: New Bedford should not be impacted by population changes, as described in Section 3.6.10.
- Changes in Land Use/Development: New Bedford should not be impacted by changes in land use/development.

3.7.2. Development Trends

Since the 2016 plan, New Bedford's vulnerability to natural disasters has not significantly changed. New development is compliant with the updated State building codes, and the City's new stormwater standards since it was promulgated, and in turn, these more restrictive codes help facilitate decreases in a structure's overall vulnerability.

Residential Development Trends

Development interest and activity continues in New Bedford today. Below is a list of major residential and mixed-use development projects (proposed, pending, under construction or completed since 2016) and located outside of the Special Flood Hazard Area (SFHA):

- 117 Union Street/7 N. Second Street/115 Union Street/121 Union Street.127-129 Union Street (mixed-use building)
 - 42,650 square feet (SF)
 - Under Construction
- Beckman's (mixed-use building)
 - 19,044 SF
 - 28 residential units
 - Under Construction
- WS Orchard Street (residential development)
 - 180 residential units
 - Pending
- 593 Kempton Street (residential development)
 - 28 residential units
 - Pending
- WS Jenney Street (residential development)
 - 8 affordable residential units
 - Pending
- WS Brock Avenue (residential development)
 - 10 residential units
 - Pending
- 20 Willis Street/WS Purchase Street/NW Purchase Street (veteran's housing/support services)
 - 36,712 SF
 - 30 residential units
 - Completed
- 984 Sharon Street (residential development)
 - 12 residential units
 - Under Construction
- Ladruaes Estates (residential subdivision)
 - 12 lots
 - Pending

Commercial Development Trends

Commercial development interest and activity also continues in New Bedford today. Below is a list of major commercial development projects (proposed, pending, permitted, under construction or completed since 2016) and located outside of the SFHA:

- 1166/1200/1228 Shawmut Avenue (redevelopment/NCG fueling station)
 - 348,915 SF
 - Pending
- 1245 Shawmut Avenue (redevelopment solid waste station)
 - 371,566 SF
 - Pending

- 143A-B Pope's Island (marine fueling station/office/warehouse)
 - 130,680 SF
 - Pending
- 198 Herman Melville Boulevard (wind turbine training facility)
 - 74,486 SF
 - Completed
- 39-49 Brook Street (warehouse)
 - 80,221 SF
 - Completed
- 26 North Front Street (shipyard improvements)
 - 339,768 SF
 - Under Construction
- 19 Hathaway Road (self-storage facility)
 - 162,900 SF
 - Pending
- 61 John Vertente Boulevard (solar carport over parking lot/new building)
 - 127,200 SF
 - Pending
- 43 Blackmer Street (building expansion/parking/drainage)
 - 29,500 SF
 - Completed
- 314 Church Street (building expansion)
 - 40,946 SF
 - Completed
- 874 Purchase Street (building expansion)
 - 40,075 SF
 - Completed
- 61 John Vertente (warehouse/distribution facility)
 - 714,384
 - Completed
- 127 Duchaine Boulevard (warehouse expansion/loading docks/parking)
 - 216,685 SF
 - Completed
- 0 Flaherty Drive (office/warehouse building)
 - 175,200 SF
 - Completed
- 387 Church Street (self-storage facility)
 - 153,638 SF
 - Completed
- 100 Duchaine Boulevard (recycling facility)
 - 27,500 SF
 - Completed
- 75 MacArthur Drive (warehouse expansion)
 - 21,600 SF
 - Completed
- 1480 East Rodney French Boulevard (restaurant expansion/parking)

- 111,078 SF
 - Completed
- 8 Washburn Street (building expansion)
 - 53,706 SF
 - Completed
- 429 Church Street (expansion storage facility)
 - 297,515 SF
 - Completed
- 100 Duchaine Boulevard (recycling/processing facility expansion/solar canopy/rail)
 - 198,000 SF
 - Completed
- 62 Wood Street (building expansion)
 - 69,681 SF
 - Completed
- WS Phillips Road (new building)
 - 87,120 SF
 - Completed
- 366 Hathaway Road (medical marijuana dispensary)
 - 18,750 SF
 - Pending

3.7.3. Economic Vulnerability

NFIP-Insured Property Damage

As seen in **Table 3-25**, FEMA estimated that the value of property insured by the NFIP in New Bedford is just over \$85,591,000 million as of September 30, 2024 (according to FEMA records supplied by the MA State Floodplain Coordinator). There are no properties that have experienced repetitive flood loss damages. According to FEMA records supplied by the State Floodplain Coordinator, since 1978, there have been 67 claims paid totaling \$1,379,272.

Table 3-25. Summary of National Flood Insurance Program Activity in New Bedford, MA

Total Policies	Coverage Value	Claims Since 1978
256	\$85,591,000	67 (\$1,379,272)

Source: FEMA, NFIP, Loss Statistics through September 30, 2024.

The majority of the NFIP-insured properties are located where development occurs near flood plains, low-lying areas, or along coastal features. The Commissioner of Inspectional Services for the City of New Bedford is responsible for enforcing the NFIP in the City.

Impacts of FEMA Flood Zones

HW performed an analysis to estimate the total land and building values within the FEMA 1% annual chance (i.e., the 100-year floodplain) and 0.2% annual chance (i.e., the 500-year floodplain) flood zones. The number and types of residential, commercial, industrial, and municipally owned structures are described earlier in Section 3.5.1 and quantified in **Table 3-26** Total Vulnerability FEMA 1% Annual Chance Flood Zone, **Table 3-27** Total Vulnerability FEMA 0.2% Annual Chance Flood Zone, and **Table 3-28** Total Vulnerability FEMA VE Flood Zone (also shown on Maps B-1.1, B-1.2, B-1.3, and B-1.4 in Appendix A). All flood zone data presented is based on the FEMA FIRMS as revised through July 16, 2014.

Table 3-26. Total Vulnerability FEMA 1% Annual Chance Flood Zone

Land Use (Simplified)	No. of Parcels	Total Assessed Value
Chapter 61	2	\$343,800
Charitable	6	\$582,700
Commercial	40	\$40,154,800
Commercial - Office Building	5	\$3,949,300
Commercial - Recreation	1	\$531,700
Commercial - Retail Trade Automotive, Marine, and Other Vehicles)	27	\$9,905,800
Commercial - Storage Warehouses and Distribution Facilities	11	\$8,831,400
Federal	2	\$3,255,200
Housing Authority	2	\$9,878,300
Improved - Municipal	11	\$22,935,300
Improved - Public Safety	1	\$437,100
Improved - Tax Title	2	\$1,112,700
Industrial	80	\$135,216,700
Multiple Use	1	\$140,100
Other	1	\$253,400
Religious	7	\$14,806,200
Residential	607	\$158,782,000
State	14	\$29,225,400
Utility	3	\$3,784,300
Vacant - Conservation	18	\$955,100
Vacant - Developable	35	\$9,281,100
Vacant - Housing Authority	1	\$1,440,600
Vacant - Municipal	79	\$40,335,700
Vacant - Potentially Developable	18	\$1,570,600
Vacant - Tax Title	17	\$1,694,300
Vacant - Undevelopable	24	\$374,200
Unknown	1	\$361,700
Total	1,016	\$500,139,500

Source: New Bedford Tax Assessor CAMA data, Massachusetts Property Tax Use Code.

Table 3-27. Total Vulnerability FEMA 0.2% Annual Chance Flood Zone

Land Use (Simplified)	No. of Parcels	Total Assessed Value
Charitable	1	\$217,800
Commercial	1	\$221,700
Commercial - Retail Trade	3	\$565,000
Residential	60	\$12,514,300
Vacant - Developable	4	\$372,000
Total	69	\$13,890,800

Source: New Bedford Tax Assessor CAMA data, Massachusetts Property Tax Use Code.

Table 3-28. Total Vulnerability FEMA VE Annual Chance Flood Zone

Land Use (Simplified)	No. of Parcels	Total Assessed Value
Charitable	4	\$920,500
Commercial	6	\$1,666,200
Commercial - Retail Trade Automotive, Marine, and Other Vehicles)	10	\$1,296,600
Improved - Municipal	7	\$159,638,592
Industrial	1	\$4,499,100
Multiple Use	1	\$682,300
Residential	174	\$48,291,800
State	1	\$3,580,700
Vacant - Developable	9	\$909,400
Vacant - Municipal	25	\$12,731,400
Vacant - Potentially Developable	3	\$153,400
Vacant - Undevelopable	7	\$140,800
Total	248	\$234,510,792

Source: New Bedford Tax Assessor CAMA data, Massachusetts Property Tax Use Code.

Impacts of Coastal Flood Hazards

Concerned about the accelerated rate of SLR in Massachusetts and its impact on coastal storms, HW performed a second analysis to estimate the total assessed values of properties vulnerable to coastal flooding across multiple time horizons. HW utilized the Massachusetts Coast Flood Risk Model (MC-FRM) developed by the Woods Hole Group. The MC-FRM data dynamically considers the effect of tides, waves, storm surge, winds, sea level rise, and other factors to present a more accurate picture of coastal flood risk. Projections of the probability and depth of flooding for future scenarios include:

- South – Relative Mean Sea Level Rise/High Scenario:
 - 2030: 1.2 feet
 - 2050: 2.5 feet
 - 2070: 4.3 feet
- Hurricane Barrier (including the cove and harbor walk):
 - Maximum Elevation: 20 feet
 - Extension Dike: Maximum Elevation 22 feet
- Clark's Cove Dike (including the cove and harbor walk):
 - North Maximum Elevation: 22 feet
 - East Maximum Elevation: 23 feet

HW used the 1% coastal flood exceedance probability MC-FRM data for 2030, 2050, and 2070, which maps areas in which there is a 1% annual chance that flooding will occur due to a coastal storm event. The number and types of residential, commercial, industrial, and municipally owned structures (for each individual probability scenario) are quantified in **Table 3-29** Total Vulnerability 1% Annual Exceedance Probability 2030 Scenario, **Table 3-30** Total Vulnerability 1% Annual Exceedance Probability 2050 Scenario, and **Table 3-31** Total Vulnerability 1% Annual Exceedance Probability 2070 Scenario below (also shown on Maps C-1.1, C-1.2, C-1.3, and C-1.4 in Appendix A). It should be noted that the total values in the following tables are independent of each other, they do not build upon one another.

Table 3-29. Total Vulnerability 1% Annual Exceedance Probability 2030 Scenario

Land Use (Simplified)	No. of Parcels	Total Assessed Value
Charitable	4	\$920,500
Commercial	16	\$16,178,000
Commercial - Office Building	2	\$2,326,400
Commercial - Recreation	1	\$531,700
Commercial - Retail Trade	15	\$3,701,300
Commercial –Storage/Warehouses/ Distribution Facilities	2	\$6,195,500
Federal	2	\$3,255,200
Improved - Municipal	10	\$166,076,292
Improved - Tax Title	1	\$667,100
Industrial	55	\$86,634,800
Multiple Use	1	\$682,300
Residential	225	\$83,921,700
State	5	\$26,691,700
Utility	2	\$3,431,600
Vacant - Developable	18	\$2,724,700
Vacant - Municipal	62	\$23,873,700
Vacant - Potentially Developable	3	\$153,400
Vacant - Tax Title	4	\$1,311,000
Vacant - Undevelopable	9	\$145,700
Total	437	\$429,422,592

Source: New Bedford Tax Assessor CAMA data, Massachusetts Property Tax Use Code.

Table 3-30. Total Vulnerability 1% Annual Exceedance Probability 2050 Scenario

Land Use (Simplified)	No. of Parcels	Total Assessed Value
Commercial	2	\$403,000
Commercial - Office Building	1	\$528,700
Commercial - Retail Trade	1	\$543,000
Improved - Municipal	1	\$180,600
Improved - Tax Title	1	\$445,600
Industrial	10	\$15,486,400
Other	1	\$253,400
Residential	43	\$11,030,700
State	3	\$4,238,400
Utility	1	\$1,235,500
Vacant - Developable	4	\$613,700
Vacant - Housing Authority	1	\$1,440,600
Vacant - Municipal	6	\$929,500
Vacant - Tax Title	1	\$70,600
Vacant - Undevelopable	1	\$4,500
Total	77	\$37,404,200

Source: New Bedford Tax Assessor CAMA data, Massachusetts Property Tax Use Code.

Table 3-31. Total Vulnerability 1% Annual Exceedance Probability 2070 Scenario

Land Use (Simplified)	No. of Parcels	Total Assessed Value
Commercial	8	\$5,188,900
Commercial - Office Building	3	\$2,508,000
Commercial - Retail Trade	24	\$7,216,100
Commercial - Storage/Warehouses/Distribution Facilities	5	\$1,663,600
Housing Authority	3	\$10,210,500
Improved - Municipal	2	\$469,300
Industrial	32	\$24,455,900
Residential	138	\$62,273,600
Utility	3	\$398,200
Vacant - Developable	9	\$963,100
Vacant - Municipal	21	\$2,152,500
Vacant - Potentially Developable	2	\$267,900
Vacant - Undevelopable	2	\$16,500
Total	252	\$117,784,100

Source: New Bedford Tax Assessor CAMA data, Massachusetts Property Tax Use Code.

Impacts of Hurricane Surge Inundation Areas

HW performed an analysis to estimate the total land and building assessed values of properties located within the worst-case hurricane surge areas for Categories 1 through 4 hurricanes developed by the National Hurricane Center using the Sea, Lake, and Overland Surge for Hurricanes (SLOSH) Model. The number and types of parcels/structures (for each individual category zone) are quantified in **Table 3-32** Total Vulnerability Hurricane Category 1, **Table 3-33** Total Vulnerability Hurricane Category 2, **Table 3-34** Total Vulnerability Hurricane Category 3, and **Table 3-35** Total Vulnerability Hurricane Category 4 below (also shown on Maps G-1.1, G-1.2, G-1.3, and G-1.4 in Appendix A).

Table 3-32. Total Vulnerability Hurricane Category 1

Land Use (Simplified)	No. of Parcels	Total Assessed Value
Charitable	4	\$920,500
Commercial	5	\$1,617,200
Commercial - Retail Trade	4	\$736,300
Improved - Municipal	5	\$156,507,692
Residential	68	\$17,959,000
Vacant - Developable	3	\$312,100
Vacant - Municipal	21	\$11,708,300
Vacant - Potentially Developable	1	\$50,000
Vacant - Undevelopable	7	\$140,800
Total	118	\$189,951,892

Source: New Bedford Tax Assessor CAMA data, Massachusetts Property Tax Use Code.

Table 3-33. Total Vulnerability Hurricane Category 2

Land Use (Simplified)	No. of Parcels	Total Assessed Value
Commercial	2	\$230,300
Commercial - Retail Trade	7	\$729,600
Improved - Municipal	2	\$3,130,900
Industrial	3	\$6,075,500
Multiple Use	1	\$682,300
Residential	158	\$43,217,000
Vacant - Developable	7	\$693,200
Vacant - Municipal	3	\$927,000
Vacant - Potentially Developable	2	\$103,400
Vacant - Undevelopable	1	\$4,800
Total	186	\$55,794,000

Source: New Bedford Tax Assessor CAMA data, Massachusetts Property Tax Use Code.

Table 3-34. Total Vulnerability Hurricane Category 3

Land Use (Simplified)	No. of Parcels	Total Assessed Value
Charitable	1	\$134,300
Commercial	1	\$221,700
Commercial - Retail Trade	3	\$565,000
Improved - Municipal	1	\$43,387,300
Residential	148	\$35,297,300
State	1	\$3,580,700
Vacant - Developable	7	\$810,100
Vacant - Municipal	1	\$96,100
Vacant - Undevelopable	1	\$4,500
Total	164	\$84,097,000

Source: New Bedford Tax Assessor CAMA data, Massachusetts Property Tax Use Code.

Table 3-35. Total Vulnerability Hurricane Category 4

Land Use (Simplified)	No. of Parcels	Total Assessed Value
Commercial	4	\$1,155,500
Commercial - Retail Trade	1	\$424,000
Improved - Tax Title	3	\$198,300
Residential	153	\$37,399,800
State	1	\$1,954,900
Vacant - Municipal	1	\$447,200
Vacant - Undevelopable	1	\$16,400
Total	164	\$41,596,100

Source: New Bedford Tax Assessor CAMA data, Massachusetts Property Tax Use Code.

Impacts of Business Interruption

Notwithstanding the obvious costs of commercial property damage, the impacts of potential business interruption from a natural disaster in New Bedford cannot be underestimated. Business closures result in a reduction of revenues to proprietors and a loss of wages to employees. Also, State and local tax revenues can be significantly reduced. In addition to the costs of commercial property damage, the impacts from potential business interruption following a disaster in New Bedford could have long-lasting effects on the local economy, quality of life, and sense of place that has been maintained and revered for generations.

3.7.4. Social Vulnerability

A critical step in assessing risk and vulnerability of New Bedford natural, human-caused, and technological hazards is to identify the links between the potential destructive impacts to the built and natural environments and that relationship to the social structure. The social assets and potential losses continue to be key components of the community and include the closure of institutions, loss of vital services (communication and transportation systems), and disruption in the movement of goods and services, and emotional strain from financial and physical losses.

The vulnerability of a community obviously includes the potential for direct damage to residential, commercial and industrial property, as well as schools, government and critical facilities. However, it also includes the potential for disruption of communication and transportation following disasters. Any disruption to the infrastructure, such as a loss of electric power or break in gas lines, can interrupt businesses and cause stress to affected families. This is especially the case where residents are forced to evacuate their homes and become subject to shortages of basic supplies.

Public Infrastructure and Emergency Lifelines

There are a number of public buildings and structures located in the floodplain. In addition to potential structural damage, various access roads for these buildings/structures also flood from time to time during an event. The extent of flooding events depends on the type, intensity and duration of the event.

Drinking Water Systems

New Bedford's water supply system currently consists of five surface water ponds, two dams, raw water diversion structures, two intakes, a 45 mgd water treatment plant, about 300 miles of transmission and distribution pipes, a 75 million gallon covered finished water storage reservoir with remote disinfection facility, an elevated storage tank, two booster pumping stations and about 24,00 metered service connections. These facilities are spread across several southeastern Massachusetts communities, but the City owns, maintains, and operates all of the facilities. The Water Division is responsible for the operation and maintenance of the City's water supply system, which operates as an enterprise fund and is self-supported through water fees.

New Bedford currently provides potable water to the communities of Acushnet, Dartmouth, Fairhaven, and Freetown through interconnections. These interconnections are only used to supply these communities from New Bedford—New Bedford does not receive supplemental supply from any of these communities. The intermunicipal connections for Acushnet, Fairhaven and Freetown are metered through master meters in the main service zone of distribution system piping network. The Town of Dartmouth has a pumping station that takes suction directly off of one of the 36-inch transmission mains downstream of the High Hill Reservoir, which is also metered by a master meter.

Wastewater Systems

The New Bedford wastewater system serves approximately 96% of the City's population and about 69% of the land area. In addition, some service is extended to residences in Dartmouth and Acushnet. The south and central parts of the City are served with a combined sewer/stormwater system, while the northern part of the City is serviced by separate sanitary sewers. The system consists of approximately 266 miles of sanitary and combined gravity and

pressure sewers and 29 pump stations. The secondary treatment plant is located at Fort Rodman and has full treatment capacity of 75 mgd.

Utility Systems

Electricity

Eversource is the electricity provider in New Bedford.

Natural Gas

Eversource is the natural gas provider in New Bedford.

Telephone/Cellular

Services provided by T-Mobile, Verizon, and AT & T

Internet/Cable

Services provided by Comcast and Verizon

Transportation Systems

MBTA⁶³

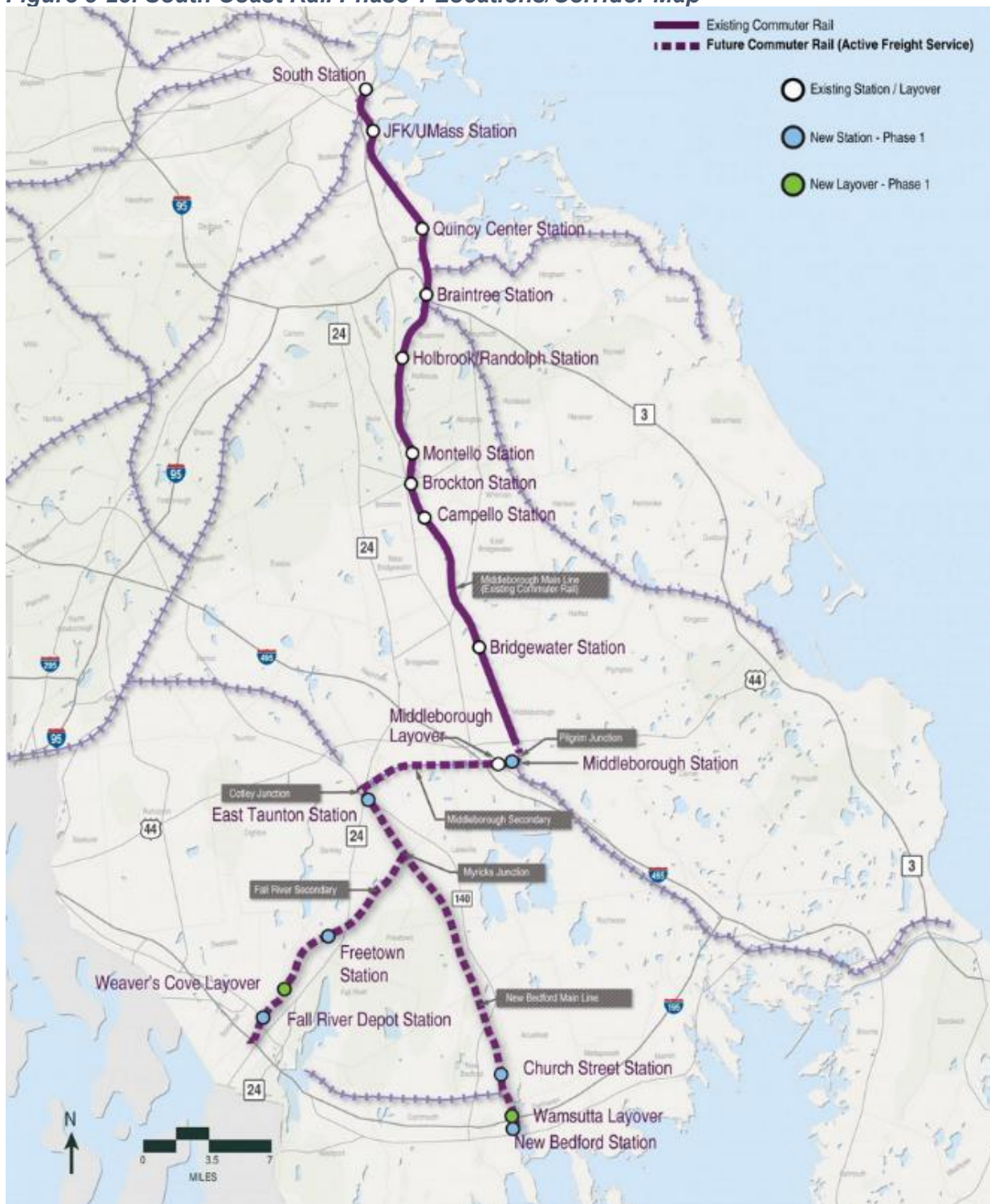
The South Coast Rail project will restore commuter rail service between Boston and southeastern Massachusetts by the spring of 2025. Taunton, Fall River and New Bedford are the only major cities within 50 miles of Boston that do not currently have commuter rail access to Boston. South Coast Rail will reconnect this region to jobs and generate economic development. Phase 1 construction is underway and will restore service to the region by the spring of 2025 (**Figure 3-23**).

- Phase 1:
 - Elements of Phase 1
 - Uses Middleborough Secondary to provide service to Taunton, New Bedford, and Fall River. Middleborough Secondary connects to Cotley Junction in East Taunton.
 - From Cotley Junction, Phase 1 trains will join the New Bedford Main Line and continue to New Bedford, or they will branch off on the Fall River Secondary to Fall River (this area is known as the Southern Triangle).
 - Benefits of Phase 1:
 - Reconstructs 12.1 miles of the Fall River Secondary
 - Reconstructs 24.1 miles of Middleborough Secondary and the New Bedford Main Line.
 - Improves freight service to the region and will provide redundancy for commuter rail riders once the Full Build Project is operating.
- Full Build Project:

⁶³ <https://www.mass.gov/info-details/about-the-south-coast-rail-project#project-overview->

- Extends Commuter Rail service on the Stoughton Line to the New Bedford and Fall River lines, connecting more communities, including Easton and Raynham, to Boston.
- Project Updates:
 - Stations
 - All stations are substantially complete:
 - Fall River
 - Freetown
 - Middleborough
 - Church Street
 - New Bedford
 - East Taunton
 - Layover Facilities
 - Wamsutta Layover Facility in New Bedford is substantially complete
 - Signal System Testing
 - Automatic Train Control Testing: completed in July 2024
 - Positive Train Control (PTC) Testing: January 2025 completion
 - Traffic Mitigation
 - Off-site traffic mitigation work (including intersection improvements and traffic signal upgrades near stations) is completed at:
 - South Main St. (Route 105) and West Grove St. (Route 28); and Route 105/I-495 interchange in Middleborough
 - County St. (Route 140) at Industrial Drive and Taunton Depot Drive in Taunton
 - Church St. and Nash Road in New Bedford
 - President Avenue at North Main St. in Fall River
 - Pedestrian Bridge
 - Construction is progressing
 - Elevator/Sidewalks (Purchase St. and Acushnet Avenue) work is progressing
 - Bridge to be open in time for passenger service
 - Start of Service
 - Anticipated March 2025

Figure 3-23. South Coast Rail Phase 1 Locations/Corridor Map



Source: <https://www.mbta.com/projects/south-coast-rail>.

Roadways and Bridges

Transportation infrastructure would likely experience an acceleration in deterioration of its components, like asphalt, from the combination of extreme temperatures, increased precipitation, and flooding. Extreme temperatures for long periods would cause thermal expansion of metal structures and stress bridge infrastructure. This would also affect roadway materials through softening and expanding, which can lead to rutting and potholes. While a warmer climate may lead to a decreased need to provide snow and ice removal, more rapid freezing and thawing cycles could cause more acute damage sustained during the warmer months.

Several MassDOT projects have been initiated (with some completed) regarding bridge repair and replacement, corridor improvements, intersection improvements, and miscellaneous projects from the Transportation Improvement Program (TIP) (**Table 3-36**).

Table 3-36. New Bedford TIP Projects

Location	Project #	Status	Bridge #	Description of Work
Bridge Work				
N-06-020, I-95 (EB & WB), Ramp C/F over ST 18, County St., State St./ Mass Coastal Railroad, Purchase St./Weld St./Includes improvements to N-06-021, N-06-022, F-01-008	606527	Design 2025		Bridge Reconstruction/ Rehabilitation
Fairhaven-New Bedford: Bridge Replacement F-01-002, N-06-001 (3PF), US-6 Over Acushnet River	612557	Design		Bridge Replacement
Corridor Improvements				
Kings Highway, Church St. to Kings Highway Bridge (N-06-036) over Route 140	606709	Construction		Highway Reconstruction - Minor Widening
County St. from Nelson St. to Union St.	608535	Construction		Milling and Cold Planning
On Route 18 between Route 6/Route I-195	610827	Design		Highway Reconstruction - No Added Capacity
Dartmouth: On Route 6, Hathaway Rd. to the New Bedford City Line	612524	Design		Highway Reconstruction - Minor Widening
On County St. from Union St. to Kempton St.	612604	Design 2029		Highway Reconstruction/ Rehabilitation

Location	Project #	Status	Bridge #	Description of Work
On Tarkiln Hill Rd. and Ashley Blvd.	612672	Design 2028		Highway Reconstruction - No Added Capacity
Intersection Improvements				
On Acushnet Ave. at Peckham Rd. /Sassaquin Ave.	609201	Construction		Traffic Signals
At Mount Pleasant St. and Nash Rd.	610798	Design 2026		Highway Reconstruction/ Rehabilitation
Miscellaneous				
New Bedford to Taunton: Guide and Traffic Sign Replacement on section of Route 140	610715	Design 2025		Structural Signing
New Bedford to Freetown: Pavement Preservation and Related Work on Route 140	611991	Design 2029		Resurfacing DOT Owned Non-Interstate
Pavement Preservation and Related Work on Route 140	611996	Construction 2026		Resurfacing DOT Owned Non-Interstate
Bicycle and Pedestrian Ramp Construction, Route 6 (WB) to MacArthur Drive	612263	Design 2027		Sidewalk Construction and Repairs
Fairhaven-New Bedford: Interstate Pavement Preservation and Related Work on I-195	613384	Design		Resurfacing Interstate
Source: https://hwy.massdot.state.ma.us/ProjectInfo/Main.asp?ACTION=ProjectSearchAdvanced&PROJECT_SEARCH_ORDER_FIELD=PROJECT_NO&PROJECT_SEARCH_ORDER_DIRECTION=ASC&TB_FILENO=&LU_VALUES_PROJECT_TYPE=&LU_VALUES_PROJECT_MPOS=1&LU_VALUES_PROJECT_CITIES=1&LU_VALUES_PROJECT_DISTRICT=1&RB_GEO_ASSOCIATION=0&LU_VALUES_ASSIGNED_DEPT=&LU_VALUES_DESIGN_RESP=&TB_BRIDGE_NUMBER=&INITIAL=on&PRC=on&FINAL=on&DESIGN75=on&DESIGN25=on&DESIGN100=on&SCHEDULED=on&ADVERTISED=on&TB_ADV_DATE_FROM=&TB_ADV_DATE_TO=&CURRENT_STATUS=0&TB_PROJECT_DESCPT=New+Bedford#				

Evacuation/Population at Risk

The use of mass care facilities during an emergency is dependent on a variety of circumstances, including warning time, public awareness of the hazard, the level of encouragement from public officials and the availability of shelters. New Bedford has one primary, one secondary, and one alternate designated facility that can be used to shelter evacuees or displaced persons in emergency situations. Shelter facilities are managed by the

New Bedford Emergency Management Department and provide mass care services to evacuees and displaced persons.

Designated Shelters

- **Primary:** Keith Middle School, 225 Hathaway Boulevard, New Bedford, MA
- **Secondary:** Normandin Middle School, 81 Felton Street, New Bedford, MA
- **Alternate:** Roosevelt Middle School, 119 Frederick Street, New Bedford, MA
- **Fire Shelter:** Andrea McCoy Recreation Center, 181 Hillman Street, New Bedford, MA

Shelter use is not easily predicted because each emergency situation has different variables such as the length of the warning period, official encouragement of the evacuation, public awareness of the location and availability of shelter, and the severity of the approaching hazard. Shelter use may be higher in the winter, such as during an ice or snowstorm, since homes would be without heat should there be power outages.

Evacuation routes are considered “fluid” dependent upon the hazard type, time of day, and severity of the event. Evacuation routes for the City are directed by the New Bedford Police Department with the assistance of other public safety partners and other City departments.

The City has also considered evacuation assembly points—locations in the community that serve as assembly points for evacuees who do not have their own transportation (typically located at cross streets and within walking distance of nearby neighborhoods). The City will use buses or other vehicles to pick up evacuees and transport them to either a shelter or to a local Evacuation Transportation Hub (T-HUB). The locations for evacuation assembly points will be released at least 24-hours before the evacuation orders and will be provided via numerous ways in the press, radio, reverse 911 system, and on all city social media accounts. The New Bedford Public Information Officer is responsible for getting this information out to the public.

In situations when residents may need to be evacuated outside of the community, the City of New Bedford will activate one or more T-HUBs where large numbers of evacuees transported from EAPs throughout the community assemble and wait for transportation to either a state-operated Regional Reception Center (RRC) or a designated shelter outside of the community. T-Hubs are locally operated, have adequate indoor facilities to stage evacuees, and adequate outdoor areas for vehicle staging and evacuee embarkation. The Commonwealth is responsible for providing buses or other vehicles to transport evacuees from local T-Hubs to RRCs or shelters.

The locations include the 3 middle schools and the high school located at:

- New Bedford High School, 230 Hathaway Blvd
- Roosevelt Middle School, 119 Frederick Street
- Keith Middle School, 225 Hathaway Blvd
- Normandin Middle School, 81 Felton Street

3.7.5. Environmental Vulnerability

Hurricanes, earthquakes, Nor’easters, floods or any weather-related hazard event, in addition to invasive species, will have particular impacts on the natural and built environment. Differences in storm size, speed of movement, wind speeds, and landfall location relative to vulnerable resources makes for high variability in impacts and related costs associated with weather-

related events. For invasive species, the location and breadth of the growth or stands will cause the same variability in impacts, however, mostly indirect in nature.

When the natural environment is impacted there are both direct and indirect costs. Impacts of severe weather events to the natural environment include both direct (e.g., loss of habitat and salinization of land or groundwater) and indirect costs (e.g., widespread inland damage to the built environment, threats to ecosystems and species, and contamination of potable water supply).

3.8. Federal Disaster/Grant Assistance

Since 2016, the City of New Bedford has received federal grant assistance through the Coronavirus Aid, Relief, and Economic Security (CARES) Act (\$8,403,705) and FEMA (\$4,496,068.59) for the following events:

Event: Snowstorm/Blizzard (January 2022)...FEMA

- Disaster Number: DR-4651
- \$ 333,157.06
- Main Items for Funding Provided for:
 - Protective measures and snow assistance
 - Administrative costs

Event: COVID 19 (2022/2023)...FEMA

- Disaster Number: DR-4496
- \$ 4,054,911.53
- Main Items for Funding Provided for:
 - Protective measures
 - Supplies and equipment
 - Public vaccine clinic

Event: COVID 19 (2023)...CARES Act

- \$8,403,705
- Main Items for Funding Provided for:
 - Emergency supplies/equipment (protective measures)
 - Personnel wages

Hazard Mitigation Grant Program (2023)...FEMA

- \$108,000
- Main Items for Funding Provided for:
 - Multi-Hazard Mitigation Plan Update
 - Comprehensive Emergency Management Plan Update

4. CAPABILITY ASSESSMENT

4.1. Introduction

The Capabilities Assessment section has been restructured to better document local, state, and federal department, agency, and program capabilities in terms of pre- and post-disaster activities. It has been organized into three main sections: Planning and Regulatory Capabilities, Administrative and Technical Capabilities, and Financial Capabilities to better define the programs, policies, and funding opportunities each department or agency is implementing to reduce risk and work towards implementing hazard mitigation programs targeted at increased resiliency.

The City of New Bedford implements several hazard mitigation policies and procedures, current state laws, executive orders, and regulations to promote the safety of its residents and minimize risk to community assets. This section presents a brief description of each of the primary mitigation programs currently in place.

4.2. Planning and Regulatory Capabilities

4.2.1. City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018

As the Commonwealth advances an integrated climate change strategy per Executive Order 569, New Bedford (and many other Massachusetts cities and towns) is working to advance local and regional resiliency planning and climate preparedness efforts. After securing MVP Planning Grant funding from the Massachusetts Executive Office of Energy and Environmental Affairs, New Bedford engaged in a two-day Community Resilience Building Workshop and produced a City-wide vulnerability assessment and action-oriented resiliency plan in June 2018. The City became an MVP-Designated community following this process, making it eligible for MVP Action Grant funding to implement identified climate adaptation actions.

Through the MVP workshops, as well as pre-workshop preparation, the City identified four main hazards that have historically impacted the community and are projected to have notable impacts going forward. Those four hazards are intense storms, heat waves and changes in air quality, flooding, and sea level rise. MVP stakeholders identified over 60 possible actions. Of these possible actions, 18 were flagged as being of particularly high priority. Below are the top three actions that were collectively identified as the top priorities for New Bedford, followed by the remaining high priority actions under each topic:

Top Priority Actions

- Increase communications capabilities – expand and educate re-reverse 911; multi-lingual program; ensure communication program for everyone
- Ensure we are taking all steps to protect aquifer protection zones through forest management around reservoirs and addressing invasive species
- Evacuation and sheltering plan – including neighborhood resilience hubs, sirens, evacuation routes, signage, and education around plans (including a road race)

High Priority Infrastructure Actions

- Continued upkeep and improvements to water, sewer, and storm systems

- CSO Mitigation/Green Infrastructure
- Bury power lines and replace aging infrastructure
- Develop a long-term adaptation strategy for the Port
- Develop/enhance the evacuation and sheltering plan (including neighborhood resilience hubs, sirens, evacuation routes, and education)
- Put air conditioning in schools (for health benefits and to use the schools as cooling centers)

High Priority Socio-Economic Actions

- Updates to the City's Master Plan that focus on the neighborhood level
- Identify a backup medical facility as part of the St. Luke's resiliency
- Increase availability of affordable housing (not in the flood zone)
- Host a roundtable discussion style workshop with key stakeholders in the fishing industry
- Education on financial literacy and English immersion
- Localize power and increase redundancy to minimize power loss

Low Priority Actions

- Implement green infrastructure projects
- Communication and outreach plan for vulnerable populations
- More green infrastructure projects
- Ensure taking all steps necessary to protect the aquifer production zone through forest management around the reservoir and addressing invasive species
- Water conservation programs with maintenance and upgrades around Great Ponds
- Increase communication capabilities and expand existing educational programs to ensure they are multi-lingual and appropriate for all

4.2.2. New Bedford Harbor Port Assessment Summary⁶⁴

In early 2021, New Bedford Port Authority hired Foth Infrastructure & Environmental, LLC and Fathom Resources, LLC to perform underwater and top-side structural inspections and assessments of the marine infrastructure at the municipally owned and managed piers in New Bedford and Fairhaven, as well as New Bedford's South Terminal. The results of these infrastructural assessments were then considered in relation to projected sea level rise and flooding events due to climate change. Additionally, Foth identified the long-term resilience recommendations for all assets. Resilient design guidelines should be implemented whenever possible, and improvements should include measures to reduce damage due to regular flooding from storm events and heavy precipitation. Careful consideration of increased mean higher high water (MHHW) elevations and management of hurricane barrier closures will be required to ensure continuous operation of the Port facilities. Design elevations for rehabilitation or reconstruction projects should be set to preserve operations at the facility to the greatest extent possible over the anticipated useful life of the structure.

⁶⁴ *New Bedford Harbor Port Assessment Summary Report, 2021: updated January 2025.*

Coal Pocket Pier

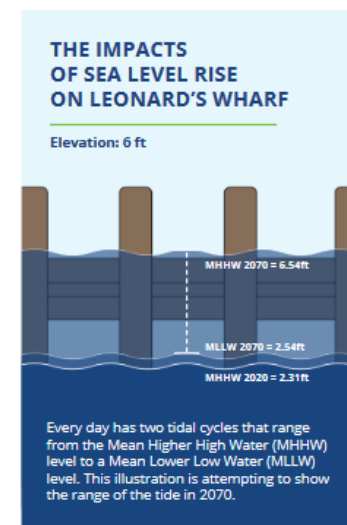
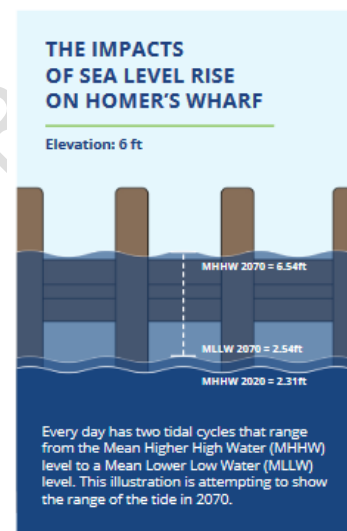
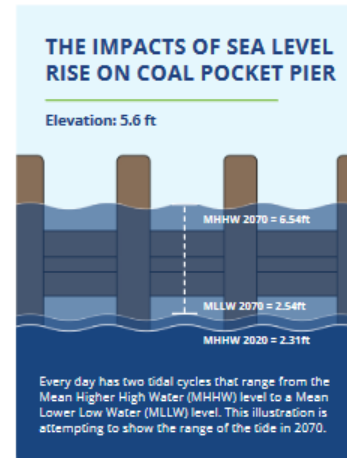
- Current condition: Good
- Mid-term needs: Cross-bracing on seven bents below the boardwalk will need repair.
- Long-term needs: The remaining 283 lf of granite wall along the shoreline will need to be replaced.
- Resilience Upgrade: Recently reconstructed. Future repairs should focus on minimizing damage from frequent flooding and maintaining operations at the pier.

Homer's Wharf

- Current condition: Serious
- Short-term needs: Full structural replacement.
- Mid-term needs: Standard maintenance and repair requirements for new structure.
- Long-term needs: Depends on continuous maintenance and repair of new structure.
- Resilience upgrade: New design elevation set at 8 feet NAVD88, which places the finished deck – 1.5 feet above MHHW for 2070, with the goal of maintaining continuous operations on the pier as sea levels rise. Incorporate resilient design features into the replacement structure.

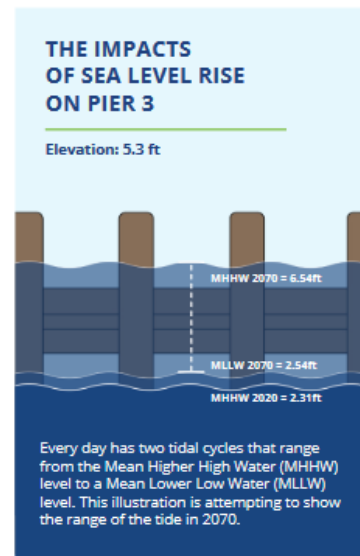
Leonard's Wharf

- Current condition: Serious
- Short-term needs: Full structural replacement.
- Mid-term needs: Standard maintenance and repair requirements for new structure.
- Long-term needs: Depends on continuous maintenance and repair of new structure.
- Resilience upgrade: New design elevation set at 8 feet NAVD88, which places the finished deck – 1.5 feet above MHHW for 2070, with the goal of maintaining continuous operations on the pier as sea levels rise. Incorporate resilient design features into the replacement structure.



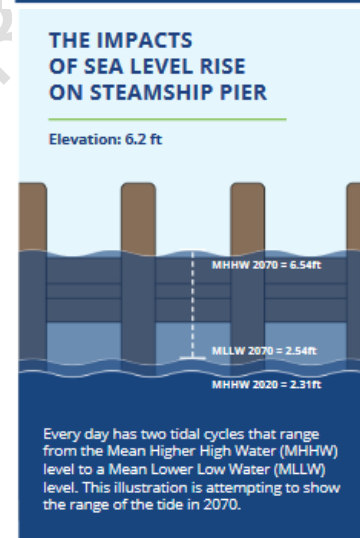
Pier 3

- Current condition: Fair
- Long-term needs: Full structure replacement required, 1,312 lf of new bulkhead, plus cap, fendering, etc.
- Resilience upgrade: New design elevation TBD – should be re-assessed in 2050, pending rehabilitation plan selected.



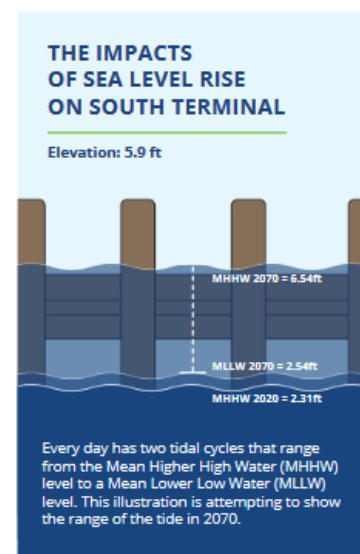
Steamship Pier

- Current condition: Fair
- Long-term needs: Depends on continuous maintenance and repair of new structure.
- Resilience upgrade: Elevation should be re-assessed in 2050. This structure can be repaired and will not require a full replacement, so consideration should be given to methods for raising the elevation of the entire structure and incorporating resilience design upgrades.



South Terminal

- Current condition: Fair
- Long-term needs: Replacement will be required within 15 to 30 years.
- Resilience upgrade: New design elevation TBD – should be re-assessed in 2050, pending rehabilitation plan selected.



4.2.3. State of the Coast: Future Climate-Driven Risks and Their Solutions on Massachusetts' South Coast⁶⁵

This report highlights the projected impacts of rising seas and increasing storm surge on the ecology of Buzzards Bay and Narragansett Bay and quantifies the significant threats to community infrastructure projected in the coming years. Resilience priorities for New Bedford include:

- Collaboration with Fairhaven to develop adaptation strategies for the harbor.
- Green infrastructure improvements for West Rodney French Boulevard and East Beach parking lot.
- West Beach renourishment and stabilization to protect the beach, seawall, and sewer main.
- Strategies for pollution reduction, including the regional Buttonwood Brook Watershed project.

4.2.4. Resilient Design Guidelines New Bedford Harbor, June 2020⁶⁶

These guidelines are intended for developers, businesses, residents, and City staff members that are living or working in and around the Port of New Bedford. These guidelines are meant to enhance existing base zoning codes and standards to proactively prepare for the impacts of sea level rise to encourage sustainable future development and proactive retrofits of existing infrastructure to maximize the useful life of key public and private assets.



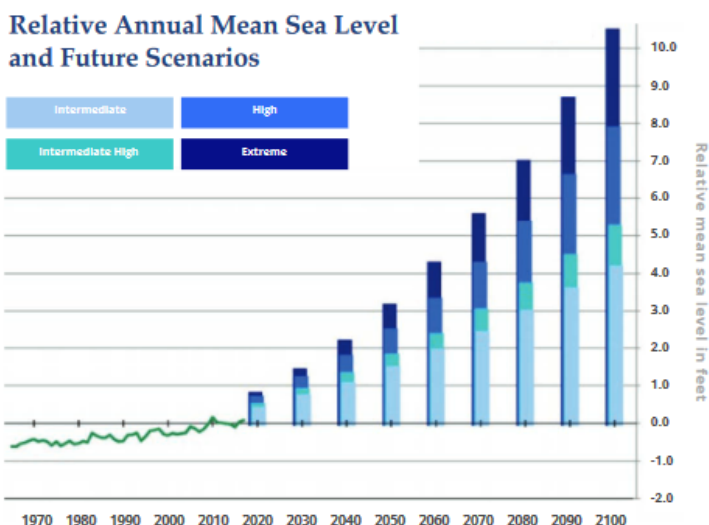
While the extent and rate of SLR depends on reducing greenhouse gas, the State recommends planning for sea level rise under a **high emission** scenario under which we would experience the following increases in sea level from a 2010 baseline:

1.2 feet by 2030

2.5 feet by 2050

4.3 feet by 2070

7.8 feet by 2100



⁶⁵ *State of the Coast: Future Climate-Driven Risks and Their Solutions on Massachusetts' South Coast.*

⁶⁶ *Resilient Design Guidelines New Bedford Harbor, June 2020.*

The guidelines provide direction by way of a 'Resiliency Hierarchy Approach' that emphasize risk avoidance when possible, protection from risk when it is not possible to avoid it, and ways to recover quickly from impacts when assets cannot be completely protected. Additional factors for considering the best design approach for a project are the criticality of the project or its various assets, as well as the expected life of the asset(s). Key considerations for measures along the Resilience Risk Hierarchy include:

- Determining a Design Flood Elevation (DFE)
 - Assess the useful life of the project
 - Determine the MC-FRM projections for your project
 - Identify the depth at the project site
 - Add a freeboard
- Establish a resilience approach based on the project type
 - Avoidance
 - Protection
 - Recovery
- Implement resilience measures
 - Avoidance
 - Site selection
 - Elevation of utilities
 - Underground utilities
 - Protection
 - Shoreline enhancements
 - Nature-based solutions
 - Man-made infrastructure
 - Flood barriers
 - Green infrastructure
 - Roadway modifications
 - Dry/Wet floodproofing
 - Elevation of utilities
 - Wind/Storm resistance
 - Flood damage-resistant materials
 - Managing hazardous materials
 - Underground utilities
 - Recovery
 - Green infrastructure
 - Flood damage-resistant materials
 - Outward swinging doors
 - Vestibules
 - Redundant energy systems
 - Stormwater infrastructure
 - Shore power

4.2.5. Building New Bedford: Strategies to Promote Attainable Housing for All in a Thriving New Bedford, March 2023⁶⁷

This plan is a comprehensive housing plan that outlines actions the City is taking to stimulate new housing development, reactivate underutilized properties, and relieve housing instability and affordability concerns for City residents. It also serves as a call to action to New Bedford's surrounding towns to increase their overall development of multi-family housing in order to contribute to solving the region's housing shortage.

The plan is comprised of 22 measures the City is taking to address the regional housing crisis, organized into six main areas:

- Facilitating New Housing Production Across Income Levels
- Making Use of Existing Housing Stock & Space
- Promoting Home Ownership & Independent Living
- Updating Regulatory Framework
- Establishing a Regional Approach on Housing Issues
- Addressing Housing Instability and Homelessness

4.2.6. City of New Bedford Open Space and Recreation Plan 2021 - 2028

This plan is intended to advise the City Council on open space preservation and acquisition efforts, act as a resource for other agencies with open space concerns and advise other departments, boards, and commissions regarding future efforts. The following goals, objectives, policies, and actions are applicable to this hazard mitigation plan update:

- Goal 1: Expand outdoor recreational and open space opportunities for all New Bedford residents.
 - Objective 3: Improve and enhance the public's access to the waterfront.
 - Actions:
 - Improve water quality at Buttonwood Pond with stormwater management improvements.
- Goal 3: Enhance the quality, connectivity & appeal of New Bedford's streetscapes.
 - Objective 2: Assess opportunities for public sidewalk/pathway amenities including lighting, sculpture, plants, etc.
 - Actions:
 - Add more street trees especially in Environmental Justice neighborhoods and other locations lacking canopy.
- Goal 4: Enhance and protect natural resources throughout New Bedford.
 - Objective 1: Develop a green infrastructure implementation strategy including climate and resiliency in parks and open spaces.
 - Actions:
 - Create stormwater management plan for Brooklawn Park.

⁶⁷ Building New Bedford: Strategies to Promote Attainable Housing for All in a Thriving New Bedford, March 2023.

- Assess GI implementation at Fort Taber, Hazelwood, Marine and Victory Parks.
- Objective 2: Restore threatened and degraded natural resources in New Bedford.
 - Actions:
 - Add trees to existing groves in parks and cemeteries to diversify ages of trees.
- Objective 3: Support preservation of private open space in New Bedford.
 - Actions:
 - Develop guidelines to impervious surfaces and integration of GI incentives for homeowners and businesses.

4.2.7. A City Master Plan New Bedford 2020

The City of New Bedford is nearing completion on an updated Comprehensive Master Plan. This planning document will include multiple citywide initiatives and positioning the City to advance a progressive agenda that addresses critical components for achieving sustainable growth and development. The updated plan (2025 Comprehensive Plan) is not yet ready for public consumption; however, the Consultant Team coordinated with the Planning Department to obtain draft updated goals, objectives, and actions that have been incorporated into the mitigation strategy for this 2025 Update. The following goals and objectives applicable to hazard mitigation planning from the current plan are referenced below:

Jobs and Business

- Goal 5: Support traditional harbor industries, including fishing and seafood processing, while capturing new opportunities to diversify the Port's economy in sectors, such as short sea shipping, alternative energy, tourism, and recreational boating.
 - Objective d: Develop a comprehensive 'Green Port' strategy to support/complement ongoing efforts to clean up the Harbor, incorporate energy efficiencies, operational improvements, recycling initiatives, and encourage the use of sustainable and cost-beneficial 'green technology' throughout the Port.

Transportation

- Goal 2: Maintain or enhance vehicular mobility in the city while striking a balance between roadway safety improvements, gateway treatments, pedestrian comfort, and roadway character.
 - Objective d: Establish design guidelines for new streets and roadways that encourage stormwater management and drought resistant plantings.

Open Space, Recreation, and Natural Resources

- Goal 2: Protect natural resources and create new greenways throughout New Bedford.
 - Objective c: Prioritize parcels for acquisition by the City based on the natural value (i.e., water resources protection; wildlife corridor; sensitive resources) and recreational potential of the land.
 - Objective d: Remediate and restore threatened and degraded natural resources (i.e., Buttonwood Park Pond).
 - Objective e: Support efforts to obtain funding to remediate CSOs and implement EPA and Department of Environmental Protection stormwater regulations.

- Goal 3. Enhance the quality and appeal of New Bedford’s streetscapes.
 - Objective a: Expand, implement, and fund street tree plantings on city streets.
 - Objective d: Work with existing organizations to ‘green’ New Bedford neighborhoods (i.e., New Bedford Preservation Society’s Re-Leaf program; and the Tree City USA program).

City Services and Resources

- Goal 1: Establish measurable methods for delivery of public services that improve efficiency, cost-effectiveness, and sustainability.
 - Objective a: Conduct an audit of all services provided that create measurable standards for effectiveness and recommends methods to improve public services and facility care based on industry best practices.
 - Objective b: Create a comprehensive capital improvements plan that focuses on improving energy efficiency and sustainable building operations.
 - Objective d: Reduce energy consumption per square foot in municipal buildings with corresponding emissions reduction, such as the installation of roof top solar panels where appropriate.
 - Objective e: Reduce the annual total gallons of gasoline and diesel fuel used by the municipal fleet and incorporate hybrid-electric vehicles.
 - Objective f: Replace all oil heat within municipal buildings with either natural gas or clean technologies; utilize clean technologies for other energy requirements (i.e., electricity).

4.2.8. Subdivision Regulations City of New Bedford⁶⁸

Article V General Requirements for the Subdivision of Land

- (14) Flooding. Land subject to flooding and land deemed by the Board to be uninhabitable shall not be platted for residential occupancy, not for such other uses as may increase danger to health, life or property or aggravate the flood hazard, but such uses as shall not be endangered by periodic or occasional inundation.

Article VII Required Improvements

- (C) Storm Drainage. Basic drainage facilities shall be installed in such area where sewer installation is impractical, in the following manner:
- (1) On major streets a crowned cross section is preferred, except at curves. Both shoulders outside the pavement shall be compacted and stabilized, and storm water run-off from adjoining properties and from the roadway shall be definitely channeled and conducted in such manner that road shoulders, embankments, and pavement edges cannot be undermined nor raveled away.
 - (2) Storm drain culverts and conduits shall be not less than twelve (12) inches in diameter or so much larger as may be required by good engineering design

⁶⁸ *Subdivision Regulations*, City of New Bedford.

standards in relation to the slope, drainage area and land use of the area to be drained.

- (3) Storm drains shall be laid with a cover depth not less than thirty-six (36) inches except that, where ledge is encountered, different depth and pipe materials may be used as determined by the Department of Public Works. Material used in the drainage system shall be as required by the Department of Public Works of the City of New Bedford.
- (4) Head walls, catch basins, and manholes as well as storm drainage lines and structures shall be those constructed to the requirements and specifications of the Department of Public Works of the City of New Bedford.
- (5) Except where storm water may be, in the opinion of the Board of Survey, safely decanted from the road surface or the gutter by paved channel to a natural drainage ditch of adequate proportions, catch basins and storm drainage lines shall be installed on continuous grades, so located as to assuredly drain all low points and sags in the roadway, and be so located that, if possible, storm water shall not flow along the street surface or gutter a greater distance than three hundred (300) feet, unless otherwise permitted by the Department of Public Works.
- (6) Where a drainage course (surface or piped) is outside street exterior lines, the location of such drainage course shall be secured to the City of New Bedford by easement or dedication.

4.2.9. New Bedford MA Code of Ordinances⁶⁹

Chapter 9 Comprehensive Zoning/Section 4000 – Special Regulations

Section 4410 – Flood Hazard Overlay District (FHOD)

The purposes of the Floodplain District are to:

- (1) Ensure public safety through reducing the threats to life and personal injury;
- (2) Eliminate new hazards to emergency response officials;
- (3) Prevent the occurrence of public emergencies resulting from water quality, contamination, and pollution due to flooding;
- (4) Avoid the loss of utility services which if damaged by flooding would disrupt or shut down the utility network and impact regions of the community beyond the site of flooding;
- (5) Eliminate costs associated with the response and cleanup of flooding conditions;

Section 4420 - Definitions.

The following definitions apply to this section," and adding and/or replacing the following definitions:

⁶⁹ *New Bedford Code of Ordinances.*

- Area of special flood hazard is the land in the floodplain within a community subject to a one percent or greater chance of flooding in any given year. The area may be designated as Zone A, AO, AH, AI-30, AE, A99, VI-30, VE, or V.
- Base flood means the flood having a one percent chance of being equaled or exceeded in any given year.
- Coastal high hazard area means an area of special flood hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storms or seismic sources. The area is designated on a FIRM as Zone V, VI-30, VE.
- Development means any man-made change to improved or unimproved real estate, including but not limited to building or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations.
- District means Floodplain District.
- Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program. FEMA provides a Nationwide flood hazard area mapping study program for communities as well as regulatory standards for development in the flood hazard areas.
- Flood Insurance Rate Map (FIRM) means an official map of a community on which FEMA has delineated both the areas of special flood hazard and the risk premium zones applicable to the community.
- Flood insurance study means an examination, evaluation, and determination of flood hazards, and, if appropriate, corresponding water surface elevations, or an examination, evaluation and determination of flood-related erosion hazards.
- Floodway means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation.
- Functionally dependent use means a use which cannot perform its intended purpose unless it is located or carried out in close proximity to water. The term includes only docking facilities, port facilities that are necessary for the loading and unloading of cargo or passengers, and ship building and ship repair facilities, but does not include long-term storage or related manufacturing facilities. [US Code of Federal Regulations, Title 44, Part 59] Also [Referenced Standard ASCE 24-14]
- Highest adjacent grade means the highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure. [US Code of Federal Regulations, Title 44, Part 59]
- Historic structure means any structure that is:
 - Listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;
 - Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;

- Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or
- Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:
 - By an approved state program as determined by the Secretary of the Interior; or
 - Directly by the Secretary of the Interior in states without approved programs. [US Code of Federal Regulations, Title 44, Part 59]
- Lowest floor means the lowest floor of the lowest enclosed area (including basement or cellar). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor, provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of NFIP Regulations 60.3.
- Manufactured home means a structure, transportable in one or more sections, which is built on a permanent chassis and is designated for use with or without a permanent foundation when connected to the required utilities. For floodplain management purposes the term "manufactured home" also includes park trailers, travel trailers, and other similar vehicles placed on a site for greater than one hundred eighty (180) consecutive days. For insurance purposes, the term "manufactured home" does not include park trailers, travel trailers, and other similar vehicles.
- Manufactured home park or subdivision means a parcel (or contiguous parcels) of land divided into two (2) or more manufactured home lots for rent or sale.
- New construction. Structures for which the start of construction commenced on or after the effective date of the first floodplain management code, regulation, ordinance, or standard adopted by the authority having jurisdiction, including any subsequent improvements to such structures. New construction includes work determined to be substantial improvement. [Referenced Standard ASCE 24-14]
- One-hundred-year flood - see Base flood.
- Recreational vehicle means a vehicle which is:
 - Built on a single chassis;
 - 400 square feet or less when measured at the largest horizontal projection;
 - Designed to be self-propelled or permanently towable by a light duty truck; and
 - Designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use. [US Code of Federal Regulations, Title 44, Part 59]
- Regulatory Floodway - see Floodway.
- Special flood hazard area means an area having special flood and/or flood-related erosion hazards and shown on an FHBM or FIRM as Zone A, AO, AI-30, AE, A99, AH, V, VI-30, VE.
- Start of construction. The date of issuance for new construction and substantial improvements to existing structures, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, or other improvement is within 180 days after the date of issuance. The actual start of construction means the first placement of permanent construction of a building (including a manufactured home) on a

site, such as the pouring of a slab or footings, installation of pilings or construction of columns.

Permanent construction does not include land preparation (such as clearing, excavation, grading or filling), the installation of streets or walkways, excavation for a basement, footings, piers or foundations, the erection of temporary forms or the installation of accessory buildings such as garages or sheds not occupied as dwelling units or not part of the main building. For a substantial improvement, the actual "start of construction" means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building. [Base Code, Chapter 2, Section 202]

Structure means, for floodplain management purposes, a walled and roofed building, including a gas or liquid storage tank, that is principally above ground, as well as a manufactured home. [US Code of Federal Regulations, Title 44, Part 59]

- Substantial damage means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed fifty (50) percent of the market value of the structure before the damage occurred.
- Substantial improvement means any repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds fifty (50) percent of the market value of the structure either (a) before the improvement or repair is started, or (b) if the structure has been damaged and is being restored, before the damage occurred. For the purposes of this definition, "substantial improvement" is considered to occur when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure.
- Substantial repair of a foundation. When work to repair or replace a foundation results in the repair or replacement of a portion of the foundation with a perimeter along the base of the foundation that equals or exceeds fifty (50) percent of the perimeter of the base of the foundation measured in linear feet, or repair or replacement of 50% of the piles, columns or piers of a pile, column or pier supported foundation, the building official shall determine it to be substantial repair of a foundation. Applications determined by the building official to constitute substantial repair of a foundation shall require all existing portions of the entire building or structure to meet the requirements of 780 CMR. [As amended by MA in 9th Edition BC]
- Variance means a grant of relief by a community from the terms of a flood plain management regulation. [US Code of Federal Regulations, Title 44, Part 59]
- Violation means the failure of a structure or other development to be fully compliant with the community's flood plain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in §60.3(b)(5), (c)(4), (c)(10), (d)(3), (e)(2), (e)(4), or (e)(5) is presumed to be in violation until such time as that documentation is provided. [US Code of Federal Regulations, Title 44, Part 59]
- Zone A means the one-hundred-year floodplain area where the base flood elevation (BFE) has not been determined. To determine the BFE, use the best available Federal, State, local, or other data.

- Zone A1-30 and Zone AE (for new and revised maps) means the one-hundred-year floodplain where the base flood elevation has been determined.
- Zone AH and Zone AO means the one-hundred-year floodplain with flood depths of one to three (3) feet, where a clearly defined channel does not exist, where the path of flooding is unpredictable, and where the velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.
- Zone A99 means areas to be protected from the one-hundred-year flood by federal flood protection system under construction. Base flood elevations have not been determined.
- Zones B, C, and X are areas identified in the community flood insurance study as areas of moderate or minimal flood hazard. Zone X replaces Zones B and C on new and revised maps.
- Zone V means a special flood hazard area along a coast subject to inundation by the one-hundred-year flood with the additional hazards associated with storm waves. Base flood elevations have not been determined.
- Zone V1-30 and Zone VE (for new and revised maps) means a special flood hazard area along a coast subject to inundation by the one-hundred-year flood with additional hazards due to velocity (wave action). Base flood elevations have been determined.

Section 4430 – Floodplain District Boundaries and Base Flood Elevation Data.

Floodplain District Boundaries and Base Flood Elevation Data. The Floodplain District is herein established as an overlay district. The District includes all special flood hazard areas within the City of New Bedford designated as Zone A, AE, AH, AO, A99, V, or VE on the Bristol County Flood Insurance Rate Map (FIRM) dated July 6, 2021, issued by the Federal Emergency Management Agency (FEMA) for the administration of the National Flood Insurance Program. The exact boundaries of the district shall be defined by the 1%-chance base flood elevations shown on the FIRM and further defined by the Bristol County Flood Insurance Study (FIS) report dated July 6, 2021. The effective FIRM and FIS report are incorporated herein by reference and are on file with the City Clerk, Planning Board, Building Official and Conservation Commission.

Section 4440 – Base Flood Elevation and Floodway Data.

1. Floodway Data. In Zones A, and AE, along watercourses that have not had a regulatory floodway designated, the best available federal, state, local, or other floodway data shall be used to prohibit encroachments in floodways which would result in any increase in flood levels within the community during the occurrence of the base flood discharge.
2. Base Flood Elevation Data. Base flood elevation data is required for subdivision proposals or other developments greater than fifty (50) lots or five (5) acres, whichever is the lesser, within unnumbered A zones.

Section 4450 – Notification of Watercourse Alteration.

In a riverine situation, the City Planner shall notify the following of any alteration or relocation of a watercourse:

- Adjacent Communities
- NFIP State Coordinator, Massachusetts Department of Conservation and Recreation, 251 Causeway Street, Suite 600-700, Boston, MA 02114-2104

- NFIP Program Specialist, Federal Emergency Management Agency, Region I, 99 High Street, 6th Floor, Boston, MA 02110

Section 4460 – Use Regulations.

1. Reference to Existing Regulations (b, c, d, e communities). The Floodplain District is established as an overlay district to all other districts. All development in the district, including structural and non-structural activities, whether permitted by right or by special permit must be in compliance with Chapter 131, Section 40 of the Massachusetts General Laws and with the following:
 - Section of the Massachusetts State Building Code which addresses floodplain and coastal high hazard areas (currently 780 CMR);
 - Wetlands Protection Regulations, Massachusetts Department of Environmental Protection (MassDEP) currently 310 CMR 10.00);
 - Inland Wetlands Restriction, MassDEP (currently 310 CMR 13.00);
 - Coastal Wetlands Restriction, MassDEP (currently 310 CMR 12.00);
 - Minimum Requirements for the Subsurface Disposal of Sanitary Sewage, MassDEP (currently 310 CMR 15, Title 5);

Any variances from the provisions and requirements of the above referenced state regulations may only be granted in accordance with the required variance procedures of these state regulations.

2. Other Use Regulations.
 - A. In Zones AE, along watercourses that have a regulatory floodway within the City of New Bedford, as designated on the Bristol County FIRM, encroachments are prohibited in the regulatory floodway which would result in any increase in flood levels within the community during the occurrence of the base flood discharge.
 - B. Man-made alteration of sand dunes within Zones VE which would increase potential flood damage are prohibited.
 - C. All new construction within Zones VE must be located landward of the reach of mean high tide.
 - D. All subdivision proposals must be designed to assure that:
 - a) such proposals minimize flood damage;
 - b) all public utilities and facilities are located and constructed to minimize or eliminate flood damage; and
 - c) adequate drainage is provided to reduce exposure to flood hazards.
 - E. Existing contour intervals of site and elevations of existing structures must be included on plan proposal.
 - F. There shall be established a "routing procedure" which will circulate or transmit one copy of the development plan to the Conservation Commission, Planning Board, Board of Health, the City Engineer and the Inspector of Buildings for comments which will be considered by the appropriate permitting board prior to issuing applicable permits.

Section 4470 – Permitted Uses.

The following uses of low flood damage potential and causing no obstructions to flood flows are encouraged provided they are permitted in the underlying district and they do not require structures, fill, or storage of materials or equipment:

1. Agricultural uses such as farming, grazing, truck farming, horticulture, etc.
2. Forestry and nursery uses.
3. "Outdoor recreational uses, including fishing, boating, play areas, etc.
4. Conservation of water, plants, wildlife.
5. Wildlife management areas, foot, bicycle, and/or horse paths.
6. Temporary non-residential structures used in connection with fishing, growing, harvesting, storage, or sale of crops raised on the premises.
7. Buildings lawfully existing prior to the adoption of these provisions.

Section 4471 - Abrogation and greater restriction.

The floodplain management regulations found in this Floodplain Overlay District section shall take precedence over any less restrictive conflicting local laws, ordinances or codes.

Section 4472 - Disclaimer of liability.

The degree of flood protection required by this ordinance is considered reasonable but does not imply total flood protection.

Section 4473 - Severability.

If any section, provision, or portion of this ordinance is deemed to be unconstitutional or invalid by a court, the remainder of the ordinance shall be effective.

Section 4474 - Designation of Community Floodplain Administrator.

The City of New Bedford hereby designates the position of Inspector of Buildings as the official floodplain administrator for the City.

Section 4475 - Requirement to submit new technical data.

If the City acquires data that changes the base flood elevation in the FEMA mapped Special Flood Hazard Areas, the City will, within 6 months, notify FEMA of these changes by submitting the technical or scientific data that supports the change(s).

Notification shall be submitted to:

FEMA Region I Risk Analysis Branch Chief, 99 High St., 6th Floor, Boston, MA 02110

And copy of notification to:

Massachusetts NFIP State Coordinator, MA Dept. of Conservation & Recreation, 251 Causeway Street, Boston, MA 02114

Section 4476 - Variances to building code floodplain standards.

The City will request from the State Building Code Appeals Board a written and/or audible copy of the portion of the hearing related to the variance and will maintain this record in the community's files.

The City shall also issue a letter to the property owner regarding potential impacts to the annual premiums for the flood insurance policy covering that property, in writing over the signature of a community official that (i) the issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance up to amounts as high as \$25 for \$100 of insurance coverage and (ii) such construction below the base flood level increases risks to life and property.

Such notification shall be maintained with the record of all variance actions for the referenced development in the floodplain overlay district.

Section 4477 - Variances to local Zoning Ordinances related to community compliance with the National Flood Insurance Program (NFIP).

A variance from these floodplain ordinances must meet the requirements set out by State law and may only be granted if: 1) Good and sufficient cause and exceptional non-financial hardship exist; 2) the variance will not result in additional threats to public safety, extraordinary public expense, or fraud or victimization of the public; and 3) the variance is the minimum action necessary to afford relief.

Section 4478 - Permits are required for all proposed development in the Floodplain Overlay District.

The City of New Bedford requires a permit for all proposed construction or other development in the floodplain overlay district, including new construction or changes to existing buildings, placement of manufactured homes, placement of agricultural facilities, fences, sheds, storage facilities or drilling, mining, paving and any other development that might increase flooding or adversely impact flood risks to other properties.

Section 4479 - Assure that all necessary permits are obtained.

The City of New Bedford's permit review process includes the use of a checklist of all local, state, and federal permits that will be necessary in order to carry out the proposed development in the floodplain overlay district. The proponent must acquire all necessary permits and must submit the completed checklist demonstrating that all necessary permits have been acquired.

Section 4480 - Unnumbered A Zones.

In A Zones, in the absence of FEMA BFE data and floodway data, the building department will obtain, review and reasonably utilize base flood elevation and floodway data available from a Federal, State, or other source as criteria for requiring new construction, substantial improvements, or other development in Zone A as the basis for elevating residential structures to or above base flood level, for floodproofing or elevating nonresidential structures to or above base flood level, and for prohibiting encroachments in floodways.

Section 4481 - AO and AH zones drainage requirements.

Within Zones AO and AH on the FIRM, adequate drainage paths must be provided around structures on slopes, to guide floodwaters around and away from proposed structures.

Section 4482 - Recreational vehicles.

In A1-30, AH, AE Zones, V1-30, VE, and V Zones, all recreational vehicles to be placed on a site must be elevated and anchored in accordance with the zone's regulations for foundation and elevation requirements or be on the site for less than 180 consecutive days or be fully licensed and highway ready.

4.2.10. MA Wetlands Protection Bylaw⁷⁰

Purpose. M.G.L. c. 131, § 40 sets forth a public review and decision-making process by which activities affecting Areas Subject to Protection under M.G.L. c. 131, § 40 are to be regulated in order to contribute to the following interests:

- protection of public and private water supply
- protection of ground water supply
- flood control
- storm damage prevention
- prevention of pollution
- protection of land containing shellfish
- protection of fisheries
- protection of wildlife habitat

The purpose of 310 CMR 10.00 is to define and clarify that process by establishing standard definitions and uniform procedures by which conservation commissions and the Department may carry out their responsibilities under M.G.L. c. 131, § 40. Applicants and issuing authorities shall use forms provided by the Department to implement 310 CMR 10.00.

310 CMR 10.00 is intended solely for use in administering M.G.L. c. 131, § 40; nothing contained in 310 CMR 10.00 should be construed as preempting or precluding more stringent protection of wetlands or other natural resource areas by local by-law, or regulation.

310 CMR 10.51 through 10.60 is intended to establish criteria and standards for the uniform and coordinated administration of the provisions of M.G.L. c. 131, § 40. It is intended to ensure that development in and near inland wetlands is sited, designed, constructed and maintained in a manner that protects the public interests identified in M.G.L. c. 131, § 40 and served by these resource areas.

4.2.11. Stormwater Rules and Regulations, June 2021⁷¹

The purpose of the City of New Bedford Stormwater Management Rules and Regulations (hereinafter the "Stormwater Rules and Regulations") is to protect, maintain, and enhance the public health, safety, environment, and general welfare by establishing minimum requirements and procedures to control the adverse effects of land disturbance activities, increased post-

⁷⁰ <https://www.mass.gov/doc/310-cmr-1000-the-wetlands-protection-act/download>.

⁷¹ *City of New Bedford, Massachusetts Stormwater Rules and Regulations*, revised June 2021.

development stormwater runoff, decreased groundwater recharge, nonpoint source pollution associated with new development and redevelopment, illicit connections and discharges, and erosion and sedimentation associated with construction, as more specifically addressed in these Stormwater Rules and Regulations.

4.2.12. New Bedford Pump Station Floodproofing Project, 2016

This floodproofing project involved nine pump stations in New Bedford. Four of the nine pump stations were considered to be critical namely those located at Howard Avenue, former Howland Street, Cove Road, and East Rodney French Boulevard and these were treated accordingly. The remaining five pump stations located at MacArthur Drive, Wamsutta Street, Coggeshall Street, Belleville Avenue, and Popes Island were considered as non-critical. Many improvements were completed as part of this project; however, the City of New Bedford will continue to work towards completion of all recommendations as funding and DPI labor resources become available.

It is noted that low hanging fruit recommendations from the *Climate Change Vulnerability Assessment and Adaptation Planning Study for Water Quality Infrastructure in New Bedford, Fairhaven and Acushnet, June 30, 2014*, were implemented under that project. Building floodproofing of walls was not assessed under this report. As part of that project, the following improvements were completed:

- Cove Road: floodproof doors with stop logs
- East Rodney French Boulevard: floodproof doors with stop logs, replaced caulking on doors, and installed stop logs at generator louver
- Howland Street: elimination of low-level louvers and floodproof of door with stop logs
- Howard Avenue: Floodproof doors with stop logs, windows bricked, floodproof hatches installed, new HVAC air intakes installed above flood elevation, open wet well grates closed, and pits filled
- Coggeshall Street: floodproof doors with stop logs, dry well and wet well hatch replacement
- Wamsutta Street: floodproof doors with stop logs and hatch replacement

A part of the *Long Term CSO Control and Integrated Capital Improvements Plan, January 2017*, referenced later in this section, additional investigations were completed at each pumping station to assess their existing condition. As part of this, an assessment as to the vulnerability of the station was completed due to sea level rise. High-level planning recommendations were developed for each station depending on the degree of improvements needed (also referenced later in this section). To date, the following improvements have been completed:

- Front Street and Merrimac Street: pump stations have been replaced
- Howland Street and Shawmut Avenue: pump stations are in the process of being replaced
- Howard Avenue: pump station upgrade is under design

4.2.13. New Bedford Wetlands Ordinance Ch. 15 – Article VII – sec. 15 – 101 thru 15-112⁷²

The purpose of this article is to protect the wetlands and all other resources currently protected under the MA Wetlands Protection Act (M.G.L. c. 131 Section 40) and Regulations (310 CMR 10.00 et seq.) in the city. This article regulates activities deemed by the Conservation Commission likely to have a significant or cumulative effect on resource area values, including but not limited to, public or private water supply, groundwater supply, flood control, storm damage prevention, prevention of pollution, protection of fisheries, protection of land containing shellfish, and protection of wildlife habitat. This article reflects and enforces the Conservation Commission fee schedule and shall further authorize the Conservation Commission to amend said fee schedule as needed, to reflect the expenditures for administrative and technical staff review time required to perform their duties. This article permits the Conservation Commission the ability to enforce, through criminal or noncriminal disposition.

4.3. Administrative and Technical Capabilities

4.3.1. New Bedford Comprehensive Emergency Management Plan – Draft 2025

The purpose of the New Bedford Comprehensive Emergency Management Plan (CEMP) is to establish the overall framework for integration and coordination of emergency management and response activities and to facilitate coordinated response to any emergency or event in the Community requiring multi-agency response or support. The CEMP identifies local agencies and partner organizations that provide command and coordination capabilities for an emergency or event and describes how command and response components are organized and managed. The plan provides guidance to all departments and agencies in the community and details general roles and responsibilities of local departments and partnering stakeholders before, during, and following an emergency situation or event. It also provides for the systematic integration of additional emergency resources but does not replace other federal, state or national emergency operations plans or procedures. It identifies lines of authority and organizational relationships for the management of emergency response actions, describes how people and property are protected in an emergency or disaster, and identifies legal authority.

Further, the purpose of this plan is to prescribe those activities to be taken by the Mayor as well as by other government and community officials to protect the lives and property of all of the citizens of the Community in the event of a natural or human-caused emergency or disaster, including terrorism, and to satisfy the requirement that the community have an effective and operational emergency management plan.

The CEMP is comprised of this Base Plan, and a series of attachments, which provide an in-depth tool to build a strong emergency management plan.

⁷² *New Bedford Wetlands Ordinance Ch. 15 – Article VII – sec. 15-101 thru 15 – 112*, https://library.municode.com/ma/new_bedford/codes/code_of_ordinances?nodeId=COOR_CH15LIPEBURE_ARTVIIWEPR.

The CEMP is intended to accomplish the following goals:

- Assign responsibilities to agencies, organizations and individuals for carrying out specific actions during an emergency or event;
- Detail the methods and procedures to be used by designated personnel to assess emergencies and take appropriate actions to save lives and reduce injuries, prevent or minimize damage to public and private property, and protect the environment;
- Provide a process by which emergency response personnel and local government staff can efficiently and effectively prevent, mitigate, prepare for, respond to, and recover from emergencies and disasters;
- Identify the responsibilities of local agencies and partnering stakeholder and organizations during emergencies or events; and
- Identify lines of authority and coordination for the management of an emergency or event.

Emergency Operations Center

The City maintains a primary emergency operations center (EOC) that serves as the central point for coordination of the community's emergency management and response activities, maintaining situational awareness about the emergency situation, and facilitating requests for deployment of resources. In the event that the primary EOC is rendered or deemed unusable, emergency operations will relocate to an alternative EOC location.

- Primary EOC: Police Headquarters, 87 Rockdale Avenue
- Alternate EOC: New Bedford City Hall, 133 William Street
- Alternate EOC: New Bedford Emergency Management Office, 151 Purchase Street

A virtual emergency operations center (VEOC) is a technology-based version of a physical EOC that allows emergency managers to prepare for extreme weather and other incidents using a digital platform for communication and coordination rather than a physical location. The City of New Bedford utilizes either Zoom or Microsoft Teams to set up a VEOC. A VEOC will only be used as a last resort.

4.3.2. Mutual Aid System

The City of New Bedford is part of a mutual aid system (e.g., the provision of services from one jurisdiction to another during times of need for additional resources from many fronts.

Community-to-Community Mutual Aid

New Bedford has opted into mutual aid agreements with other communities, allowing the City to request support from other Massachusetts communities for response activities. It also provides a way for New Bedford to share its resources with neighboring communities that are experiencing emergency response limitations. Established agreements and plans document the procedures and standards for intrastate mutual aid.

The New Bedford Police Department maintains agreements with:

- Dartmouth
- Acushnet
- Mattapoisett
- Fall River

- Fairhaven
- Westport
- MA State Police

The New Bedford Fire Department maintains agreements with:

- Acushnet Fire
- Fairhaven Fire
- Dartmouth District 1 Fire
- Dartmouth District 2 Fire
- Dartmouth District 3 Fire
- Freetown Fire
- Mattapoisett Fire

The New Bedford Emergency Medical Services maintains agreements with:

- Fairhaven
- Marion
- Freetown
- Westport
- Lakeville
- Wareham

The New Bedford Emergency Management Department maintains agreements with:

- Acushnet
- Dartmouth
- Fairhaven

The New Bedford Board of Health maintains agreements with the Southeastern Massachusetts Public Health Collaborative with Acushnet and Fairhaven to design and implement a program by which the public health staff and resources are consolidated and shared such that cross-jurisdiction services, investigations, enforcement and data reporting may be carried out and the public health and safety of the communities may be better protected.

State-to-Community Mutual Aid

MEMA is authorized to make available any equipment, services, or facilities owned or organized by the Commonwealth for use in the City of New Bedford, upon request by the Mayor, and appointed agents to include the Emergency Management Director, Fire Chief, or Police Chief when there is a declaration of an emergency by the Governor that includes the City. Furthermore, MEMA is authorized to reinforce emergency management agencies in areas stricken by emergencies or disasters. New Bedford can also request assistance even if a declaration or State of Emergency isn't declared.

Massachusetts has entered into agreements with the New England states and Canadian provinces to rapidly access resources for both notice and non-notice events, including:

- New England State Police Compact provides mutual aid and assistance in the event of police emergencies, and to provide for the powers, duties, rights, privileges, and immunities of police personnel when rendering such aid.

- Northeastern Forest Fire Protection Compact provides the means for member states and provinces to cope with fires that might be beyond the capabilities of a single member through information, technology, and resource sharing.

Other Mutual Aid Agreements

New Bedford can also receive assistance through the Commonwealth's participation in broader interstate and international mutual aid compacts:

- The Emergency Management Assistance Compact (EMAC) is an interstate mutual aid agreement that covers all 50 states, the District of Columbia, Puerto Rico, Guam, and the U.S. Virgin Islands. The National Emergency Management Association provides administrative support for EMAC. EMAC acts as a complement to the federal disaster response system and may be used in lieu of or in conjunction with federal assistance. The City, through Massachusetts, may receive assistance via EMAC after a state of emergency is declared when resources are not available in the Commonwealth.
- The International Emergency Management Assistance Compact (IEMAC) is a mutual aid compact which covers the six New England states as well as the Canadian provinces of Quebec, New Brunswick, Prince Edward Island, Nova Scotia, and Newfoundland. IEMAC operates under the same principles as the EMAC, save that the governor of an affected member state does not need to declare a state of emergency before requesting resources through IEMAC.

New Bedford Emergency Medical Services Department also maintains mutual aid agreements for ambulatory services that cover EMT basic level emergency medical assistance/911 response to higher level of care response requiring a paramedic with the following:

- South Coast Ambulance
- Alert Ambulance
- Brewster Ambulance
- STAT Ambulance Service of New England

4.3.3. City of New Bedford Green Infrastructure Master Strategy and Implementation Roadmap Report, June 2022⁷³

This Green Infrastructure Master Strategy takes a holistic look at the City's major drainage areas, assesses existing and proposed future drainage and combined sewer system infrastructure outlined in the City's *Long Term CSO Control and Integrated Capital Improvements Plan* (Integrated Plan) and other City projects (roadway projects, developments, etc.), identifies green infrastructure opportunities and sets priority actions for implementation. The plan prioritizes Environmental Justice neighborhoods and areas of urban flooding where the additional co-benefits from green infrastructure (aesthetics, community engagement, the reduction of heat island effects as well as stormwater treatment and volume reduction) will improve the neighborhoods and create more resilient, equitable communities. The proposed plan also strives to preserve and enhance New Bedford's coastal areas, rivers, streams, ponds, wetlands, and other resource assets.

⁷³ City of New Bedford Green Infrastructure Master Strategy and Implementation Roadmap Report, June 2022.

4.3.4. NB Resilient – New Bedford’s Plan for Community Climate Action + Resilience, 2020⁷⁴

The development of *NB Resilient*, the first climate action plan in the City’s history, brought together municipal departments, community partners, and residents. *NB Resilient* is a climate action and resilience plan with 45 ambitious but achievable actions that help New Bedford achieve its vision: “a thriving, self-sustaining city that is culturally and historically secure and is ready to implement innovative approaches to prepare for tomorrow’s possibilities.”

Actions were identified under six broad focus areas including: climate and energy; economy and jobs; infrastructure, utilities, and waste; natural resources, public health, and safety; and transportation and land use. Actions applicable to hazard mitigation planning are referenced below:

Climate and Energy

- Develop a long-term adaptation strategy for the Port.
- Create a city-wide energy and water conservation campaign and tracking system.
- Increase the type and number of community installations of renewable energy resources.

Economy & Jobs

- Create a resiliency program for businesses to raise awareness of and prepare for climate change.

Infrastructure, Utilities, and Waste

- Promote green infrastructure in projects throughout the city.
- Implement the Integrated Capital Improvements Plan.
- Adopt an action plan to ensure the continued protection of New Bedford’s water supply.
- Ensure redundancy of critical infrastructure (EMS/Police/OPI/etc.), community facilities, and utilities.

Natural Resources

- Research and find opportunities to install alternatives to impervious surfaces and hardscapes in the city.
- Develop and implement an Urban Reforestation Plan.
- Develop a Watershed Protection Plan.
- Adopt a city-wide policy to use only native plant species, with a focus on pollinator plantings.
- Improve access to and education of the city’s natural resources.
- Support the sustainable remediation of natural resources.

Public Health & Safety

- Improve and increase communication capabilities.

⁷⁴ *NB Resilient – New Bedford’s Plan for Community Climate Action + Resilience, 2020.*

- Conduct a thorough vulnerable populations assessment.
- Identify cooling stations throughout the City.
- Create Resilience Hubs throughout the City.
- Enhance the Evacuation and Sheltering Plan (MVP Plan).

4.3.5. **Climate Change Vulnerability Assessment and Adaptation Planning Study for Water Quality Infrastructure in New Bedford, Fairhaven and Acushnet, June 30, 2014⁷⁵**

The City of New Bedford and the neighboring Towns of Acushnet and Fairhaven are particularly vulnerable to the impacts of SLR, especially in the event of a hurricane barrier failure in a storm. The projected interaction between SLR, increased storm intensity, and heavier precipitation is expected to impact the area's public and private property including associated water quality infrastructure and at-risk populations. A SeaPlan led team, which included RPS ASA and Fuss & O'Neill, modeled hypothetical worst case inundation scenarios using a combination of hurricane parameters and SLR scenarios, and used the model results to conduct a vulnerability analysis of water quality infrastructure, public property, and populations. We also quantified economic and structural damages from storms, and formulated recommendations for adapting water quality infrastructure to prepare for storm events.

The results of the vulnerability analysis showed that Hurricane Barriers protecting New Bedford Harbor began to be compromised by Category 2 hurricanes with 4-foot SLR and Category 3 hurricanes at current MHHW. At a Category 3 storm with 4-foot SLR, maximum inundation depths in the area would reach 32 feet. This scenario would also result in inundation at the site of 100% of Designated Port Areas, 36% of publicly-owned structures, 26 pump stations, and one wastewater treatment facility. It would also affect over 30,000 residents of environmental justice communities. Damage quantification analyses estimated \$3.5 billion in projected economic damages to buildings and substantial damage to 1,399 buildings.

Municipalities can use a water quality infrastructure adaptation project adaptation matrix developed in the report to prioritize projects which will protect critical water quality infrastructure from storm-related damages. Recommendations include adding on-site generators, checking for buoyancy, and flood-proofing doors, electrical systems, and air intakes at vulnerable structures. The data generated during this study will further the municipal, state, and federal government's understanding of public infrastructure vulnerability and help municipalities plan for future storm events.

Combined Sewer Overflows (CSOs)

Various locations: Hydraulic modeling of CSO system to assess storage capacity of system and ability to drain during various SLR scenarios, especially for those CSOs where regulator weir elevations are below SLR elevations for evaluation scenarios.

Pump Stations

⁷⁵ *Climate Change Vulnerability Assessment and Adaptation Planning Study for Water Quality Infrastructure in New Bedford, Fairhaven and Acushnet, June 30, 2014.*

It is noted that low hanging fruit recommendations from this study were implemented under the *New Bedford Pump Station Floodproofing Project, 2016*, previously referenced.

4.3.6. North End/South End Resilience Hub Business Planning

As part of the City's 2018 MVP process, the City identified "improved sheltering options" as a top priority action. To further enhance this action, the City decided to develop sheltering plans that also provide resources that meet and support people where they are in emergency and non-emergency situations and to empower them to bolster community resilience together, through the creation of a network of Resilience Hubs.

This plan serves as a business plan for creating a Resilience Hub at the Capitol Theater for the Near North End Neighborhood and Dennison Memorial Community Center in the South End neighborhoods which will:

- Bolster the resilience of and empower the members of the Near North End Neighborhood Community.
- Provide a community location for people to find shelter in any extreme weather events and high-heat days.
- Support community preparation and recovery from damage caused by a severe weather event.

4.3.7. Maritime Business Resilience Toolkit: City of New Bedford & Town of Fairhaven, June 2020

A guide for businesses of New Bedford Harbor to build resilience in the face of SLR and other climate hazards.

Long Term Solutions: Infrastructure Resilience

- Dry Floodproofing
- Wet Floodproofing
- Elevate Fueling and Mechanical Equipment
- Wind and Storm Resistance
- Flood Damage-Resistant Materials
- Outward Swinging doors
- Vestibules
- Redundant Energy Systems

Short Term Solutions: Resilient Business Operations

- Creating Response/Recovery Plans
- Understanding flood risk
- Preparing staff
- Examining information technology
- Assessing assets and equipment
- Getting to know utilities
- Understanding insurance
- Developing a business continuity plan
- Keeping communication lines open
- Government relations

4.3.8. Unofficial Tenth Edition Base Code Draft (780 CMR), updated December 22, 2022⁷⁶

The City of New Bedford enforces the Massachusetts State Building Code which includes many detailed regulations regarding structural design for wind loads, earthquake resistant design, flood-proofing and snow loads.

- Chapter 16: Structural Design
 - 1603.1.7 Flood Design Data. For buildings located in whole or in part in flood hazard areas as established in section 1612.3, the documentation pertaining to design, if required in section 1612.5, shall be included and the following information, referenced to the datum of the base flood elevation, shall be shown, regardless of whether flood loads govern the design of the building:
 - Flood design class assigned according to ASCE 24.
 - In flood hazard areas other than coastal high hazard areas or the elevation of the proposed lowest floor, including the basement.
 - In flood hazard areas other than coastal high hazard areas or the elevation to which any nonresidential building will be dry floodproofed.
 - In coastal high hazard areas, the proposed elevation of the bottom of the lowest horizontal structural member of the lowest floor, including the basement.
 - 1604.11 Snow, Wind and Earthquake Design Factors. Ground snow load, p_g , basic wind speed, V , and earthquake response accelerations for the maximum considered earthquake, S_S and S_1 , for each city and town in the Commonwealth shall be as given in Table 1604.11.

Table 1604.11 Snow Loads, Wind Speeds, and Seismic Parameters

Snow Loads		Basic Wind Speed, V^4 (mph)				Seismic Parameter S (g)		Peak Ground Acceleration
Ground Snow Load, P_g (psf)/Mean Elevation (FT)	Minimum Flat Roof Snow Load, P_f^1 (psf)	Risk Category I	Risk Category II	Risk Category III	Risk Category IV	S_g	S_1	P_{ga}
30	30	120	129	138	142	0.19	0.05	

- 1612.1 General. Within flood hazard areas as established in section 1612.3, all new construction of buildings, structures and portions of buildings and structures, including substantial improvement and restoration of substantial damage to buildings and structures, and substantial repair of a foundation shall be designed and constructed to resist the effects of flood hazards and flood loads. For buildings that are located in more than one flood hazard area, the provisions associated with the most restrictive flood hazard area shall apply.
- 1612.2 Design and construction. The design and construction of buildings and structures located in flood hazard areas, including coastal high hazard areas and

⁷⁶ Unofficial Tenth Edition Base Code Draft (780, CMR), December 2022.

coastal A zones, shall be in accordance with Chapter 5 of ASCE 7 and ASCE 24 plus one additional extra foot of freeboard (see REVISED - ASCE 24 Tables for flood-resistant materials and dry and wet-floodproofing below).

- 1612.3 Establishment of Flood Hazard Areas. See 780 CMR 2.00 for definition of flood hazard areas.
- 1612.4 Design and Construction. The design and construction of buildings and structures located in flood hazard areas, including coastal high hazard areas shall be in accordance with Chapter 5 of ASCE 7 and ASCE 24. For minimum elevation requirements for lowest floor, bottom of lowest horizontal structural member, utilities, flood-resistant materials, and wet and dry flood-proofing refer to tables in ASCE 24 which are to be amended as shown below. The design and construction of buildings and structures located in coastal dunes shall be in accordance with Appendix G
 - Exceptions: Existing non-residential structures and non-residential portions of existing mixed-use structures in Coastal A Zones shall be allowed to meet the A Zone requirements.
 - See ASCE 24 Tables for flood-resistant materials and dry and wet floodproofing.

4.3.9. Port of New Bedford Strategic Plan 2018 - 2023⁷⁷

For the past 22 years and counting, the Port of New Bedford has been America's highest-grossing commercial fishing port and the epicenter of the industry on the East Coast. The Port of New Bedford is the economic engine for southeastern Massachusetts. A 2019 economic analysis showed that port businesses generated revenue of \$3.8 billion, created 6,808 direct jobs, and paid \$362 million in direct wages.

The New Bedford maritime industry supports almost 40,000 local jobs and nearly \$2 billion in wages and local expenditures. Direct and indirect tax revenues include \$402 million to state and local governments and over \$1 billion to the federal government annually.

The Port of New Bedford is preparing to update its Strategic Plan that guided its priorities from 2018 – 2023. With the arrival of the offshore wind industry, significant new investments, activation of several new facilities, increased vessel activity, and continued infrastructure needs, it is timely to prepare a new strategic plan.

4.3.10. Circulation & Drainage Master Plan Brooklawn Park, New Bedford, MA, August 7, 2020⁷⁸

This plan seeks to improve the vehicular and pedestrian circulation, make recommendations for the site's poor drainage, and provide maintenance guidelines to shape the Park's development over the next decade. A former natural wetland, the Park is still an important hydrology system within the Acushnet River and Buzzards Bay watershed. The wet character of the site is evident from the frequent flooding of fields and paths during storms. Surface and subsurface drain pipes all carry water to Duck Pond which can overflow onto Acushnet Avenue during peak storm events. Existing stone-lined channels may be beautiful remnants of days past, but their paved

⁷⁷ *Port of New Bedford Strategic Plan 2018 – 2023.*

⁷⁸ *Circulation & Drainage Master Plan Brooklawn Park, New Bedford, MA, August 2020.*

basins speed runoff, contributing to obvious erosion throughout the site. A high-water table is evident in lawns that are often wet, spongy, and otherwise show signs of poor drainage. A centrally located, manmade wet meadow in the Park was designed to provide some runoff relief, but more needs to be done to improve drainage. City maps indicate a system of gray infrastructure stormwater pipes in the Park, including the recent installation of underdrainage at the soccer field. The visible erosion and sedimentation indicate that these subsurface pipes and basin require cleaning to remove debris, sediment, and tree roots to drain properly and improve runoff outcomes. Duck Pond also needs upgrades to improve drainage capacity and deter overflows during major storms.

One of the Plan's goals is to reduce stormwater runoff by 20%, by reducing impervious paving, improving drainage, and creating green infrastructure, such as rain gardens, green roofs, and constructed wetlands.

- New channels are proposed throughout Brooklawn Park to guide runoff to constructed wetlands.
- The stone paved floor of the existing stone channel that presently drains to Duck Pond should be replaced with a natural stone basin over gravel base.
- The Pond should be engineered to improve overflow and prevent erosion.
- Existing baseball fields infield mix should be replaced with turf to naturally slow overland flows.

The Port of New Bedford received a grant from the Seaport Economic Council to update its Municipal Harbor Plan, last adopted in 2010. Together with the Town of Fairhaven, the two municipalities have commenced the process to update the Plan with the goal of completion by mid-2026.

4.3.11. East Beach Parking Lot Green Infrastructure Retrofit, June 2022

Drainage improvements for a series of parking areas along Rodney French Boulevard (East Beach Parking Redesign) that include the installation of check dams and bioretention basins.

4.3.12. AVX Site Cleanup Project⁷⁹

From 2016 through 2023, AVX completed cleanup on the Titleist property south of the former AVX facility, completed in-situ chemical oxidation to treat chlorinated volatile organic compounds in groundwater in shallow and deep bedrock, excavated PCB-impacted soil from a 25-foot-wide pathway along the Acushnet River shoreline on the former AVX facility property, installed a permeable reactive barrier along the Acushnet River to treat/filter all groundwater on the former AVX facility property before discharge to the river, installed a hydraulic barrier along the northeastern and southeastern facility property boundaries, disposed of over 13 tons of PCB-impacted soil off site, and consolidated remaining impacted soil onsite beneath an asphalt cap.

⁷⁹ AVX Site Cleanup Project, <https://www.newbedford-ma.gov/environmental-stewardship/two-week-look-ahead-for-site-activities/>.

4.3.13. Shawmut Avenue Landfill Post-Closure Environmental Monitoring Report⁸⁰

River Hawk Environmental LLC prepared a Post-Closure Environmental Monitoring Report in accordance with MA Solid Waste Management Regulations (310 CMR 19.00) and the requirements of the facility-specific Post-Closure Monitoring and Maintenance Plan.

Landfill Gas Well & Temporary Monitoring Point/Vent Results

The results of landfill gas monitoring are generally consistent with previous landfill gas well and temporary gas probe monitoring results. It should be noted that monitoring conducted during this event did not reveal the presence of explosive gases at concentrations greater than 25% of the lower explosion level at the property line, or beyond. Therefore, notification to the MassDEP, pursuant to 310 CMR 19.132(5)(h) was not applicable.

Catch Basin, Fire Hydrant, and Indoor Air Monitoring Results

No significantly elevated concentrations of toxic organic values, methane, carbon dioxide, H₂S, nor depleted concentrations of oxygen, were detected during field screening conducted at catch basins, fire hydrants, or within the scale house or the warehouse buildings. The results of catch basin and indoor air screening are generally consistent with previous monitoring results.

4.3.14. City of New Bedford, MA 2017 Community Greenhouse Gas Emissions Inventory Methodology Report⁸¹

The purpose of this document is to provide a summary of the results and methodologies used in the development of the 2017 Community Greenhouse Gas Emissions Inventory for New Bedford.

Emissions totaled approximately 801,044 metric tons of carbon dioxide equivalent (MTCO₂e) in 2017. Buildings were the largest source of emissions, accounting for approximately 460,255 MTCO₂e (57.5% of total emissions).

Transportation, including on-road vehicles, air transportation and marine vessels accounted for approximately 250,288 MTCO₂e (31.2% of total emissions). Wastewater accounted for 80,983 MTCO₂e (10.1% of total emissions). Waste accounted for 8,800 MTCO₂e (1.0%) of total emissions. Water treatment and delivery accounted for 1,660 MTCO₂e (0.2% of total emissions). A summary of the updated greenhouse gas (GHG) inventory results is provided in Table 1 and Figure 1.

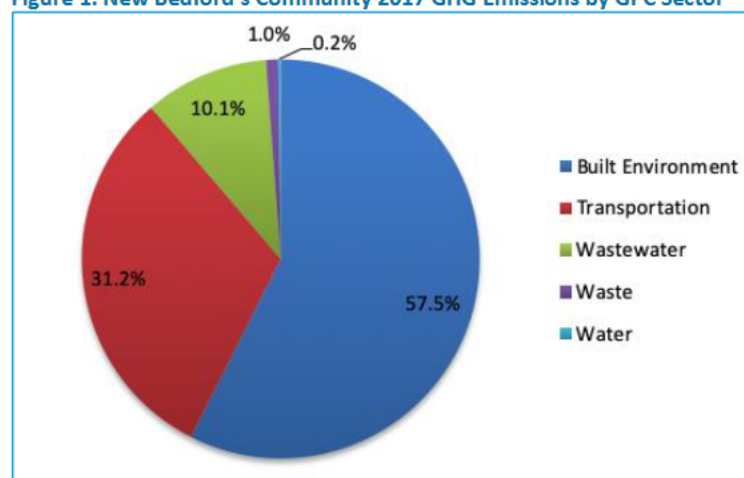
⁸⁰ *Shawmut Avenue Landfill Post-Closure Environmental Monitoring Report, 2022 Q3 Monitoring Report.*

⁸¹ *City of New Bedford, MA 2017 Community Greenhouse Gas Emissions Inventory Methodology Report.*

Table 1. New Bedford Community 2017 Greenhouse Gas (MTCO₂e) Emissions by Source

Source	Metric Tons (MTCO ₂ e)	Percent of Total Emissions
Built Environment	460,255	57.5%
Transportation	250,288	31.2%
Wastewater	80,983	10.1%
Waste	7,858	1.0%
Water	1,660	0.2%
Total	801,044	--

Figure 1. New Bedford's Community 2017 GHG Emissions by GPC Sector



4.3.15. Rapid Recovery Plan 2021, New Bedford⁸²

The Local Rapid Recovery Planning (LRRP) Program was a key part of the Baker-Polito Administration's Partnerships for Recovery Plan, the strategy established to help communities stabilize and grow the Massachusetts economy as a result of the economic impacts brought on by COVID-19.

With the assistance of the LRRP, the City of New Bedford's goal is to re-engage a regional audience to return to downtown for dining, shopping, and arts and culture-based programming. The primary focus of the team was on the retention of the high-quality businesses already in place through business assistance programs and reactivating the public realm. The second was to attract new businesses to fill vacancies downtown. The City developed flexible and streamlined policies for permitting which the team identified an opportunity to use as a marketing tool for business retention, adaptation, and recruitment.

4.3.16. City of New Bedford Sassaquin Pond Watershed Management Plan, September 2021⁸³

The watershed management plan represents efforts taken by the City to improve the water quality in Sassaquin Pond since the 1970s in response to water quality degradation that has occurred.

Short-Term Recommendations

⁸² *Rapid Recovery Plan 2021*, New Bedford.

⁸³ *Sassaquin Pond Watershed Management Plan*, September 2021.

- Green infrastructure implementation
- Downspout disconnection and redirection
- Removal of impervious area
- Preliminary evaluation/design of stormwater rerouting or green infrastructure implementation
- Phragmites Removal

Ongoing Measures

- Ongoing monitoring program
- Catch basin cleaning
- Public education
- Alternative snow and ice removal

Long-Term Recommendations

- Green infrastructure implementation
- Sassaquin Avenue outfall vegetated conveyance swale
- Rain garden adjacent to Sassaquin Avenue pump station
- Re-routing stormwater to bypass Sassaquin Pond
- Assessment of sewer/water system infrastructure
- Invasive snail control
- Stormwater Ordinance updates

4.3.17. Assawompset Ponds Complex (APC) and Nemasket Watershed Management and Climate Action Plan, August 2022⁸⁴

The APC and Nemasket Watershed Management and Climate Action Plan is a regional planning document intended to coordinate the protection of the APC in order to protect its uses as a public drinking water supply, wildlife habitat, and recreation resource. The Towns of Lakeville, Freetown, Middleborough, and Rochester and the Cities of New Bedford and Taunton, as well as local stakeholder groups and state agencies were involved in the plan's development. Collectively, the planning partners identified a variety of management goals, objectives, and actions to address ongoing challenges and increase long-term climate resilience, including:

Goal: Reduce flood risks to people and property

- Limit development in the floodplain and enhance protection for existing development.
 - Pursue regional participation in FEMA's CRS program, on a local and regional basis.
 - Create a voluntary buyout program and/or prepare to participate in a potential state-run program (currently under consideration) to acquire properties for flood storage.
 - Adopt shared wetland regulations across all communities that expand the Conservation Commission's authority to uniformly protect floodwater storage areas and their buffers across the watershed from development.

⁸⁴ APC and Nemasket Watershed Management and Climate Action Plan, August 1, 2022.

- Expand the floodplain overlay district to the 500-year FEMA flood zones and take a climate change-aware stance in accounting for floodplain shifts.
- Restrict development encroachment into the floodplain by requiring special permit review in the flood overlay district, subject to review by Conservation Commission, Planning Board, Board of Health, Department of Public Works, and/or building department.
- Leverage natural functions that protect communities from flooding, extreme heat, and intense storms.
 - All local jurisdictions should adopt a current Hazard Mitigation Plan that prepares the community for future climate impacts, incorporating the latest information and projections.
 - Identify and prioritize areas where nature-based stormwater management (i.e., green infrastructure, swales, etc.) may have the greatest impact on mitigating stormwater and flooding.
 - Restore natural wetland habitat and function so that these lands can act like a sponge to hold and slowly infiltrate and filter water.

Goal: Safeguard public drinking water supplies

- Anticipate and guard against drought, especially as climate change causes more frequent and extended drought periods in summer and fall.
 - Adopt uniform Water Resource Protection Overlay Districts and Regulations that protect groundwater recharge areas to the ponds, as well as local water supply wells elsewhere in the watershed.
 - Update and increase transparency about thresholds and implementation measures for enforcing water use restrictions during drought.
 - Use a multi-platform approach to notify the public of restricted water use periods and conservation measures, including webpage, social media, and roadway signage boards.
 - Regularly evaluate and update drought protocols and back-up supply plans.
- Take steps to improve knowledge and management capabilities to enhance water supply management.
- Keep contaminants out of the water supply.

Goal: Preserve wildlife and habitat

- Improve habitat through natural resource management.
 - Adopt and/or update forestry management plans that improve forest health and resilience to climate change.

Goal: Encourage sustainable development that retains natural functions

- Plan for and manage expected growth and its impacts to the watershed.
- Encourage low impact development practices in local bylaws and regulations.
- Ensure new development is built with the future climate in mind and doesn't contribute to stormwater runoff.
- Establish impervious cover controls in zoning and site design to limit conversion of natural areas that contributes to stormwater runoff.

- Require the inclusion of 100- and 500-year floodplains and the most up-to-date rainfall rates in site planning to ensure all new infrastructure is built for the future.

4.3.18. Long Term CSO Control and Integrated Capital Improvements Plan, January 2017⁸⁵

This Integrated Plan is the result of an integrated wastewater and stormwater planning process, which generally follows the EPA's *Integrated Municipal Stormwater and Wastewater Planning Approach Framework* to address competing Clean Water Act initiatives. It is only under this broad-based framework that the many burdens and unique challenges faced by the City of New Bedford can be efficiently and successfully addressed. This Integrated Plan identifies appropriate sequencing and scheduling of work to address the City's most pressing public health, critical infrastructure and environmental protection issues regarding the City's wastewater, stormwater, and flood protection. It includes both wastewater and stormwater projects intended to be implemented over a 20-year planning horizon.

In preparation for evaluating and recommending a capital improvements program for wastewater and stormwater facilities, resolution concepts were first prioritized within their individual project classifications; WWTPs, pumping stations, CSOs, wet weather sewers, general sewers, stormwater, flood control, and organizational/institutional enhancements.

Wet Weather Sewers

Historically, the City's combined sewer system has been susceptible to surcharging and wet weather-related flooding during intense rainfall events. Wet weather combined sewer capacity issues may cause pipe surcharging and in some cases, wet weather sewer system flooding. These can result in property damage and threaten public health and safety.

Modeling of the City's combined sewer system completed as part of the Integrated Plan predicted the occurrences of wet weather-related overflows at certain locations under certain rainfall events. Should events like this occur, they may result in unintentional discharges of sewage via manholes, catch basins and inlets and/or basement backups during significant rainfall events. Because of this, they are considered a priority for the protection of public health and safety. Wet weather sewer system flooding occurs when pipes have insufficient capacity to convey peak flows during rainfall events. Additional street flooding can occur because surcharged pipes can inhibit stormwater from entering catch basins due to elevated water levels. Depending on their location, this flooding might also discharge to adjacent receiving waters or wetlands. Because of this, wet weather flooding might also impact receiving water quality.

Main Intercepting Sewer (SWW1)

- Complete further studies, modeling and investigation to determine the most viable approach to addressing wet weather flooding along the Main Intercepting Sewer including but not limited to the following alternatives:
 - Construction of a parallel relief conduit or tunnel for conveyance of peak storm flow to the WWTP. This would require additional capacity upgrades at the WWTP or separate process train to blend overflow with treated effluent.

⁸⁵ *Long Term CSO and Integrated Capital Improvements Plan*, January 2017.

- Construction of a new, larger diameter, Main Intercepting Sewer either in place or in a tunnel.
- Construction of an emergency overflow weir at a selected location along the Main Intercepting Sewer to provide hydraulic relief and mitigate wet weather system flooding during larger storm events. This overflow could be conveyed to a storage tank in the Whales Tooth Parking Lot for future pump back during lower flows.

Belleville Avenue (Hatch Street and Covell Street) (SWW9)

- Construct a new outfall in Hadley Street from Belleville Avenue to the Inner Harbor to replace the existing undersized outfall.
- Install new catch basins along and storm drain piping in Belleville Avenue to capture stormwater runoff and convey it to the outfall.

Wastewater Collection System

The City's wastewater collection system dates to the 1850s when pipes were first installed to convey sanitary flows from expanding urban areas to the City's receiving waters. Additional expansion in the early 1900s up through the 1960s resulted in a complex network of sewer and interceptors of varying age and pipe material that conveys flow to the City's wastewater treatment plant at Fort Rodman.

The Integrated Plan identified a series of projects aimed at reinforcing the existing sewer system to ensure its continued and reliable services. Without the safe conveyance of wastewater to the wastewater treatment plant, homes and businesses as well as adjacent natural resource areas could become flooding due to overflowing and surcharged systems. The following summarizes the projects aimed at reinforcing and building resiliency in the existing collection system:

Hydrogen Sulfide Corrosion and Odors (SG1)

- Implement field studies and develop recommendations for improvements to address hydrogen sulfide and odors at the following locations: Coggeshall Street pumping station, Wamsutta Street pumping station, Hathaway Road pumping station.
- Implement a formal inspection program of the Main Intercepting Sewer, Herman Melville Boulevard Sewer and pumping station force mains to assess condition and monitor over time.
- Implement a system side catch basin cleaning and inspection program combined with hood replacements and discharge piping improvements. Having clean catch basins with functioning hoods is a good approach to addressing odors within the collection system.

Saltwater Intrusion/Tidal Flow (SG2)

- Complete a systemwide inspection of existing tide gates.
- Develop a study to assess impacts of climate change and sea level rise on existing outfalls and CSO regulators. Determine impacts to system outflows during storm events and inland flooding resulting from elevated tide levels.
- Implement an outfall inspection program to determine the condition of each of the City's MS4 and CSO outfalls.
- Implement recommendations from the tide gate program, the sea level rise assessment and outfall inspection program to begin deficiencies and build resiliency into the system.

Brick, Segmental Block, Concrete and Vitrified Clay Collectors and Sewers (SG4)

- Remove cross bores from identified locations along the interceptor and collector sewer system.
- Implement rehabilitation recommendations as identified in the report titled Interceptor and Collector Sewer Investigation Program, January 2022 by CDM Smith.

Over-Under Manholes (SG5)

- Implement the recommendations identified in the report titled Over-Under Manhole Study dated July 2020 and revised November 2020 by CDM Smith.
- Implement the additional studies and stormwater evaluation as recommended in the report followed by the prioritized removal of the open over under manholes as they lead to flooding of the sanitary collection system and discharges from the MS4 system.
- Focus first efforts in the Outfall 003B, Outfall 026, Outfall 027 and those outfalls tributary to Clarks Cove and the Outer Harbor first followed by the remainder of the system.

Under Sewers (SG6)

- Install access manholes at key junction points along under sewers for access and maintenance. Key under sewers to be addressed include those along the Main Intercepting Sewer and Church Street collector.

Belleville Avenue Collector (North) (SG 10)

- Develop a study to assess the impacts of removing the restriction in the Belleville Avenue collector to ensure that it will not cause any downstream flooding due to excessive flow conveyance.
- Based on the results of the study and the recommendations from the Integrated Plan, remove the restriction which exists at the intersection of Belleville Avenue and Tarkiln Hill Road. Coordinate this effort with future roadway reconstruction projects. The project will involve the open cut replacement of an existing 10-in sewer pipe and replace it with an 18-in pipe.

Coffin Avenue Sewer and Belleville Avenue Collector (South) (SG 11)

- Develop a study to assess regulator 023A to determine what improvements are needed to increase dry weather flow conveyance to the Belleville Avenue pumping station and mitigate the potential for dry weather discharges within the Coffin Avenue sewer and Belleville Avenue Collector (south).
- Implement the recommendations to make improvements to regulator 023A.
- Replace the Coffin Avenue sewer from Regulator 023A to Belleville Avenue to increase flow conveyance and mitigate upstream wet weather flooding.

Belleville Avenue Sewer (Sawyer Street to Beetle Street (SG13)

- Replace the existing sewer pipe in Belleville Avenue between Sawyer Street and Beetle Street and Beetle Street from Belleville Avenue to North Front Street. The pipe should be

raised to prevent discharge at the invert of the existing Sawyer Street sewer that surcharges due to the Coggeshall Street pumping station.

Orchard Street Condensing Pipe (SG14)

- Conduct a study to assess the number of stormwater and sanitary connections that convey flow to the existing pipeline.
- Line the existing Orchard Street brick sewer to reinforce the pipeline.
- Connect sanitary connections into the lined brick sewer pipeline.
- Replace the Orchard Street condensing pipeline.
- Direct stormwater flows around Regulator 004B to the existing stormwater discharge/sea water intake conduit through the hurricane barrier.

Herman Melville Boulevard Sewer (SG15)

- Replace section of the existing 18-in sewer with new sewer pipe that is located directly beneath an existing concrete culvert and the Belleville Avenue force main. This will eliminate an existing sag in the pipeline that causes debris to settle out from low velocity which impedes flow to the Wamsutta Street pumping station.

Hathaway Road Sewer (SG16)

- Complete a flow study and hydraulic capacity pump station assessment of the existing pumping station. Include future build out of the existing area and golf course redevelopment.
- Upgrade/replace the existing pumping station and force main.
- Conduct a multi-sensory inspection of the downstream pipeline from the force main discharge to Mt. Pleasant Street to determine if any structural repairs need to be made. This includes approximately 2,230-ft of pipeline that needs to be inspected.
- Based on the results of the inspection, implement repairs to the pipeline or increase the diameter to provide additional capacity. The change in capacity will be based on the findings of the pumping station flow capacity and build out analysis.

Infrastructure Renewal (SG18)

- Continue to implement sewer system evaluation survey (SSES) field investigations within the high and low priority areas as recommended in the report titled City of New Bedford, Massachusetts Infiltration and Inflow Analysis Flow Monitoring Summary Report dated December 2017 and updated October 2019 by CDM Smith.
- Continue to implement SSES field investigations in the combined areas of the sewer system prioritized based on model flow estimates of infiltration and inflow.
- Based on the SSES findings from the SSES program, implement the recommendations to reinforce existing pipelines, manholes and service connections addressing both public and private inflow and infiltration.
- Develop an easement maintenance program including documentation of all known easement and cross-country pipelines. Implement the program.
- Purchase a new Closed-Circuit Television (CCTV) truck to replace the existing vehicle including new camera equipment.

- Link CCTV truck to existing work order management system and PowerBI system for tracking of CCTV footage completed and PACP/MACP/LACP data connection to assets.

WWTP Projects

Treatment plant issues and needs mainly focus on the need to maintain or rehabilitate existing facilities and equipment. While there are some exceptions, such as the addition of wind energy, it is the maintenance and rehabilitation work that are expected to ultimately determine the level of operability at the plant.

A majority of the WWTP projects address issues due to the treatment plant's 20-year age and condition but also include infrastructure upgrades to improve plant performance.

- WWTP1 is for facilities planning studies that would more thoroughly assess all aspects of the facility and provide a framework for additional capital improvement projects.
- WWTP3 is a waste-to-energy facility, which would address sludge disposal issues.
- WWTP4 requires additional funds annually for smaller repairs and equipment replacement, as needed, until larger capital projects (WWTP5 through WWTP9) are implemented.
- Similarly, WWTP10 provides for periodic upgrade of instrumentation and controls – including SCADA – as necessary for technologic advancement.
- WWTP11 adds a chemical storage and feed system for alkalinity addition.

Pumping Station Projects

A part of this *Long Term CSO Control and Integrated Capital Improvements Plan, January 2017*, additional investigations were completed at each pumping station to assess their existing condition. As part of this, an assessment as to the vulnerability of the station was completed due to sea level rise. High-level planning recommendations were developed for each station depending on the degree of improvements needed. To date, the following improvements have been completed:

- Front Street and Merrimac Street: pump stations have been replaced
- Howland Street and Shawmut Avenue: pump stations are in the process of being replaced
- Howard Avenue: pump station upgrade is under design

The following summarizes the remaining work (as of January 2025) to address pump station improvements:

Belleville Avenue

- Require floodproof doors for entries and loading dock as well as floodproofing electrical vault and air intakes. Also, incoming sewer manholes will need to have covers bolted and gasketed.
- Assess structural integrity of building to withstand flood waters.
- Complete major upgrade of wet well, equipment and pumps including code compliance issues, generator upgrades, screen and gate upgrades, and piping replacement as recommended in the Integrated Plan.

Coggeshall Street

- Floodproofing of windows will be required. Existing vents will need to be raised. Electrical infrastructure such as services, generators and transformers will either need to be raised or protected with floodwall system with flashboards for access. Structure and vaults should be checked for buoyancy. Controlling water levels above roof line likely not feasible.
- Assess wall integrity for and reinforce as needed based on designated flood elevation.
- Major upgrade to the station including pumping, piping and mechanical upgrades, electrical upgrades, odor control and HVAC upgrades as recommended in the Integrated Plan.

Cove Road

- Electrical service should be raised and floodproofed with transformer protected as well. Generator vent should be protected with cut off wall. Gas service needs to be assessed. Controlling water levels above roof line likely not feasible.
- Assess wall integrity for and reinforce as needed based on designated flood elevation.
- Major upgrade including pump upgrades, wet well improvements including replacing the bar rack, HVAC and odor control upgrades, minor electrical upgrades.
- Install a force main by-pass to allow pumping station by-pass pumping similar to that of the Front Street pumping station.
- Rehabilitate the pumping station force main. Several leaks have been noted.
- Link SCADA controls to digital twin and the level sensor at the pond and the Hurricane Barrier pumping station operations to real time control system.

Dottin Place

- Complete replacement of this station is recommended including new electrical, odor control, wet well, valves and piping, etc.

East Rodney French Boulevard

- Floodproof windows. Vents will need to be protected with cutoff wall. Electrical service will need to be raised and gas service needs to be evaluated. Controlling water levels above roof line likely not feasible.
- Assess wall integrity for and reinforce as needed based on designated flood elevation.
- Rehabilitation of the station recommended including complete replacement of the HVAC, pump upgrades, electrical upgrades and odor control.

Forbes Street

- Complete a major upgrade to this station as recommended in the Integrated Plan.

Fort Taber Park

- Complete a major upgrade to this station as recommended in the Integrated Plan.

Hall Estates

- Complete replacement of this station is recommended based on findings from the Integrated Plan.

Hanover Street

- Complete replacement of this station is recommended based on findings from the Integrated Plan.

Hathaway Road

- Complete replacement of this station is recommended based on findings from the Integrated Plan.
- Coordinate replacement with pending development of the golf course and Advanced Manufacturing Complex.

Industrial Park

- Complete a major upgrade to this station as recommended in the Integrated Plan.

Jones Street

- Complete replacement of this station is recommended based on findings from the Integrated Plan.

Joyce Street

- Complete a major upgrade to this station as recommended in the Integrated Plan.

Marlborough Street

- Complete a major upgrade to this station as recommended in the Integrated Plan.

Peckham Road

- Complete replacement of this station is recommended based on findings from the Integrated Plan.

Pequot Street

- Complete replacement of this station is recommended based on findings from the Integrated Plan.

Popes Island

- Access hatch to pump station will need to be floodproofed. Electrical service and control panels will need to be raised and floodproofed. A generator or a generator hook up should also be provided that they will need to be protected as well.
- Complete upgrade to the station should be completed per the Integrated Plan.

Potter Street

- Complete replacement of this station is recommended based on findings from the Integrated Plan.

Rowe Street

- Complete a major upgrade to this station as recommended in the Integrated Plan.

Sassaquin Avenue

- Complete replacement of this station is recommended based on findings from the Integrated Plan.

Valley View Drive

- Complete replacement of this station is recommended based on findings from the Integrated Plan.

Wamsutta Street

- Floodproof building penetrations. Generator will also need to be protected likely with wall system. Potential buoyancy of building should also be assessed. Controlling water levels above roof line likely not feasible.
- Reinforce walls to protect against flood waters.
- Complete rehabilitation of the wet well rehabilitation including but not limited to all mechanical equipment, structural rehabilitation, electrical, HVAC and odor control.
- Install a pumping station bypass similar to the Front Street pumping station to allow by-passing of flows and force main rehabilitation.
- Implement a complete station upgrade or replacement.

Welby Road

- Complete a major upgrade to this station as recommended in the Integrated Plan.

Zuckerman's Farm

- Complete a major upgrade to this station as recommended in the Integrated Plan.

CSO Projects

There are several quantifiable benefits common to most CSO projects, including CSO abatement, mitigation of flooding, and opportunities for infrastructure renewal.

CSO control projects comprise almost half of the recommended Integrated Capital Plan. Projects include sewer separation, upgrade of two pumping stations, infiltration/inflow removal, illicit connection removal, and other projects. The following summarizes the recommended improvements in each CSO Group, updated by the Department of Public Infrastructure in January 2025:

CSO Group 1

- Project CSO 1D: Clean approximately 3,900 lf of the Cove Road Collector (15-inch to 36-inch diameter) and approximately 4,600 lf of the Hurricane Barrier Collector (24-inch to 84-inch diameter) to remove accumulated sediment and debris.
- Project CSO 1E: Remove illicit connections in Regulator 003B tributary area and address over under manholes. Once complete, remove weir in Regulator 003B and plug connection to sewer system. In addition, complete sewer system rehabilitation to address other illicit discharges to the stormwater system. Implement outfall improvements as needed.
- Projects CSO 1G and CSO 1I: Construct an offline storage tank at Clarks Cove ponding area and consolidation conduits from all regulators to convey the overflow to the storage

tank. Storage tank volume is approximately 6.0 million gallons to capture 6-month storm event. Combined flows which cannot be stored by the tank would overflow to the Inner Harbor or through the Inner Harbor Diversion Conduit or the Clarks Cove pumping station. Stored combined flow in tank would be pumped back to system (Main Intercepting Sewer at West Rodney French Boulevard) after the storm event.

- Project CSO 1A and CSO 1H: Implement West End Phases 4 and 5 Sewer Separation (158 acres) in the West End to abate flooding at Maple and Chancery Street as well as reduce flooding downstream. This also includes the construction of downstream conveyance facilities along Grinnell Street. Sewer separation includes reconstruction of neighborhood streets, complete water system Americans with Disabilities Act (ADA) improvements, and complete system reinforcement of the existing sanitary sewer system through I/I mitigation and cured in place pipe lining (CIPP) lining.
- Project CSO 1B: St. Luke's Sewer Separation (25 acres) in the West End to abate flooding near St Luke's Hospital as well as reduce flooding downstream. Sewer separation includes reconstruction of neighborhood streets, complete water system upgrades, ADA improvements, and complete system reinforcement of the existing sanitary sewer system through infiltration and inflow (I/I) mitigation and CIPP lining.
- Project CSO 1C: Sewer separation (73 acres) in areas tributary to Regulator 018A. Sewer separation includes reconstruction of neighborhood streets, complete water system upgrades, ADA improvements, and complete system reinforcement of the existing sanitary sewer system through I/I mitigation and CIPP lining. Also, modify Regulator 018A to mitigate overflows up to 3-month storm event.
- Project CSO 1F: Construction of green infrastructure and subsurface storage technologies for approximately 65 acres of impervious areas tributary to Regulator 003B.

CSO Group 2

- Project CSO 2: Group-wide construction of street trees, bioretention and subsurface storage technologies for approximately 20 acres of impervious areas. In addition, implement targeted green infrastructure improvements in areas south of CSO Group 2 in separated MS4 areas to address water quality and flooding abatement. This also includes sewer system rehabilitation to address infiltration and inflow issues.
- Project CSO 2: Sewer separation (75 acres) of combined areas tributary to Outfalls 005 through 010. Sewer separation includes reconstruction of neighborhood streets, complete water system upgrades, ADA improvements, and complete system reinforcement of the existing sanitary sewer system through I/I mitigation and CIPP lining.
- Project CSO 2: Adjust regulators and weir elevations to meet the targeted level of control. It is important to evaluate the impact of regulator modifications so that raising weirs does not create surcharging, basement backups or flooding in larger events. Regulator modifications can be incorporated into other alternatives as appropriate to optimize solutions as needed.

CSO Group 3

- Project CSO 3: Group-wide construction of street trees, bioretention and subsurface storage technologies for approximately 70 acres of impervious areas

- Project CSO 3: Sewer separation (approximately 150 acres) of combined areas tributary to Outfalls 012 to 017. Sewer separation includes reconstruction of neighborhood streets, complete water system upgrades, ADA improvements, and complete system reinforcement of the existing sanitary sewer system through I/I mitigation and CIPP lining. Also, weir modifications at Regulator 015A in order to meet CSO level of control.

CSO Group 4

- Project CSO 4B: Reconstruct the weir at Regulators 030A, 030B, 031A, 031B, 031C and 032A. Remove the dry weather connection from the Main Intercepting Sewer and reroute to the under sewer. Flow would be conveyed to the Howland Street pumping station and Cove Road pumping station. Reconnect overflow to outfall pipes to convey flow to Outfalls 030, 031 and 032 during larger storm events.
- Project CSO 4B: Increase pipe diameter for sewer pipe from under sewer in South Second Street to Howland Street pump station (across Route 18) from 15-inch to 18-inch diameter.
- Project CSO 4B: Increase pipe diameter for sewer pipe from MacArthur Drive to Howland Street pump station from 15-inch to 24-inch diameter.
- Project CSO 4B: Modify the Howland Street pump station to accept additional dry weather flow from modified regulators. Construct an approximate 150,000-gallon CSO storage tank on the Howland Street pumping station site to store and pump back to the Main Intercepting Sewer during lower flows. The approximate 150,000-gallon volume was determined by modeling of a 6-month storm event.
- Project CSO 4B: I/I removal, including CIPP lining of sewer mains, epoxy lining of manholes and testing and sealing of service connections for separated areas tributary to Regulators 030A, 030B, 031A, 031B, 031C and 032A as well as in the areas from the South Terminal Area.

CSO Group 5

- Project CSO 5: Block the high-level outlet at Regulator 034A to prevent overflows from reaching Outfall 034.
- Project CSO 5: Modify Regulator 032C to mitigate overflows to a 3-month level of control.

CSO Group 6

- Project CSO 6E: Construct an offline storage tank (approximately 180,000 gallons) at the City-owned Whale's Tooth Parking Lot between Acushnet Avenue and Herman Melville Boulevard and consolidation conduits from all regulators to convey the overflow to a storage tank which is sized for a 3-month storm event. Following the rainfall event, the flow would be pumped back to the Main Intercepting Sewer in Acushnet Avenue.
- Project CSO 6B: Sewer separation (95 acres) of combined areas tributary to Regulator 020B. Sewer separation includes reconstruction of neighborhood streets, complete water system upgrades, ADA improvements, and complete system reinforcement of the existing sanitary sewer system through I/I mitigation and CIPP lining. New separated storm drains would convey flow to the proposed Copper Brook Drain. This would also allow for separation of Interstate 195 drainage from the City's system.

- Project CSO 6A and CSO 6D: Replace the Copper Brook Storm drain from Cedar Grove to the outfall (approximately one mile). The existing infrastructure is failing and has a number of known structural deficiencies. Includes Wamsutta Street swale improvements, which is comprised of piping flows and site clean-up to improve outflow capacity to address flooding in RT 18. Also, includes construction of larger siphons at Acushnet Avenue and Wamsutta Street/Route 18 which connect to new Copper Brook Storm drain.
- Project CSO 6G: Hicks-Logan-Sawyers I/I removal, including CIPP lining of approximately 11,300 lf of sewer mains, epoxy lining of manholes and testing and sealing of service connections. Note that this work is located only in portions of the separated or partially separated areas of the sewer system.
- Project CSO 6F: Enlarge approximately 400 lf of existing 16-inch diameter sewer pipe in North Front Street at Wamsutta Street to 21-inch diameter. This sewer pipe is located just upstream of the Wamsutta Street pumping station.

CSO Group 7

- Projects CSO 7A, CSO 7B, and CSO 7D: Sewer separation (approximately 215 acres) of combined sewers includes reconstruction of neighborhood streets, complete water system upgrades, ADA improvements, and complete system reinforcement of the existing sanitary sewer system through I/I mitigation and CIPP lining. Sewer separation would allow for the removal of stormwater flow from the combined system in the Deane Street area tributary to the combined system causing operational issues at the Coggeshall Street pumping station. Removal of stormwater from the North End Relief Interceptor could help address flooding along the Main Intercepting Sewer. The work could also help support the necessary infrastructure improvements to support development of the International Marketplace along Acushnet Avenue.

CSO Group 8

- Project CSO 8J and CSO 8K: Construct an offline storage tank (approximately 0.4 million gallons) at the Manomet Mills site, between Belleville Avenue and Riverside Avenue and consolidation conduits from Regulators 023A, 024A, 041A and 041B to convey the overflow to a storage tank which is sized for a 3-month storm event.
- Project CSO 8B: Sewer separation (60 acres) of combined areas in the Coffin Avenue area. Sewer separation includes reconstruction of neighborhood streets, complete water system upgrades, ADA improvements, and complete system reinforcement of the existing sanitary sewer system through I/I mitigation and CIPP lining.
- Project CSO 8A: Remove illicit connections in Regulator 026A tributary area and address under manholes. Once complete, implement outfall improvements including but not limited to removal of the weir in Regulator 026A and plug connection to sewer system in River Road. In addition, complete sewer system rehabilitation to address additional discharges to the stormwater system.
- Project CSO 8E: Increase diameter of River Road\Mill Road sewer to 24-inch diameter from River Road at Sylvia Street to Belleville Avenue and Mazeppa Street. Increase diameter of River Road/Mill Road sewer to 36-inch from River Road at Sylvia Street to Howard Avenue pumping station.

- Project CSO 8E: Modification at Regulator 027A to raise the weir height forcing additional flow to the Howard Avenue pumping station.
- Project CSO 8D: Increase capacity of Howard Avenue pumping station from 3.75 mgd to 9.7 mgd. Construct new 18-inch diameter force main. This may allow for future expansion of Acushnet sewer system to the City and conveyance of peak wet weather flows.
- Project CSO 8C: Sewer separation of combined areas in the Lucy Street area. Sewer separation includes construction of a new drain pipe from Stratford Street catch basin to Mezeppa Street and River Road. This would support future stormwater work upstream as well as allow for the removal of an existing over under system and discharge of stormwater at Regulator 027C. Work would also include reconstruction of neighborhood streets, complete water system upgrades, ADA improvements, and complete system reinforcement of the existing sanitary sewer system through I/I mitigation and CIPP lining.
- Project CSO 8F: Increase diameter of Belleville Avenue collector sewer (3,500 lf) between Brewster Street and the inlet to the Belleville Avenue pumping station to 48-inch diameter.
- Project CSO 8L: CIPP lining of approximately all of sewer mains, epoxy lining of all manholes and testing and sealing of all service connections in separated areas tributary to Outfalls 026 and 027.
- Project CSO 8I: Install a flow regulating device at Regulator 027D and Regulator 027B to regulate 3-month flow to new 24-in overflow conduit that would convey flow to the new River Road sewer for conveyance downstream via the Howard Avenue pumping station.
- Project CSO 8H: Increase diameter of sections of the overflow pipes at Belleville Avenue pumping station (Outfall 041) from 36-inch to 48-inch diameter (300 lf).
- Project CSO 8H: Construct 30-inch diameter relief sewer and overflow weir in Belleville Avenue from discharge of Howard Avenue pumping station force main to downstream of Regulator 041B (2,600 lf). Relief sewer is for more intense storm events and would convey flow directly to Outfall 041.

CSO Group 9

- Project CSO 9: Group-wide I/I removal, including CIPP lining of approximately 245,000 lf of sewer mains, epoxy lining of manholes and testing and sealing of service connections. Private inflow removal should also be addressed in this area including disconnection of roof leaders in the Pine Grove area.

Stormwater Projects

The resolution concepts for this project classification address water quality impairment, flooding in widespread systems, and isolated flooding caused by localized issues.

Like the wet weather sewer projects, many stormwater (SW) issues are expected to be largely mitigated by the CSO control projects. It is anticipated that SW3 will be integrated with a MassDOT project. Similarly, SW6 would likely be integrated with CSO7A. Other projects (e.g., SW2, SW8 and SW9) address isolated flooding and water quality issues. The following summarizes the recommended stormwater system improvements, updated by the Department of Public Infrastructure in January 2025:

Copper Brook Drain System (SW1)

- Nash Pond and Nash Road
 - To facilitate free flow through the outlet structure, it is recommended that the existing bar rack and accumulated debris and sediment are removed. The existing catch basins and drainage systems that currently discharge into the culvert under Nash Road should be diverted to Nash Pond. Diverting these systems should alleviate the high tailwater conditions that are contributing to flooding on Nash Road. In addition, the open channel located on the south side of Nash Road in private property should be cleaned out, along with its inlet and outlet pipes. Trash and sediment should be removed from the open channel and enlarged if necessary. Enclosing the open channel into a pipe should be considered to reduce maintenance and debris accumulation. Copper Brook system flows under two railroad tracks between Nash Road and Nauset Street. These culverts should be inspected and repaired/replaced as necessary including improvements to the outlet piping that conveys flow to Nauset Street which has caused flooding in the past.
 - Recurrent Maintenance Recommendations
 - Vegetation management at outlet structures and downstream swales
 - Utilize Bristol County Mosquito Control Project Services to maintain swales
 - Underground pipe monitoring and maintenance
 - Remedial Modification Recommendations
 - Restore Floodplain banks utilizing shade trees to shade invasive species regrowth, and consider planting conifers that reduce leaf litter and stabilize banks
- Purchase Street (Nauset Street to Coggeshall Street)
 - The 24-inch culvert on Purchase Street is in poor condition and undersized for peak flows during a 10-year storm. A portion of the culvert was recently replaced with a 3-foot by 3-foot box culvert during improvements to the nearby railroad tracks. Due to site constrictions, replacement of the culvert downstream of the 3-foot by 3-foot box culvert was not feasible (the culvert runs adjacent to and under existing buildings). This pipe that was not replaced could continue to serve as a bottleneck for the system because the alternative of diverting the drain into City streets would require cost-prohibitive utility relocations. It is recommended that the remaining 24-inch culvert upstream of the new box culvert be replaced with a 3-foot by 3-foot box culvert. The new box culvert should provide storage for excess flow and have the required capacity if future conditions allow replacement of the downstream system becomes feasible. The improvements also include a new 3-foot by 3-foot box culvert on Purchase Street from Sawyer Street to Coggeshall Street (approximately 260 lf). This new box culvert would connect to the relocated portions of Copper Brook that are being upgraded under the RT 195 Viaduct Replacement project.

Buttonwood Brook (SW2)

- Brownell Avenue and Hawthorn Street
 - To mitigate flooding issues at the intersection of Brownell Avenue and Hawthorn Street a combination of increased pipe capacity and improvements to the Buttonwood Park Pond are recommended. The existing culvert in the intersection

is a 5-foot by 3-foot box culvert that runs through private property (460 Hawthorn Street) and acts as a bottleneck for the system. The existing culvert would need to be replaced with twin 3-foot by 4-foot box culverts to provide conveyance for the peak flow of a 2-year, 24-hour storm. To accommodate the new culvert, a new junction manhole would be required at the upstream end. A new headwall would be required at the downstream end. In addition to flooding abatement, this project would also address infrastructure issues associated with the culvert adjacent to 460 Hawthorn Street which has known structural issues. Additional flood protection could be gained by using Buttonwood Park Pond for storage, particularly during larger, storm events. Utilizing the Pond for storage would help mitigate flooding at the intersection of Brownell Avenue and Hawthorn Street, as well as at Fuller Memorial Parkway.

Buttonwood Park Pond and Brook Water Quality

- Addressing water quality issues in Buttonwood Park Pond and Buttonwood Brook could require the coordination of several structural and non-structural best management practices (BMPs). The intent of these improvements is to address the immediate issues of pollutants, eutrophication, and sediment buildup, but to also prevent future issues from arising. Recommendations are provided below for addressing these needs.
 - Pond Dredging and Bank Stabilization
 - Significant amount of sediment and invasive species have been identified in the pond that is reducing the storage volume and impacting water quality. In addition, due to the excessive flooding that occurs in the area, the upstream brook and pond banks have destabilized causing sediment to wash into the pond. This recommendation would dredge the pond of the sediment and restore the storage volume afforded upstream of the dam. In addition, bank and brook stabilization improvements would be implemented to mitigate further inflow of sediment.
 - Constructed Wetlands (Upstream of the Pond)
 - The City is required by permitting agencies to recreate wetlands in order to compensate for the loss of wetlands due to improvements at the dam. The current design calls for this re-creation to take place at the mouth of Buttonwood Brook into the dam in the form of constructed wetlands. These wetlands are intended to meet the requirements of the permitting agency but should also be designed to act as a filter for pollutants and suspended sediments.
 - Green Infrastructure and Drainage System Improvements
 - Structural BMPs are recommended throughout the watersheds to the Brook and Pond. The watersheds are comprised of a variety of land uses, including MassDOT roadways, commercial businesses, and residential areas. In the residential areas in particular, there is an opportunity to implement wide-spread, small BMPs such as rain gardens, vegetative filter strips, infiltration areas, and tree box filters. The cumulative impact of these BMPs mitigates pollutants and also provides a small measure of flood control. Improvements to the drainage system are also needed to address over-under manholes that currently existing and need to be “closed”. Pipe and manhole rehabilitation is recommended through the

watershed to address this problem. This program represents an excellent public education opportunity, and it is recommended that community groups, neighborhood organizations, and local schools are invited to participate in the BMP evaluation process, construction, and on-going maintenance.

- Constructed Wetlands (At and Downstream of the Zoo)
 - Constructed wetlands and BMPs are proposed in the Zoo area (e.g., at select animal enclosures and downstream of the Pond). The wetlands/BMPs would treat the base flow and “first flush” flows after it has been in contact with animal enclosures. The focus of treatment would be on pathogens, with additional treatment for nutrients, metals, and suspended solids. When complete, the project could be incorporated into a future exhibit at the Zoo to highlight the importance of wetland habitats. The BMPs would be designed to treat the maximum pollutant loading expected under full zoo build-out and also to mitigate peak flows for a 25-year storm event. Improvements to the parking lot are also proposed as flow is conveyed to Buttonwood Brook with little to no treatment or attenuation leading to additional flooding downstream.

Rockdale Avenue (Dartmouth and Allen Streets) (SW3)

- Street flooding has been reported at two intersections on Rockdale Avenue. New catch basins are needed at both intersections to mitigate stormwater street flooding. The new catch basins should be placed in the flatter areas of the roadways where runoff tends to slow down or accumulate. Additional catch basins upstream of the intersection are also recommended to help mitigate flooding during larger storm events.
- Flooding in the Jacinto Street, Allen Street and John Street areas are due to inadequately sized storm drain systems and lack of catch basins. To address the issue, new 27-in through 42-in drain piping is proposed from Jacinto Street easterly to Brownell Street in Allen Street. New 18-inch drains are proposed along Jacinto Street and John Street to capture flows and convey them to the main line drain in Allen Street. New catch basins would be installed along the project route to properly capture flows.
- The new catch basins near the intersection with Dartmouth Street can be connected to the existing separate drainage system. Additional infrastructure, including manholes and pipes, would also be required to connect the new catch basins into the existing systems. It is anticipated that four additional catch basins will be required.

Barnum Street, Lucy Street, and Stratford Street Systems (SW5)

- Un-named Brook (Middle Road) Improvements
 - The recommended un-named Brook improvements include a number of different drainage solutions including pipe construction, channel improvements and brook cleaning. The recommended plan focuses on increasing the capacity of culverts and the brook channel to mitigate flooding. Improvements include the following:
 - 120 lf of new 4.5-foot by 3-foot box culvert parallel to the existing 27-inch culvert across Acushnet Avenue.

- 225 lf of new 5-foot by 3-foot box culvert constructed parallel to the existing 24-inch/18-inch drain line that discharges to the Winston Street wetland north of Lucy Street.
 - 290 lf of 6-foot by 3-foot box culvert that would run through the Winston Street wetland area and discharge behind 936 Lucy Street.
 - Reconstruct the brook channel behind 936 Lucy Street and cleaning of the Phillips Road brook channel and culverts to increase conveyance capacity.
 - Replace the existing culverts at Terry Lane and Chaffee Street with 4-foot by 6-foot and 5-foot by 7-foot box culverts, respectively, and construct new inlet and outlet structures with riprap aprons.
 - Clean and improve bank condition of 75 lf of brook channel downstream of Terry Lane.
 - Clean and removal of vegetation/debris of 125 lf of brook upstream of Chaffee Street.
 - Reference the Brook by name: Consider adopting formal indigenous recognition (e.g., Ousamequin, Pokenoket, etc.) to facilitate public education/buy-in)
- Outfall 027 Area Improvements
 - The recommended plan includes improvements to the Outfall 027 branch upstream of Stratford Street. This work is contingent upon work under Project CSO 8C. Improvements include the following:
 - Replace the existing 15-inch and 12-inch culverts with 305 lf of 24-inch and 155 lf of 2-foot by 4-foot box culvert between Osgood Street and Maplewood Street.
 - Construct new catch basins on Barnum Street and Osgood Street, as well as new inlet and outlet structures and riprap aprons.
 - Clean approximately 200 lf of brook channel south of Maplewood Street and 90 lf south of Elliott Street. Shore the existing banks to protect private property. Remove vegetation, debris and accumulated sediment from remaining brook channel in project area.
 - Replace the existing culverts at Bristol Street, Elliott Street, and the Stratford Street connection to the City's drainage system with new 2-foot by 3-foot box culvert, 3-foot by 4-foot box culvert, and 42-inch culvert, respectively. Lowering of the existing channel at Elliot Street and Stratford Street allows for the installation of larger diameter pipes at Elliot Street and Stratford Street.
 - Construct weirs at all inlet structures to maintain the existing water surface elevation in adjacent wetlands allowing them to be used for intermittent storage of flood waters.

Belleville Avenue (Sawyer Street to Coffin Avenue) (SW6)

- Additional flood protection is needed along Belleville Avenue. The City installed catch basins along Belleville Avenue and a 36-inch outlet pipe through Riverside Park to attempt to improve conditions. Additionally, pipe capacity should be increased somewhat by improvements planned as part of the Deane Street Sewer Separation Project

(CSO7A), including replacing an existing 30-inch combined sewer between Sawyer Street and Holly Street.

- Additional improvements to address the flooding will be addressed by utilizing open space in Riverside Park. The park is proposed to be used as the primary relief for flooding on Belleville Avenue which includes the installation of BMPs for water quality treatment, underground storage under the existing soccer field and the construction of a stormwater park that is intended to flood during extreme rainfall events. This would require the construction of diversion drains in Belleville Avenue between Coffin Avenue and Sawyer Street to convey excessive flows to the newly constructed facilities in the park, the installation of BMPs in Belleville Avenue, and the complete reconstruction of the park to allow from the stormwater water improvements which would also integrate much needed improvements to the park requested by the community.

Belleville Avenue at Earle Street (SW7)

- Additional inlet capacity is required in the area of Belleville Avenue and Earle Street in order to mitigate street flooding. The malfunctioning catch basin located adjacent to Global gas should be inspected, and the structure should either be cleaned or replaced. An additional two to four catch basins should be located in upstream areas to capture flow before it can accumulate on the flat road surface. The new catch basins should be connected to the existing separated drain that flows to Outfall 024.

Dottin Place Brook (SW8)

- Replacement of the existing drainage system would require construction in the backyards of a residential area. Construction activities in this residential area would result in dust, noise, and potential hazards to pedestrian and automobile traffic. Construction impacts can be mitigated by limiting work hours, effective traffic management plans, and other construction management techniques. Given the close vicinity of residential houses, special considerations may be required to mitigate impacts to residents to the largest extent possible.
- By increasing the conveyance capacity of the system, the peak flow is anticipated to be increased to downstream systems. Increasing the peak flow to downstream systems not designed to convey the added stormwater can add to flooding conditions. As such, the impact on downstream systems needs to be considered before improvements are implemented. Coordination with MassDOT may be required as Dottin Brook connects to infrastructure owned by this agency.
- Determining the type of improvements that are recommended (i.e., closed pipe versus open channel) should include further coordination between individual City departments. The City's Housing Authority owns the property on which the proposed improvements are proposed. The City's DPI maintains and understands the implications of the sewer and drainage infrastructure. The two agencies should work together to determine which alternative is preferred and to discuss the maintenance responsibilities of the constructed facilities.

Sassaquin Pond Area (SW9)

- The City has been working to improve the water quality in Sassaquin Pond since the 1970s in response to water quality degradation that has occurred. Activities have

included the banning of gasoline motors on the pond, construction of a stormwater system to reduce flooding potential in the watershed and connecting residents to the sanitary sewer system to reduce nutrient and bacterial loading to the pond. While these actions notably improved water quality, degraded water quality still occurred.

- To provide an updated roadmap to improve water quality in Sassaquin Pond, a Watershed-based Plan was developed in 2023 following EPA and Massachusetts guidance. This plan uses the latest field data in conjunction with information from previously completed studies to provide a list of prioritized projects that can be implemented to improve water quality in Sassaquin Pond. The plan includes 30 recommendations for short- and long-term actions to reduce nutrient and bacteria loads to the pond. As projects are implemented, progress toward water quality goals is evaluated through a routine pond sampling program:
 - Installation of stormwater diversion piping to direct first flush stormwater away from the pond to infiltration BMPs located outside of the pond watershed. This is proposed for two separate outfalls.
 - Impervious area removal and the installation of targeted BMPs to reduce runoff to the pond.
 - Roof leader redirection away from impervious area to pervious area allowing for improved infiltration and flow attenuation.
 - Continued use of alum to treat pond sediments to bind phosphorous to sediment mitigating release during low oxygen periods until a permanent pond dredging alternative can be implemented that would remove phosphorous laden sediment that contributes to algal blooms.
 - Pond dredging to remove accumulated sediment.
 - Removal of invasive species from the pond.
 - Address invasive snail populations in the pond.
 - Establish on going pond water quality sampling programs to document effectiveness of programs over time.
 - Heightened maintenance of existing stormwater infrastructure in the pond watershed area.
 - Stormwater ordinance updates include the possible creation of a stormwater overlay district.
 - Continue implementation of public outreach program to educate watershed residents and users about the importance of proper watershed management practices.
 - Promote the use of alternative de-icing products to protect pond water quality. Complete a study of appropriate products. Implement equipment modifications and utilize new product in pond watershed area.

St. Luke's Hospital (SW10)

- St. Luke's Hospital experiences flooding due to insufficient inlet and pipe capacity. To address pipe capacity, improvements to the combined sewer system should be implemented (Project CSO1B). CSO1B is an integrated solution that is anticipated to increase pipe capacity in the vicinity of St. Luke's Hospital and decrease CSOs in CSO Group 1 through sewer separation. Improvements to St. Luke's Hospital that address stormwater capture include the following recommended improvements.

- Several options are available to stem the volume of stormwater entering the Emergency Entrance driveway at St. Luke's Hospital. These options include:
 - Installing additional inlet capacity along Page Street, including trench drains in the driveway(s).
 - Installing a speed hump at the entrance and exit on the driveway.
 - Installing site-specific improvements in the hospital property (e.g., temporary walls/stop logs during storm events).
 - Incorporating BMPs into existing landscaping features.
 - Removal of roof drains from internal hospital sewer system piping to a separate piping network.

The Hospital is in the limits of the future St. Luke's Hospital Sewer Separation project, which is part of the improvements. New catch basins and other site drainage improvements should be connected to the new separate drainage system instead of the existing combined sewer. The exact location and number of catch basins should be determined based on a detailed drainage study, including a gutter analysis, and coordination with the hospital. It is not recommended that the new catch basins be connected to the existing combined sewer (which has limited capacity) unless scheduling of the St. Luke's Sewer Separation project becomes prohibitive or other obstacles occur. If this does need to happen, then provisions should be made in the project to facilitate future connection to the drainage systems once they are constructed.

Adding a speed hump at the entrance and exit to the Emergency Entrance prevents entry of stormwater runoff in the gutter on Page Street. The humps would need to be several inches high in order to be above the upstream gutter elevation. Additionally, the humps would need to serve as a pedestrian crossing and therefore meet ADA requirements.

Site-specific improvements can be costly but should be capable of providing a higher level of flood control than the City infrastructure can on its own. These improvements could include changes to site grading, installation of temporary flood control gates, new flood-proof doors and window and/or moving critical infrastructure out of flooding areas.

There are several landscaped areas and parking lots directly adjacent to and in the hospital grounds that are immediately adjacent to Page Street. These areas present an opportunity to implement best management practices to control flooding. The recommended BMPs for the hospital are rain gardens or infiltration BMPs such as trenches, porous pavement/pavers, tree filter boxes or underground infiltration units. These BMPs provide limited flood control and water quality treatment, while maintaining an aesthetic atmosphere. Stormwater runoff on Page Street and adjacent parking areas would be diverted from the gutter into the rain gardens via curb cuts in the existing sidewalk. Pedestrian access would be maintained on the sidewalks through plating over the curb cut. Runoff would be detained and treated in the BMPs and discharged back into the existing combined sewer system or proposed separated drainage system. Additional coordination with the hospital and a more detailed siting analysis for the BMPs would be needed in order to proceed to construction.

Wilkes Public Library (SW 11)

- Street flooding is experienced in Acushnet Avenue in front of the Wilks Public Library near Brooklawn Park. Recent CCTV inspections indicate that the pipe varies in diameter and is in poor condition. To relieve pressure in the drainage system, which is causing

backflow through catch basins, additional pipe capacity is required. The most efficient way to address pipe capacity is to replace the pipes that currently bottleneck the drainage system immediately in front of the library. Approximately 515 linear feet of existing drain should be replaced with new 15-inch reinforced concrete drain.

- It is recommended that the remaining drains on Acushnet Avenue be inspected and cleaned of any blockages that may exist. In addition, at locations where the pipe is being replaced and a pipe-to-pipe connection currently exists, it is recommended that a manhole is added for maintenance purposes. Based on GIS mapping, three manholes are anticipated.

East Rodney French Boulevard and Hudson Street (SW12)

- Additional pipe capacity is required to mitigate flooding at the intersection of East Rodney French Boulevard and Hudson Street. Insufficient inlet capacity and undersized pipes fail to capture flow and it is bypassed to the low spot in the intersection. Once ponding begins, the undersized pipes and outfall cannot discharge at a sufficient rate to allow the catch basins in the intersection to discharge.
- To convey the peak flow from a 2-year, 24-hour storm, the existing 12-inch and 15-inch drain that runs from the intersection of East Rodney French Boulevard and Hudson Street to the outfall location should be replaced with 2-foot by 4-foot box culvert (approximately 775 lf).
- Upstream improvements at the three large beach parking lots are needed to attenuate peak flows and improve water quality discharges to the harbor. This would require the full reconstruction of the parking lots to accommodate the installation of BMPs to promote infiltration of stormwater.
- This project should be coordinated with the reconstruction of Monkey's Island/East Beach Pier as noted below.

Liberty Street (Parker Street to Durfee Street) (SW13)

- Liberty Street experiences flooding due to its flat topography, insufficient drainage structures, and possibly accumulation of sediment in existing drainage structures. To address the flooding, additional drainage infrastructure is required along Liberty Street. The new drainage should include additional inlet capacity and discharge to existing drainage located on Durfee Street, Hathaway Boulevard, and Potter Street. An additional ten catch basins are anticipated on Liberty Street.
- The proposed drainage infrastructure should connect to an existing drainage system. The existing system discharges to an unnamed brook which ultimately flows to the Whaling City Golf Course. A drainage analysis of the existing drainage and brook system should be conducted prior to construction to determine availability of capacity and if any additional downstream improvements are required. It is anticipated that 15-inch and 18-inch drains on Durfee Street from Liberty Street to Hathaway Boulevard is anticipated to need to be replaced with larger capacity pipes in order to accommodate the additional flow.
- Flooding that occurs to the rear of the City garage on Liberty Street between the building and the cemetery would be addressed as part of this project. Currently runoff is trapped at a low point adjacent to an existing stone wall in the cemetery. The flow would be conveyed to the new drainage system being constructed under this project.

- Additional measures are recommended to mitigate sediment transport originating from the City-owned property on the east side of Liberty Street. Best practices should be implemented to contain materials in designated storage areas to prevent clogging of catch basins on Liberty Street. The existing catch basin on Liberty Street should be inspected and cleaned if necessary.

West Rodney French Boulevard – Cove Road to Hurricane Barrier Gates

- Install green infrastructure and stormwater infrastructure improvements between Cove Road and the hurricane barrier street gate to address urban flooding issues along West Rodney French Boulevard.
- Reduce impervious area along the corridor by moving curb lines and planting grass and low impact development improvements along the corridor.
- Address flooding adjacent to the hurricane barrier gates by making improvements to the existing Kilburn Mill parking area by installing green infrastructure, new drainage and other low impact development improvements.
- Reconstruct the roadway due to poor pavement and drainage and regrade to newly constructed green infrastructure.

Brooklawn Park Stormwater Improvements

A former natural wetland, the Park is still an important hydrology system within the Acushnet River/Buzzards Bay watershed. A centrally located, manmade wet meadow in the Park was designed to provide some runoff relief, but more needs to be done to improve drainage. City maps indicate a system of gray infrastructure stormwater pipes in the Park, including the recent installation of underdrainage at the soccer field that require cleaning to remove debris, sediment, and tree roots to drain properly and improve runoff outcomes. The Duck Pond also needs upgrades to improve drainage capacity and deter overflows during major storms.

- New channels are proposed throughout Brooklawn Park to guide runoff to constructed wetlands.
- The stone paved floor of the existing stone channel that presently drains to the Duck Pond should be replaced with a natural stone basin over gravel base.
- The Pond should be engineered to improve overflow and prevent erosion.
- Existing baseball fields infield mix should be replaced with turf to naturally slow overland flows.
- Flooding in Brooklawn Park poses a threat to the park's infrastructure and use as a recreational facility. It is recommended that the park be allowed to continue to act as flood storage or infrastructure be constructed in the existing parking area to store flood water during extreme rainfall events. To mitigate impacts to the park, site improvements could be made, possibly including flood protection for the Brooklawn Community Center, regrading of land immediately surrounding the duck pond, and/or protecting electric work. Additionally, the outlet structure for the duck pond should be cleaned of debris to allow free discharge to the drainage system on Acushnet Avenue.
- Overland flow to the duck pond is causing erosion and sediment to be transported to the duck pond. Discharges from two upstream MS4 outfalls also contribute flow to the pond. Pollutants from these sources are being transported to the pond which in turn are being discharged to the City's MS4 system and receiving waters. Installation of BMPs

upstream of the duck pond is recommended to address the washout and erosion issues, flooding issues at the pond/park and water quality related issues.

Stormwater Ordinance Improvements

- Complete edits to the City's existing Stormwater Ordinance and Stormwater Management Rules and Regulations based on current City practices and changes in MS4 permit regulations.
- Incorporate landscape standards into development standards/subdivision rules and regulations for all new construction or significant rehabilitation.

Stormwater System Maintenance and Operation

- Implement the recommendations contained in the DPI Five-year Strategic Business Plan.
- Fully-fund a separate Stormwater Division which would include the management, oversight and maintenance of the City's existing stormwater system.

Green Infrastructure Master Plan Implementation

- Implement the projects as identified in the City's green infrastructure master plan to address the quality of discharges and quantity of discharge which causes urban flooding.
- Prioritize implementation based on receiving water quality sensitivity and with CSO abatement activities.
- Continue to fund capital upgrades to critical systems, integrating green infrastructure and nature-based solutions in conjunction with gray components to promote more resilient systems and improved water quality.

Flood Control Projects

The resolution concepts for this project classification address both maintenance on the existing dams and a capital improvements project on the Hurricane Barrier to abandon unused pipe conduits.

Rehabilitation of the City-owned portion of the Hurricane Barrier (FC1) is the responsibility of the Wastewater Division. The identified work should be performed in the near future to maintain its FEMA certification. The following section summarizes the major needs and recommendations for each flood control structure:

New Bedford–Fairhaven–ACOE Hurricane Barrier System (FC1)

- Clarks Cove Pumping Station
 - Installation of a second generator to provide full power to the pumping station during a power outage.
 - Installation of a pumping station SCADA system to allow for remote monitoring of the equipment and systems.
 - Wet well refurbishment including but not limited to piping improvements, installation of new pump shrouds, concrete repairs, and dewatering pump replacement.
 - Evaluation and repair / replacement of Gates 1,2,3,4 and all associated mechanical and electrical equipment.
- Hurricane Barrier System (Gates and Structures)

- Inadequately sized sewer and stormwater drainage systems cause localized flooding near the hurricane barrier. Therefore, in conjunction with the Army Corps of Engineers, the City will undertake further improvements to the Hurricane Barrier System including low-lying areas near the hurricane barrier, and to the sewer and stormwater drainage systems.
- Beneath the barrier lies six conduits, each with gates, that were inspected using an underwater remote operated vehicle in 2019. They were noted as being in fair to good condition due to their ability to open and close properly and only minor defects reported. In some cases, conduits were not able to be fully inspected due to debris accumulation. This work will include the removal of accumulated debris and completing an updated inspection, developing a design to abandon four out of the six pipes (two pipes are required to serve as an outfall for CSO and drainage) and rehabilitating the two conduits that are proposed to remain in service.
- Recent inspection of the three barrier street gates completed in 2024 found structural issues that need addressing for the gates to operate as designed during a storm surge event. It is recommended that the gates be rehabilitated. Such repairs recommended based on the 2024 inspection include but are not limited to:
 - Painting of the gates
 - Replacement of the pins that operate the street gates
 - Replace deteriorated steel segments of the gates.
 - Replace gate hydraulic jacks
 - Replace gate rubber sealing gasket

Operations and Maintenance Plan

The Levee System Evaluation Investigation Report identified a lack of formal operations and maintenance for the New Bedford–Fairhaven–ACOE Hurricane Barrier System. It is recommended that the City of New Bedford (City) and the Town of Fairhaven develop this plan together to address both short- and long- term operations and maintenance (O&M) practices. There is an existing O&M manual from 1966 that provides detailed regulation and requirements detailing the inspection, maintenance, and operation of the hurricane barrier and dike, Clarks Cove Dike, and Fairhaven Dike per FEMA requirements Section 65.10 of the NFIP regulations. The manual also includes a hurricane flood warning system that operates in coordination with the U.S. Weather Bureau to identify a hurricane or coastal storm threatening the North Atlantic States. The existing manual should be reviewed and updated to meet current standards and to reflect current equipment, operating practices, and organizational hierarchy.

Buttonwood Park Pond Dam (FC2)

See Section 3.5.1 Flood-related Hazards – Dam Failure.

New Bedford Reservoir Dam (FC3)

See Section 3.5.1 Flood-related Hazards – Dam Failure.

Turner Pond Dam (FC4)

See Section 3.5.1 Flood-related Hazards – Dam Failure.

High Hill Reservoir Dam (FC5)

See Section 3.5.1 Flood-related Hazards – Dam Failure.

4.3.19. Emergency Alerts and Warnings

Emergency alert and warning systems are designed to allow local authorities to warn the public of impending or current threats or emergencies affecting their area. Such public warning systems are essential to communicating critical emergency information to the public during times when other communications systems may not be dependable. Public warnings may be issued during severe weather, flooding, fire, hazardous material release, terrorist threat, water contamination, and any other threats to life, property, and safety.

Public Warning

During emergencies, the public needs timely, accurate information on the emergency situation and appropriate instructions regarding protective actions that should be taken to minimize injuries, loss of life and damage to property. For some slowly developing emergency situations (such as hurricanes), there may be several days for local government and the media to provide detailed information about the hazard and what citizens should do. For other emergency situations, there may be no warning, leaving the public information system unable to react rapidly enough to properly inform the public about the hazard and what to do about it. For this reason, it is important that the public be advised of likely hazards and what protective measures should be taken to lessen the effect of an emergency and/or disaster.

Public warning is accomplished using the following methods as appropriate:

- Emergency Alert System (EAS)
- Wireless Emergency Alerts (through MEMA)
- Local Access TV Station
- Community Website Notifications
- Social Media
- Variable Message Boards
- Reverse Telephonic Notification Systems (NB Alert)

Emergency Alert and Warning for Persons with Access and Functional Needs

Access and functional needs populations will be warned of emergencies by available methods, including the following:

- Visually impaired: EAS messages on radio, sirens, NOAA Weather Radio, reverse telephonic notification systems (locally based), route alerting (locally based), door-to-door notification (locally based)
- Hearing impaired: Captioned EAS messages on television, TTY on reverse telephonic notification systems (locally based), route alerting (locally based), door-to-door notification (locally based)
- Non-English speaking: Language messages on radio and/or TV, NOAA Weather Radio, route alerting, door-to-door, other

4.3.20. Municipal Website

The City's Emergency Management Department maintains a municipal webpage (<https://www.newbedford-ma.gov/emergency-management/>) hosted on the City's website that includes a variety of local, state, and regional emergency program information for residents, business owners and tourists. The Emergency Management Department also includes emergency information/resources regarding disasters and emergencies, winter storms, hurricane, and local weather:

- Special Needs Registry Form (https://s3.amazonaws.com/newbedford-ma/wp-content/uploads/sites/28/20191219200634/Special_Needs_Registry.pdf).
- Emergencies and Disasters (<https://www.newbedford-ma.gov/emergency-management/emergencies-disasters/ready-emergencies-disasters/>) includes various pages of information including:
 - Being Informed
 - Make a Plan
 - Build a Kit
 - Pets in Emergencies and Disasters
 - Ready.gov home page (<http://s3.amazonaws.com/newbedford-ma/wp-content/uploads/sites/28/20191219200620/Pet-Preparedness-Fact-Sheet.pdf>).
 - Includes safety and emergency preparedness tips for related to natural hazards and other personal security topics.
 - Disaster Mitigation (<https://www.newbedford-ma.gov/emergency-management/emergencies-disasters/mitigation/>).
 - Extreme Heat (<https://www.newbedford-ma.gov/emergency-management/emergencies-disasters/extreme-heat/>).
 - Earthquakes (<https://www.newbedford-ma.gov/emergency-management/emergencies-disasters/earthquake/>).
 - Tornadoes (<https://www.newbedford-ma.gov/emergency-management/emergencies-disasters/tornado/>).
 - Floods (<https://www.newbedford-ma.gov/emergency-management/emergencies-disasters/flood/>).
 - Thunderstorms and Lightning <https://www.newbedford-ma.gov/emergency-management/emergencies-disasters/thunderstorms-lightning/>).
 - You Can Help (<https://www.newbedford-ma.gov/emergency-management/emergencies-disasters/can-help/>).
- Winter Storms (<https://www.newbedford-ma.gov/emergency-management/winter-storms/>) includes various pages of information including:
 - City Winter Storm Guide
 - Information
 - Storm Awareness
 - Definitions
 - Wind Chill Information
 - Plan for a Winter Storm
 - Disaster Supplies Kit
 - Storm Watch
 - Storm Warning
 - After Winter Storms
 - Driving
 - If You Must Go Outside
- Hurricanes (<https://www.newbedford-ma.gov/emergency-management/hurricanes/>) includes various pages of information including:
 - Hurricane Information
 - Know Your Risk
 - Be Prepared

- Stay Informed
- Hurricane Maps
- Hurricane Scale
- Hurricane Plan
- Protect Your Property
- Hurricane Watch
- Hurricane Warning
- Hurricane Evacuation
- After the Hurricane
- Utilities
- Weather Information & Links (<https://www.newbedford-ma.gov/emergency-management/weather-info-links/>) includes various pages of information including:
 - Local Weather (National Weather Service)
 - Other Weather links (National Weather Service, National Hurricane Center)
 - Link to other emergency management sites:
 - Massachusetts Emergency Management Agency homepage (MEMA) (<https://www.mass.gov/orgs/massachusetts-emergency-management-agency>).
 - Federal Emergency Management Agency (<https://www.fema.gov/>).
 - American Red Cross homepage (<https://www.redcross.org/>).
 - Northeast States Consortium (<https://nsec.org/>).
 - Department of Homeland Security (<https://www.dhs.gov/>).
 - National Safety Council – Emergency Preparedness (<https://www.nsc.org/learn/safety-knowledge/pages/safety-at-home-emergency-preparedness.aspx>).

The City's Emergency Medical Services Department maintains a municipal webpage (<https://www.newbedford-ma.gov/emergency-medical-services/>) hosted on the City's website that provides a description of services provided. There is also an additional, independent website (<https://newbedfordems.org/about/>) that is also maintained.

The City's Resilience and Environmental Stewardship Department maintains a municipal webpage (<https://www.newbedford-ma.gov/environmental-stewardship/>) (hosted on the City's website) that includes a listing of department staff and members of the City's Conservation Commission, brownfield, site assessment, and other cleanup projects, resilience and sustainability projects, and MA Department of Environmental Protection Wetlands links. The Department also manages content on the [NB Resilient Dashboard](#).

The City's Fire Department maintains a municipal webpage (<https://www.newbedford-ma.gov/fire-department/>) hosted on the City's website that lists the contact information for various personnel and emergency numbers. The New Bedford Fire Department utilizes the following methods to prevent fires and reduce the risk of severe fire losses. These efforts are considered ongoing.

- Code Enforcement
 - Enforcing applicable fire codes and laws is quickest way to achieve fire safety and mitigate hazards. Code enforcement involves ensuring all types of fire protection systems (alarm and sprinkler) are functioning properly, ensuring excessive combustibles are not allowed to accumulate in egress paths or

adjacent to nearby structures or residential dwellings, and businesses follow safe interior and exterior storage practices.

- Public Fire Safety Education
 - Whether it's through in-person presentations at schools or neighborhood meetings, web-based training, or public service announcements, getting the public informed on practicing a fire safe lifestyle is essential. This includes lessons on how to properly dispose of smoking materials, checking batteries in fire alarm, safe electrical practices, and fire escape plans. The Department's Student Awareness of Fire Education Program (SAFE Program) provides fire safety education to preschool age children, kindergarten, 3rd grade, and 5th grade students across the city on an annual basis. They also provide fire extinguisher, CPR/First Aid, safe babysitter, and home escape plan/smoke alarm training at community events, neighborhood meetings, and to businesses within the city.
- Engineering
 - This involves designing and installing new fire protection systems and fire resistive construction when an existing building is renovated, or a new building is constructed.
- Fire Investigation
 - Determining the origin and cause of all fires to conclude how they started. This will allow for new safety practices or fire code revisions to prevent these types of fire causes from re-occurring.

The City's Harbor Development Department maintains a municipal webpage (<https://portofnewbedford.org/>) hosted on the City's website that includes information about the Port, doing business, visiting the Port, various Port facilities, latest news, and upcoming events.

The City's Health Department maintains a municipal webpage (<https://www.newbedford-ma.gov/health-department/>) hosted on the City's website that includes information about emergency preparedness (Guidance for Emergency Action Planning for Retail Food Establishments), as well as information regarding the Environmental Health Division, Municipal Marine Lab, Public Health Nursing Division, Regulations and Policy, and Regulations and Policy, and the various programs and services available to residents.

The City's Parks Recreation and Beaches Department maintains a municipal webpage (<https://www.newbedford-ma.gov/parks-recreation-beaches/>) hosted on the City's website that includes information on park facilities, rules, programs, and ordinances, in addition to several projects and plans, with recommendations.

The City's Police Department maintains a municipal webpage (<https://www.newbedfordpd.com/faq-links/>) hosted on the City's website that includes a resource directory of divisions and services, animal control, information on firearms, and various links. There is also an additional, independent website (<https://www.newbedfordpd.com>) that is maintained and includes community information and resources.

The City's Public Infrastructure Department maintains a municipal webpage (<https://www.newbedford-ma.gov/public-infrastructure/>) hosted on the City's website that includes information on five separate divisions: water; wastewater; highways; engineering; and cemeteries.

- Highway (<https://www.newbedford-ma.gov/public-infrastructure/highway/>) includes: guide to snowstorms for residents and business owners, private property owners responsibility for clearing snow from sidewalks, and information on parking bans.
- Water (<https://www.newbedford-ma.gov/public-infrastructure/water/>) includes water/sewer rate information, updated water quality report, and general information regarding services the division performs.
- Wastewater (<https://www.newbedford-ma.gov/public-infrastructure/wastewater/>) includes: general information regarding services the division performs, various systems and facilities information, Stormwater Rules and Regulations, MS\$ annual reports, and the City's Long Term CSO Control and Integrated Capital Improvements Plan.

4.3.21. Conservation Agent

The New Bedford Conservation Agent provides technical assistance for invasive vegetation management for the City. This includes but is not limited to, advising the Department of Public Infrastructure in removing non-native street trees that pose safety risks along rights-of-ways, educating resident volunteer groups in cutting ailanthus and rosa rugosa from beaches and dunes, providing feedback to the Planning Board on vegetation selection for proposed developments, and consulting on park improvement projects with the Department of Parks, Recreation, and Beaches. The remote field work of the Agent is a valuable service in early detection of emerging invasive vegetation 'hot spots' leading to more successful removal and mitigation operations. This capability could increase to further address potential impacts to the City's drinking water supply including the management of phragmites to prevent water quality impacts to Little Quittacas Pond.

4.3.22. Municipal Administration and Staff

The New Bedford City Council, Planning Board, municipal officials, and municipal staff all work well together to develop, implement, and update policies and plans to promote the safety of its residents and minimize risk to the community.

4.3.23. Coordination with Neighboring Municipalities

The City of New Bedford coordinates with the adjacent communities of Dartmouth, Fall River, Freetown, Acushnet, and Fairhaven periodically across municipal issues. The City will continue to coordinate with these communities on natural hazard mitigation planning, specifically any shared resource plans and evacuation plans.

4.4. Financial Capabilities

4.4.1. Federal/State Grant Opportunities

The City, across all municipal departments, considers and pursues all applicable federal, state and local grant opportunities to assist in implementing hazard mitigation programs, such as FEMA, Housing and Urban Development Community Development Block Grant (HUD CDBG) Program, USDA – Natural Resources Conservation Service (USDA-NRCS) and Rural Development Grants, Massachusetts Municipal Vulnerability Preparedness Program, Massachusetts Coastal Resilience Grant Program, Massachusetts Water Quality Grants, GrantWatch, and U.S. Economic Development Administration (EDA).

- Federal disaster assistance FEMA Hazard Mitigation Assistance (HMA) Program (HMGP, BRIC, and FMA): Since 2016, the City of New Bedford has applied for and

received approximately \$4,496,068.59 in grant assistance from FEMA (see Section 3.8 for additional details).

- HUD CDBG Program: A flexible program that provides communities with resources to address a wide range of unique community development needs, particularly the Disaster Recovery Assistance Program which provides grants to help cities, counties, and States recover from Presidentially-declared disasters, especially in low-income areas, subject to availability of supplemental appropriations.
- USDA NRCS and Rural Development Grants: Provides conservation technical assistance, financial assistance, and conservation innovation grants. USDA Rural Development operates over fifty financial assistance programs for a variety of rural applications.
- MA MVP Program: Provides action grants to communities that are MVP-Certified. Since 2018, the City of New Bedford has applied for and received \$854,022 in grant assistance from the MVP Program.
- MA Coastal Resilience Grant Program: CZM administers the Coastal Resilience Grant Program to provide financial and technical support for local and regional efforts to increase awareness and understanding of climate impacts, identify and map vulnerabilities, conduct adaptation planning, redesign, and retrofit vulnerable public facilities and infrastructure, and restore shorelines to enhance natural resources and provide storm damage protection.
- MA Water Quality Grants: Financial assistance options available for drinking water, wastewater, septic systems, wetlands, and watersheds in Massachusetts.
- GrantWatch: A proprietary grant search engine for non-profits.
- USED: EDA disaster grants are available under the Economic Adjustment Assistance (EAA) program. EAA funds can be awarded to assist a wide variety of activities related to disaster recovery, including economic recovery strategic planning grants, and public works construction assistance.
- CARES Act: Implemented a variety of programs to address issues related to the onset of the COVID-19 pandemic, with new phases, new allocations, and new guidance added totaling \$8,403,705 in funding received by the City of New Bedford.
- Southeast New England Program (SNEP) Grants: The City has utilized this grant program for water quality and green infrastructure projects along Buttonwood Brook.

4.5. Opportunities Expand and Improve Capabilities to Reduce Risk

While New Bedford has a wide range of capabilities and is well-positioned to address/mitigate nature, human-caused, and technological hazards profiled for the community, municipal staff and officials should remain vigilant working towards improvement planning. Opportunities to expand and improve on capabilities are described below for consideration.

Planning and Regulatory Capabilities

- Integrate hazard mitigation/resilience into future updates of the City of New Bedford's other key plans (2025 Comprehensive Plan Update, New Bedford Community Resilience Building Workshop: Summary of Findings, New Bedford Harbor Port Assessment Summary, Resilient Design Guidelines New Bedford Harbor, Open Space and Recreation Plan) in alignment with this 2025 Update.

- Conduct bylaw/regulatory reviews and updates for multi-hazard mitigation, climate resilience, and adaptation opportunities (incorporating LID, GI, and other nature-based solutions to mitigate the effects of extreme heat, heavy precipitation, and flooding).

Administrative and Technical Capabilities

- Build staff capacity for mitigation activities through increased training and professional development opportunities (GIS capacity).
- Leverage the New Bedford's website, social media, and community events to promote risk awareness and low-cost mitigation activities.
- Maintain active engagement with the Equity Partners Group created through this 2025 Update to better understand unmet needs related to targeted outreach, education, and communications.

Financial Capabilities

- Integrate long-term risk reduction/resilience as a key principle/screening/prioritization criterion for the City's General Appropriations Budget.

4.6. National Flood Insurance Program

New Bedford implements and enforces the state building code and fully participates in the NFIP. New Bedford supports natural resource management and protection, which is articulated in the Master Plan, Open Space and Recreation Plan, NB Resilient, Resilient Design Guidelines New Bedford Harbor, the MVP Community Resilience Building Workshop: Summary of Findings, and others. New Bedford understands that participation in the NFIP is an essential step in mitigation flood damage and is working to consistently enforce NFIP compliant policies in order to continue its participation in this program.

Table 4-1 Actions for Continued Compliance with NFIP below lists those actions that New Bedford has done and will continue to do and those actions that will be done within the next five years for continued compliance with the NFIP.

Table 4-1. Actions for Continued Compliance with NFIP

Actions (Listed in order of priority)	Done / Ongoing	To be Done
Join the NFIP.	X	
Participate in NFIP training by State and/or FEMA.	X	
Establish mutual aid agreements with neighboring communities to address administering the NFIP following a major storm event.	X	
Address NFIP monitoring and compliance activities.	X	
Revise/adopt subdivision regulations and erosion control regulations to improve floodplain management in the community.	X	
Participate in the CRS.		X
Prepare, distribute, or make available NFIP, insurance and building code explanatory pamphlets or booklets.	X	
Identify and become knowledgeable on non-compliant structures in the community.	X	
Identify and become knowledgeable of submit to rate structures.	X	

Identify cause of submit to rate structure and analyze how to prevent non-compliant structures in the future.	X	
Inspect foundations at time of completion before framing to determine if lowest floor is at or above BFE.	X	
Require use of elevation certificates.	X	
Report any changes in the Special Flood hazard Area to FEMA within 180 days of change.		X
Identify and keep track of LOMA/LOMR in the community.	X	
Gain familiarity with community's Flood Insurance Rate Maps.	X	
Address repetitive loss structures.		X

Source: New Bedford Department of Inspectional Services.

4.7. Community Rating System

NFIP's CRS Program is a voluntary program that recognizes and encourages a community's efforts that exceed the NFIP minimum requirements for floodplain management. The CRS program emphasizes three goals:

- the reduction of flood losses
- facilitating accurate insurance rating
- promoting the awareness of flood insurance

By participating in the CRS Program, communities can earn a 5-45% discount for flood insurance premiums based upon the activities that reduce the risk of flooding within the community. The City does not currently participate in the CRS Program but has initiated personnel education in preparation for enrollment.

4.8. Existing Protection Matrix

A summary of the main identified existing and future protection measures presented above are summarized in **Table 4-2**. These measures constitute the baseline protection that was further evaluated by the New Bedford LHMC to determine gaps in New Bedford's protection from natural disasters. Goal statements and specific actions were then developed to mitigate the identified gaps in the existing protection. These identified protection measures facilitate New Bedford to implement various hazard mitigation programs, ultimately making the community more resilient.

Table 4-2 Existing Protection Matrix, New Bedford, Massachusetts

Existing Protection	Description	Area Covered	Effectiveness and/or Enforcement	Improvements or Changes Needed
Planning and Regulatory				
City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2020				
	A citywide vulnerability assessment and action-oriented resiliency plan that identifies four main hazards and high priority actions. The city became an MVP-designated community following this process, making it eligible for MVP Action Grant funding.	Citywide	Effectiveness: Very Good Enforcement: Office of Resilience and Environmental Stewardship Dept., Planning Department	Continue to utilize
New Bedford Harbor Port Assessment Summary Report, 2021				
	An assessment of current conditions and short/long-term needs for Port Authority marine infrastructure in relation to projected sea level rise and flooding events. Includes long term resilience upgrade recommendations for all assets.	New Bedford Harbor	Effectiveness: Very Good Enforcement: New Bedford Port Authority	Continue to utilize
State of the Coast: Future Climate-Driven Risks and Their Solutions on Massachusetts' South Coast, 2022				
	Highlights projected impacts of rising seas and increasing storm surge on the ecology of Buzzards Bay and Narragansett Bay. Quantifies anticipated threats to community infrastructure and identifies resilience priorities, including specific recommendations for New Bedford.	Buzzards Bay and Narragansett Bay	Effectiveness: Very Good Enforcement: Resilience and Environmental Stewardship Dept.	Continue to utilize
Resilient Design Guidelines New Bedford Harbor, June 2020				
	Guidelines for developers, businesses, residents, and City staff members living or working in and around the Port of New Bedford. Enhances existing base zoning codes and standards to prepare for impacts of sea level rise.	Port of New Bedford	Effectiveness: Very Good Enforcement: Office of Resilience and Environmental Stewardship Dept., New Bedford Port Authority	Continue to utilize
Building New Bedford: Strategies to Promote Attainable Housing for All in a Thriving New Bedford, March 2023				
	Comprehensive housing plan that outlines actions the City is taking to stimulate new housing development, reactivate underutilized properties, and relieve housing instability and affordability.	Citywide	Effectiveness: Very Good Enforcement: Office of Housing & Community Development	Continue to utilize

Table 4-2 Existing Protection Matrix, New Bedford, Massachusetts

Existing Protection	Description	Area Covered	Effectiveness and/or Enforcement	Improvements or Changes Needed
Planning and Regulatory				
City of New Bedford Open Space and Recreation Plan 2021 - 2028				
	Citywide plan that sets forth the vision and goals to improve public open space and recreation assets, including parks, beaches, trails, greenways, and protected open space. Identifies and prioritizes action items that will enhance access, programming and infrastructure within New Bedford's parklands for all city residents.	Citywide	Effectiveness: Good Enforcement: Department of Parks, Recreation and Beaches, Department of Public Infrastructure, SRPEDD, and Conservation Commission	Continue to utilize
A City Master Plan New Bedford 2020 [published in 2010]				
	Comprehensive citywide planning document that sets for the vision and 10 year action plan to achieve sustainable growth and development. Lays out framework for seven citwide initiatives and 12 targeted development districts. City is currently in the process of developing update (2025).	Citywide	Effectiveness: Good Enforcement: Planning Board, Planning Dept.	Continue to utilize
Subdivision Regulations City of New Bedford				
	Sections of the city's subdivision regulations that pertain to the MHMP include Article V and Article VII, setting forth requirements for the development of land regarding flooding and stormwater management.	Citywide	Effectiveness: Good Enforcement: Planning Board	Continue to enforce
New Bedford MA Code of Ordinances				
	Chapter 9 Comprehensive Zoning creates a Flood Hazard Overlay District (FHOD) (Section 4410) and sets for building code standards for development within the floodplain.	Citywide	Effectiveness: Good Enforcement: Zoning Board	Continue to enforce
MA Wetlands Protection Bylaw				
	The Wetlands Protection Bylaw, Chapter 131 Section 40 of the Massachusetts General Laws, regulates activities affecting protected areas in order to protect water resources and wildlife habitat, prevent pollution, and reduce flooding and storm damage.	Wetlands	Effectiveness: Good Enforcement: Resilience and Environmental Stewardship Dept., Conservation Commission, MASSDEP	Continue to enforce

Table 4-2 Existing Protection Matrix, New Bedford, Massachusetts

Existing Protection	Description	Area Covered	Effectiveness and/or Enforcement	Improvements or Changes Needed
Planning and Regulatory				
City of New Bedford Stormwater Management Rules and Regulations, June 2021				
	Establishes minimum requirements and procedures related to construction associated with new development and redevelopment in order to minimize adverse impacts of stormwater runoff and pollution.	Citywide	Effectiveness: Good Enforcement: Building Department	Continue to enforce
New Bedford Pump Station Floodproofing Project, 2016				
	Identified recommendations for floodproofing improvements at nine pump stations across New Bedford.	Citywide	Effectiveness: Good Enforcement: Department of Public Infrastructure, Wastewater Division	Continue to utilize
New Bedford Wetlands Ordinance Ch. 15 - Article VII - sec. 15-101 through 15-112				
	To protect the wetlands and all other resources currently protected under the MA Wetlands Protection Act (M.G.L. c. 131 Section 40) and Regulations (310 CMR 10.00 et seq.) in the city.	Citywide	Effectiveness: Good Enforcement: Resilience and Environmental Stewardship	Continue to utilize
Administrative and Technical				
Comprehensive Emergency Management Plan - Draft 2025				
	Provides a framework for a community-wide emergency management system to ensure a coordinated response to emergencies and coordinated support of certain pre-planned events.	Citywide	Effectiveness: Not yet implemented Enforcement: Emergency Management Dept.	Implement once approved by Municipal Officials
City of New Bedford Green Infrastructure Master Strategy and Implementation Roadmap Report, June 2022				
	Takes a holistic look at all of the City's major drainage areas, assesses existing and proposed future drainage and combined sewer system infrastructure, identifies green infrastructure opportunities, and sets priority actions for implementation.	Citywide	Effectiveness: Very good. Enforcement: Resilience and Environmental Stewardship Dept., Department of Public Infrastructure	Continue to utilize

Table 4-2 Existing Protection Matrix, New Bedford, Massachusetts

Existing Protection	Description	Area Covered	Effectiveness and/or Enforcement	Improvements or Changes Needed
Administrative and Technical				
NB Resilient - New Bedford's Plan for Community Climate Action + Resilience, 2018				
	The City's first climate action and resilience plan with 45 ambitious but achievable actions that will help New Bedford strengthen its community and prepare for the impacts of climate change. Includes a broad number of actions applicable to hazard mitigation planning.	Citywide	Effectiveness: Very good. Enforcement: Resilience and Environmental Stewardship Dept.	Continue to utilize
Climate Change Vulnerability Assessment and Adaptation Planning Study for Water Quality Infrastructure in New Bedford, Fairhaven and Acushnet, June 30, 2014				
	A vulnerability analysis of water quality infrastructure, public property, and populations for the City of New Bedford and neighboring Towns of Acushnet and Fairhaven. Quantifies potential economic and structural damage from storms, and provides water quality infrastructure adaptation recommendations.	New Bedford Harbor	Effectiveness: Very good Enforcement: Resilience and Environmental Stewardship Dept., Department of Public Infrastructure	Continue to utilize
North End/South End Resilience Hub Business Planning				
	A business plan for creating a Resilience Hub at the Capitol Theater for the Near North End Neighborhood and Dennison Memorial Community Center in the South End neighborhoods.	North End/South End neighborhoods	Effectiveness: Very good Enforcement: Resilience and Environmental Stewardship Dept., Department of Public Infrastructure	Continue to utilize
Maritime Business Resilience Toolkit: City of New Bedford & Town of Fairhaven, June 2020				
	A guide for businesses of New Bedford Harbor to build resilience in the face of sea level rise and other climate hazards.	New Bedford Harbor	Effectiveness: Very good. Enforcement: Resilience and Environmental Stewardship Dept., New Bedford Port Authority	Continue to utilize
Unofficial Tenth Edition Base Code Draft (780 CRM), updated December 22, 2022				
	Regulations within the Massachusetts State Building Code, and enforced by the City of New Bedford, regarding structural design for wind loads, earthquake resistant design, flood-proofing and snow loads.	Citywide	Effectiveness: Very good Enforcement: Department of Inspectional Services, Building Division	Continue to enforce

Table 4-2 Existing Protection Matrix, New Bedford, Massachusetts

Existing Protection	Description	Area Covered	Effectiveness and/or Enforcement	Improvements or Changes Needed
Administrative and Technical				
Port of New Bedford Strategic Plan 2018-2023				
	Five year strategic plan to guide the growth and development of the Port of New Bedford and improve services for harbor users.	New Bedford Harbor	Effectiveness: Very good Enforcement: New Bedford Port Authority	Continue to utilize
Circulation & Drainage Master Plan Brooklawn Park, New Bedford, MA, August 7, 2020				
	This plan seeks to improve the vehicular and pedestrian circulation, make recommendations for the site's poor drainage, and provide maintenance guidelines to shape the Park's development over the next decade.	Brooklawn Park	Effectiveness: Very good Enforcement: Department of Parks Beaches and Recreation	Continue to utilize
East Beach Park Parking Lot Green Infrastructure Retrofit, June 2022				
	Drainage improvements for a series of parking areas along Rodney French Boulevard (East Beach Parking Redesign) that include the installation of check dams and bioretention basins.	East Beach Park	Effectiveness: Very good Enforcement: Department of Parks Beaches and Recreation	Continue to utilize
AVX Site Cleanup Project				
	Environmental cleanup of former Aerovox facility used for electrical component manufacturing on a 10-acre site now owned by the City of New Bedford.	AVX Site	Effectiveness: Very good Enforcement: Resilience and Environmental Stewardship Dept.	Continue to utilize
Shawmut Avenue Landfill Post-Closure Environmental Monitoring Report				
	A Post-Closure Environmental Monitoring Report of the former Shawmut Avenue Landfill prepared by River Hawk Environmental, LLC for 2022 Q3 in accordance with MA Solid Waste Management Regulations (310 CMR 19.00).	Shawmut Avenue Landfill site	Effectiveness: Very good Enforcement: Resilience and Environmental Stewardship Dept.	Continue to utilize
City of New Bedford, MA 2017 Community Greenhouse Gas Emissions Inventory Methodology Report				
	A summary of the results and methodologies used in the development of the 2017 Community Greenhouse Gas Emissions Inventory for New Bedford, MA.	Citywide	Effectiveness: Very good Enforcement: Resilience and Environmental Stewardship Dept.	Continue to utilize
Rapid Recovery Plan 2021, New Bedford				
	The City of New Bedford's economic recovery plan in response to the COVID-19 pandemic. The plan, developed through Massachusetts' Local Rapid Recovery Plan (LRRP) Program, focused on retaining and attracting local businesses downtown.	Citywide	Effectiveness: Very good Enforcement: Mayor's Office	Continue to utilize

Table 4-2 Existing Protection Matrix, New Bedford, Massachusetts

Existing Protection	Description	Area Covered	Effectiveness and/or Enforcement	Improvements or Changes Needed
Administrative and Technical				
City of New Bedford Sassaquin Pond Watershed Management Plan, September 2021				
	A plan to improve water quality in Sassaquin Pond, designated as a Great Pond by the Commonwealth of Massachusetts. Provides a roadmap of projects that can be implemented in a prioritized approach aimed at achieving water quality standards.	Sassaquin Pond Watershed	Effectiveness: Very good Enforcement: Department of Public Infrastructure	Continue to utilize
Assawompset Ponds Complex (APC) and Nemasket Watershed Management and Climate Action Plan, August 2022				
	A regional planning document intended to coordinate the protection of the APC in order to protect its uses as a public drinking water supply, wildlife habitat, and recreation resource. Identifies management goals, objectives, and actions to address ongoing challenges and increase long-term climate resilience.	Nemasket Watershed	Effectiveness: Very good Enforcement: Resilience and Environmental Stewardship Dept.	Continue to utilize
Long Term CSO Control and Integrated Capital Improvements Plan, January 2017				
	This Integrated Plan identifies appropriate sequencing and scheduling of work to address the City's most pressing public health, critical infrastructure and environmental protection issues regarding the City's wastewater, stormwater, and flood protection. It includes both wastewater and stormwater projects intended to be implemented over a 20-year planning horizon.	Citywide	Effectiveness: Very good Enforcement: Department of Public Infrastructure	Continue to utilize
Emergency Alerts and Warnings				
	Designed to allow local authorities to warn the public of impending or current threats or emergencies affecting their area. Includes public warning: Emergency Alert System, Wireless Emergency Alerts, Local Access TV Station, Community Website Notifications, Social Media, Variable Message Boards, Reverse Telephonic Notification Systems (NB Alert).	Citywide	Effectiveness: Very good Enforcement: Emergency Management Department/CEMP	Continue to utilize
Municipal Website				
	The City maintains a municipal website that hosts webpages for various municipal Departments and Divisions, with information for residents, business owners, and visitors.	Citywide	Effectiveness: Very good Enforcement: Mayor's Office	Continue to utilize

Table 4-2 Existing Protection Matrix, New Bedford, Massachusetts

Existing Protection	Description	Area Covered	Effectiveness and/or Enforcement	Improvements or Changes Needed
Administrative and Technical				
Conservation Agent				
	The New Bedford Conservation Agent has a program addressing invasive plants.	Citywide	Effectiveness: Very good Enforcement: Resilience and Environmental Stewardship Dept.	Continue to utilize
Municipal Administration and Staff				
	The New Bedford City Council, Planning Board, municipal officials, and municipal staff all work well together to develop, implement, and update policies and plans to promote the safety of its residents and minimize risk to the community.	Citywide	Effectiveness: Very Good Enforcement: City Council, Planning Board, Mayor's Office, All Departments	Continue to utilize
Coordination with Neighboring Municipalities				
	The City coordinates with the adjacent municipalities of Dartmouth, Fall River, Freetown, Acushnet, and Fairhaven on natural hazard mitigation planning, specifically any shared resource plans and evacuation plans.	Regional	Effectiveness: Very Good Enforcement: Mayor's Office, All Departments	Continue to utilize
Financial				
Federal/State Grant Opportunities				
	FEMA Hazard Mitigation Assistance (HMA) Program: HMGP, BRIC, and FMA - Since 2016, the City of New Bedford has applied for and received approximately \$441,157.06 in grant assistance from FEMA	Citywide		Continue to utilize
	HUD - CDBG Program provides communities with resources to address wide range of community development needs; the Disaster Recovery Assistance Program provides grants to help cities, counties, and States recover from Presidentially-declared disasters, especially in low-income areas.	Low-income Areas		Continue to Utilize
	USDA NRCS and Rural Development Grants - provides conservation technical assistance, financial assistance, and conservation innovation grants. USDA Rural Development operates over fifty financial assistance programs for a variety of rural applications.	Citywide		Continue to Utilize

Table 4-2 Existing Protection Matrix, New Bedford, Massachusetts

Existing Protection	Description	Area Covered	Effectiveness and/or Enforcement	Improvements or Changes Needed
Financial				
Federal/State Grant Opportunities				
	MA MVP Program - provides action grants to communities that are MVP-Certified. Since 2018, the City of New Bedford has applied for and received \$854,022 in grant assistance from the MVP Program.	Statewide		Continue to Utilize
	MA Coastal Resilience Grant Program - provides financial and technical support for local and regional efforts.	Statewide		Continue to Utilize
	MA Water Quality Grants – provides financial assistance options for drinking water, wastewater, septic systems, wetlands, and watersheds in Massachusetts.	Statewide		Continue to Utilize
	GrantWatch - a proprietary grant search engine for non-profits.	Statewide		Continue to Utilize
	USEDA - EDA disaster grants available under the Economic Adjustment Assistance (EAA) program. Awarded to assist a wide variety of activities related to disaster recovery, including economic recovery strategic planning grants, and public works construction assistance.	Citywide		Continue to Utilize
	CARES Act. The Coronavirus Aid, Relief, and Economic Security (CARES) Act (2020) and the Coronavirus Response and Consolidated Appropriations Act (2021) provided fast and direct economic assistance for American workers, families, small businesses, and industries. https://home.treasury.gov/policy-issues/coronavirus/about-the-cares-act .	Citywide		No longer available
	SNEP. Southeast New England Program grants targeted towards water quality and green infrastructure projects.	Citywide		Continue to Utilize

5. MITIGATION STRATEGY

5.1. Introduction

Removing and precluding development from hazardous areas is the best method of mitigation. However, this cannot be the sole focus of hazard mitigation in New Bedford. The City's character and functionality require a level of intimacy with the areas of greatest risk.

5.2. Mitigation Activities

In completing the risk and vulnerability analyses, the LHMC considered projects and actions that would reduce New Bedford's vulnerability to the identified hazards. The 2025 Risk Assessment Matrix (**Table 5-1**) is the basis for the mitigation actions presented in Section 5.3.

5.3. Mitigation Action Plan

The LHMC considered the goals of this 2025 Update and re-prioritized the matrix and the associated actions based on historical damage, safety of the population, property protection and consistency with city-wide goals and objectives. Where applicable, mitigation actions carried forward from the 2016 Plan include the new 'Priority Score' for each mitigation action (2025 plan update), along with the 2016 Plan prioritization (not completed/partially completed) to reflect any changes in the prioritization of actions/comparative purposes. Issues and objectives were aligned to public health risks, evacuation and mass care considerations, disruption of essential services and potential economic losses to New Bedford.

The LHMC has worked to set goals and objectives that are bound by a time frame and are compatible and consistent with state hazard mitigation goals. Upon submitting this plan to MEMA, the State Hazard Mitigation Committee (SHMC) is expected to review and approve these goals and objectives to ensure consistency with the statewide goals and objectives. The time frames used for this strategy are as follows (recognizing a five-year planning horizon):

- **Short Term:** Within 1 Year
- **Medium Term:** 2 – 3 Years
- **Long Term:** 4 – 5 Years

The following actions use the Risk Assessment Matrix to identify areas at risk, offer mitigation strategies and consider benefits. Each action offers a discussion of the project and if applicable, includes the options considered. Multiple actions associated with a vulnerable area reflect city priorities and are simply prioritized high, medium or low. The actions include cost estimates and assign responsible parties to lead the efforts to complete the action. The cost ranges used for this strategy are as follows:

- **Staff/Personnel Time:** Municipal personnel time
- **Low:** \$25,000 or less
- **Moderate:** More than \$25,000 but less than \$50,000
- **Significant:** \$50,000 or more

Other relevant departments/agencies that can offer support to the project are also listed. Finally, possible finance options are offered. Under each action item, the original source (s) for the mitigation action has been identified in **red font** as a visual queue for the general reader not closely involved in the development of the 2025 Update. Once the 2025 Update receives FEMA's "Approved Pending Adoption," the mitigation strategy will be put into motion.

Evaluation/Selection of Mitigation Actions

After reviewing New Bedford's identified risks and vulnerabilities to natural, human-caused, and technological hazards, the input/feedback from the public workshop and recommendations from the municipal personnel, and the local Capability Assessment, the LHMC selected mitigation actions to incorporate into the 2025 Update.

Prioritization of Actions

Due to budgetary constraints and other limitations, it is often impossible to implement all mitigation actions. The LHMC needed to select the most cost-effective actions for implementation first to use resources efficiently and develop a realistic approach toward mitigation risks. The DMA 2000 supports this principle of cost-effectiveness by requiring action plans to follow a prioritization process that emphasizes benefits over costs. DMA 2000 states:

"The mitigation strategy section shall include an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs."

For this 2025 Update, the LHMC used FEMA's STAPLEE Qualitative Method/Relative Score to identify, evaluate, and prioritize proposed mitigation actions. The STAPLEE method uses the following criteria to assess proposed mitigation actions:

- **Social:** Assesses whether it will be socially accepted within the community.
- **Technical:** Assesses whether it will be technically feasible and whether it will help to reduce losses in the long term.
- **Administrative:** Assesses the community's capabilities for carrying out the projects.
- **Political:** Assesses local and state political support for the project.
- **Legal:** Assesses whether state and local laws will allow for implementation of the project.
- **Economic:** Assesses the cost-effectiveness and sources of funding for the project.
- **Environmental:** Assesses how the project will affect the environment

Table 5-1 summarizes the proposed mitigation actions for New Bedford, organized by municipal department and priority. These mitigation actions were prioritized as either "high," "medium," or "low" priority based on the STAPLEE evaluation. Each of the 23 criteria on the STAPLEE worksheets was assigned either a favorable, less favorable or non-applicable rating. The priority level was set by the total scores ([total favorable] – [total less favorable]) generated from the worksheets. High priority mitigation actions received a majority of criteria with favorable ratings, compared to criteria with less favorable or non-applicable rating, and resulted in a score of 12 or greater. Medium priority mitigation actions received a mixture of favorable, less favorable and non-applicable ratings for the criteria, and resulted in scores ranging between 0 and 11. Low

priority mitigation actions received a majority of less favorable or non-applicable ratings for the criteria and resulted in a score of less than 0. The City of New Bedford will make a good faith effort to implement these actions within the constraints of the local budget, staff resources, and new demands from state and federal agencies.

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Table 5-1 STAPLEE Analysis

	STAPLEE Criteria																										
	SOCIAL		TECHNICAL			ADMINISTRATIVE			POLITICAL			LEGAL			ECONOMIC				ENVIRONMENTAL						TOTAL		PRIORITY SCORE
ACTION	Community Acceptance: Is action socially acceptable?	Effect on Segment of Population: Equity issues?	Technical Feasibility: Will action work?	Long-Term Solution: Does action solve problem and/or symptom?	Secondary Impacts: Will action create more problems than it solves?	Staffing: Someone to coordinate action?	Funding Allocated: Is there enough funding available?	Maintenance/Operations: Are there ongoing requirements?	Political Support: Is action politically acceptable?	Local Champion: Is there a local champion?	Public Support: Is there public support to implement action?	State Authority: Is the state authorized to implement the action?	Existing Local Authority: Does the City have the authority to implement the action?	Political Legal Challenge: Will the action be challenged?	Benefit of Action: Do benefits exceed costs?	Cost of Action: Do costs exceed benefits?	Contributes to Economic Goals: Does action contribute to economic development goals?	Outside Funding Required: Does action require outside funding to implement?	Effect on Land/Water: Does action affect the environment?	Effect on Endangered Species: Are endangered/threatened species affected?	Effect on HAZMAT Waste Sites: Will action impact HAZMAT sites?	Consistent with Environmental Goals: Is action consistent with local environmental goals?	Consistent with Federal Laws: Will action require regulatory approvals?	Plus	Minus		
5.3.6 EMERGENCY MANAGEMENT DEPARTMENT																											
HIGH PRIORITY ACTION (S)																											
5.3.6.1/9	+	+	+	+	-	+	+	N	+	+	+	N	+	N	+	N	+	N	+	+	+	+	+	N	16	1	15
MEDIUM PRIORITY ACTION (S)																											
5.3.6.2/10	+	N	+	+	N	+	-	N	+	+	+	N	+	+	+	N	+	N	N	N	N	N	N	N	11	1	10
5.3.6.3/11	+	+	+	+	-	+	-	-	+	+	+	-	+	-	+	-	+	-	+	+	+	+	+	+	16	7	9
5.3.6.4/12	+	-	+	+	-	+	-	+	+	+	N	+	+	N	+	-	+	-	N	N	N	N	N	N	11	5	6
5.3.6.5/13	+	+	+	+	-	+	-	-	+	+	+	N	+	N	+	-	+	-	N	N	N	N	N	N	11	5	6
5.3.6.6/14	+	+	+	+	N	+	-	-	+	+	+	-	+	N	+	-	+	-	N	N	N	N	N	N	11	5	6
5.3.6.7/15	+	-	+	+	-	+	-	-	+	+	+	N	+	-	N	-	+	-	+	N	N	+	N	N	11	7	4
5.3.7 POLICE DEPARTMENT																											
MEDIUM PRIORITY ACTION (S)																											
5.3.7.1 16	+	+	+	+	-	-	-	+	+	+	+	+	+	-	+	-	+	-	N	N	N	N	N	N	12	6	6
5.3.8 FIRE DEPARTMENT																											
MEDIUM PRIORITY ACTION (S)																											
5.3.8.1/17	+	+	+	+	-	+	+	-	+	+	+	-	-	+	+	-	N	+	+	N	N	N	N	N	13	5	8
5.3.9 NEW BEDFORD PORT AUTHORITY																											
MEDIUM PRIORITY ACTION (S)																											
5.3.9.1/18	+	+	+	+	+	+	-	-	+	+	+	+	+	N	+	-	+	-	+	N	+	+	-	16	5	11	
5.3.9.2/19	+	N	+	+	N	+	-	+	+	+	+	+	+	N	+	-	+	-	+	N	N	+	N	14	3	11	

Table 5-1 STAPLEE Analysis

	STAPLEE Criteria																										
	SOCIAL		TECHNICAL			ADMINISTRATIVE			POLITICAL			LEGAL			ECONOMIC				ENVIRONMENTAL						TOTAL		PRIORITY SCORE
ACTION	Community Acceptance: Is action socially acceptable?	Effect on Segment of Population: Equity issues?	Technical Feasibility: Will action work?	Long-Term Solution: Does action solve problem and/or symptom?	Secondary Impacts: Will action create more problems than it solves?	Staffing: Someone to coordinate action?	Funding Allocated: Is there enough funding available?	Maintenance/Operations: Are there ongoing requirements?	Political Support: Is action politically acceptable?	Local Champion: Is there a local champion?	Public Support: Is there public support to implement action?	State Authority: Is the state authorized to implement the action?	Existing Local Authority: Does the City have the authority to implement the action?	Political Legal Challenge: Will the action be challenged?	Benefit of Action: Do benefits exceed costs?	Cost of Action: Do costs exceed benefits?	Contributes to Economic Goals: Does action contribute to economic development goals?	Outside Funding Required: Does action require outside funding to implement?	Effect on Land/Water: Does action affect the environment?	Effect on Endangered Species: Are endangered/threatened species affected?	Effect on HAZMAT Waste Sites: Will action impact HAZMAT sites?	Consistent with Environmental Goals: Is action consistent with local environmental goals?	Consistent with Federal Laws: Will action require regulatory approvals?	Plus	Minus		
5.3.9 NEW BEDFORD PORT AUTHORITY																											
MEDIUM PRIORITY ACTION (S)																											
5.3.9.2/20	+	N	+	+	N	+	-	-	+	+	+	+	+	N	+	-	+	-	+	+	+	+	-	15	5	10	
5.3.9.4/21	+	+	+	+	N	+	-	-	+	+	+	+	+	N	+	-	+	-	+	N	+	+	-	15	5	10	
5.3.9.5/22	+	N	+	+	N	+	-	-	+	+	+	-	+	N	+	-	+	-	+	N	+	+	N	13	5	8	
5.3.9.6/23	+	N	+	+	-	+	-	-	+	+	+	+	+	-	+	-	+	-	-	+	N	+	N	13	7	6	
5.3.9.7/24	+	N	+	+	N	+	-	-	+	+	+	+	+	-	+	-	+	-	-	N	N	+	-	12	7	5	
5.3.10 DEPARTMENT OF PUBLIC INFRASTRUCTURE																											
HIGH PRIORITY ACTION (S)																											
5.3.10.1/25	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	-	+	-	+	+	+	+	-	18	5	13	
5.3.10.2/26	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	-	+	-	+	+	+	+	-	18	5	13	
5.3.10.3/27	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	-	+	-	+	+	+	+	-	18	5	13	
5.3.10.4/28	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	-	+	-	+	+	+	+	-	18	5	13	
5.3.10.5/45	+	+	+	+	+	+	-	-	+	+	+	N	+	+	+	-	+	-	+	+	+	+	-	17	5	12	
5.3.10.6/29	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	-	+	-	+	N	+	+	-	17	5	12	
5.3.10.7/30	+	+	+	+	-	+	-	+	+	+	+	+	+	-	+	-	+	-	+	+	N	+	+	17	5	12	
5.3.10.8/31	+	+	+	+	-	+	-	+	+	+	+	+	+	-	+	-	+	-	+	+	+	+	N	17	5	12	

Table 5-1 STAPLEE Analysis

	STAPLEE Criteria																							TOTAL			PRIORITY SCORE
	SOCIAL		TECHNICAL			ADMINISTRATIVE		POLITICAL		LEGAL			ECONOMIC				ENVIRONMENTAL										
ACTION	Community Acceptance: Is action socially acceptable?	Effect on Segment of Population: Equity issues?	Technical Feasibility: Will action work?	Long-Term Solution: Does action solve problem and/or symptom?	Secondary Impacts: Will action create more problems than it solves?	Staffing: Someone to coordinate action?	Funding Allocated: Is there enough funding available?	Maintenance/Operations: Are there ongoing requirements?	Political Support: Is action politically acceptable?	Local Champion: Is there a local champion?	Public Support: Is there public support to implement action?	State Authority: Is the state authorized to implement the action?	Existing Local Authority: Does the City have the authority to implement the action?	Political Legal Challenge: Will the action be challenged?	Benefit of Action: Do benefits exceed costs?	Cost of Action: Do costs exceed benefits?	Contributes to Economic Goals: Does action contribute to economic development goals?	Outside Funding Required: Does action require outside funding to implement?	Effect on Land/Water: Does action affect the environment?	Effect on Endangered Species: Are endangered/threatened species affected?	Effect on HAZMAT Waste Sites: Will action impact HAZMAT sites?	Consistent with Environmental Goals: Is action consistent with local environmental goals?	Consistent with Federal Laws: Will action require regulatory approvals?	Plus	Minus		
5.3.10 DEPARTMENT OF PUBLIC INFRASTRUCTURE																											
MEDIUM PRIORITY ACTION (S)																											
5.3.10.9/32	+	+	+	+	-	+	-	-	+	+	+	-	+	+	+	-	+	-	+	+	+	+	+	+	17	6	11
5.3.10.10/33	+	+	+	+	-	+	-	+	+	+	+	+	+	-	+	-	+	-	+	+	+	+	+	-	17	6	11
5.3.10.11/34	+	+	+	+	-	+	-	+	+	+	+	+	+	-	+	-	+	-	+	+	+	+	+	-	17	6	11
5.3.10.12/35	+	+	+	+	-	+	-	+	+	+	+	+	+	-	+	-	+	-	+	+	+	+	+	-	17	6	11
5.3.10.13/36	+	+	+	+	-	+	-	+	+	+	+	+	+	-	+	-	+	-	+	+	+	+	+	-	17	6	11
5.3.10.14/37	+	+	+	+	-	+	-	-	+	+	+	+	+	-	+	-	+	-	+	+	N	+	+	+	16	6	10
5.3.10.15/38	+	N	+	+	-	+	-	-	+	+	+	+	+	+	+	-	+	-	+	+	N	N	+	+	15	5	10
5.3.10.16/39	+	+	+	+	+	-	+	+	+	+	+	+	+	-	+	-	+	-	N	N	N	N	N	N	14	4	10
5.3.10.17/41	+	+	+	+	-	+	-	-	+	+	+	+	+	-	+	-	+	-	+	+	N	+	N	N	15	6	9
5.3.10.18/42	+	+	+	+	-	+	-	-	+	+	+	+	+	+	+	-	+	-	+	N	N	+	-	15	6	9	
5.3.10.19/43	+	+	+	+	-	+	-	-	+	+	+	+	+	-	+	-	+	-	+	N	+	+	-	15	7	8	
5.3.10.20/44	+	+	+	+	-	+	-	-	+	+	+	+	+	-	+	-	+	-	+	N	+	+	-	15	7	8	
5.3.11 RESILIENCE AND ENVIRONMENTAL STEWARDSHIP DEPARTMENT																											
HIGH PRIORITY ACTION (S)																											
5.3.11.1/46	+	+	+	+	-	+	-	-	+	+	+	+	+	+	+	-	+	+	+	+	+	+	N	18	4	14	
5.3.11.2/47	+	+	+	+	+	+	-	-	+	+	+	+	+	N	+	-	+	-	+	+	+	+	+	18	4	14	

Table 5-1 STAPLEE Analysis

	STAPLEE Criteria																										
	SOCIAL		TECHNICAL			ADMINISTRATIVE			POLITICAL			LEGAL			ECONOMIC				ENVIRONMENTAL						TOTAL		PRIORITY SCORE
ACTION	Community Acceptance: Is action socially acceptable?	Effect on Segment of Population: Equity issues?	Technical Feasibility: Will action work?	Long-Term Solution: Does action solve problem and/or symptom?	Secondary Impacts: Will action create more problems than it solves?	Staffing: Someone to coordinate action?	Funding Allocated: Is there enough funding available?	Maintenance/Operations: Are there ongoing requirements?	Political Support: Is action politically acceptable?	Local Champion: Is there a local champion?	Public Support: Is there public support to implement action?	State Authority: Is the state authorized to implement the action?	Existing Local Authority: Does the City have the authority to implement the action?	Political Legal Challenge: Will the action be challenged?	Benefit of Action: Do benefits exceed costs?	Cost of Action: Do costs exceed benefits?	Contributes to Economic Goals: Does action contribute to economic development goals?	Outside Funding Required: Does action require outside funding to implement?	Effect on Land/Water: Does action affect the environment?	Effect on Endangered Species: Are endangered/threatened species affected?	Effect on HAZMAT Waste Sites: Will action impact HAZMAT sites?	Consistent with Environmental Goals: Is action consistent with local environmental goals?	Consistent with Federal Laws: Will action require regulatory approvals?	Plus	Minus		
5.3.11 RESILIENCE AND ENVIRONMENTAL STEWARDSHIP DEPARTMENT																											
MEDIUM PRIORITY ACTION (S)																											
5.3.11.3/48	+	+	+	+	+	+	-	-	+	+	+	N	+	N	+	-	+	-	+	+	+	+	+	N	16	4	12
5.3.11.4/49	+	+	+	+	-	+	-	-	+	+	+	-	+	N	+	+	+	-	+	+	N	+	N	15	5	10	
5.3.11.5/50	+	+	+	+	+	+	-	-	+	+	+	N	+	N	+	+	+	-	N	N	N	N	-	13	4	9	
5.3.12 DEPARTMENT OF FACILITIES AND FLEET MANAGEMENT																											
MEDIUM PRIORITY ACTION (S)																											
5.3.12.1/51	+	N	+	+	N	+	-	-	+	+	+	N	+	N	+	N	+	-	+	+	N	+	+	14	3	11	
5.3.12.2/52	+	+	+	+	-	+	-	+	+	+	+	+	+	-	+	-	+	+	N	N	N	N	N	14	4	10	
5.3.12.3/53	+	+	+	+	+	+	-	-	+	+	+	N	+	+	+	-	N	-	N	N	N	N	N	12	4	8	
5.3.12.4/54	+	N	+	+	N	+	-	-	+	+	+	N	+	N	+	-	N	-	+	N	+	+	N	12	4	8	
5.3.12.5/55	+	N	+	+	N	+	-	-	+	+	+	N	+	N	+	-	+	N	N	N	N	N	N	10	3	7	
5.3.12.6/56	+	-	+	+	-	+	-	-	+	+	+	N	+	N	+	+	N	-	N	N	N	+	N	11	5	6	
5.3.13 INFORMATION TECHNOLOGY DEPARTMENT																											
MEDIUM PRIORITY ACTION (S)																											
5.3.13.1/57	+	N	+	+	-	+	-	-	+	+	N	N	+	N	+	N	+	-	N	N	N	N	N	9	4	5	

5.3.1. Mayor's Office Actions

High Priority Actions

5.3.1.1 *The City of New Bedford will advocate to the USACE to have a plan in place—and available replacement parts and components in stock available for immediate deployment in the event of an allision or other damage—to ensure that continuity of Port operations and the City's ongoing storm protection are uninterrupted or minimized to the maximum extent possible.*

Source: 2025 MHMP/Emergency Management Department

- Action Type: Planning, Pre-Disaster
- Priority Score: 14/High Priority
- Lead: Mayor's Office/Port Authority
- Supporting: Town of Fairhaven/USCG/USACE
- Time Frame: Short/within 1 Year
- Financing Options: USACE's budget, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Continuity of Operations/Property Protection/Public Health Safety and Welfare
- Vulnerable Area: Property Protection/Public Health, Safety and Welfare/Port Operations
- Hazards Addressed: Hurricane Barrier System Incident/Failure

Medium Priority Actions

5.3.1.2 *Develop and implement a public communications and education campaign for all City projects in advance of project initiation, during implementation and construction, and following completion to facilitate transparency regarding all City projects and to keep residents and businesses informed.*

Source: 2025 MHMP/Emergency Management Department

- Action Type: Planning, Pre-Disaster
- Priority Score: 11/Medium Priority
- Lead: Mayor's Office/Public Information Officer (PIO)
- Supporting: All City Departments
- Time Frame: Short/within 1 Year
- Financing Options: City General Appropriations Budget (Mayor's/PIO's Budget)
- Cost Estimate: Staff/Personnel Time
- Benefit: Informed residents/businesses
- Vulnerable Area: Municipal Communications
- Hazards Addressed: All Hazards

5.3.2. Planning Department Actions

High Priority Actions

5.3.2.1 *Develop a cultural resource data universe and associated guidelines and protocols for coordinated disaster management with stakeholders throughout the City.*

Source: City of New Bedford Open Space and Recreation Plan, 2021 – 2028

- Identify and map cultural resources throughout the city, whether public or privately owned, including moveable and immovable heritage sites, museums, studios and galleries, libraries, storage facilities and heritage trees and landscapes.
 - Develop guidelines for prioritization of vulnerable sites and institutions in need of formally adopted disaster plans
 - Develop a protocol to address deferred maintenance and conservation and standard operating procedures to protect moveable and immovable public property.
 - Develop a protocol for coordinated government post-disaster response with non-profit and private cultural institutions and private studios/galleries.
 - Develop Triage and Hazmat Management and Monitoring Plans specific to the nature of publicly and privately held collections by location to address recovery, triage, monitoring, preservation and disposal after a disaster event.
- Action Type: Planning, Pre-Disaster
 - Priority Score: 14/High Priority
 - Lead: Planning Department
 - Supporting: Library Services, Massachusetts Historic Commission, National Park Service
 - Time Frame: Medium Term/2 – 3 Years
 - Financing Options: City General Appropriations Budget (Planning Department Budget), Community Preservation Act (CPA) funds, Cultural Foundations support/funds, In-Kind volunteerism, FEMA BRIC/FMA/HMGP grants
 - Cost Estimate: Medium
 - Benefit: Cultural Asset Protection/Public Health, Safety and Welfare/Property Protection
 - Vulnerable Area: Cultural Sites/Assets
 - Hazards Addressed: All Hazards

5.3.2.2 Develop guidelines to impervious surfaces and integration of green infrastructure incentives for homeowners and businesses.

Source: City of New Bedford Open Space and Recreation Plan, 2021 - 2028

- Action Type: Planning, Pre-Disaster
- Priority Score: 15/High Priority
- Lead: Planning Department
- Supporting: Department of Public Infrastructure/Conservation Commission
- Time Frame: Medium Term/2 – 3 Years
- Financing Options: City General Appropriations Budget (Planning Department Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Protection of natural resources/Protection of public and private property
- Vulnerable Area: Natural Resources
- Hazards Addressed: Flood-related Hazards/Extreme Heat-related Hazards

5.3.2.3 Incorporate standards for climate-resilient development into the City's zoning and project approval processes for new development or significant rehabilitation.

Source: 2025 Comprehensive Plan Update

Add design guidelines for climate resilience to neighborhood-based design guidelines.

- Action Type: Planning, Pre-Disaster
- Priority Score: 15/High Priority
- Lead: Planning Department
- Supporting: Department of Inspectional Services
- Time Frame: Short Term/within 1 Year
- Financing Options: City General Appropriations Budget (Planning Department Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Improved public health, safety, and welfare/Improved resilience
- Vulnerable Area: Public Health, Safety, and Welfare/Natural Resources/Resilience/Localized Areas Subject to Flooding
- Hazards Addressed: All Natural Hazards

5.3.2.4 Engage vulnerable communities and environmental justice populations to preserve and restore open spaces and natural habitats from climate impacts.

Source: 2025 Comprehensive Plan Update

- Adopt a native plant policy for parks and public open spaces. This policy might include no or limited mow zones, naturalized median areas, and natural area demonstration sites. Integrate policy into City's engineering design standards.
 - Update development standards to encourage use of native species and green infrastructure components. Integrate recommendations from the City's City Wide Urban Green Infrastructure Masterplan and Implementation Roadmap.
 - Provide training and necessary equipment to staff in the Department of Public Infrastructure Greenspace Division to be knowledgeable about planting and caring for native plants and naturalized landscape zones. Ensure proper maintenance practices are in City's Asset Management System.
 - Conduct an urban forest and tree canopy master plan to support continued and sustainable growth, expansion and maintenance of the City's urban forest. Fund the maintenance and ensure proper staffing for sustainable management.
 - Develop a climate-vulnerable population assessment.
 - Consider implementing a "Cultural Liaisons" program to identify leaders from New Bedford's communities to partner on climate change communications.
 - Create a Citywide Cooling Plan to combat heat island impacts, with a particular focus on vulnerable communities and environmental justice populations.
 - Support and expand Resilience Hubs throughout the City.
- Action Type: Planning, Pre-Disaster
 - Priority Score: 14/High Priority
 - Lead: Planning Department
 - Supporting: Department of Public Infrastructure/Department of Facilities and Fleet Management/Parks, Recreation and Beaches Department
 - Time Frame: Medium Term
 - Financing Options: City General Appropriations Budget (Planning Department Budget), FEMA BRIC/FMA/HMGP grants

- Cost Estimate: Significant
- Benefit: Protection of natural resources/Improved resilience
- Vulnerable Area: Natural Resources
- Hazards Addressed: Invasive Species-Related Hazards, Extreme Heat-related Hazards

5.3.3. New Bedford Regional Airport Actions

Medium Priority Actions

5.3.3.1 Standard Operating Procedure Snow Removal Support

Source: New Bedford Regional Airport Interview

Develop a Standard Operating Procedure/Snow Removal Policy threshold for assistance at the Regional Airport along Airport Road, Aviation Way, and various parking lots.

- Action Type: Planning, Pre-Disaster
- Priority Score: 10/Medium Priority
- Lead: New Bedford Regional Airport
- Supporting: Purchasing Department
- Time Frame: Short Term/1 Year
- Financing Options: City General Appropriations Budget (New Bedford Regional Airport Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Continuity of operations/Improved public health, safety, and welfare
- Vulnerable Area: Emergency Response/Transportation Network
- Hazards Addressed: Major Airplane Crash-related Hazards/Winter-related Hazards

5.3.3.2 Construct new signalized intersection at Route 140 and Mt. Pleasant Street with a new access roadway that connects Mt. Pleasant Street at Route 140 to Aviation Way and Downey Street.

Source: Department of Public Infrastructure

The New Bedford Regional Airport is located adjacent to Route 140; however, no direct access from the highway exists. Those wishing to access the airport need to traverse through the City streets to access the property making it challenging for those not familiar with the area. In addition, without direct access from the highway, the airport is isolated from emergency vehicle access from the highway. Also, significant growth and investment at the airport is anticipated, including the construction of a new airport terminal and tower. This roadway project will provide the infrastructure needed for direct access from Route 140 to support access to the new tower, allow direct access for emergency first responders from the highway and those wishing to utilize the airport.

- Action Type: Planning, Pre-Disaster
- Priority Score: 3/Medium Priority
- Lead: New Bedford Regional Airport
- Supporting: Planning Department/Department of Public Infrastructure/MassDOT
- Time Frame: Long Term/4 – 5 Years
- Financing Options: City General Appropriations Budget (New Bedford Regional Airport Budget), FEMA BRIC/FMA/HMGP grants, TIP/MassDOT funding

- Cost Estimate: Significant
- Benefit: Continuity of operations/Improved emergency response and public access
- Vulnerable Area: Emergency Response/Transportation Network
- Hazards Addressed: Major Airplane Crash-related Hazards/Infrastructure Failure-related Hazards

5.3.4. Eversource Actions

Medium Priority Actions

5.3.4.1 Develop publicly available information/communications regarding power outages, work orders/repairs, and projects about power outages.

Source: Eversource Interview

Collaboration of City/Eversource to facilitate transparency of information/operations in advance of sustained power outages.

- Work with the City to develop electricity-provider content regarding the presence of two service areas intersecting New Bedford, and work order/repair limitations on equipment.
- Work with the City to develop improved communication protocols regarding ongoing/upcoming improvement projects, schedules, and locations.
- Action Type: Planning, Pre-Disaster
- Priority Score: 10/Medium Priority
- Lead: Eversource
- Supporting: Emergency Management Department/Department of Public Infrastructure/Mayor's Office/Public Information Office
- Time Frame: Short Term/1 Year
- Financing Options: Eversource Budget
- Cost Estimate: Staff/Personnel Time
- Benefit: Increased awareness of service areas/services
- Vulnerable Area: Emergency Response/Municipal Communications
- Hazards Addressed: All Hazards

5.3.5. Health Department Actions

Medium Priority Actions

5.3.5.1 Advocate for public health initiatives/resources to protect the health, safety and welfare of all residents.

Source: New Bedford Community Health/Southcoast Health Interview/NB Resilient – New Bedford's Plan for Community Climate Action + Resilience, 2020

In advance of a public health crisis, the City proposes to do the following:

- Have Public Health Nurse/Contact Tracer complete Field Epidemiology course.
- Develop/Launch health communications and outreach plan related to vaccine-preventable disease, communicable disease prevention, general health communication.
- Partner with local healthcare providers to support childhood vaccination efforts/increase focus on supporting families newly arriving to the U.S.
- Support efforts to promote tuberculosis testing among at-risk populations.

- Complete referrals to Tuberculosis clinics amongst residents.
 - Facilitate/support procurement of adequate vaccine supply to meet community demands.
 - Increase administration of standard and high-dose influenza vaccines targeting vulnerable populations.
 - Procure/distribute health promotion items (insect repellent spray/wipes, Tick Keys).
 - Secure staff to support public health planning and response (Contact Tracers, Community Health Workers, Public Health Nurses, Sanitarians, Administrative Support).
 - Continue periodic health meetings in advance of the next public health crisis.
 - Identify funding mechanisms to replenish public health supplies.
 - Support/Advocate for accelerating improvements to the local and regional public health system to address disparities in the delivery of public health services.
 - Support resources for non-English speakers.
- Action Type: Planning, Pre-Disaster
 - Priority Score: 10/Medium Priority
 - Lead: Health Department
 - Supporting: Supporting Area Health Care Organizations
 - Time Frame: Short Term/1 Year
 - Financing Options: City General Appropriations Budget (Health Department Budget), FEMA BRIC/FMA/HMGP grants
 - Cost Estimate: Moderate
 - Benefit: Improved public health and medical response
 - Vulnerable Area: Public Health, Safety, and Welfare
 - Hazards Addressed: Infectious Disease-related Hazards

5.3.6. Emergency Management Department Actions

High Priority Actions

5.3.6.1 Critical Facilities/Vulnerable Populations Data Updates

Source: Emergency Management Department

The City proposes to assemble a committee of applicable municipal departments to update all critical facility and vulnerable population GIS data on an annual basis.

- Action Type: Planning, Pre-Disaster
- Priority Score: 15/High Priority
- Lead: Emergency Management Department
- Supporting: All City Departments
- Time Frame: Short Term/1 Year
- Financing Options: City General Appropriations Budget (Emergency Management Department Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Property protection/Public health, safety, and welfare/Accelerated recovery
- Vulnerable Area: Critical Facilities/Vulnerable Populations Data
- Hazards Addressed: All Hazards

Medium Priority Actions

5.3.6.2 Conduct a site feasibility study for an official Emergency Operations Center within a City building and outfit the space for meetings and trainings.

Source: Emergency Management Department

- Action Type: Planning, Pre-Disaster
- Priority Score: 10/Medium Priority
- Lead: Emergency Management Department
- Supporting: Facilities and Fleet Management Department/Mayor's Office
- Time Frame: Medium Term/2-3 Years
- Financing Options: City General Appropriations Budget (Emergency Management Department Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Continuity of emergency services
- Vulnerable Area: Emergency Response/Resilience/Public Health, Safety and Welfare
- Hazards Addressed: All Hazards

5.3.6.3 Expand the Comprehensive Emergency Management Plan with Hazard-Specific and Functional Annexes (Appendices).

Source: 2025 Comprehensive Emergency Management Plan Update

Additional hazard-specific and functional annexes to be developed include:

Hazard-Specific Annexes:

- Severe Weather Annex (e.g., tornadoes, lightning, rain, extreme heat)
- Winter Weather Annex
- Flood Annex
- Cyber Security Annex
- Pandemic Response Annex
- Drought Response Annex

Functional Annexes:

- Communications Plans
 - Templates
 - Recovery Plan
 - Continuity of Operations Plan (COOP)
 - Transportation Annex
 - Medical Services Annex
 - Mass Care/Shelter
 - Vulnerable Population Evacuation Transportation Operations Annex
- Action Type: Planning, Pre-Disaster
 - Priority Score: 9/Medium Priority
 - Lead: Emergency Management Department
 - Supporting: All City Departments
 - Time Frame: Long Term/4-5 Years

- Financing Options: City General Appropriations Budget (Emergency Management Department Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Improved resilience/Continuity of government/Accelerated recovery
- Vulnerable Area: Emergency Response
- Hazards Addressed: Infrastructure Failure-related Hazards -Emergency Services Hazards, All Hazards

5.3.6.4 Identify/Consolidate/Digitize vital records maintenance/storage.

Source: 2025 Comprehensive Emergency Management Plan Update

Many City departments maintain various vital records. The City will develop initial/update annually the inventory of vital records and consolidate storage locations outside of all potential hazard areas.

- Action Type: Planning, Pre-Disaster
- Priority Score: 6/Medium Priority
- Lead: Emergency Management Department/Planning Department/Information Technology Department
- Supporting: All City Departments
- Time Frame: Short Term/1 Year
- Financing Options: City General Appropriations Budget (Emergency Management Department/Planning Department/Information Technology Department Budgets), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Improved Resilience/Continuity of Government
- Vulnerable Area: Municipally owned Infrastructure
- Hazards Addressed: Information Technology-related Hazards

5.3.6.5 Enhance the City's emergency response capacity/capability.

Source: NB Resilient – New Bedford's Plan for Community Climate Action + Resilience, 2020/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018

The City will work across municipal departments and community stakeholders to enhance emergency capacity/capability.

- Identify cooling stations throughout the City/Install air conditioning in schools (for health benefits and to use schools as cooling centers)
- Increase communications capabilities (expand/educate re-reverse 911, multi-lingual programs)
- Enhance the evacuation and sheltering plan (including the implementation of neighborhood resilience hubs throughout the City, evacuation routes, signage, and education around plans)
- Action Type: Planning, Pre-Disaster
- Priority Score: 6/Medium Priority
- Lead: Emergency Management Department

- Supporting: Community Services Department, American Red Cross, School District/St. Luke's Hospital/Mayor's Office/Health Department
- Time Frame: Medium Term/2-3 Years
- Financing Options: City General Appropriations Budget (Emergency Management Department Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Moderate
- Benefit: Improved public health and medical response
- Vulnerable Area: Emergency Response
- Hazards Addressed: Infrastructure Failure-related Hazards, All Hazards

5.3.6.6 Upgrades to Andrea McCoy Recreation Center (Shelter)

Source: Emergency Management Department

The City proposes to address the needs of the Andrea McCoy Recreation Center to become a City shelter before/during/following a hazard events. Needs include:

- Emergency Generator Power
- HVAC upgrades
- Cell phone charging stations
- Restrooms with showering facilities
- Food service capabilities
- Pet-friendly accommodations
- Action Type: Planning, Pre-Disaster
- Priority Score: 6/Medium Priority
- Lead: Department of Facilities and Fleet Management/Parks, Recreation and Beaches Department
- Supporting: Emergency Management Department
- Time Frame: Medium/2-3 Years
- Financing Options: City General Appropriations Budget (Emergency Management Department budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Improved public health, safety, and welfare
- Vulnerable Area: Emergency Response
- Hazards Addressed: All Hazards

5.3.6.7 Debris Management Plan

Source: 2016 HMP/Anthony Novelli Interview

The City proposes to develop a Debris Management and Monitoring Plan. The plan will address the collection, monitoring and disposal of debris after a storm event. Development of such a plan will enhance the City's efforts to secure reimbursement under FEMA's Public Assistance Program in a declared disaster for debris removal operations.

Considerations should include:

- Regionalization with Dartmouth.

- Establish staging locations and a plan for separating materials and disposal locations (in advance of an event/disaster).
- Brush and organic debris should be separated from construction and demolition waste and from recyclables for optimal material recovery. If not separated properly, brush and recyclables become contaminated and must be treated as waste which becomes more expensive.
- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2025: 4/Medium Priority
- Lead: Greater NB Regional Refuse Management District/Supporting: Department of Facilities and Fleet Management/Department of Public Infrastructure/Emergency Management Department
- Time Frame: Medium/2-3 Years
- Financing Options: City General Appropriations Budget (Emergency Management Department Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Accelerated recovery/Continuity of services
- Vulnerable Area: Debris Management
- Hazards Addressed: All Hazards

5.3.7. Police Department Actions

Medium Priority Actions

5.3.7.1 Ensure redundancy of critical infrastructure (EMS/Police/Fire), community facilities and utilities.

Source: NB Resilient – New Bedford’s Plan for Community Climate Action + Resilience, 2020/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018

- Collaborate with utility providers to increase the type and number of community installations of renewable energy resources.
- Localize power and increase redundancy to minimize power loss.
- Action Type: Planning, Pre-Disaster
- Priority Score: 6/Medium Priority
- Lead: Police/Fire/EMS Departments
- Supporting: Emergency Management Department/Department of Facilities and Fleet Management/Department of Public Infrastructure/Eversource
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Budget (Police/Fire/EMS Departments Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Improved public health, safety, and welfare/Continuity of services/Improved resilience
- Vulnerable Area: Resilience/Natural Resources
- Hazards Addressed: All Hazards

5.3.8. Fire Department Actions

Medium Priority Actions

5.3.8.1 Develop and implement a public education campaign regarding the New Bedford Community Connect that serves as the Special Needs Registry.

Source: 2025 MHMP/Emergency Management Department

- Action Type: Planning, Pre-Disaster
- Priority Score: 8/Medium Priority
- Lead: Fire Department
- Supporting: Community Services Department/Information Technology Department/Emergency Medical Services Department/Police Department/Mayor's Office/Public Information Office
- Time Frame: Short/within 1 Year
- Financing Options: City General Appropriations Budget (Fire Department Budget)
- Cost Estimate: Staff/Personnel Time
- Benefit: Informed residents/businesses/Improved public health, safety, and welfare
- Vulnerable Area: Municipal communications/Emergency response/Public Health, Safety, and Welfare
- Hazards Addressed: All Hazards

5.3.9. New Bedford Port Authority Actions

Medium Priority Actions

5.3.9.1 Dredge New Bedford Harbor

Source: 2016 HMP

The City is proposing to dredge all required areas remaining after the completion of Phase V of the Harbor Development Commission's dredging project. These projects will permanently open up new berths within the hurricane barrier for commercial and recreational vessels, which will allow these vessels to be protected during storm events.

As of this writing, Phase V dredging program has been completed, with 38 public and private sites dredged throughout the harbor. Future dredging activities will need funding.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2025: 11/Medium Priority
- Lead: New Bedford Port Authority
- Supporting: Department of Public Infrastructure
- Time Frame: Medium Term/2-3 Years
- Financing Options: MA Seaport Economic Council, Port Authority Funds, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Reduced storm impacts/Improved public health, safety, and welfare
- Vulnerable Area: Port Operations/Property Protection
- Hazards Addressed: Flood-related Hazards/Wind-related Hazards/Infrastructure Failure-related Hazards

5.3.9.2 Replacement of Mooring Anchors and Gear

Source: 2016 HMP

The City is proposing to replace all the remaining mooring anchors to a helix-style and replace all the gear to hazelett-style. Replacing these fixtures will make them more resistant to storms.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2025: 11/Medium Priority
- Lead: Port Authority
- Supporting: New Bedford Harbor Master/Resilience and Environmental Stewardship Department
- Time Frame: Medium Term/2-3 Years
- Financing Options: MA Seaport Economic Council, Port Authority Funding, Federal Boating Infrastructure Grant Program, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Reduced storm impacts/Improved public health, safety, and welfare
- Vulnerable Area: Port Operations/Property Protection
- Hazards Addressed: Flood-related Hazards/Wind-related Hazards/Infrastructure Failure-related Hazards

5.3.9.3 Ensure the implementation of resilience recommendations for municipally owned/managed piers within the Port identified from the 2021 Harbor Port Assessment (according to the January 2025 update completed by the New Bedford Port Authority and referenced in Section 4.2 Planning and Regulatory Capabilities/New Bedford Harbor Port Assessment Summary/updated January 2025).

Source: New Bedford Harbor Port Assessment Summary

- Action Type: Planning, Pre-Disaster
- Priority Score: 10/Medium Priority
- Lead: New Bedford Port Authority
- Supporting: Department of Public Infrastructure
- Time Frame: Long Term/4-5 Years
- Financing Options: MA Seaport Economic Council, Port Authority Funds, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Reduced storm impacts/Improved public health, safety, and welfare
- Vulnerable Area: Port Operations/Municipally owned Infrastructure
- Hazards Addressed: Flood-related Hazards/Wind-related Hazards/Infrastructure Failure-related Hazards

5.3.9.4 Repair, Bolster and Expand Commercial Fishing Piers

Source: 2016 HMP

The City is proposing to repair, bolster and expand the commercial fishing piers in the harbor. These improvements to the commercial fishing piers will allow the piers to secure larger fishing vessels during storm events. Protection of fishing vessels during storm events will reduce the impact on the fishing industry.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2024: 10/Medium Priority
- Lead: New Bedford Port Authority
- Supporting: Department of Public Infrastructure
- Time Frame: Medium Term/2-3 Years
- Financing Options: MA Seaport Economic Council, Port Authority Funds, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Reduced storm impacts/Improved public health, safety, and welfare
- Vulnerable Area: Port Operations
- Hazards Addressed: Flood-related Hazards/Wind-related Hazards/Infrastructure Failure-related Hazards

5.3.9.5 Installation of a Wave Attenuator at Pope's Island Marina

Source: 2016 HMP

The City is proposing to install a wave attenuator on the southwestern side of Pope's Island Marina. The wave attenuator will help to protect the structures and vessels in the marina during significant storm events.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2025: 8/Medium Priority
- Lead: New Bedford Port Authority
- Supporting: Department of Public Infrastructure/Resilience and Environmental Stewardship Department
- Time Frame: Medium Term/2-3 Years
- Financing Options: MA Seaport Economic Council, Port Authority Funds, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Reduced storm impacts/Improved public health, safety, and welfare/Property protection
- Vulnerable Area: Port Operations
- Hazards Addressed: Flood-related Hazards/Wind-related Hazards/ACOE Hurricane Barrier Failure-related Hazards/Infrastructure Failure-related Hazards

5.3.9.6 Installation of a Storm Mooring System north of Pope's Island

Source: 2016 HMP

The Environmental Protection Agency is overseeing the dredging of contaminated soils in New Bedford Harbor. These removed soils are buried in a CAD cell field north of Pope's Island. The City is proposing to install a mooring system in the CAD cell field to protect this area during significant storm events.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2025: 6/Medium Priority
- Lead: New Bedford Port Authority
- Supporting: Department of Public Infrastructure/Harbormaster

- Time Frame: Long Term/4-5 Years
- Financing Options: MA Seaport Economic Council, Port Authority Funds, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Reduced storm impacts/Improved public health, safety, and welfare/Property protection
- Vulnerable Area: Port Operations/Property Protection
- Hazards Addressed: Flood-related Hazards/Wind-related Hazards/Infrastructure Failure-related Hazards

5.3.9.7 Expansion of Pope's Island Marina

Source: 2016 HMP

The City is proposing to expand Pope's Island Marina to create more berths for recreational vessels. Expansion of the marina will allow these vessels to be protected during storm events. Phase 1 of this project will occur during the effective period of the Local Multi-Hazard Mitigation Plan.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: Medium Priority/2025: 5/Medium Priority
- Lead: New Bedford Port Authority
- Supporting: Department of Public Infrastructure
- Time Frame: Long Term/4-5 Years
- Financing Options: MA Seaport Economic Council, Port Authority funds, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Reduced storm impacts/Improved public health, safety, and welfare
- Vulnerable Area: Port Operations/Property Protection
- Hazards Addressed: Flood-related Hazards/Wind-related Hazards

5.3.10. Department of Public Infrastructure Actions

High Priority Actions

5.3.10.1 Buttonwood Park Pond and Dam Improvements

Source: 2016 HMP/2025 Update, Long Term CSO and Integrated Capital Improvements Plan

The City will ensure the completion of recommended improvements identified in the most recent Phase I/II Inspection Reports/Follow Up Inspection Report, the development of an O & M Plan, and annually update the EAP for Buttonwood Park Dam (according to the most recent Phase I Inspection Report and referenced in Section 3.5.1 Flood-Related Hazards/Dams).

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: Medium Priority/2025: 13/High Priority
- Lead: Department of Public Infrastructure
- Supporting: MA DCR ODS
- Time Frame: Long Term/4-5 Years

- Financing Options: City General Appropriations Budget (Department of Public Infrastructure Budget), State Dam Removal & Repair Grant Program, FEMA BRIC/FMA/HMGP grants, High Hazard Potential Dam Program funds
- Cost Estimate: Significant
- Benefit: Property protection/Improved public health, safety, and welfare/Reduced potential for contamination
- Vulnerable Area: Dams/Property Protection/Public Health, Safety and Welfare
- Hazards Addressed: Flood-related Hazards/Dam Failure-related Hazards

5.3.10.2 New Bedford Reservoir Dam

Source: 2016 HMP/2025 Update, Long Term CSO and Integrated Capital Improvements Plan

The City will ensure the completion of the recommended improvements identified in the most recent Phase I Inspection Report, annually update the EAP, and develop an O&M Manual for the New Bedford Reservoir Dam, and coordinate with the Town of Acushnet (according to the most recent Phase I Inspection Report and referenced in Section 3.5.1 Flood-Related Hazards/Dams).

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: Medium Priority/2025: 13/High Priority
- Lead: Department of Public Infrastructure
- Supporting: MA DCR ODS
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Budget (Department of Public Infrastructure Budget), State Dam Removal & Repair Grant Program, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Property protection/Improved public health, safety, and welfare/Reduced potential for contamination
- Vulnerable Area: Dams/Property Protection/Public Health, Safety and Welfare
- Hazards Addressed: Flood-related Hazards/Dam Failure-related Hazards

5.3.10.3 Turner's Pond Dam Improvements

Source: 2016 HMP/2025MHMP Update, Long Term CSO and Integrated Capital Improvements Plan

The City will ensure the completion of the recommended improvements identified in the most recent Phase I Inspection Report, annually update the EAP, and update/formalize an O&M Manual for the Turner's Pond Dam and coordinate with the Town of Dartmouth (according to the most recent Phase I Inspection Report and referenced in Section 3.5.1 Flood-Related Hazards/Dams).

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: Medium Priority/2025: 13/High Priority
- Lead: Department of Public Infrastructure
- Supporting: MA DCR ODS
- Time Frame: Long Term/4-5 Years

- Financing Options: City General Appropriations Budget (Department of Public Infrastructure budget), FEMA BRIC/FMA/HMGP grants, State Dam Removal & Repair Grant Program
- Cost Estimate: Significant
- Vulnerable Area: Dams/Property Protection/Public Health, Safety and Welfare
- Hazards Addressed: Flood-related Hazards/Dam Failure-related Hazards

5.3.10.4 High Hill Reservoir Dam

Source: 2025 MHMP, Long Term CSO and Integrated Capital Improvements Plan

The City will ensure the completion of the recommended improvements identified in the most recent Phase I Inspection Report, develop an EAP and O&M Manual, and coordinate with the Town of Dartmouth (according to the most recent Phase I Inspection Report and referenced in Section 3.5.1 Flood-Related Hazards/Dams).

- Action Type: Planning, Pre-Disaster
- Priority Score: 13/High Priority
- Lead: Department of Public Infrastructure
- Supporting: MA DCR ODS
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Budget (Department of Public Infrastructure Budget), FEMA BRIC/FMA/HMGP grants, State Dam Removal & Repair Grant Program
- Cost Estimate: Significant
- Benefit: Property protection/Improved public health, safety, and welfare/Reduced potential for contamination
- Vulnerable Area: Dams/Property Protection/Public Health, Safety and Welfare
- Hazards Addressed: Flood-related Hazards/Dam Failure-related Hazards

5.3.10.5 Implement the preferred alternative for the New Bedford–Fairhaven ACOE Hurricane Barrier Structure (according to the January 2025 update completed by the Department of Public Infrastructure and referenced in Section 4.3 Administrative and Technical Capabilities/Long Term CSO Control and Integrated Capital Improvement Plan, January 2017/updated January 2025).

Source: 2016 HMP/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018, Long Term CSO and Integrated Capital Improvements Plan

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2025: 12/High Priority
- Lead: Department of Public Infrastructure
- Supporting: Emergency Management Department, U.S. Army Corps of Engineers, MA DCR ODS, Towns of Dartmouth/Acushnet/Fairhaven
- Time Frame: Medium Term/2 – 3 Years
- Financing Options: City General Appropriations Budget (Department of Public Infrastructure Budget), FEMA BRIC/FMA/HMGP grants, DPI Water/Wastewater Enterprise Fund, MA Dam and Seawall Repair/Replacement Program grants
- Cost Estimate: Significant

- Benefit: Flood protection, Compliance with U.S. Army Corps of Engineers regulations, Improved public health, safety, and welfare
- Vulnerable Area: Municipally owned Infrastructure/Property Protection/Public Health, Safety and Welfare
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-Wastewater/Stormwater Systems/U.S. ACOE Hurricane Barrier Failure-related Hazards

5.3.10.6 Complete improvements to the High Service Area to build resiliency in the water distribution system.

Source: Department of Public Infrastructure

The area currently serviced by the Durfee Street water pumping station and Hathaway Road storage tank have been found to lack required fire flow and capacity. Water distribution system modeling and field pressure testing with pump tests have confirmed the lack of flow during critical fire emergencies in this area. Under this project, the following improvements would be made to build resiliency in the water distribution system to mitigate the potential impacts that could occur in the event of a fire emergency:

- Replace the Hathaway Road storage tank with a new one million gallon elevated storage tank.
- Replace the Durfee Street water pumping station with a new pumping station containing four pumps with a capacity of 1,600 gpm with variable frequency drives.
- Construct approximately 23,100 feet of new 12-inch and 16-inch water mains sized to adequately convey water in the event of a fire to the distribution system. In some instances, the piping will expand the high service area to areas of the system with inadequate system pressure and in others, it will reduce the existing service area in locations of excessive pressure.
- Replace watermains that cross over three bridges that serve the High Service Area including Hathaway Road, Shawmut Avenue, and Mt. Pleasant Street.
- Action Type: Planning, Pre-Disaster
- Priority Score: 12/Medium Priority
- Lead: Department of Public Infrastructure
- Supporting: Fire Department
- Time Frame: Medium Term/2-3 Years
- Financing Options: City General Highway Funds, DPI Water Enterprise Fund, EPA Water Infrastructure Finance and Innovation Act (WIFIA), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Continuity of services/Reduced potential for contamination/Improved public health, safety, and welfare
- Vulnerable Area: Municipally owned Infrastructure/Public Health, Safety and Welfare/Property Protection
- Hazards Addressed: Brushfire/Wildfire-related Hazards/Urban Fire-related Hazards

5.3.10.7 Safeguard public drinking water supplies.

Source: Assawompset Ponds Complex (APC) and Nemasket Watershed Management and Climate Action Plan, August 2022/NB Resilient – New Bedford’s Plan for Community Climate

Action + Resilience, 2020/City of New Bedford Community Resilience Building Workshop:
Summary of Findings, June 2018

The following actions are proposed to safeguard public drinking water supplies:

- Anticipate and guard against drought, especially as climate change causes more frequent and extended drought periods in summer and fall.
 - o Adopt uniform Water Resource Protection Overlay Districts and Regulations that protect groundwater recharge areas to the ponds, as well as local water supply wells elsewhere in the watershed.
 - o Update and increase transparency about thresholds and implementation measures for enforcing water use restrictions during drought.
 - o Use a multi-platform approach to notify the public of restricted water use periods and conservation measures, including webpage, social media, and roadway signage boards.
 - o Regularly evaluate and update drought protocols and back-up supply plans.
- Take steps to improve knowledge and management capabilities to enhance water supply management.
- Improve watershed management strategies through continued maintenance within the approximately 3,000 acres of watershed to remove debris, downed trees and understory maintenance activities.
- Continue to purchase properties within the watershed to reduce development.
- Keep contaminants out of the water supply. Improve security around and within the watershed including fence maintenance, security system improvements and monitoring.
- Continue to communicate with the stakeholder communities of the Assawompset Pond Complex and regional water suppliers to protect raw water supply volumes and balance the interests of wildlife, recreation and property owners in the vicinity of the Assawompset Dam.
- Increase watershed ranger presence.
- Maintain fire roads and fire breaks in watershed.
- Action Type: Planning, Pre-Disaster
- Priority Score: 12/High Priority
- Lead: Department of Public Infrastructure/Resilience and Environmental Stewardship
Department/Conservation Commission
- Supporting: MassDEP
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Budget (Department of Public Infrastructure/Resilience and Environmental Stewardship Departments Budgets), FEMA BRIC/FMA/HMGP grants, MA DCR ODS, DPI Water Enterprise funding
- Cost Estimate: Moderate
- Benefit: Protection of natural resources/Improved public health, safety and welfare
- Vulnerable Area: Natural Resources/Municipally owned Infrastructure/Public Health, Safety and Welfare
- Hazards Addressed: Flood-related Hazards/Drought-related Hazards/Changes in Groundwater-related Hazards

5.3.10.8 Technology infrastructure upgrades to build resiliency in data protection, cyber security and monitoring of existing systems

Source: Department of Public Infrastructure

In 2019, the City was subject to a cyber security breach in the form of a ransomware attack. This caused significant disruption to city operations and resulted in loss of historical data and electronic files. The following projects are geared towards building resiliency into the existing electronic data management and leveraging technology to better manage systems to abate emergencies rather than react to them:

GPS Locating and Spatial Orientation Critical Assets

- Utilize GPS technology and newly acquired aerial photography to spatially orient system assets to actual location(s) so that in emergency situations emergency management staff and maintenance personnel have access to accurate mapping in the field and can locate assets either buried or in inundation areas.
- Ensure that field crews have access to GPS technology and electronic data access tools such as tablets and laptop computers for use during emergencies.

Document Management System

- Implement a document management system (DMS) to capture electronic files, emails and historical records into a single location. Implementation of the system will allow more streamlined collaboration between city departments, enhance security, and streamline compliance.
- Implement IT infrastructure upgrades to support system implementation including servers and network connectivity needs.

DPI Facility Network Infrastructure Upgrades

- No redundancy exists and equipment is end of life including switches, routers and servers. Replace the DPI network at 1105 Shawmut Avenue to include new wiring, servers and switches.
- Construct on-site servers for data access for ever increasing data storage needs such as asset management data and CCTV data.
- Provide direct network connections to all remote DPI facilities such as Brooklawn Garage, the Quittacas Water Treatment Plant, the Hazlewood Park garage and Central Garage.

Network Wide Sensors and Camera Installation

- Implement a coordinated Citywide network of cameras and sensors along major roadways, shared use paths, parks and other public spaces to facilitate tracking the movement of multi-modal users to optimize usage especially during emergency events such as flooding or snow emergencies. This system will capture data to develop improvements, and when needed, be used to abate emergencies by remotely notifying emergency management personnel so that they can respond in a timely manner. This system would be connected to existing systems in place by the Police Department and Department of Public Infrastructure.

- Implement infrastructure upgrades such as fiber networks, piping, handholes, wiring, remote access enhancements, server upgrades, and other network infrastructure to support project implementation.

Sewer System Remote Monitoring

- Install systemwide remote monitoring sensors in the stormwater and wastewater collection system to enable remote monitoring of systems. These would be installed along critical pipelines, in areas of known wet weather flooding, and along problem pipelines subject to maintenance issues that result in flooding if unattended.
- Update and expand the existing wastewater collection system model to include additional pipes in known problem areas and allow real time comparison of data from remote sensors to model data. This will build on future real time system controls to optimize flow distribution and to proactively address system emergencies and flooding rather than reactively manage emergency situations.
- Develop a system wide extreme rainfall flooding model of the City. Integrate with the existing SWMM model and digital twin to support pro-active evacuations and emergency response preparedness.
- Link critical assets such as the pumping stations and wastewater treatment plant to the system to allow full SCADA integration into existing systems and the digital twin model.
- Implement a public outreach campaign to promote water conservation efforts.

Water Distribution System Remote Monitoring

- Implement system wide remote monitoring equipment to real time monitor the water distribution and transmission system. This would include pressure sensors and monitors at key locations throughout the system.
- Upgrade and replace system hydrants and valves with newer modern equipment that will be capable of accepting the pressure sensors and monitoring equipment.
- Link the data capture to the City's existing digital twin and integrate the water model into the digital twin system.
- Develop a water loss and break monitoring program to proactively abate watermain breaks along critical transmission main systems to allow for the continued and safe operations of the water distribution system.

Street Light Remote Monitoring

- Implement system wide remote monitoring of city street lights to promote the proactive maintenance of existing street light systems.
 - Action Type: Planning, Pre-Disaster
 - Priority Score: 12/High Priority
 - Lead: Department of Public Infrastructure
 - Supporting: Information Technology/Police/Fire/Emergency Management Departments
 - Time Frame: Medium Term/2-3 Years
 - Financing Options: City General Appropriations Budget (Department of Public Infrastructure Budget), DPI Wastewater and Water Enterprise Fund, Massachusetts State Revolving Fund (SRF) Loan, FEMA BRIC/FMA/HMGP grants
 - Cost Estimate: Significant

- Benefit: Continuity of services/Reduced potential for contamination/Improved public health, safety, and welfare
- Vulnerable Area: Municipally owned Infrastructure/Municipal Communications/Public Health, Safety and Welfare
- Hazards Addressed: Flood-related Hazards/Cyber Incident-related Hazards/Infrastructure Failure-related Hazards – Water/Wastewater/Stormwater Systems

Medium Priority Actions

5.3.10.9 Complete Sea Wall, Pier and Beach Stabilization Improvements

Source: Department of Public Infrastructure

Erosion of existing beaches and destabilization of sea walls and piers due to more extreme storm events is a concern that needs to be addressed. Several key locations require upgrades to protect major roadways and critical infrastructure. The following summarizes the existing projects that are needed:

West Beach Nourishment and Sea Wall Stabilization

- Install approximately 31,150 cubic yards of sand to restabilize the beach between Hazelwood Park and Coral Street.
- Reconstruct/reinforce the existing West Rodney French Boulevard Sea Wall between Hazelwood Park and Coral Street to protect the Main Intercepting Sewer.
- Construct ten (10) “T” groins along West Rodney French Boulevard between Hazelwood Park and Coral Street to protect the existing beach from erosion during storm events.
- Reconstruct existing outfalls between Lucas Street and Bellevue Street to extend beyond the new “T” groin sections. Install tide gates.
- Installation of a living sea wall to promote habitat regeneration within Clarks Cove.
- Conduct an eel grass survey and plant additional eel grass at select locations based on survey results.
- Remove existing armor stone groins at Woodlawn Street and select portions of existing armor stone groins at Valentine Street, Hazelwood Park, and Oaklawn Street.
- Reconstruct the West Rodney French Boat Ramp and sea wall at the location of the former New Bedford Primary Plant.

East Rodney French Boulevard Beach Nourishment

- Install approximately 1,900 cubic yards of sand to renourish beach along East Rodney French Boulevard that has been lost due to erosion. This will ensure the continued protection of the existing sea wall from Monkey’s Island to Tabor Park and habitat preservation of Piping Plovers that use the area to nest.
- Stabilize the entrance to Tabor Park and the City’s wastewater treatment plant.

Monkey’s Island (East Beach) Pier Reconstruction

- Reconstruct Monkey’s Island Pier which is currently in a state of disrepair with failure eminent. The improvements would include complete replacement of the exiting pier walls and surface. The pier would be upgraded to include more resilient nature-based

solutions to address overtopping during major storm events to protect it from further erosion with amenities for public use.

- Address access to the beach and stop log installation to prevent inland flooding.
- Reconstruct the armor stone groin.
- Install portable seawall/jersey barrier installations in old seawall openings adjacent to O'Toole Monument/Monkey's Island (There are four openings from Ricketson Street to Nina).

Irish Monument Sea Wall Reconstruction

- Repoint existing sea wall.
- Replace missing granite blocks that have become dislodged.
- Install tide gates on existing drain pipes that protrude through the wall.
- Replace the existing concrete cap that is deteriorated.
- Replace existing fencing along the top of the sea wall that is broken or missing sections.

Tabor Park Pier Reconstruction

- Repoint existing pier walls to replace missing mortar.
- Seal and caulk existing concrete walking surface.
- Replace dislodged granite blocks that have become dislodged.
- Replace existing fencing along the top of the pier that is broken or missing sections.

Tabor Park Seawall Improvements

- Stabilize seawall at entrance to Tabor Park at Fort Rodman and the City's wastewater Treatment Plant. Recent storm events have started to cause erosion of the bank and seawall requiring reinforcement and stabilization.
- Stabilize seawall at the 'great lawn' area. This is the location of the former City of New Bedford treatment plant and current plant constructed in 1996. Armoring of seawall crest for erosion protection which may include, but not be limited to:
- Replace/Backfill leeward side of boulder seawall with smaller aggregate gravel to repair storm wave energy erosion.
- Top dress course material with sandy loam and plant native coastal perennial plants to stabilize material and provide wildlife habitat.
- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2025: 11/Medium Priority
- Lead: Department of Public Infrastructure
- Supporting: Resilience and Environmental Stewardship Department/U.S. Department of the Interior
- Time Frame: Medium Term/2-3 Years
- Financing Options: City General Highway Funds, DPI Wastewater Enterprise Fund, Dam and Seawall State Funding, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Continuity of services/Reduced potential for contamination/Improved public health, safety, and welfare
- Vulnerable Area: Municipally owned Infrastructure/Property Protection/Coastal Areas

- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-related Hazards-Wastewater Systems

5.3.10.10 Implement the preferred alternative identified for each CSO Group (according to the January 2025 update completed by the Department of Public Infrastructure and referenced in Section 4.3 Administrative and Technical Capabilities/Long Term CSO Control and Integrated Capital Improvement Plan, January 2017/updated January 2025).

Source: Long Term CSO and Integrated Capital Improvements Plan//Climate Change Vulnerability Assessment and Adaptation Planning Study for Water Quality Infrastructure in New Bedford, Fairhaven and Acushnet, June 30, 2014/City of New Bedford Green Infrastructure Master Strategy and Implementation Roadmap Report, June 2022/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018 (updated summary of projects developed in 2025)

- Action Type: Planning, Pre-Disaster
- Priority Score: 11/Medium Priority
- Lead: Department of Public Infrastructure
- Supporting: Resilience and Environmental Stewardship Department
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Budget (Department of Public Infrastructure Budget), FEMA BRIC/FMA/HMGP grants, DPI Wastewater Enterprise Fund, MA SRF Financial Assistance Program, EPA Water Infrastructure Finance and Innovation Act (WIFIA)
- Cost Estimate: Significant
- Benefit: Property protection/Improved public health, safety, and welfare/Reduced potential for contamination/CSO abatement/Opportunities for infrastructure renewal
- Vulnerable Area: Municipally owned Infrastructure
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-Wastewater/Stormwater Systems

5.3.10.11 Implement the preferred alternative identified for each Stormwater Collection System (according to the January 2025 update completed by the Department of Public Infrastructure and referenced in Section 4.3 Administrative and Technical Capabilities/Long Term CSO Control and Integrated Capital Improvement Plan, January 2017/updated January 2025).

Source: Long Term CSO and Integrated Capital Improvements Plan/State of the Coast: Future Climate-Driven Risks and Their Solutions on Massachusetts' South Coast/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018/City of New Bedford Open Space and Recreation Plan, 2021 – 2028

- Action Type: Planning, Pre-Disaster
- Priority Score: 11/Medium Priority
- Lead: Department of Public Infrastructure
- Supporting: MassDOT (for MassDOT Stormwater Connections), Resilience and Environmental Stewardship Department, New Bedford Housing Authority, Massachusetts Coastal Railroad (MassCoastal), Sassaquin Pond Betterment Association, South Coast Health, Department of Parks, Recreation and Beaches

- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Budget (Department of Public Infrastructure Budget), FEMA BRIC/FMA/HMGP grants, EPA Water Infrastructure Finance and Innovation Act (WIFIA)
- Cost Estimate: Significant
- Benefit: Improved water quality, Reduced flooding, Protection of Natural Resources
- Vulnerable Area: Municipally owned Infrastructure/Natural Resources
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-Wastewater/Stormwater Systems

5.3.10.12 Implement the preferred alternative identified for each Wet Weather Flooding Project (according to the January 2025 update completed by the Department of Public Infrastructure and referenced in Section 4.3 Administrative and Technical Capabilities/Long Term CSO Control and Integrated Capital Improvement Plan, January 2017/updated January 2025).

Source: Long Term CSO and Integrated Capital Improvements Plan

- Action Type: Planning, Pre-Disaster
- Priority Score: 11/Medium Priority
- Lead: Department of Public Infrastructure
- Supporting: Resilience and Environmental Stewardship Department
- Time Frame: Long Term/4-5 Years
- Financing Options: DPI Wastewater Enterprise Fund, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Property protection/Improved public health, safety, and welfare/Reduced potential for contamination
- Vulnerable Area: Municipally owned Infrastructure
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-Wastewater/Stormwater Systems

5.3.10.13 Implement the recommended wastewater collection system improvements (according to the January 2025 update completed by the Department of Public Infrastructure and referenced in Section 4.3 Administrative and Technical Capabilities/Long Term CSO Control and Integrated Capital Improvement Plan, January 2017/updated January 2025).

Source: Long Term CSO and Integrated Capital Improvements Plan

- Action Type: Planning, Pre-Disaster
- Priority Score: 11/Medium Priority
- Lead: Department of Public Infrastructure
- Supporting: Information Technology Department
- Time Frame: Medium Term/2-3 Years
- Financing Options: City General Highway Funds, DPI Wastewater Enterprise Fund, State SRF Loan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Continuity of services/Reduced potential for contamination/Improved public health, safety, and welfare

- Vulnerable Area: Municipally owned Infrastructure/Public Health, Safety and Welfare
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-Wastewater/Stormwater Systems

5.3.10.14 Resolve the flooding associated with the Padanaram Avenue/Rogers Street area resulting from inadequate stormwater drainage and ocean runup.

Source: Emergency Management Department

- Action Type: Planning, Pre-Disaster
- Priority Score: 10/Medium Priority
- Lead: Department of Public Infrastructure
- Supporting: Planning Department/Resilience and Environmental Stewardship Department/Town of Dartmouth
- Time Frame: Medium` Term/2-3 Years
- Financing Options: City General Highway Funds, DPI Wastewater Enterprise Fund, State SRF Loan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Property protection/Improved public health, safety, and welfare/Reduced potential for contamination
- Vulnerable Area: Localized Areas Subject to Flooding
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-Transportation Systems

5.3.10.15 Install New SCADA System at Sewer Pump Stations

Source: 2016 HMP/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018

The City will continue to expand the installation program of new SCADA systems within pumping stations to ensure remote monitoring of all stations in the event of a disaster. Eight stations out of the 29 existing pumping stations require new SCADA system to be implemented:

- Coggeshall Street
- Dottin Place
- Forbes Street
- Hanover Street
- Jones Street
- Joyce Street
- Potter Street
- Sassaquin Avenue

This improved system will also eliminate the potential for prolonged system failures that result in flooding.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2025: 10/Medium Priority
- Lead: Department of Public Infrastructure
- Supporting: Veolia Water USA
- Time Frame: Medium Term/2-3 Years

- Financing Options: City General Highway Funds, DPI Wastewater Enterprise Fund, State SRF Loan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Continuity of services/Reduced potential for contamination/Improved public health, safety, and welfare
- Vulnerable Area: Municipally owned Infrastructure
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure- Wastewater Systems

5.3.10.16 Promote/Enhance public outreach and engagement through the use of social media, interactive web site improvements and a City-wide 311 system.

Source: Department of Public Infrastructure

Communication is critical to ensure that the public is aware of the various activities that are undertaken within the community. In addition, it's critical for the public to be able to engage in and provide input on projects, known issues or emergencies that are occurring. This improved communication will lead to better public engagement, understanding of projects and issues faced by the community and allow for near real time reporting of maintenance related emergencies. The following summarizes the public outreach and engagement strategies that should be implemented to better serve the community, especially during emergency situations:

- Develop an updated DPI web page, Facebook account, and X account for engagement with the public. Include interactive mapping of project areas with up-to-date information on projects and locations of work.
- Fund a public engagement and outreach position that interacts directly with the Office of the Mayor on key topics.
- Fully integrate a modern 311 reporting system into DPI's existing systems for work order management and expand to full Citywide implementation.
- Develop a fully automated PowerBI dashboard system that connects with existing work order management systems for tracking real time work product. This includes such items as interactive mapping of various maintenance activities with linkable data for easy viewing or real time capture of CCTV video and linkage to assets.
- Action Type: Planning, Pre-Disaster
- Priority Score: 10/Medium Priority
- Lead: Department of Public Infrastructure
- Supporting: Office of the Mayor
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Budget (Department of Public Infrastructure Budget), DPI Water and Wastewater Enterprise Funding, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Moderate
- Benefit: Reduced heat-island effect, Improve public health, safety, and welfare/Improved communications
- Vulnerable Area: Public Health, Safety, and Welfare/Municipal Communications
- Hazards Addressed: Infrastructure Failure-related Hazards -Communications

5.3.10.17 Enhance the quality and appeal of New Bedford's streetscapes by building and maintaining a resilient and healthy urban forest.

The City is proposing to develop, fund, and implement street tree plantings on city streets through the following actions:

- Fund, on a yearly basis, the required number of staff and equipment to support the implementation of the City's Urban Forestry Management Plan and proper maintenance of the City's urban forest under the direction of the City's certified Arborist.
 - Fund, on a yearly basis, the required number of staff to maintain the network of ever-increasing best management practices (BMPs), high maintenance areas, and increase green space areas.
 - Acquire 200 – 400 new trees each year.
 - Investigate the feasibility of developing a tree farm on city-owned land to provide a supply of trees at a reduced cost for city parks and streets.
 - Establish a Street Tree Endowment to provide sustainable source of public/private funding for street trees.
 - Develop and fully fund an urban forestry program coordinated by the City's Arborist with support provided by existing non-profit support groups coordinated with the City's Urban Forestry Management Plan.
 - Create a tree ordinance to preserve historically significant trees.
 - Complete a citywide study to manage urban heat island effects or cooling plan. Consider integrating study as part of urban forest and tree canopy master plan.
 - Continue to expand and diversify tree canopy on city-owned properties, with a priority on equitable distribution across the city, environmental justice communities, areas with lower than average tree canopy, high impervious surfaces, or high urban heat effect, areas prone to flooding, and corridors around transit and retail/job destinations and neighborhood schools.
 - Accompany tree canopy expansion with education outreach and resources that communicate the benefits of increased tree canopy.
 - Explore the feasibility of becoming a Tree City USA.
 - Incentivize the protection of significant trees on private property, using the Washington DC Urban Forestry Division as a model.
 - Continue to offer incentives and guidance to preserve or plant trees on private land.
 - Promote the "adopt a tree" program.
- Action Type: Planning, Pre-Disaster
 - Priority Score: 9/Medium Priority
 - Lead: Department of Public Infrastructure
 - Supporting: Parks, Recreation and Beaches Department/Department of Facilities & Fleet Management/Planning Department
 - Time Frame: Long Term/4-5 Years
 - Financing Options: City General Appropriations Budget (Department of Public Infrastructure Budget), New Bedford Preservation Society Re-Leaf Program, Tree City USA Program, Greening Gateway Cities, FEMA BRIC/FMA/HMGP grants
 - Cost Estimate: Moderate
 - Benefit: Reduced heat-island effect, Improve public health, safety, and welfare
 - Vulnerable Area: Public Health, Safety, and Welfare/Natural Resources

- Hazards Addressed: Extreme Heat-related Hazards

5.3.10.18 Enhance vehicular, pedestrian and bicycle mobility in the City while striking a balance between roadway safety improvements, gateway treatments, pedestrian comfort, and roadway character.

Source: A City Master Plan, New Bedford 2020/Department of Public Infrastructure

The City's network of streets, sidewalks, bike paths and pedestrian pathways has been developed over time into a complex network of critical transportation infrastructure. Currently, there are 77 signalized intersections, 355 miles of sidewalk, 294 miles of roadway, 5,177 ADA ramps and 14 miles of shared use path that support movement around the City.

Ensuring that these facilities are safe and accessible to all users, especially during an emergency, is critical to allow free movement and safe passage. In addition, design of such facilities needs to be consistent with city goals and objectives such that public realm enhancements support revitalization of neighborhoods and development areas. Consideration of these types of elements during project implementation is crucial to both the safe passage of users but also an improved experience. The following summarizes the improvements needed to ensure the continued safe passage of users:

Traffic System Upgrade – Artificial Intelligence (AI) and Remote Monitoring

- Upgrade traffic signals throughout the City that do not have camera systems to support the more accurate tracking of vehicles at intersections to mitigate queueing of vehicles. This may include replacement of mast arms and control cabinets.
- Install uninterrupted power supplies (UPS) at each traffic signal to ensure continued operation in the event of a power outage.
- Implement GPS technology to coordinate with the police and fire departments to more efficiently move traffic during an emergency.
- Install an AI and remote monitoring system at all traffic signals that allow for real time synchronization of traffic signals citywide to ensure the free flow of traffic through the AI system. The remote monitoring system will allow for real time updates to traffic signal timing or adjustment to divert traffic away from emergency areas or will enable alarms to maintenance staff in the event of an outage to ensure rapid response for addressing the outage.
- Upgrade non-compliant traffic signals with new ADA compliant infrastructure.

BlueLane Multimodal Improvements

- Construct an approximate 1.8 mile multi-use path extending approximately from Walnut Street in the south to Coggeshall Street in the north along MacArthur Drive, Herman Melville Boulevard and North Front Street. This would include cameras and sensors to address path maintenance and use during storm events.
- Construct a connector multi-use path to the new Whale's Tooth MBTA station and pedestrian bridge. Extend path along Hillman Street to connect to new Purchase Street multi-use path and downtown.
- Address rail grade crossings along the corridor that service existing businesses.
- Realign MacArthur Drive at Walnut Street to accommodate better and safer flow of traffic from Route 18 and the new FOSS marine wind terminal.

- Implement traffic signal upgrades along Route 18 and North Front Street at Coggeshall Street, Elm Street and Walnut Street to address traffic flow and safety.
- Install new lighting along the corridor for safety for users during storm events and night time use.
- Complete upgrades to rail line grade crossings along the corridor.
- Full roadway reconstruction along the corridor with ADA upgrades and new drainage with green infrastructure to address isolated areas of flooding that mitigate traffic flow during storm events.

ADA Ramp Improvements

- Replace ADA ramps along major corridors and along dedicated emergency access routes to shelters and safety points throughout the City.

Complete Streets Improvements

- Implement projects as identified in the City's Tier 2 approved MassDOT Complete Streets prioritization plan.
- Establish design guidelines for new streets and roadways that encourage safe passage for all users, improved landscaping consistent with city neighborhood historical perspectives and future improvements goals, improved stormwater management and the promotion of native species with drought-resistant plantings.

Rodney French Boulevard Shared Use Path Improvements

- Construct a shared use path from East Rodney French Boulevard to County Street along Cove Street connecting an existing path on East Rodney French Boulevard and newly constructed paths along JFK Boulevard, West Rodney French Boulevard and County Street.
 - Resurface existing paths along East Rodney French Boulevard and West Rodney French Boulevard. Pavement is in poor condition with identified trip hazards where users have fallen causing injury.
- Action Type: Planning, Pre-Disaster
 - Priority Score: 9/Medium Priority
 - Lead: Department of Public Infrastructure
 - Supporting: Resilience and Environmental Stewardship/Planning/Emergency Management/Police/Fire Departments
 - Time Frame: Medium Term/2-3 Years
 - Financing Options: City General Highway Funds (Department of Public Infrastructure Budget), TIP, Chapter 90 Funding Program, Rebuilding American Infrastructure with Sustainability and Equity funds, MassDOT grants, FEMA BRIC/FMA/HMGP grants
 - Cost Estimate: Significant
 - Benefit: Continuity of services/Reduced potential for contamination/Improved public health, safety, and welfare
 - Vulnerable Area: Municipally owned Infrastructure/Public Health, Safety and Welfare/Transportation Network
 - Hazards Addressed: Infrastructure Failure-related Hazards - Transportation Systems

5.3.10.19 Ensure the resiliency of pump stations throughout the City by completing the remaining improvements identified for each pump station (according to the January 2025 update completed by the Department of Public Infrastructure across three individual studies/projects since 2014 and referenced in Section 4.2 of the Capability Assessment).

Source: Climate Change Vulnerability Assessment and Adaptation Planning Study for Water Quality Infrastructure in New Bedford, Fairhaven and Acushnet, June 30, 2014⁸⁶, New Bedford Pump Station Floodproofing Project, 2016, Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Action Type: Planning, Pre-Disaster
- Priority Score: 8/Medium Priority
- Lead: Department of Public Infrastructure
- Supporting: Veolia Water USA
- Time Frame: Long Term/4-5 Years
- Financing Options: DPI Wastewater Enterprise Fund, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Property protection/Improved public health, safety, and welfare/Reduced potential for contamination/Continuity of services
- Vulnerable Area: Municipally owned Infrastructure/Public Health, Safety and Welfare
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-Wastewater/Stormwater Systems

5.3.10.20 Inspect and implement recommendations for repair/replacement/reinforcement associated with the City's main transmission system.

Source: Department of Public Infrastructure

The City's major transmission main system dates to the late 1800's and is the backbone of pipelines that conveys water to the City's distribution system servicing over 100,000 people in New Bedford, Dartmouth, Freetown and Lakeville. Recent investigations have identified non-operable valves and pipelines in suspect condition. This program will complete a thorough inspection of the transmission main system, including the interlooping mains and implement recommendations for repair, replacement and reinforcement through the addition of new valves and pipeline upgrades.

- Complete a field investigation program to assess the condition of the City's transmission main network including the interlooping mains. This assessment should include valve location and exercising to determine placement and operability, pipeline condition assessment, and sizing analysis through modeling.
- Update the City's GIS system with accurate information regarding each transmission main asset. Attach information to each valve and other components for viewing by field crews.

⁸⁶ Climate Change Vulnerability Assessment and Adaptation Planning Study for Water Quality Infrastructure in New Bedford, Fairhaven and Acushnet, June 30, 2014.

- Implement recommendations to improve the reliability and resiliency of the City's transmission main network. This would include pipeline rehabilitation, replacement, valve installation and other activities to ensure adequate operation of the transmission main network.
- Action Type: Planning, Pre-Disaster
- Priority Score: 8/Medium Priority
- Lead: Department of Public Infrastructure
- Supporting: Information Technology Department?
- Time Frame: Medium Term/2-3 Years
- Financing Options: City General Appropriations Budget (Department of Public Infrastructure Budget), SRF Funding, DPI Water Enterprise Funding, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Continuity of services/Reduced potential for contamination/Improved public health, safety, and welfare/Protection of Natural Resources
- Vulnerable Area: Municipally owned Infrastructure/Critical Facility and Vulnerable Populations Data/Natural Resources
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-related Hazards-Water Systems

5.3.11. Resilience and Environmental Stewardship Department Actions

High Priority Actions

5.3.11.1 Expand education and communication about climate change and sustainability.

Source: 2025 Comprehensive Plan Update

- Expand environmental education programming and interpretive/educational signage in parks to communicate about natural systems, the changes they are experiencing, and the importance of stewardship.
- Partner across City Departments to communicate the understanding and importance of climate change and resiliency to New Bedford residents.
- Use all city projects as an opportunity to demonstrate climate change and resilient design locally and express how the City is working to alleviate or adapt to increased threats.
- Integrate climate analysis into construction signage at project sites that articulate the threat and the City's response.
- Develop sign standards that can be used in outreach materials, signage, and on the web site.
- Create climate resilience grants to collaborate with the arts community to express a site and project's vulnerability and solutions.
- Ensure that all project presentations, public communications and post-occupancy studies include data and metrics around climate and sustainability features.
- Implement education campaigns around energy and water conservation, water quality, and alternative modes of transportation.
- Action Type: Planning, Pre-Disaster
- Priority Score: 14/High Priority

- Lead: Resilience and Environmental Stewardship Department
- Supporting: Department of Public Infrastructure/Mayor's Office
- Time Frame: Short Term/within 1 Year
- Financing Options: City General Appropriations Budget (Resilience and Environmental Stewardship Department Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Improved public health, safety, and welfare/Improved resilience
- Vulnerable Area: Public Health, Safety, and Welfare/Natural Resources/Resilience/Localized Areas Subject to Flooding
- Hazards Addressed: All Natural Hazards

5.3.11.2 Protect natural resources and create new greenways through urban New Bedford.

Source: City of New Bedford Open Space and Recreation Plan, 2014 – 2021/A City Master Plan, New Bedford 2020/NB Resilient – New Bedford's Plan for Community Climate Action + Resilience, 2020

- Restore threatened and degraded natural resources in New Bedford through the following actions:
 - Improve ability of the Conservation Commission to protect wetlands (land acquisition, easements, restrictions).
 - Cooperate with MA DCR, DER, and MA Fish & Wildlife to protect the Acushnet Cedar Swamp.
 - Investigate opportunities for restoration of degraded wetland resources.
 - Develop and implement a watershed management study and plan for the Atlantic Cedar Swamp.
 - Remediate and restore Buttonwood Brook Corridor and Park Pond plus other historic streams and hydrological connections (e.g., Industrial Park outlet stream at John Vertente Boulevard extension south, Welby Road Brook, Pokenocket Brook (unnamed brook), and Copper Brook).
- Action Type: Planning, Pre-Disaster
- Priority Score: 14/High Priority
- Lead: Resilience and Environmental Stewardship Department
- Supporting: Conservation Commission/Department of Public Infrastructure/Department of Parks, Recreation and Beaches/Planning Department
- Time Frame: Long Term/4-5 Years
- Financing Options: MA Wildlife Natural Heritage & Endangered Species Program, EPA Wetlands Development Program grants (CFDA 66.641), MassDEP. DER 604(b) Water Quality Management Planning Grant, 319 Non-Point Source funding, City General Appropriations Budget (Resilience and Environmental Stewardship Department Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Moderate
- Benefit: Property protection/Protection of natural resources
- Vulnerable Area: Natural Resources/Localized Areas Subject to Flooding/Property Protection
- Hazards Addressed: Flood-related Hazards

5.3.11.3 Develop/Adopt a comprehensive invasive species management plan to address the invasives identified/impacting the City, with an emphasis on waterway resource maintenance/flood mitigation.

Source: Resilience and Environmental Stewardship Department/NB Resilient – New Bedford's Plan for Community Climate Action + Resilience 2020

New Bedford needs a comprehensive Invasives Species Management Plan to combat the spread of invasives citywide, but also specifically for:

- New Bedford Regional Airport
- Copper Brook/Little Quittacas Pond/Sassaquin Pond/Buttonwood Park Pond
- Beaches
- Various rights-of-way, drainage swales, and best management practices
- New Bedford Reservoir
- Action Type: Planning, Pre-Disaster
- Priority Score: 12/Medium Priority
- Lead: Resilience and Environmental Stewardship Department
- Supporting: Department of Public Infrastructure/New Bedford Regional Airport/Conservation Commission/Planning Department/ Parks, Recreation and Beaches Department
- Time Frame: Short Term/within 1 Year
- Financing Options: Financing Options: City General Appropriations Budget (Resilience and Environmental Stewardship Department Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Reduced impacts on water quality/Protection of natural resources
- Vulnerable Area: Natural Resources
- Hazards Addressed: Invasive Species-related Hazards

Medium Priority Actions

5.3.11.4 Create a City-wide energy efficiency campaign and tracking system.

Source: NB Resilient – New Bedford's Plan for Community Climate Action + Resilience, 2020

- Action Type: Planning, Pre-Disaster
- Priority Score: 10/Medium Priority
- Lead: Resilience and Environmental Stewardship Department
- Supporting: Eversource
- Time Frame: Medium Term/2-3 Years
- Financing Options: City General Appropriations Budget (Resilience and Environmental Stewardship Department Budget), Energy Efficiency and Conservation Block Grant (EECBG), EPA Climate Pollution Reduction (CPR) grants, Mass Save Program grants, MA Executive Office of Energy and Environmental Affairs grants, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Municipal and constituent energy savings/Greenhouse Gas emissions reduction/Protection of natural resources
- Vulnerable Area: Resilience/Natural Resources

- Hazards Addressed: Infrastructure Failure–related Hazards/Changes in Groundwater-related Hazards

5.3.11.5 Community Rating System Participation

Source: 2016 HMP Assawompset Ponds Complex (APC) and Nemasket Watershed Management and Climate Action Plan, August 2022

Over the next several years the City will be exploring participation in the federal Community Rating System (CRS) program. Staff will evaluate program requirements, review existing activities eligible for program “credits” and explore potential activities that could be initiated and/or implemented to secure additionally needed “credits” to secure a CRS rating classification. Participation in this program will allow a discount in flood insurance premium rates, which reflect the reduced flood risk as a result of meeting the goals of the CRS program.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2025: 9/Medium Priority
- Lead: Resilience and Environmental Stewardship Department
- Supporting: Inspectional Services Department/Emergency Management Department/Information Technology Department
- Time Frame: Medium Term/2-3 Years
- Financing Options: City General Appropriations Budget (Resilience and Environmental Stewardship Department Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Financial support (discount) to flood insurance policy holders
- Vulnerable Area: Property Protection/Resilience
- Hazards Addressed: Flood-related Hazards

5.3.12. Department of Facilities and Fleet Management

Medium Priority Actions

5.3.12.1 Purchase and Install Emergency Generator Power

Source: 2016 HMP/2025 MHMP/Emergency Management Department

The City proposes to secure/install emergency generator power (and fuel containment facilities) for all City critical department operations, and critical infrastructure (including schools and communications):

- Health Department – 1213 Purchase Street.
 - o Completed for vaccines only
- Emergency Medical Services Department – 181 Hillman Street
 - o Not completed due to lack of funding and municipal personnel capacity
 - o Carry forward into 2024 Update
- City Central Garage – Liberty Street
- Andrea McCoy Gym – Hillman Street
- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2025: 11/Medium Priority
- Lead: Department of Facilities and Fleet Management

- Supporting: Emergency Management Department/School District/Department of Public Infrastructure/Emergency Medical Services Department
- Time Frame: Medium/2-3 Years
- Financing Options: City General Appropriations Budget (Department of Facilities and Fleet Management Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Continuity of services
- Vulnerable Area: Municipally owned Infrastructure/Emergency Response
- Hazards Addressed: All Hazards

5.3.12.2 The City shall invest in creating and maintaining high-quality public buildings, services, and infrastructure (enhancing safety, accessibility and security) before/during/after hazard events.

Source: 2025 Comprehensive Plan Update

- ADA-Accessibility Improvements:
 - Conducting facility assessments to identify accessibility barriers.
 - Installing ramps, elevators, automatic doors, and accessible restrooms.
 - Ensuring compliance with ADA-standards for pathways, signage, and workspaces.
 - Create security plans to address real and perceived safety concerns in neighborhood public spaces.
 - Enhanced Security Measures:
 - Installing high-resolution security cameras in key areas for continuous monitoring.
 - Implementing fob access control systems to restrict unauthorized entry.
 - Conducting regular security audits to identify and address vulnerabilities.
 - Fire Safety Upgrades:
 - Installing individual fire boxes in each facility for quicker emergency response.
 - Ensuring proper placement and accessibility of fire extinguishers and alarms.
 - Conducting fire drills and safety training to improve preparedness.
 - Develop a Network of Civic Resiliency Centers:
 - Located in civic buildings or in partner sites, that are accessible to each neighborhood and offer resilient spaces during climate-related or other community emergencies.
 - a. Support a network of Resilience Hubs, owned and operated by non-government community-based organizations, that are accessible to the communities they serve and offer resilient spaces before, during, and after climate-related or other community emergencies.
- Action Type: Planning, Pre-Disaster
 - Priority Score: 10/Medium Priority
 - Lead: Department of Facilities and Fleet Management
 - Supporting: All other Municipal Departments
 - Time Frame: Long Term
 - Financing Options: City General Appropriations Budget (Department of Facilities and Fleet Management Budget), FEMA BRIC/FMA/HMGP grants

- Cost Estimate: Significant
- Benefit: Improved public health, safety, and welfare/Protection of Property/Continuity of services
- Vulnerable Area: Municipally owned Infrastructure/Public Health, Safety, and Welfare/Resilience
- Hazards Addressed: All Hazards

5.3.12.3 Replace/Renovate Existing Fire Stations

Source: 2016 HMP

The fire stations in the City have an average age of 102 years of age with the newest having been constructed in the early 1950's. None of these buildings were constructed to seismic standards and are of unreinforced masonry. These types of buildings are the most prone to catastrophic failure in the event of a seismic event. This would result in the possible complete loss of fire protection during a moderate event. In addition, these structures located throughout the City would be logical locations for mass care facilities in the event of a catastrophic event. At present none of our buildings have this capability in their design and this should be a future consideration.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2025: 8/Medium Priority
- Lead: Department of Facilities and Fleet Management
- Supporting: Fire Department, Department of Public Infrastructure
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Budget (Department of Facilities and Fleet Management Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Improved public health, safety, and welfare
- Vulnerable Area: Emergency Response
- Hazards Addressed: Geologic-related Hazards, Brushfire/Wildfire-related Hazards, Urban Fire-related Hazards

5.3.12.4 Develop Standard Operating Procedures (SOPs) for the active management of brush surrounding the recycling center (particularly near/adjacent to the methane vents) and safe storage of used batteries

Source: Department of Facilities and Fleet Management Interview

- Action Type: Planning, Pre-Disaster
- Priority Score: 8/Medium Priority
- Lead: Department of Facilities and Fleet Management
- Supporting: Resilience and Environmental Stewardship Department
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Budget (Department of Facilities and Fleet Management Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Reduced risk of fire/Improved public health, safety and welfare
- Vulnerable Area: Municipally owned Infrastructure/Public Health, Safety and Welfare

- Hazards Addressed: Brushfire/Wildfire-related Hazards/Hazardous Materials Accident/Spill-related Hazards/Chemical, Biological, Radiological Nuclear Agent-related Hazards

5.3.12.5 New roof for former Police Station #1

Source: 2016 HMP

The roof for former Police Station #1 is aging and in need of repairs. Accordingly, the City proposes to install a new roof at former Police Station #1 over the next two years. Having a new roof will mitigate potential structural damage during a natural disaster.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2025: 7/Medium Priority
- Lead: Department of Facilities and Fleet Management
- Supporting: Inspectional Services Department
- Time Frame: Medium Term/2-3 Years
- Financing Options: City General Appropriations Budget (Department of Facilities and Fleet Management Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Continuity of services/Property protection
- Vulnerable Area: Municipally owned Infrastructure
- Hazards Addressed: Brushfire/Wildfire-related Hazards/Urban Fire-related Hazards

5.3.12.6 Conduct feasibility studies regarding the potential separation and ultimate relocation of the following:

Source: Department of Facilities and Fleet Management Interview

- Fire Garage: serves as storage and power to the City's 13 all-electric vehicles/many hybrid vehicles (increased risk of fire), along with gas-powered vehicles
- Regarding electric vehicles and where they are placed in city yard and how they are stored (i.e., concrete barriers to prevent a fire from spreading).
- Action Type: Planning, Pre-Disaster
- Priority Score: 6/Medium Priority
- Lead: Department of Facilities and Fleet Management
- Supporting: Resilience and Environmental Stewardship Department
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Budget (Department of Facilities and Fleet Management Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Reduced risk of fire/Improved public health, safety and welfare
- Vulnerable Area: Municipally owned Infrastructure/Public Health, Safety and Welfare
- Hazards Addressed: Brushfire/Wildfire-related Hazards/Urban Fire-related Hazards/Hazardous Materials Accident/Spill-related Hazards/Chemical, Biological, Radiological Nuclear Agent-related Hazards

5.3.13. Information Technology Department Actions

Medium Priority Actions

5.3.13.1 *Effectuate communications upgrades across municipal departments.*

Source: Emergency Management Department

- Build out the City's MotoTrbo radio system to a multi-site system. This radio system provides communications for non-public safety departments including Department of Public Infrastructure, Facilities and Fleet Management Department, Port Authority, New Bedford regional Airport, Health Department, Inspectional Services Department, Emergency Management Department, and the Council on Aging. This system is heavily used during storm events and day-to-day operations from multiple departments.
 - Build out the City's Interop radio channel to a multi-site repeater system to facilitate improved coverage areas. This channel allows public safety departments/other departments to communicate on one channel.
 - Build out an EMS dispatch and events channel for the EMS department.
- Action Type: Planning, Pre-Disaster
 - Priority Score: 5/Medium Priority
 - Lead: Information Technology Department
 - Supporting: Emergency Management Department/Department of Public Infrastructure
 - Time Frame: Medium Term/2-3 Years
 - Financing Options: City General Appropriations Budget (Information Technology Department Budget), FEMA BRIC/FMA/HMGP grants
 - Cost Estimate: Significant
 - Benefit: Continuity of emergency services/Accelerated recovery
 - Vulnerable Area: Emergency Response/Resilience
 - Hazards Addressed: All Hazards

6. PLAN IMPLEMENTATION AND MAINTENANCE

6.1. Implementation, Evaluation, and Revision of Plan

6.1.1. Implementation

The LHMC realized that assigning a time frame to each recommended mitigation action is important so activities can be coordinated with other important governmental functions, such as committee meetings and budget hearings. Assigned time frames also provide input into a project plan used for tracking the progress of all activities. Once the 2025 Update receives FEMA's "Approved Pending Adoption," the mitigation strategy will be put into motion and the City Council will adopt the Plan (within one year of FEMA's approval). It is recognized that progress on plan implementation may vary depending upon available funding and capacity of staff to complete assigned tasks.

Once adopted by the City of New Bedford, this MHMP will be incorporated throughout government operations and other local plans and processes (when created or updated) to take advantage of additional opportunities to address hazard mitigation and risk reduction in a manner that can support multiple community objectives. The LHMC will remain vigilant with helping to ensure that all new or updated plans are informed by and consistent with the goals and actions of this MHMP. This integration includes but is not limited to the implementation or future updates to the following further described in Section 4 (Capability Assessment):

- City of New Bedford Community Resilience Building Workshop: Summary of Findings (June 2020)
- New Bedford Harbor Port Assessment Summary (2021)
- City of New Bedford Open Space and Recreation Plan (2021 – 2028)
- A City Master Plan New Bedford (current update in progress)
- Comprehensive Emergency Management Plan 2025 draft)
- City of New Bedford Green Infrastructure Master Strategy and Implementation Roadmap Report (June 2022)
- NB Resilient – New Bedford's Plan for Community Climate Action + Resilience (2020)
- North End/South End Resilience Hub Business Planning
- Port of New Bedford Strategic Plan (2018 – 2023)
- Long Term CSO Control and Integrated Capital Improvements Plan (January 2017)
- Emergency Alerts/Warnings
- Municipal Website

Additional opportunities to integrate the goals and actions of this plan into other plans, studies, reports, and processes shall continue to be identified through future meetings of the LHMC and through the annual review process described in this section.

6.1.2. Evaluation

The Emergency Management Director will bring the LHMC together annually during the month of May to review the status of the mitigation actions by initiating a "Report Card" (action completed/partially completed, responsible department/agency, cost/funding mechanism). The LHMC will also evaluate the 2025 plan's effectiveness annually by determining if any of the stated goals have been met and if completed actions have indeed mitigated the problem and/or vulnerability. Within two months of this meeting, a status report will be given to the Planning

Board and City Council. Progress will be reviewed annually at advertised public hearings held by the New Bedford Planning Board. It is advantageous that the annual review be conducted prior to the City's annual budget process so any locally funded projects can be considered in the budget process.

6.1.3. Revision

As per 44 CFR S 201.6(d)(3), the 2025 Update will be reviewed and revised to reflect progress in local mitigation efforts and changes in priorities and resubmitted for approval within five years in order to continue to be eligible for mitigation project grant funding. To ensure the plan remains current, the LHMC will meet annually. The plan will also be evaluated and updated after a disaster, or as funding opportunities arise for the actions and projects identified in the plan. Any updates will be reviewed and submitted to MEMA upon local approval to ensure that the state hazard mitigation strategy remains current.

The New Bedford Multi-Hazard Mitigation Plan has been incorporated into the City's Comprehensive Emergency Management Plan and the Comprehensive Master Plan (currently both in progress) for consistency. The City will also integrate the 2025 Update into other planning documents as updated, and for consistency. The City Council and Planning Board are the primary entities responsible for regulating development in New Bedford. Feedback to the Mayor, City Council, and Planning Board was ensured through participation of the City's Chief Operating Officer on the LHMC and during the public comment period.

6.2. Continued Public Involvement

The City of New Bedford will continue public involvement in the plan maintenance process by:

- Posting the approved and adopted plan on the City's website;
- Posting and advertising the annual meeting of the LHMC to review the implementation of the Plan as a public meeting as per city guidelines; and
- Having the LHMC include the public in the preparation of the five-year update using the same public participation process as in the development of this 2025 Update.

References

Federal/National Resources

28 CFR 0.85(l). [https://www.ecfr.gov/current/title-28/part-0/section-0.85#p-0.85\(l\)](https://www.ecfr.gov/current/title-28/part-0/section-0.85#p-0.85(l))

Climate Change and Vector-borne Diseases. Thompson, M. C. & Stanberry, L. R. New England Journal of Medicine (387:21). November 24, 2022.
<https://www.nejm.org/doi/full/10.1056/NEJMra2200092>

Climate Change 2007: The Physical Science Basis. Summary For Policymakers. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Geneva Switzerland: UNEP. IPCC. 2007

Decennial Census, [DP1: PROFILE OF GENERAL POPULATION ... - Census Bureau Table](#).
Accessed March 1, 2025

Enhanced Fujita Scale. NOAA, <https://www.spc.noaa.gov/efscale/>

FEMA Region 1 Declared Disasters, <https://www.fema.gov/locations/massachusetts>

Heat Index. NOAA National Weather Service, <https://www.weather.gov/phi/heatcond>

Historical Drought Conditions in Bristol County.
<https://www.drought.gov/states/massachusetts/county/Bristol>

Lightning Events per km². Vaisala U.S. National Lightning Detection Network.
<https://www.vaisala.com/en/press-releases/2024-01/report-reveals-most-lightning-prone-us-metropolitan-areas-and-risk-wind-farm>

Local Mitigation Planning Policy Guide. FEMA, released April 19, 2022 (effective April 19, 2023)

Modified Mercalli Intensity Scale. USGS <https://www.usgs.gov/natural-hazards/earthquake-hazards/education>

Mosquitoes of the Northeast. Northeast Regional Center for Excellence in Vector-Borne Diseases. <https://www.neregionalvectorcenter.com/mosquitoes>

Northeast Snowfall Impact Scale. <https://www.ncei.noaa.gov/access/monitoring/rsi/nesis>

Richter Magnitude Scale. USGS,
<https://earthquake.usgs.gov/learn/glossary/?term=Richter%20scale>

Saffir Simpson Hurricane Wind Scale. NOAA, <https://www.nhc.noaa.gov/aboutsshws.php>

Severe Events Database. NOAA National Centers for Environmental Information,
www.ncdc.noaa.gov

Severe Thunderstorm Watches Annually. NOAA Storm Prediction Center.
<https://www.spc.noaa.gov/wcm/20ysvra.png>

Sperry-Piltz Ice Accumulation Index. Sperry, E. and Piltz, D.
<https://www.spia-index.com/>

The Wildland Urban Interface in the United States. Radeloff, V.C., R.B. Hammer, S.I. Stewart, J.S. Holcomb, and J.F. McKeefry, *Ecological Applications* 15:799 – 805, 2005

Wind Chill Temperature Index. National Weather Service.
https://www.weather.gov/media/aik/brochures/Wind_Chill_Temperature_Index.pdf

TORRO Hail Intensity Scale, <https://www.torro.org.uk/research/hail/hscale>

Types of Fire. Northwest Fire Science Consortium.
<https://www.nwfirescience.org/sites/default/files/publications/Types%20of%20Fire.pdf>

Understanding Zone D for Levees: “Areas of Undetermined Flood Hazards”. FEMA.
https://www.fema.gov/sites/default/files/2020-08/fema_understanding-zone-D-levees.pdf

Wind Zones in the United States, www.nist.gov

State Resources

Arbovirus Disease Surveillance Summary. Massachusetts Department of Public Health, Bureau of Infection Disease and Laboratory Services. <https://www.mass.gov/lists/arbovirus-surveillance-plan-and-historical-data#current-data>

Environmental Justice Definition. <https://www.mass.gov/info-details/environmental-justice-populations-in-massachusetts>. MA Executive Office of Energy and Environmental Affairs.
Accessed January 2024

Extreme Heat Temperature Projections, Taunton and Buzzards Bay Basins.

FEMA Declared Disasters – DR 4372. <https://www.mass.gov/info-details/fema-dr-4372-march-2-3-2018-severe-winter-storm-flooding>. Accessed October 2023

MA Department of Fish and Game – Division of Marine Fisheries, *Closed Shellfish Areas*, <https://www.mass.gov/orgs/division-of-marine-fisheries>, accessed February 27, 2025.

Massachusetts Department of Transportation Bridge Inspection Management System Dataset.
<https://geo-massdot.opendata.arcgis.com/datasets/MassDOT::bridges/explore?location=41.633083%2C-72.112666%2C7.45>

Massachusetts Hazard Identification and Risk Assessment, Commonwealth of Massachusetts, 2019

Municipal Vulnerability Preparedness Program. Executive Office of Energy and Environmental Affairs, www.resilientma.org

Massachusetts Wetlands Protection Act

NFIP Loss Statistics, FEMA, January 1978 – October 3, 2023

Ninth Edition of the Massachusetts State Building Code 780. June 8, 2018

ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan,
September 2023

State of the Coast: Future Climate-Driven Risks and Their Solutions on Massachusetts' South Coast

Tickborne Disease Surveillance Summary, 2019. Massachusetts Department of Public Health, Bureau of Infectious Disease and Laboratory Sciences. <https://www.mass.gov/lists/tick-borne-disease-surveillance-summaries-and-data>

2022 Massachusetts Climate Change Assessment, Volume II, December 2022, Executive Office of Energy and Environmental Affairs

2022 Massachusetts Climate Change Assessment, Volume III, December 2022, Executive Office of Energy and Environmental Affairs

Local/Regional Resources

APC and Nemasket Watershed Management and Climate Action Plan, August 1, 2022

AVX Site Cleanup Project, <https://www.newbedford-ma.gov/environmental-stewardship/two-week-look-ahead-for-site-activities/>

Building New Bedford: Strategies to Promote Attainable Housing for All in a Thriving New Bedford, March 2023

Buttonwood Park Pond Dam Phase 1 Inspection/Evaluation Report. Tighe & Bond. December 9, 2021

Circulation & Drainage Master Plan Brooklawn Park, New Bedford, MA, August 2020

City of New Bedford Community Resilience Building Workshop Summary of Findings

City of New Bedford, New Bedford Regional Airport Master Plan Update. 2013.
https://newbedford-ma.s3.amazonaws.com/wp-content/uploads/sites/29/20220304114731/EWB-AMPU-Complete-FINAL-2014_06_11_.pdf

City of New Bedford Green Infrastructure Master Strategy and Implementation Roadmap Report, June 2022

City of New Bedford, Massachusetts Stormwater Rules and Regulations, revised June 2021

City of New Bedford, MA 2017 Community Greenhouse Gas Emissions Inventory Methodology Report

City of New Bedford Open Space and Recreation Plan 2014-2021

Climate Change Vulnerability Assessment and Adaptation Planning Study for Water Quality Infrastructure in New Bedford, Fairhaven, and Acushnet, June 30, 2014

High Hill Reservoir Dam Phase 1 Inspection/Evaluation Report. Tighe & Bond. April 21, 2023

Long Term CSO and Integrated Capital Improvements Plan, City of New Bedford, Massachusetts. CDM Smith. January 2017

NB Resilient – New Bedford’s Plan for Community Climate Action + Resilience, 2020

New Bedford Harbor Port Assessment Summary Report, 2021

New Bedford Code of Ordinances

New Bedford Reservoir Dam Phase 1 Inspection/Evaluation Report. CDM Smith. July 16, 2020

New England Public Media, <https://www.nepm.org/regional-news/2023-08-08/massachusetts-gov-healey-declares-a-state-of-emergency-in-overwhelmed-family-shelter-system>

New Bedford Wetlands Ordinance Ch. 15 – Article VII – sec. 15-101 thru 15 – 112,
https://library.municode.com/ma/new_bedford/codes/code_of_ordinances?nodeId=COOR_CH15LIPEBURE_ARTVIIWEPR.

Port of New Bedford Strategic Plan 2018 - 2023

Rapid Recovery Plan 2021, New Bedford

Resilient Design Guidelines New Bedford Harbor, June 2020

Shawmut Avenue Landfill Post-Closure Environmental Monitoring Report, 2022 Q3 Monitoring Report

Sassaquin Pond Watershed Management Plan, September 2021

Subdivision Regulations, City of New Bedford

Turner Pond Dam Phase 1 Inspection/Evaluation Report. Tighe & Bond. December 9, 2021

UMass Donahue Institute Population Projections. <https://donahue.umass.edu/business-groups/economic-public-policy-research/massachusetts-population-estimates-program/population-projections>. Accessed March 2024

Town Website Resources

City of New Bedford. “Airport Webpage”. <https://www.newbedford-ma.gov/airport/>
“New Bedford Regional Airport Layout Plan”. <https://newbedford-ma.s3.amazonaws.com/wp-content/uploads/sites/29/20220304120543/ALP.pdf>

City of New Bedford. “Emergency Management Department Webpage”.
<https://www.newbedford-ma.gov/emergency-management/>
“American Red Cross”. <https://www.redcross.org/>
“Department of Homeland Security”. <https://www.dhs.gov/>
“Disaster Mitigation”. <https://www.newbedford-ma.gov/emergency-management/emergencies-disasters/mitigation/>

“Earthquakes”. <https://www.newbedford-ma.gov/emergency-management/emergencies-disasters/earthquake/>

“Emergencies and Disasters”. <https://www.newbedford-ma.gov/emergency-management/emergencies-disasters/ready-emergencies-disasters/>

“Extreme Heat”. <https://www.newbedford-ma.gov/emergency-management/emergencies-disasters/extreme-heat/>

“Federal Emergency Management Agency”. <https://www.fema.gov/>

“Floods”. <https://www.newbedford-ma.gov/emergency-management/emergencies-disasters/flood/>

“Hurricanes”. <https://www.newbedford-ma.gov/emergency-management/hurricanes/>

“Hurricane Maps”. <https://www.newbedford-ma.gov/emergency-management/hurricane-maps/>

“Massachusetts Emergency Management Homepage”. <https://www.mass.gov/orgs/massachusetts-emergency-management-agency>

“National Safety Council – Emergency Preparedness”. <https://www.nsc.org/learn/safety-knowledge/pages/safety-at-home-emergency-preparedness.aspx>

“Northeast States Consortium”. <https://nsec.org/>

“Pet Preparedness Fact Sheet”. <https://s3.amazonaws.com/newbedford-ma/wp-content/uploads/sites/28/20191219200620/Pet-Preparedness-Fact-Sheet.pdf>

“Special Needs Registration Form”. https://s3.amazonaws.com/newbedford-ma/wp-content/uploads/sites/28/20191219200634/Special_Needs_Registry.pdf

“Thunderstorms and Lightning”. <https://www.newbedford-ma.gov/emergency-management/emergencies-disasters/thunderstorms-lightning/>

“Tornadoes”. <https://www.newbedford-ma.gov/emergency-management/emergencies-disasters/tornado/>

“Weather Information & Links”. <https://www.newbedford-ma.gov/emergency-management/weather-info-links/>

“Winter Storms”. <https://www.newbedford-ma.gov/emergency-management/winter-storms/>

“You Can Help”. <https://www.newbedford-ma.gov/emergency-management/emergencies-disasters/can-help/>

City of New Bedford. “Emergency Medical Services Department Webpage”. <https://www.newbedford-ma.gov/emergency-medical-services/>

New Bedford Emergency Medical Services. <https://newbedfordems.org/about/>

City of New Bedford. “Environmental Stewardship Department Webpage”. <https://www.newbedford-ma.gov/environmental-stewardship/>

City of New Bedford. “Fire Department Webpage”. <https://www.newbedford-ma.gov/fire-department/>

City of New Bedford. “Harbor Development Department Webpage”. <https://portofnewbedford.org/>

City Of New Bedford. “Health Department Webpage”. <https://www.newbedford-ma.gov/health-department/>

“Coronavirus”. <https://www.newbedford-ma.gov/health-department/coronavirus/>

City of New Bedford. “Police Department Webpage”. <https://www.newbedfordpd.com/faq-links/>

New Bedford Police Department Webpage. <https://www.newbedfordpd.com>

City of New Bedford. "Public Infrastructure Department Webpage". <https://www.newbedford-ma.gov/public-infrastructure/>
"Highway". <https://www.newbedford-ma.gov/public-infrastructure/highway/>
"Water". <https://www.newbedford-ma.gov/public-infrastructure/water/>
"Wastewater". <https://www.newbedford-ma.gov/public-infrastructure/wastewater/>

Appendix A – Maps

Table A-1 Critical Facilities

Table A-2 Vulnerable Populations

Environmental Justice Areas

Map A-1 Environmental Justice Areas

Flood Risks

Map B-1.1 Flood Risks North

Map B-1.2 Flood Risks North Central

Map B-1.3 Flood Risks South Central

Map B-1.4 Flood Risks South

Massachusetts Coast Flood Risk Model (MC-FRM)

Map C-1.1 MC-FRM North

Map C-1.2 MC-FRM North Central

Map C-1.3 MC-FRM South Central

Map C-1.4 MC-FRM South

Critical Facilities

Map D-1.1 Critical Facilities North

Map D-1.2 Critical Facilities North Central

Map D-1.3 Critical Facilities South Central

Map D-1.4 Critical Facilities South

Vulnerable Populations

Map E-1.1 Vulnerable Populations North

Map E-1.2 Vulnerable Populations North Central

Map E-1.3 Vulnerable Populations South Central

Map E-1.4 Vulnerable Populations Facilities South

Average Annual Snowfall

Map F-1 Average Annual Snowfall

Hurricane Surge Inundation Zones (Sea, Lake and Overland Surge from Hurricanes)

Map G-1.1 Hurricane Surge Inundation Zones North

Map G-1.2 Hurricane Surge Inundation Zones North Central

Map G-1.3 Hurricane Surge Inundation Zones South Central

Map G-1.4 Hurricane Surge Inundation Zones South

Tornado Incidence

Map H-1 Tornado Incidence

Earthquake Incidence

Map I-1 Earthquake Incidence

Wildland Urban Interface

Map J-1.1 Wildland Urban Interface North

Map J-1.2 Wildland Urban Interface North Central

Map J-1.3 Wildland Urban Interface South Central

Map J-1.4 Wildland Urban Interface South

MC-FRM Annual Coastal Flood Exceedance Probability

Map K-1.1 MC-FRM Annual Coastal Flood Exceedance Probability (2030): Clarks Cove

Map K-1.2 MC-FRM Flood Depths for 1% Annual Coastal Flood Exceedance Probability
(2030): Clarks Cove

Table A-1 Critical Facilities

SITE ID	NAME	TYPE
1	Police Headquarters	Public Safety/Emergency Response
2	New Bedford Community Development Office	Public Safety/Emergency Response
3	South Public Safety Complex Annex (Fire Prevention/Training/with NBPB Animal Control)	Public Safety/Emergency Response
4	Police Station 3	Public Safety/Emergency Response
5	Massachusetts Environmental Police/Seastreak Ferry Terminal	Public Safety/Emergency Response/Transportation
6	Fire Headquarters/Station 2	Public Safety/Emergency Response
7	Fire Station 5	Public Safety/Emergency Response
8	New Bedford Emergency Management (Alternate EOC)	Public Safety/Emergency Response
9	Fire Station 7	Public Safety/Emergency Response
10	Fire Station 8	Public Safety/Emergency Response
11	Fire Station 9	Public Safety/Emergency Response
12	South Public Safety Building (Police/Fire/EMS)	Public Safety/Emergency Response
13	Emergency Management HQ/Alternate Emergency Operations Center	Public Safety/Emergency Response
14	Andrea McCoy Recreation Center (Emergency Medical Services Office/Council on Aging/Veteran's Services/Parks & Recreation	Medical/Emergency Response/Municipal Facility
16	STAT Ambulance Service	Medical/Emergency Response
17	Alert Ambulance Service	Medical/Emergency Response
18	New Bedford City Hall	Municipal Facility
19	New Bedford Health Department	Municipal Facility
20	New Bedford City Building	Municipal Facility
21	New Bedford Wastewater Treatment Plant	Wastewater Infrastructure, Tier 2 HazMat Facility, Municipal Facility
22	New Bedford Department of Public Infrastructure	Municipal Facility
23	New Bedford Solid Waste Transfer Station	Municipal Facility
24	New Bedford Department of Public Facilities	Municipal Facility
25	Bristol County Jail	County Facility
27	U.S. Coast Guard Marine Safety Office	Federal Facility
28	New Bedford Regional Airport	Transportation - Airport
30	Massachusetts Trial Court New Bedford District	State Facility
31	Bristol County Superior Court	County Facility
32	Massachusetts Probate & Family Court New Bedford District	State Facility
33	United States Post Office - Main	Federal Facility
34	United States Post Office - South	Federal Facility
35	United States Post Office - North	Federal Facility
36	United States Post Office - West	Federal Facility
37	Environmental Protection Agency & U.S. Army Corp of Engineers Dewatering Facility	Federal Facility
38	U.S. Army Corp of Engineers Hurricane Barrier System Harbor Segment (Clarks Cove)	Federal Facility

39	Acushnet Company - Ball Plant C	Tier 2 HAZMAT Facilities
40	Acushnet Company - Ball Plant III	Tier 2 HAZMAT Facilities
41	Acushnet Rubber Co. - Building B	Tier 2 HAZMAT Facilities
42	AMTEK/Aegis (HCC Aegis)	Tier 2 HAZMAT Facilities
43	CD Aero, LLC	Tier 2 HAZMAT Facilities
44	AFC Cable Systems	Tier 2 HAZMAT Facilities
45	Allegheny Ludlum, LLC	Tier 2 HAZMAT Facilities
46	American Cable Systems	Tier 2 HAZMAT Facilities
47	Amerigas Propane - New Bedford	Tier 2 HAZMAT Facilities
48	Store Capital	Tier 2 HAZMAT Facilities
49	Waterfront Cold Storage	Tier 2 HAZMAT Facilities
50	Brittany Global Technologies Corp./ATI Allegheny Ludlum, Inc.	Tier 2 HAZMAT Facilities
51	Coyne Textile Services	Tier 2 HAZMAT Facilities
52	Crystal Ice Co., Inc.	Tier 2 HAZMAT Facilities
53	Foley Fish (M.F. Foley, Inc.)	Tier 2 HAZMAT Facilities
54	Maritime Terminal, Inc.	Tier 2 HAZMAT Facilities
55	Morgan Advanced Ceramics	Tier 2 HAZMAT Facilities
56	North East Silicon Technologies, Inc.	Tier 2 HAZMAT Facilities
57	Northern Wind, Inc.	Tier 2 HAZMAT Facilities
58	NSTAR - New Bedford Service Center	Tier 2 HAZMAT Facilities
59	NSTAR - Phillips Road Station	Tier 2 HAZMAT Facilities
60	NSTAR - Hathaway Street Station	Tier 2 HAZMAT Facilities
61	Tonix Pharmaceuticals	Tier 2 HAZMAT Facilities
62	Purity Services	Tier 2 HAZMAT Facilities
63	ROTHTEC Engraving Corporation	Tier 2 HAZMAT Facilities
64	New Bedford Foss Marine Terminal (Pine Street)	Tier 2 HAZMAT Facilities
65	Southcoast Plating Inc. (formerly Star Plating Co.)	Tier 2 HAZMAT Facilities
66	Sullivan's Ledge Groundwater TP	Tier 2 HAZMAT Facilities
67	Symmetry Medical New Bedford	Tier 2 HAZMAT Facilities
68	Maritime West	Tier 2 HAZMAT Facilities
82	Greater New Bedford Regional Vocational Technical High School	School, POD - Health Dept.
86	Keith Middle School	School, POD - Health Dept., Primary MassCare Shelter
92	New Bedford High School	School, POD - Health Dept.
93	Normandin Middle School	School, POD - Health Dept., Secondary MassCare Shelter
99	Roosevelt Middle School	School, POD - Health Dept., Alternate MassCare Shelter
109	Algonquin Gas Transmission Metering Station	Utility
110	Salvation Army	Food Pantry
112	Verizon New Bedford Central Office	Utility
113	Verizon Acushnet Central Office	Utility
114	New Bedford Marine Commerce Terminal	Utility
117	Greater New Bedford Community Health Center	Health Center

121	New Bedford Child & Family Services	Municipal Facility
122	New Bedford Health Care Center (CareOne)	Health Center
124	New Bedford Rehabilitation Hospital	Hospital
129	Saint Luke's Hospital	Hospital, Tier 2 HAZMAT Facility
130	Saint Luke's / Southcoast Hospital Group	Hospital
132	Metromedic Walk-In Medical Center	Medical - Urgent Care
133	Tristan Medical Care New Bedford Walk-In	Medical - Urgent Care
158	Stop & Shop	Market - Food Supply/Pharmacy
159	Stop & Shop	Market - Food Supply/Pharmacy
161	CVS Pharmacy	Pharmacy
162	CVS Pharmacy	Pharmacy
163	CVS Pharmacy	Pharmacy
164	CVS Pharmacy	Pharmacy
165	PharmaHealth Pharmacy	Pharmacy
166	PharmaHealth Pharmacy	Pharmacy
167	Rite Aid Pharmacy	Pharmacy
168	Rite Aid Pharmacy	Pharmacy
169	Rite Aid Pharmacy	Pharmacy
170	Rite Aid Pharmacy	Pharmacy
171	Rite Aid Pharmacy	Pharmacy
172	Walgreens Pharmacy	Pharmacy
173	Walgreens Pharmacy	Pharmacy
174	Walgreens Pharmacy	Pharmacy
175	Walgreens Pharmacy	Pharmacy
176	U.S. Army Corp of Engineers Hurricane Barrier System Harbor Segment (Harbor Side)	Federal Facility
177	New Bedford Department of Public Facilities	Municipal Facility
178	Popes Island Pump Station	Wastewater Infrastructure - Sewer Pump Station
179	Potter Street Pump Station	Wastewater Infrastructure - Sewer Pump Station
180	Rowe Street Pump Station	Wastewater Infrastructure - Sewer Pump Station
181	Wamsutta Street Pump Station	Wastewater Infrastructure - Sewer Pump Station
182	East Rodney French Boulevard Pump Station	Wastewater Infrastructure - Sewer Pump Station
183	Pequot Street Pump Station	Wastewater Infrastructure - Sewer Pump Station
184	Hathaway Boulevard Pump Station	Wastewater Infrastructure - Sewer Pump Station
185	Sassaquin Avenue Pump Station	Wastewater Infrastructure - Sewer Pump Station
186	Joyce Street Pump Station	Wastewater Infrastructure - Sewer Pump Station
187	Dottin Place Pump Station	Wastewater Infrastructure - Sewer Pump Station
188	Welby Road Pump Station	Wastewater Infrastructure - Sewer Pump Station

189	Industrial Park Pump Station	Wastewater Infrastructure - Sewer Pump Station
190	Front Street Pump Station	Wastewater Infrastructure - Sewer Pump Station
191	Coggeshall Street Pump Station	Wastewater Infrastructure - Sewer Pump Station
192	Belleville Avenue Pump Station	Wastewater Infrastructure - Sewer Pump Station
193	Howard Avenue Pump Station	Wastewater Infrastructure - Sewer Pump Station
194	Peckham Road Pump Station	Wastewater Infrastructure - Sewer Pump Station
195	Shawmut Avenue Pump Station	Wastewater Infrastructure - Sewer Pump Station
196	Zuckerman Farms Pump Station	Wastewater Infrastructure - Sewer Pump Station
197	Cove Road Pump Station	Wastewater Infrastructure - Sewer Pump Station
198	Hanover Street Pump Station	Wastewater Infrastructure - Sewer Pump Station
199	Marlborough Street Pump Station	Wastewater Infrastructure - Sewer Pump Station
200	Forbes Street Pump Station	Wastewater Infrastructure - Sewer Pump Station
201	Valley View Drive Pump Station	Wastewater Infrastructure - Sewer Pump Station
202	Merrimac Street Pump Station	Wastewater Infrastructure - Sewer Pump Station
203	North End Water Booster Station	Wastewater Infrastructure - Booster Station
204	Septage Receiving Facility	Wastewater Infrastructure
205	Jones Street Pump Station	Wastewater Infrastructure - Sewer Pump Station
208	Buttonwood Park Pond Dam and Culvert System	Dam
209	Turners Pond Dam	Dam
210	New Bedford Reservoir Dam	Dam
212	State Pier	Transportation - State Facility
213	New Bedford - Fairhaven Bridge	Bridge
215	Main Street Bridge	Bridge
216	Coggeshall Street Bridge	Bridge
217	Taber Park Pier	Transportation - Port
218	Brooklawn Park Garage	Transportation - Parking
219	Elm Street Bridge	Bridge
220	Howland St Pump Station	Wastewater Infrastructure - Sewer Pump Station
221	Irish Monument Sea Wall - E Rodney French Blvd	Municipal Facility
222	New Bedford Marine Commerce Terminal (Wright Street)	Transportation - State Facility
223	North Terminal Pier Facilities	Transportation - Port

224	Port Authority Facilities - Piers and Bulkheads	Transportation - Port
225	Port Authority Facilities - Piers and Bulkheads	Transportation - Port
226	Port Authority Facilities - Piers and Bulkheads	Transportation - Port
227	Port Authority Facilities - Piers and Bulkheads	Transportation - Port
228	Route 18 Pedestrian Bridge	Bridge
229	SCR/MBTA Track Facilities and Stations (Church Street)	Transportation - Train
230	Greater New Bedford Regional Refuse Management District	Municipal Facility
231	SCR/MBTA Track Facilities and Stations (Whales Tooth)	Transportation - Train
232	SCR/MBTA Layover Facility, Wamsutta Ave	Transportation - Train
233	North Terminal Pier Facilities	Transportation - Port
234	North Terminal Pier Facilities	Transportation - Port
235	South Terminal Pier Facilities	Transportation - Port
236	South Terminal Pier Facilities	Transportation - Port
250	Grace Episcopal Church Food Pantry	Food Pantry
255	Salvation Army New Bedford Pantry and Meals Program	Food Pantry/Soup Kitchen
265	P.A.C.E. Community Food Center	Food Pantry
276	Saint Anthony of Padua Food Pantry and Soup Kitchen	Food Pantry/Soup Kitchen
287	New Life Food Pantry	Food Pantry
291	PECUSA Saint Martin's Food Pantry	Food Pantry
293	Pentecostal Assembly	Food Pantry
294	Saint Lawrence Parish Food Pantry	Food Pantry
353	New Bedford WWTP (Veolia Water NE LLC)	Tier 2 HAZMAT Facilities
354	Sea Fuels Marine Services, Inc	Tier 2 HAZMAT Facilities
355	NB Marine Commerce Terminal	Tier 2 HAZMAT Facilities
356	Eversource Station 682 (PNU) Bonney St	Tier 2 HAZMAT Facilities
357	T-Mobile NEH0011A DAS	Tier 2 HAZMAT Facilities
358	Finicky Pet Food, Inc	Tier 2 HAZMAT Facilities
359	Eversource Station 694 (PNU) Second St	Tier 2 HAZMAT Facilities
360	Eversource Station 615 (PNU) Ash St	Tier 2 HAZMAT Facilities
361	Ice Cube Cold Storage State Pier	Tier 2 HAZMAT Facilities
362	Northern Pelagic Group LLC	Tier 2 HAZMAT Facilities
363	Eastern Fisheries	Tier 2 HAZMAT Facilities
364	City Yard	Tier 2 HAZMAT Facilities
365	Eversource Station 685 (PNU) Depot	Tier 2 HAZMAT Facilities
366	Hetland Arena	Tier 2 HAZMAT Facilities
367	Ryder Transportation Services #1122A	Tier 2 HAZMAT Facilities
368	Eversource Station 686 (PNU) Durfee St	Tier 2 HAZMAT Facilities
369	Tremblay Bus Co LLC	Tier 2 HAZMAT Facilities
370	Eversource Station 688 - Highland St	Tier 2 HAZMAT Facilities
371	Ariston Thermo (Prev HTP Inc)	Tier 2 HAZMAT Facilities
372	City of New Bedford	Tier 2 HAZMAT Facilities
373	Speedway 2508	Tier 2 HAZMAT Facilities
374	Penske Truck Leasing Co., LP	Tier 2 HAZMAT Facilities
375	Colonial Air Inc	Tier 2 HAZMAT Facilities

376	Eversource Station 695(PNU) -River Rd 13.2kV Sub	Tier 2 HAZMAT Facilities
377	Eversource Station 684 - Church St	Tier 2 HAZMAT Facilities
378	Verizon Acushnet Co	Tier 2 HAZMAT Facilities
379	L&S Industries - New Bedford Maintenance Garage	Tier 2 HAZMAT Facilities
380	New Bedford MA Yard	Tier 2 HAZMAT Facilities
381	Comcast of Southern New England	Tier 2 HAZMAT Facilities
382	New Bedford MA Yard	Tier 2 HAZMAT Facilities
383	Eastern Fisheries	Tier 2 HAZMAT Facilities
384	North Coast Seafoods	Tier 2 HAZMAT Facilities
385	Eversource New Bedford Service Center	Tier 2 HAZMAT Facilities
386	Vibra Hospital of SE MA	Tier 2 HAZMAT Facilities
387	Clean Uniforms and More/REVISED	Tier 2 HAZMAT Facilities
388	Verizon New Bedford	Tier 2 HAZMAT Facilities
389	Sea Watch International-NB Plant	Tier 2 HAZMAT Facilities
390	Ice Cube Maritime	Tier 2 HAZMAT Facilities
391	Eversource Station 607 & 611 - Pine St	Tier 2 HAZMAT Facilities
392	Brodeur Machine Co., Inc	Tier 2 HAZMAT Facilities
393	Northern Wind LLC	Tier 2 HAZMAT Facilities
394	Pier Fish Co., Inc	Tier 2 HAZMAT Facilities
395	New Bedford WWTP (Veolia Water NE LLC)	Tier 2 HAZMAT Facilities
396	Mt Pleasant Salt Shed	Tier 2 HAZMAT Facilities
397	Acushnet Company BP II	Tier 2 HAZMAT Facilities
398	Eversource Station 681 (PNU) Bolton St	Tier 2 HAZMAT Facilities
399	Zapp Precision Strip, Inc (Zapp)	Tier 2 HAZMAT Facilities
400	Quittacas Water Treatment Plant	Tier 2 HAZMAT Facilities
401	High Hill Chloramination Facility	Tier 2 HAZMAT Facilities
402	United Hauling Inc.	Tier 2 HAZMAT Facilities
403	Offshore Substation (Vineyard Wind)	Tier 2 HAZMAT Facilities

Table A-2 Vulnerable Populations

SITE ID	NAME	TYPE
14	Andrea McCoy Recreation Center (Emergency Medical Services Office/Council on Aging/Veteran's Services/Parks & Recreation)	Medical/Emergency Response/Municipal Facility
69	New Bedford Public Schools Administration Building (Paul Rodrigues)	School
70	New Bedford Public Schools Maintenance Operations	School
71	All Saints Catholic School	School
72	Alma del Mar Charter School	School
73	Ashley School	School
74	Bristol Community College - New Bedford Campus	College/University
75	Brooks School	School
76	Campbell School	School
77	Carney Academy	School
78	Congdon School	School
79	DeValles School	School
80	Global Learning Charter School	School - Charter
81	Gomes School	School
82	Greater New Bedford Regional Vocational Technical High School	School, POD - Health Dept.
83	Hathaway School	School
84	Hayden-McFadden School	School
85	Holy Family-Holy Name School	School
86	Keith Middle School	School, POD - Health Dept., Primary MassCare Shelter
87	Fort Taber Community Center	Municipal Facility
88	Kennedy -Donavan Center School	School
89	Lincoln School	School
90	Nativity Preparatory School	School - Private
91	Nazarene Christian Academy	School - Private
92	New Bedford High School	School, POD - Health Dept.
93	Normandin Middle School	School, POD - Health Dept., Secondary MassCare Shelter
94	Our Sister's School	School - Private
95	Pacheco Elementary School	School
96	Parker School	School
97	Pulaski School	School
98	Rodman School	School
99	Roosevelt Middle School	School, POD - Health Dept.
100	Taylor Elementary School/Sea Lab	School
101	St. James/St. John/St. Teresa of Calcutta School	School
102	Swift School	School
103	DeValles-Congdon Elementary School (future home)	School

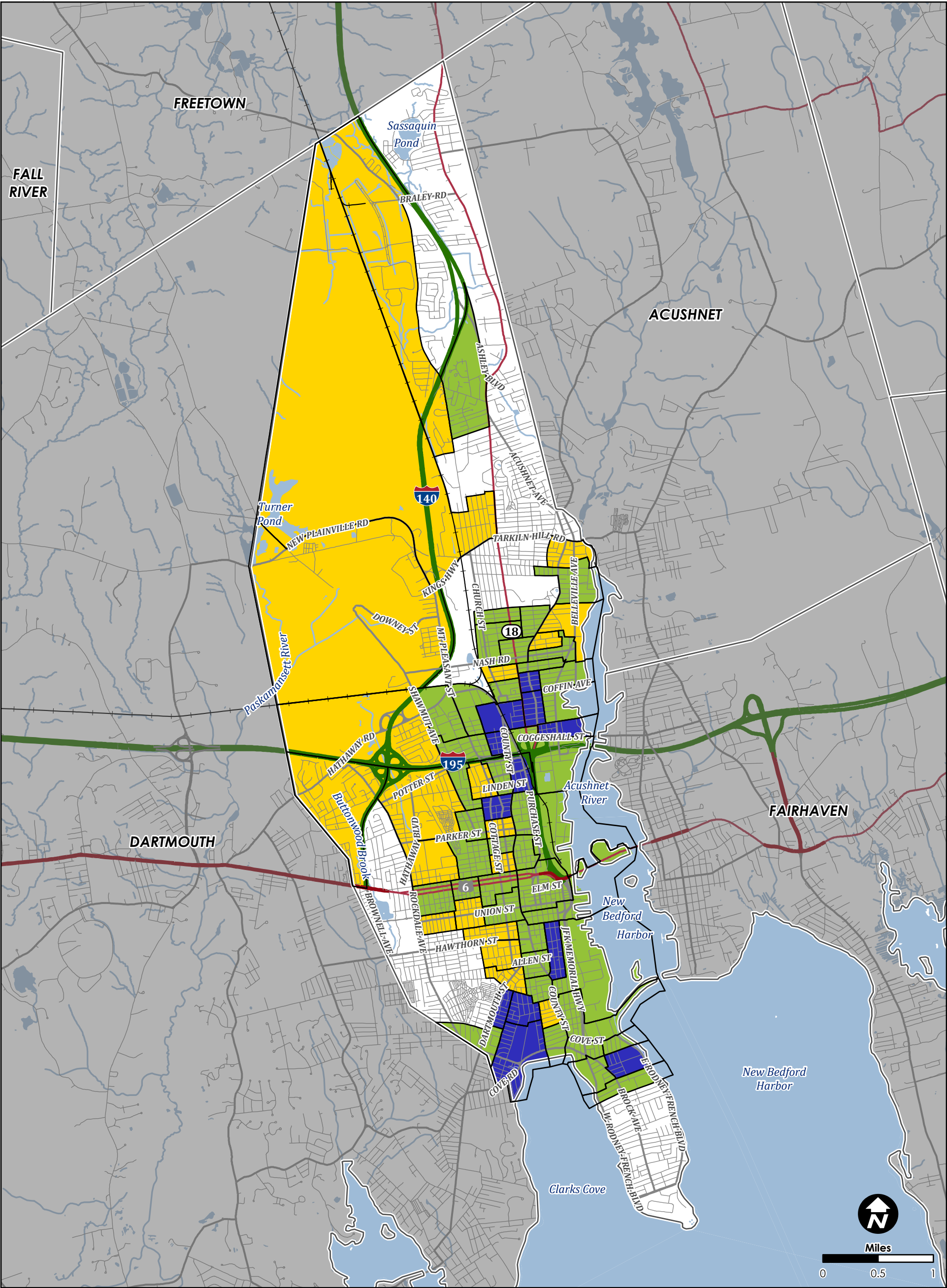
104	Trinity Day Academy	School
105	New Bedford Public Schools Central Kitchen (future home)	School
106	UMASS Dartmouth School for Marine Science & Technology	College/University
107	Whaling City Alternative High School	School
108	Winslow School	School
115	Bedford Village Nursing Home	Congregate Care/Nursing Home
116	Brandon Woods of New Bedford	Congregate Care - Rehabilitation Center
118	Kindred Nursing and Rehabilitation Center	Congregate Care - Rehabilitation Center
119	Hathaway Manor Extended Care Facility	Congregate Care/Nursing Home
120	Havenwood Rest Home	Congregate Care - Nursing Home
123	New Bedford Jewish Convalescent Home	Congregate Care/Nursing Home
125	The Oaks Long Term Care Facility	Congregate Care/Nursing Home
126	Sacred Heart Nursing Home	Congregate Care/Rehabilitation Center
127	Savoy Nursing and Rehabilitation Center	Congregate Care/Rehabilitation Center
128	Southeast Mass Health and Rehabilitation Center	Congregate Care - Rehabilitation Center
131	Taber Street Nursing and Rehabilitation Center	Congregate Care/Rehabilitation Center
134	Bedford Towers	Apartment Complex
135	Boa Vista Towers	Apartment Complex
136	Car Barn Apartments	Apartment Complex
137	Carriage House Apartments	Apartment Complex
138	Casey-Miller Apartments	Apartment Complex
139	Grinnel Congregate Home for Elderly	Congregate Care - Nursing Home
140	Harborview Towers East	Apartment Complex
141	Harborview Towers West	Apartment Complex
142	Mechanic Square Apartments	Apartment Complex
143	Melville Towers	Apartment Complex
144	New Bedford Hotel Apartments	Apartment Complex
145	Olympia Towers Apartments	Apartment Complex
146	Regency Tower Apartments	Apartment Complex
147	Roosevelt Apartments	Apartment Complex
148	Taber Mill Apartments	Apartment Complex
149	Tripp Towers Apartments	Apartment Complex
150	Whaler's Cove Assisted Living Facility	Congregate Care/Assisted Living
151	Young House Elderly Housing	Apartment Complex - Age Restricted
152	PriceRite	Market - Food Supply
153	PriceRite	Market - Food Supply
154	Market Basket	Market - Food Supply
155	Save-A-Lot Food Stores	Market - Food Supply
156	Save-A-Lot Food Stores	Market - Food Supply
157	A & J Seabra Supermarket	Market - Food Supply
160	Trucci's Market	Market - Food Supply
237	Eliot - New Bedford Emergency Residence	Congregate Housing - Residential/Group Home
238	45 Morgan Lodging House	Congregate Housing - Rooming House

239	St Anne's SRO	Congregate Housing - Rooming House
240	There is a Solution, Inc. - Tyler's Home	Congregate Housing - Sober House
241	There Is a Solution, Inc - Traci's Home	Congregate Housing - Sober House
242	WRAP House	Congregate Housing - Rooming House
243	There is a Solution, Inc. - Max & Caleb's Home	Congregate Housing - Sober House
244	Dawn's New Day 2	Congregate Housing - Sober House
245	Dawn's New Day 1	Congregate Housing - Sober House
246	371 County St (Rooming House)	Congregate Housing - Rooming House
247	449 Purchase St (Rooming House)	Congregate Housing - Rooming House
248	YWCA Southeastern Ma/A Woman's Place	Congregate Housing - Rooming House
249	Another Woman's Place	Congregate Housing - Rooming House
251	Oliveira Investment Inc./ Roland Hopwood Lodging	Congregate Housing - Rooming House
252	Fairfield Inn & suites	Congregate Housing - Rooming House
253	Roland Hopwood Lodging	Congregate Housing - Rooming House
254	Monarch House	Congregate Housing - Rooming House
256	110 8th St (Rooming House)	Congregate Housing - Rooming House
257	Seth Ingalls House	Congregate Housing - Rooming House
258	Another Woman's Place/New Bedford House	Congregate Housing - Rooming House
259	Carl Corrao Jr. Lodging	Congregate Housing - Rooming House
260	Ethel Rose House of Refuge	Congregate Housing - Sober House
261	1 County Home-Vanderburgh House	Congregate Housing - Sober House
262	Phil's Rooming House	Congregate Housing - Rooming House
263	YWCA Women's Residential Services/Elizabeth's house	Congregate Housing - Rooming House
264	The Homestead	Congregate Housing - Rooming House
266	Roland Hopwood Lodging	Congregate Housing - Rooming House
267	Cottage St Inn	Congregate Housing - Rooming House
268	The County Street House LLC	Congregate Housing - Rooming House
269	Southeastern Mass Veteran Housing Program	Congregate Housing - Rooming House
270	Royal Crown Lodging	Congregate Housing - Rooming House
271	162 Sawyer Street Lodging	Congregate Housing - Rooming House
272	Baylies Square Guest House	Congregate Housing - Rooming House
273	INAYAT LLC/8425 Rockwell LLC	Congregate Housing - Rooming House
274	Capitol House	Congregate Housing - Rooming House
275	Unity House	Congregate Housing - Rooming House
277	237 Collette St (Rooming House)	Congregate Housing - Rooming House
278	Central Avenue Rooms	Congregate Housing - Rooming House
279	Harmony House	Congregate Housing - Rooming House
280	Ellen's House	Congregate Housing - Rooming House
281	Tarklin Hill Lodging	Congregate Housing - Rooming House
282	Young Adult Access Center Child and Family Services	Congregate Housing - Residential/Group Home
283	Whaler Inn & Suites	Congregate Housing - Rooming House
284	Community Behavioral Health Center Child and Family Services	Congregate Housing - Residential/Group Home
285	The Sean Brooke House	Congregate Housing - Rooming House
286	West End Lodging LLC	Congregate Housing - Rooming House
288	Old Colony Y New Bedford Emergency Residence	Congregate Housing - Residential/Group Home

289	NB Hotel MT LLC	Congregate Housing - Rooming House
290	21 Galleon Ave (Rooming House)	Congregate Housing - Rooming House
292	152 William St (Rooming House)	Congregate Housing - Rooming House
295	There Is a Solution, Inc. - Ashley's Home	Congregate Housing - Sober House
296	Castillo, Yudelka	In-Home Daycare
297	Rainbow Day Care Center	Commercial Daycare
298	DeValles Day Care Program	Commercial Daycare
299	Lara-Blanco, Karina	In-Home Daycare
300	Blessed Angels Academy	Commercial Daycare
301	Crayon Campus - Howland	Commercial Daycare
302	North Star LC - Schooner Program	Commercial Daycare
303	Little People's College-374	Commercial Daycare
304	Costa, Carmen	In-Home Daycare
305	Raposo, Constance M.	In-Home Daycare
306	P.A.C.E. Head Start	Commercial Daycare
307	YWkids - YWCA SE MA	Commercial Daycare
308	Ribeiro, Arlinda	In-Home Daycare
309	Valentin Burgos, Ana	In-Home Daycare
310	Rivera Berrios, Germaries	In-Home Daycare
311	West End Day Nursery of New Bedford	Commercial Daycare
312	P.A.C.E. Head Start	Commercial Daycare
313	Mendez-Cortes, Flor De Liz	In-Home Daycare
314	Children's Paradise, Inc	Commercial Daycare
315	Hernandez, Viry	In-Home Daycare
316	Canelon, Maria	In-Home Daycare
317	Frometa De Guzman, Raquel	In-Home Daycare
318	Jimenez, Carmen	In-Home Daycare
319	Long, Bernadette	In-Home Daycare
320	Pennington, Christina	In-Home Daycare
321	Heather Ambrose	In-Home Daycare
322	Brilliant Children's College and Day Care	Commercial Daycare
323	Early Learning Academy	Commercial Daycare
324	Days of Discovery Child Care Center	Commercial Daycare
325	Days of Discovery	Commercial Daycare
326	Smola, Nicholas	In-Home Daycare
327	Brager, Delia	In-Home Daycare
328	Little Explorers LLC	Commercial Daycare
329	Children's Paradise, Inc	Commercial Daycare
330	Charbonneau, Wren	In-Home Daycare
331	Fernandes, Frances	In-Home Daycare
332	Creative Playschool	Commercial Daycare
333	Olson, Mark	In-Home Daycare
334	Stolmeier, Sandra	In-Home Daycare
335	Little People's College - Sassaquin	Commercial Daycare
336	Little People's College - Rockdale	Commercial Daycare
337	Motta, Susan	In-Home Daycare
338	Vasquez De Garcia, Eduvigis	In-Home Daycare
339	Positive Action Day Care	Commercial Daycare
340	After The Bell At Carney School	Commercial Daycare

341	Sgt Carney Academy After Sch	Commercial Daycare
342	Sunshines Place, Inc	Commercial Daycare
343	New Bedford YMCA Preschool & School Age	Commercial Daycare
344	Dennison Memorial School Age DayCare	Commercial Daycare
345	Luperon, Ana	In-Home Daycare
346	Santos, Elga	In-Home Daycare
347	Tejeda, Joselyn	In-Home Daycare
348	Northstar Learning Centers, Inc.	Commercial Daycare
349	Crayon Campus - Nash	Commercial Daycare
350	Little People's College - Church	Commercial Daycare
351	Early Learning Child Care	Commercial Daycare
352	Little People's College - Dartmouth	Commercial Daycare
408	Jacobs Elementary School	School

Path: I:\Projects\2023\23064 New Bedford Hazard Planning\GIS\Maps\240205_NewBedfordMaps.aprx



Map A-1
Environmental Justice Areas

Date: 7/2/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

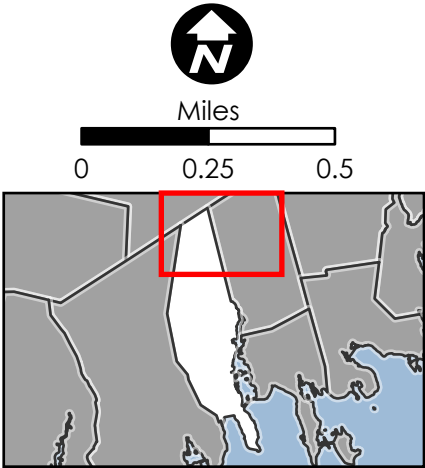
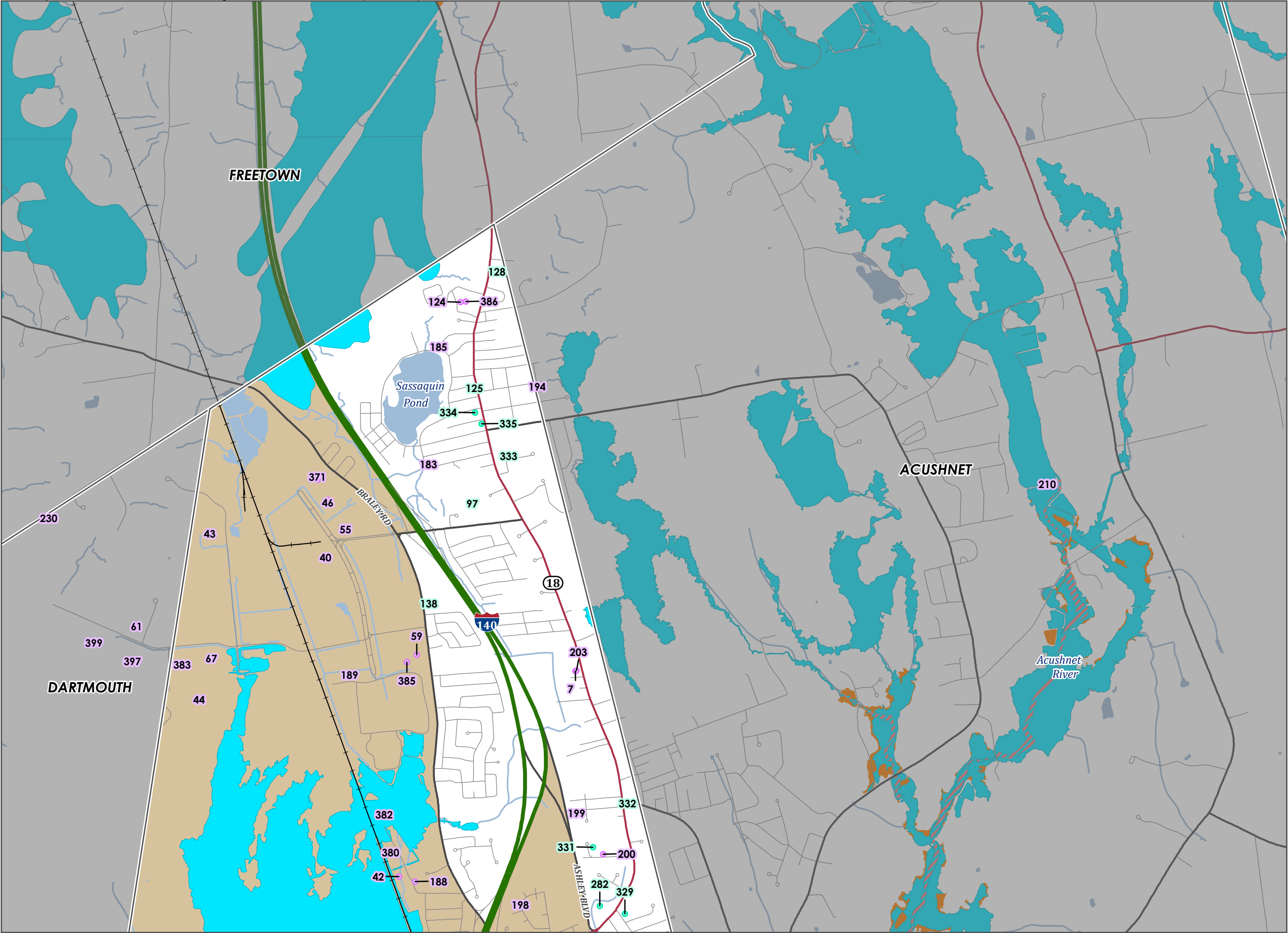
- Transportation**
- Freight Rail
 - Interstate
 - State Highway
 - Major Road
 - Minor Road
 - Local Road

- Environmental Justice Populations**
- Criteria
- Minority
 - Minority and income
 - Minority, income and English isolation

Date: 11/15/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, New Bedford LHMC

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

- Environmental Justice Populations
- Transportation**
 - Freight Rail
 - Interstate
 - State Highway
 - Major Road
 - Minor Road
 - Local Road
- FEMA National Flood Hazard Layer**
 - 1% Annual Chance Flood Hazard (Zones A, AE, AH, AO, VE)
 - Regulatory Floodway (Zone AE)
 - 0.2% Annual Chance Flood Hazard (Zone X)
 - Area with Reduced Risk Due to Levee (Zone X)
 - Zone VE
- Critical Facilities & Vulnerable Populations**
 - Critical Facility
 - Vulnerable Population
 - Critical Facility, Vulnerable Population
 - Shelter



Map B-1.1
Flood Risks North (FEMA 100-year / 500-year / Zone X - Reduced risk due to levee / Repetitive Loss Areas)

Date: 11/15/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, New Bedford LPMC

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

Environmental Justice Populations

Transportation

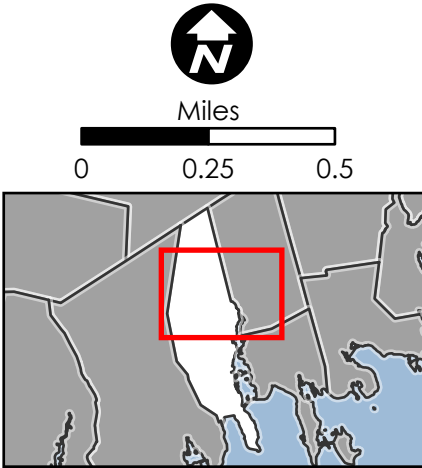
- Freight Rail
- Interstate
- State Highway
- Major Road
- Minor Road
- Local Road

FEMA National Flood Hazard Layer

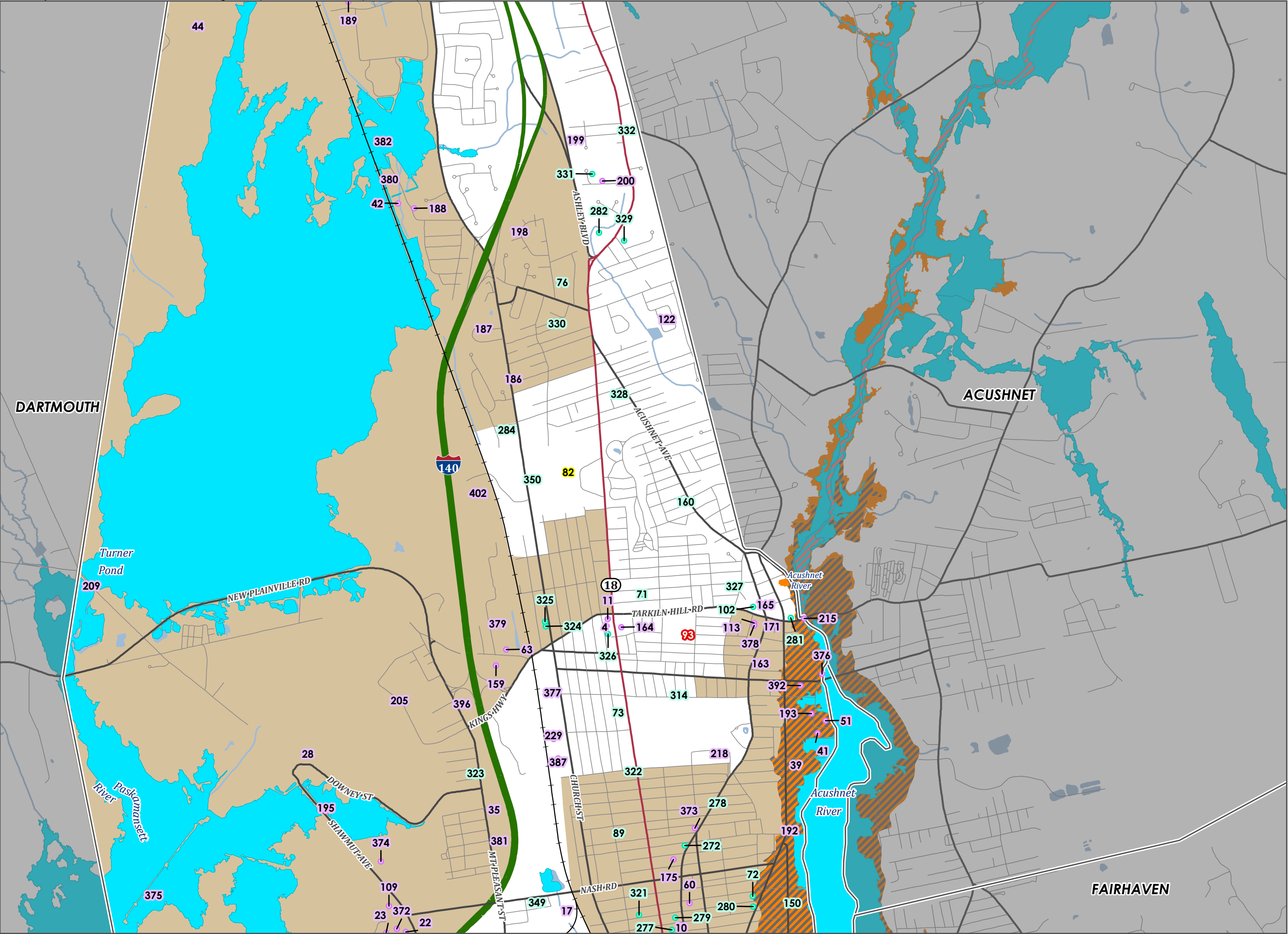
- 1% Annual Chance Flood Hazard (Zones A, AE, AH, AO, VE)
- Regulatory Floodway (Zone AE)
- 0.2% Annual Chance Flood Hazard (Zone X)
- Area with Reduced Risk Due to Levee (Zone X)
- Zone VE

Critical Facilities & Vulnerable Populations

- Critical Facility
- Vulnerable Population
- Critical Facility, Vulnerable Population
- Shelter

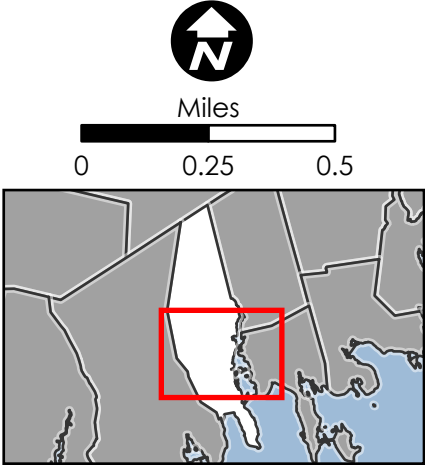
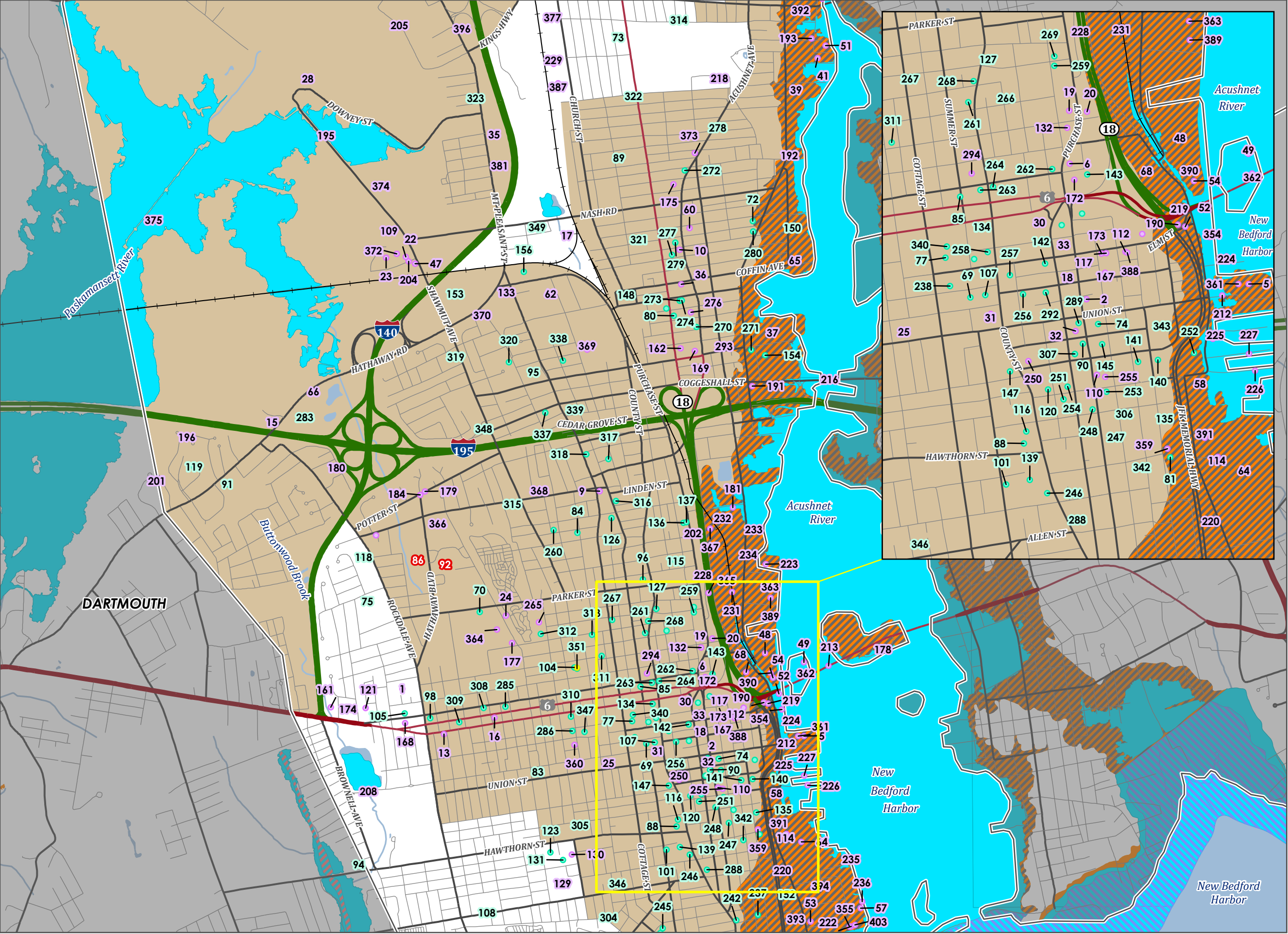


Map B-1.2
Flood Risks North Central
(FEMA 100-year / 500-year / Zone X - Reduced risk due to levee / Repetitive Loss Areas)



Date: 11/15/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, New Bedford LHM
This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

- Environmental Justice Populations
- Transportation**
 - Freight Rail
 - Interstate
 - State Highway
 - Major Road
 - Minor Road
 - Local Road
- FEMA National Flood Hazard Layer**
 - 1% Annual Chance Flood Hazard (Zones A, AE, AH, AO, VE)
 - Regulatory Floodway (Zone AE)
 - 0.2% Annual Chance Flood Hazard (Zone X)
 - Area with Reduced Risk Due to Levee (Zone X)
 - Zone VE
- Critical Facilities & Vulnerable Populations**
 - Critical Facility
 - Vulnerable Population
 - Critical Facility, Vulnerable Population
 - Shelter

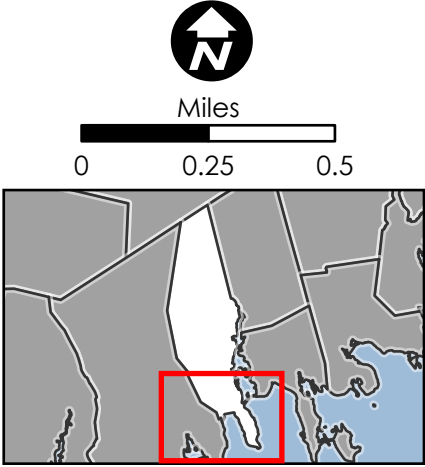
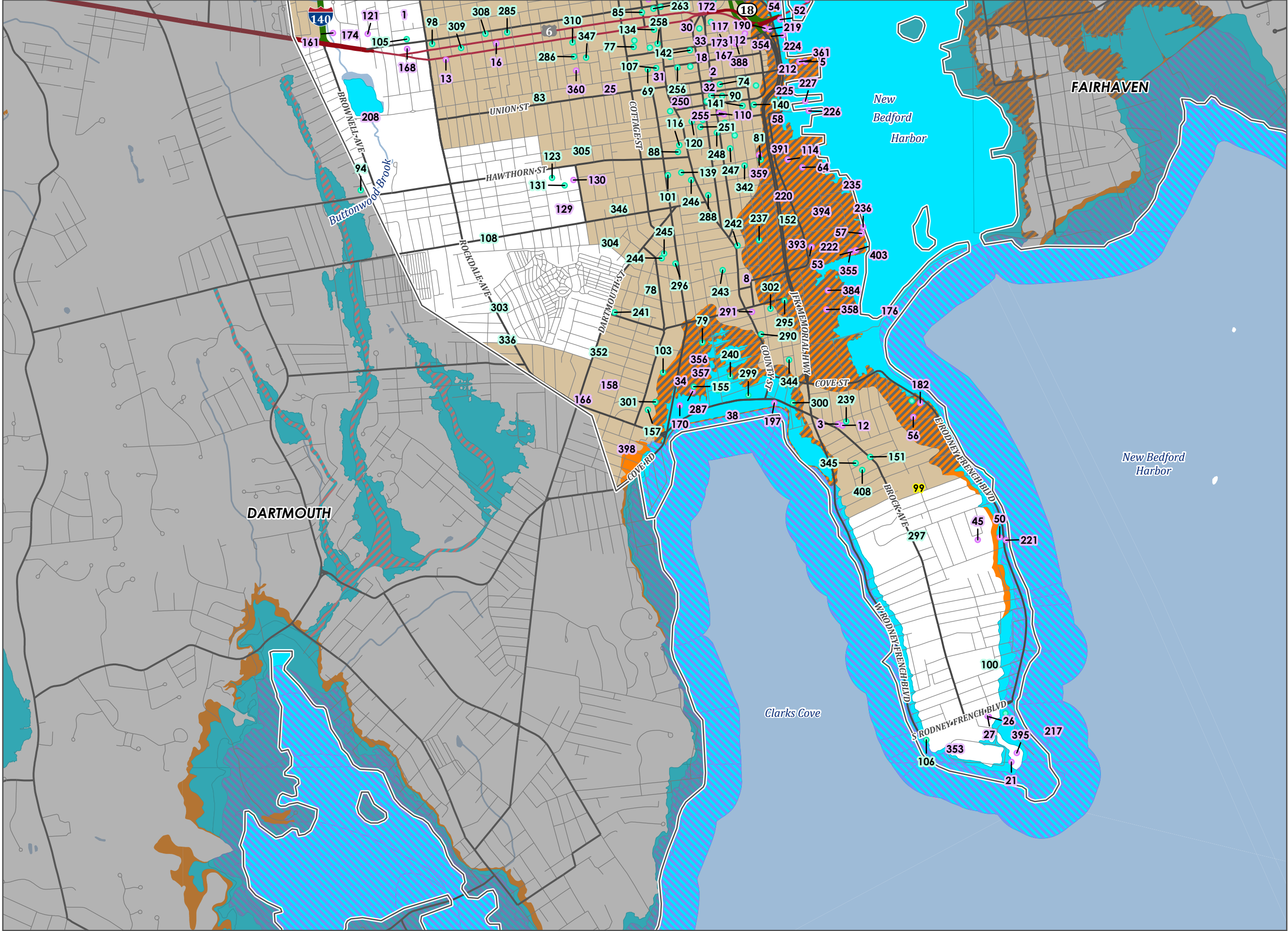


Map B-1.3
Flood Risks South Central
(FEMA 100-year / 500-year / Zone X - Reduced risk due to levee / Repetitive Loss Areas)

Date: 11/15/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, New Bedford LPMC

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

- Environmental Justice Populations
- Transportation**
 - Freight Rail
 - Interstate
 - State Highway
 - Major Road
 - Minor Road
 - Local Road
- FEMA National Flood Hazard Layer**
 - 1% Annual Chance Flood Hazard (Zones A, AE, AH, AO, VE)
 - Regulatory Floodway (Zone AE)
 - 0.2% Annual Chance Flood Hazard (Zone X)
 - Area with Reduced Risk Due to Levee (Zone X)
 - Zone VE
- Critical Facilities & Vulnerable Populations**
 - Critical Facility
 - Vulnerable Population
 - Critical Facility, Vulnerable Population
 - Shelter

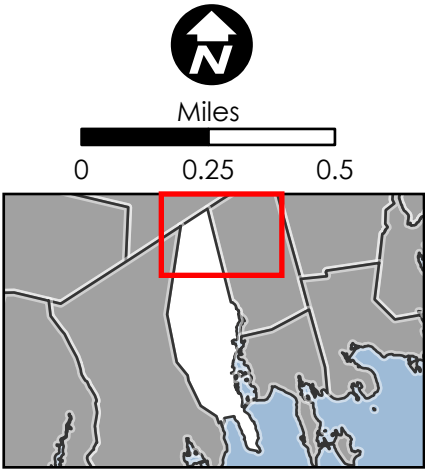
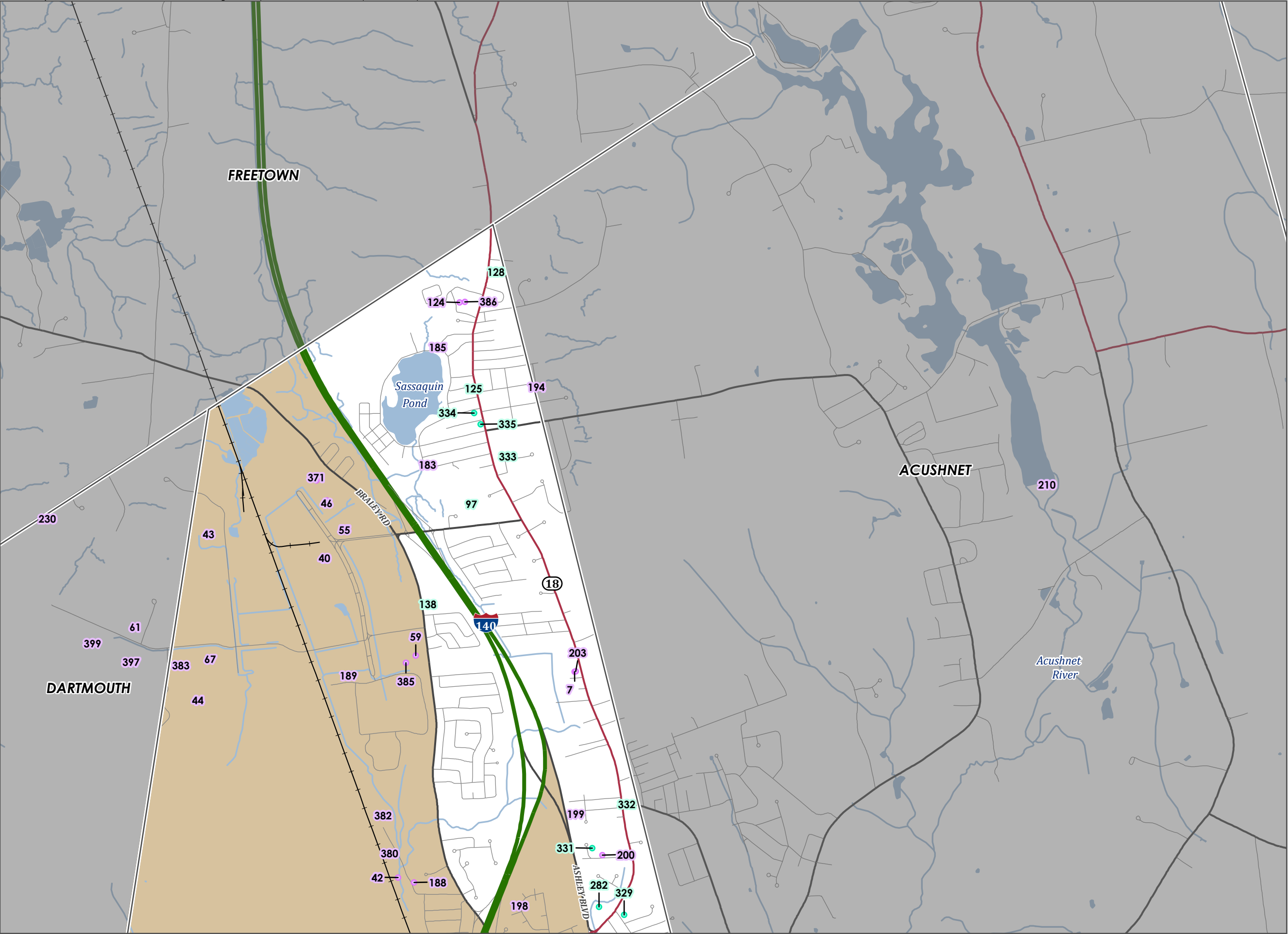


Map B-1.4
Flood Risks South (FEMA 100-year / 500-year / Zone X - Reduced risk due to levee / Repetitive Loss Areas)

Date: 11/15/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, MA Executive Office of Energy & Environmental Affairs, New Bedford LHMC

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

- Environmental Justice Populations
- Transportation**
 - Freight Rail
 - Interstate
 - State Highway
 - Major Road
 - Minor Road
 - Local Road
- MC-FRM 1% Annual Exceedance Probability**
 - 2030
 - 2050
 - 2070
- Critical Facilities & Vulnerable Populations**
 - Critical Facility
 - Vulnerable Population
 - Critical Facility, Vulnerable Population
 - Shelter

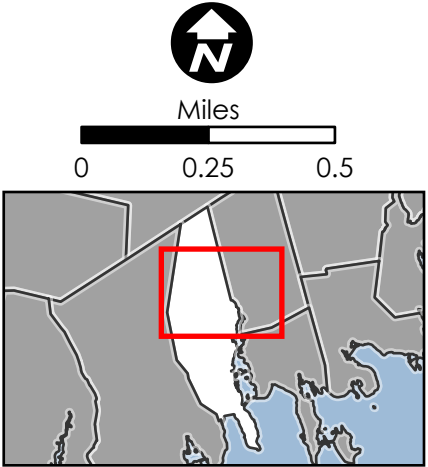
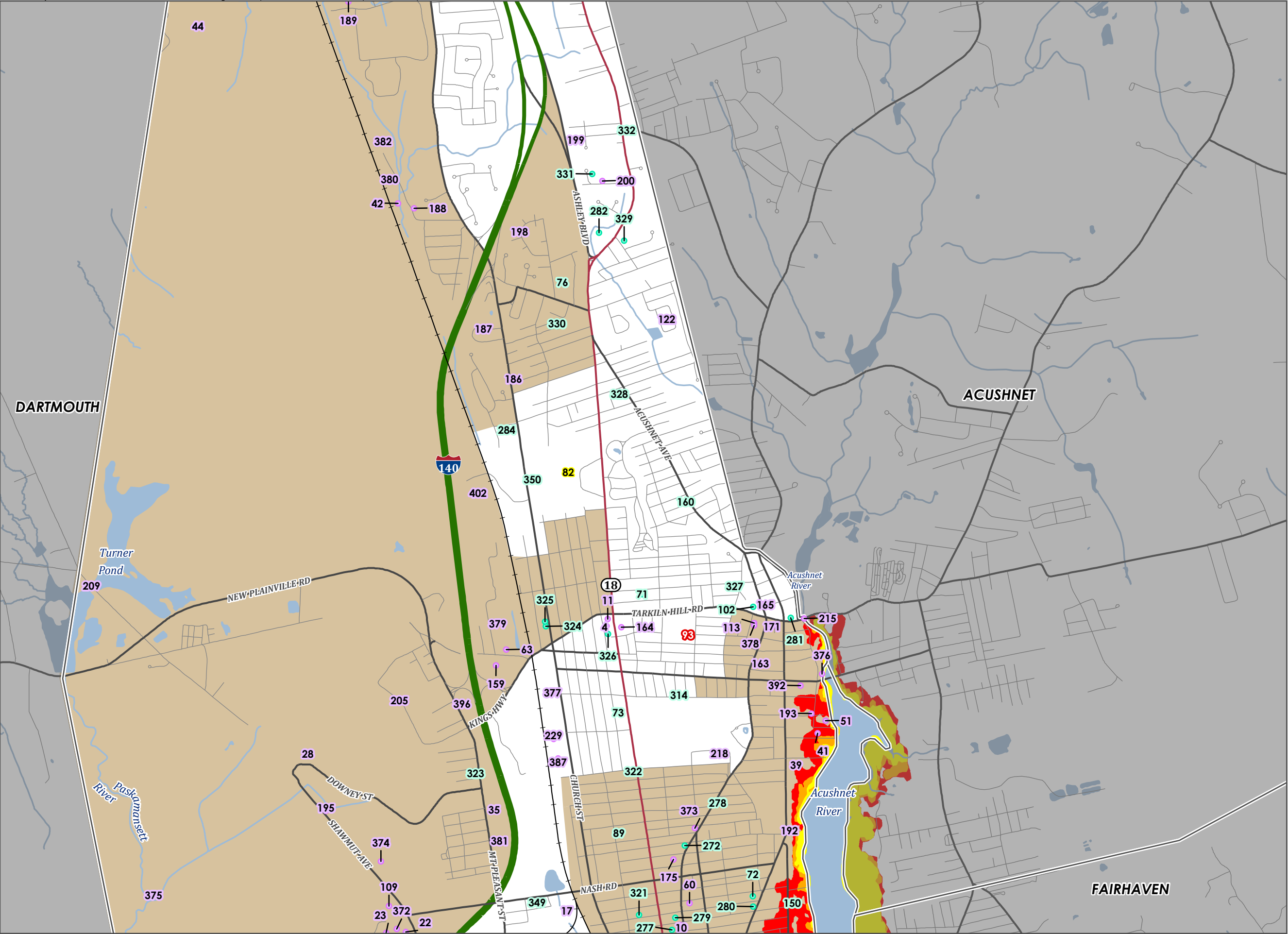


Map C-1.1
MC-FRM North (MA Coast
Flood Risk Model 2030 /
2050 / 2070)

Date: 11/15/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, MA Executive Office of Energy & Environmental Affairs, New Bedford LHMC

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

- Environmental Justice Populations
- Transportation**
 - Freight Rail
 - Interstate
 - State Highway
 - Major Road
 - Minor Road
 - Local Road
- MC-FRM 1% Annual Exceedance Probability**
 - 2030
 - 2050
 - 2070
- Critical Facilities & Vulnerable Populations**
 - Critical Facility
 - Vulnerable Population
 - Critical Facility, Vulnerable Population
 - Shelter



Map C-1.2
MC-FRM North Central (MA Coast Flood Risk Model 2030 / 2050 / 2070)

Date: 11/15/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, MA Executive Office of Energy & Environmental Affairs, New Bedford LHM

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

- Environmental Justice Populations

Transportation

MC-FRM 1% Annual Exceedance Probability

Critical Facilities & Vulnerable Populations
- Freight Rail

Interstate

State Highway

Major Road

Minor Road

Local Road

2030

2050

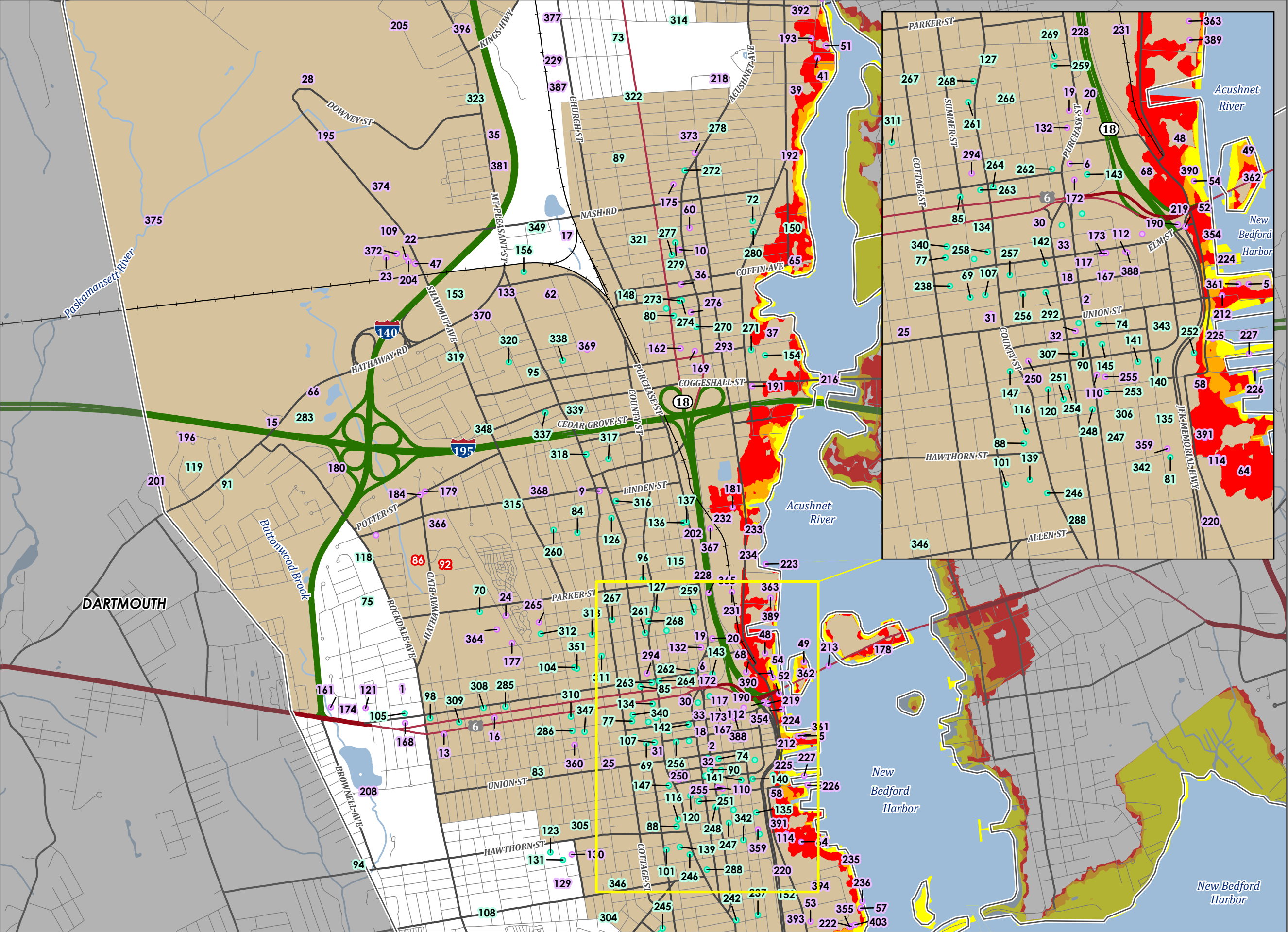
2070

Critical Facility

Vulnerable Population

Critical Facility, Vulnerable Population

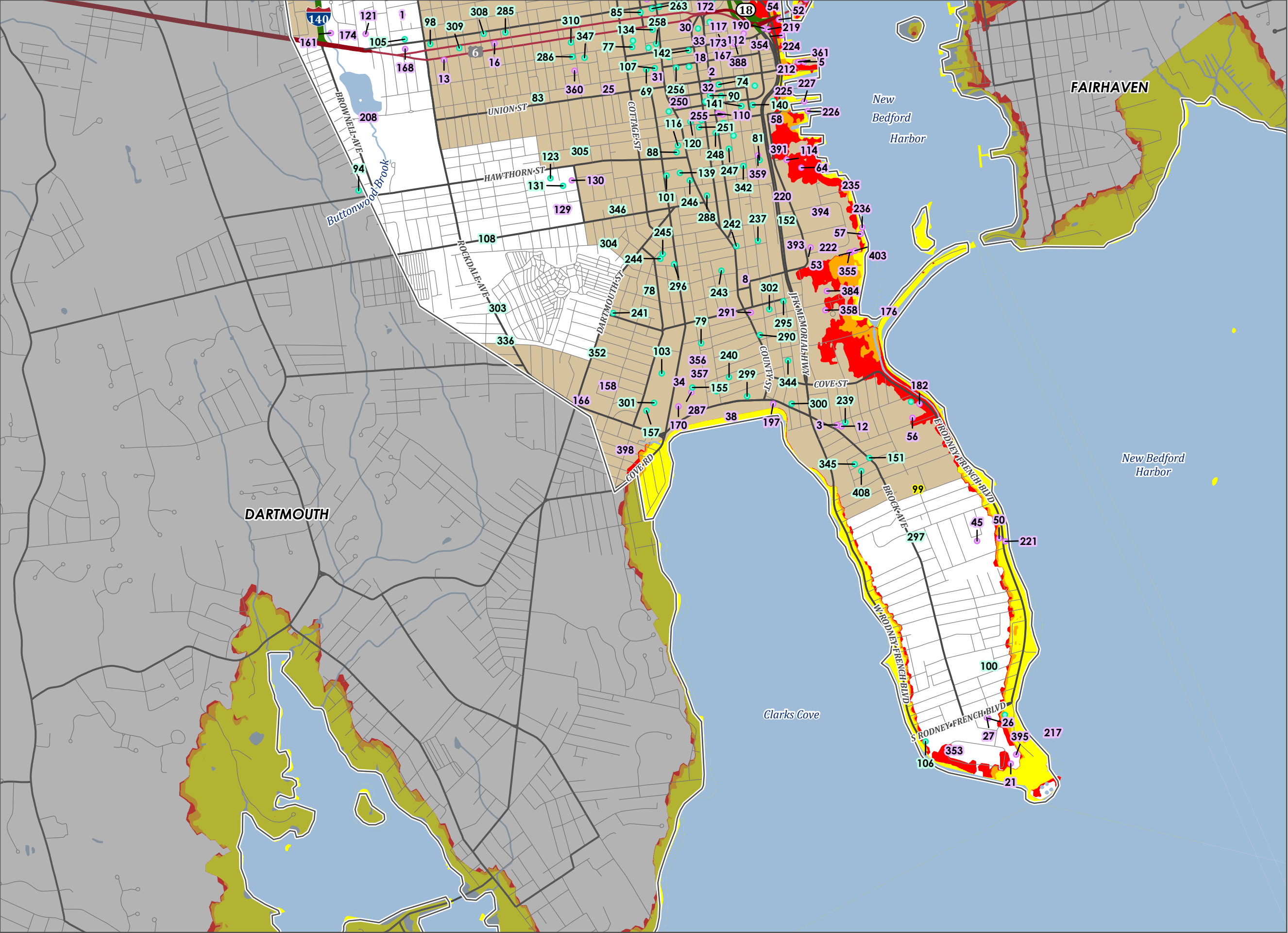
Shelter



Map C-1.3
MC-FRM South Central (MA
Coast Flood Risk Model
2030 / 2050 / 2070)

Date: 11/15/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, MA Executive Office of Energy & Environmental Affairs, New Bedford LHMC

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.



- Environmental Justice Populations
- Transportation**
- Freight Rail

Interstate

State Highway

Major Road

Minor Road

Local Road
- MC-FRM 1% Annual Exceedance Probability**
- 2030

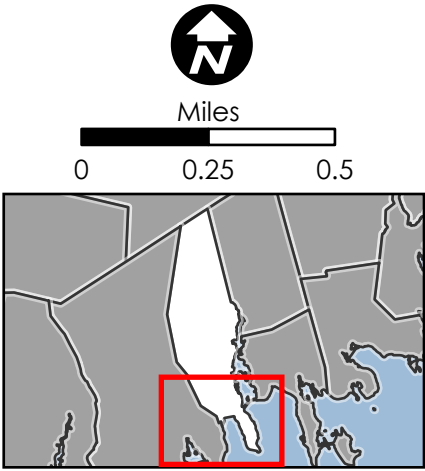
2050

2070
- Critical Facilities & Vulnerable Populations**
- Critical Facility

Vulnerable Population

Critical Facility, Vulnerable Population

Shelter



Map C-1.4
MC-FRM South (MA Coast
Flood Risk Model 2030 /
2050 / 2070)

Date: 11/15/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, New Bedford LPMC

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

Environmental Justice Populations

Criteria

Minority

Minority and income

Minority, income and English

Transportation

Freight Rail

Interstate

State Highway

Major Road

Minor Road

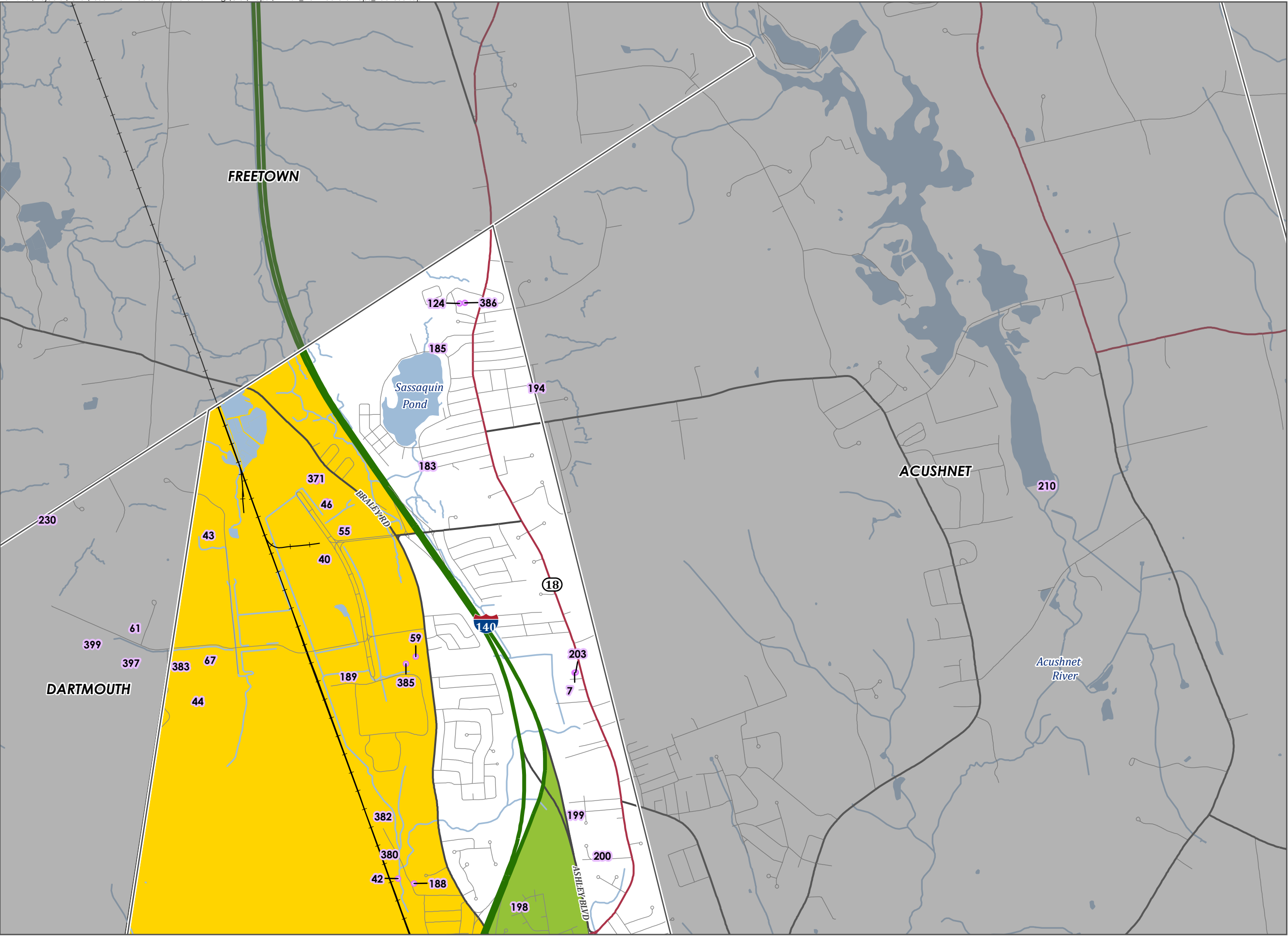
Local Road

Critical Facilities

Critical Facility

Critical Facility, Vulnerable Population

Shelter



Map D-1.1
Critical Facilities North

Date: 11/15/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, New Bedford LPMC

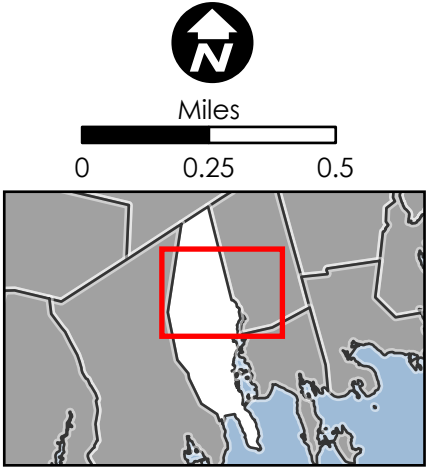
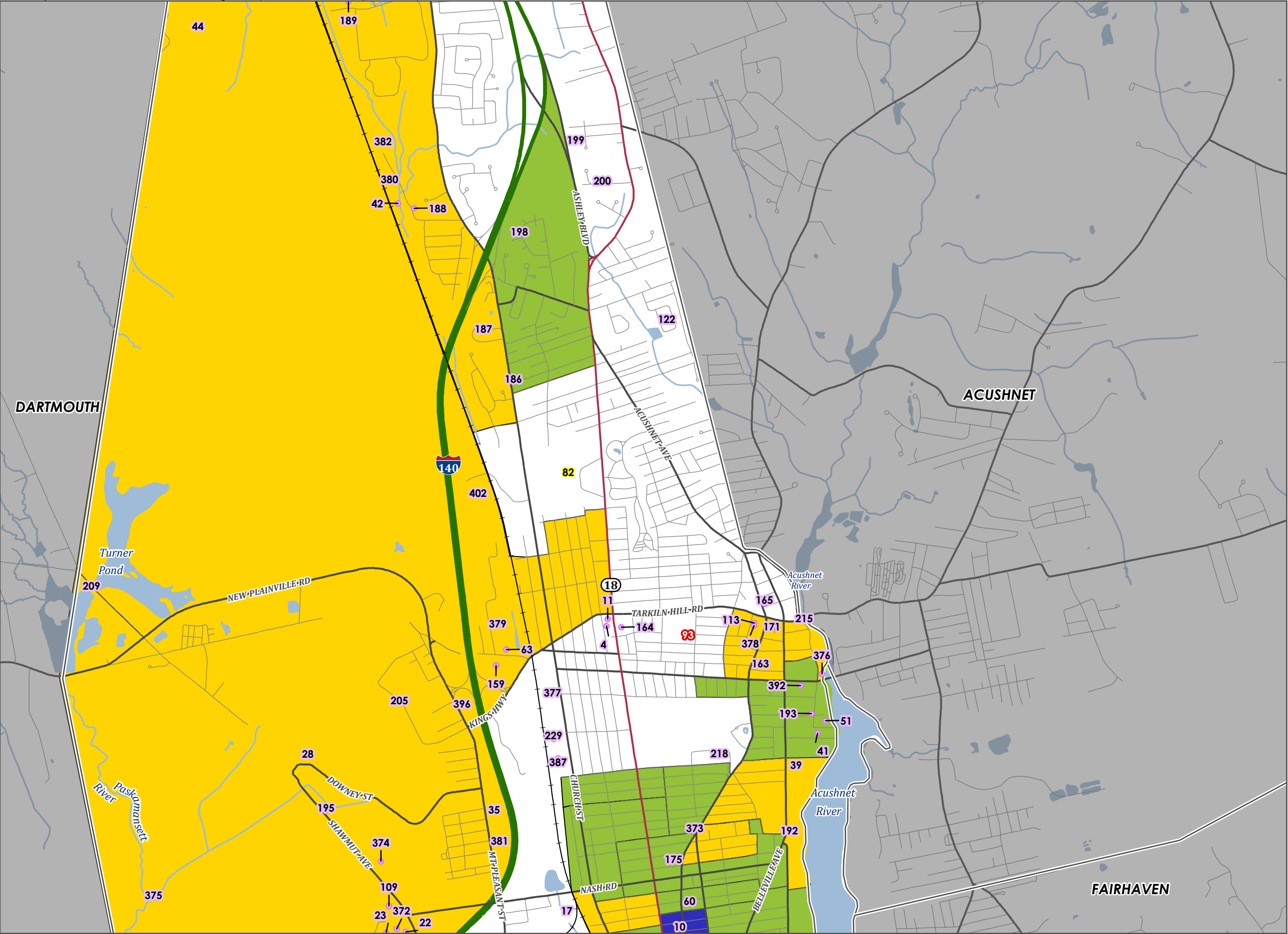
This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

Environmental Justice Populations

- Criteria**
- Minority
 - Minority and income
 - Minority, income and English

- Transportation**
- Freight Rail
 - Interstate
 - State Highway
 - Major Road
 - Minor Road
 - Local Road

- Critical Facilities**
- Critical Facility
 - Critical Facility, Vulnerable Population
 - Shelter



Map D-1.2
Critical Facilities North
Central

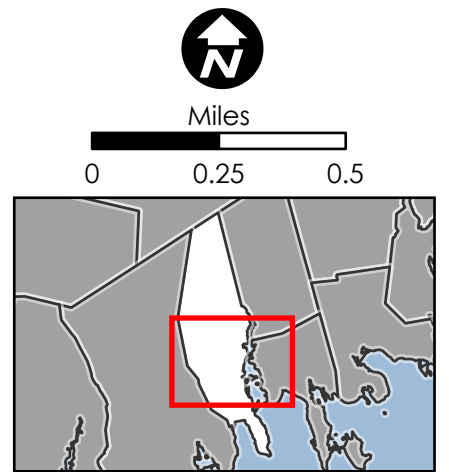
*This map is for informational purposes
and may not be suitable for legal,
engineering, or surveying purposes.*

Criteria

- Minority
- Minority and income
- Minority, income and English

- Freight Rail
- Interstate
- State Highway
- Major Road
- Minor Road
- Local Road

- # Critical Facility
- # Critical Facility, Vulnerable Population
- # Shelter



Map D-1.3

Critical Facilities South Central

Date: 11/15/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, New Bedford LHMC

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

Environmental Justice Populations

Criteria

Minority

Minority and income

Minority, income and English

Transportation

Freight Rail

Interstate

State Highway

Major Road

Minor Road

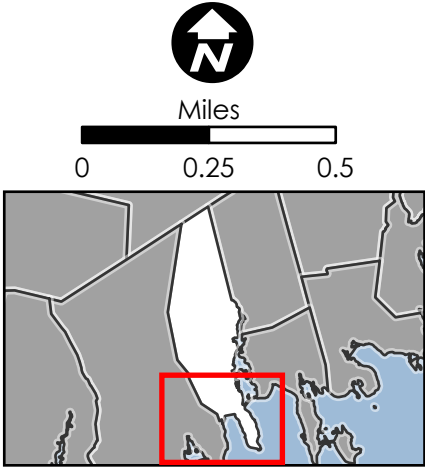
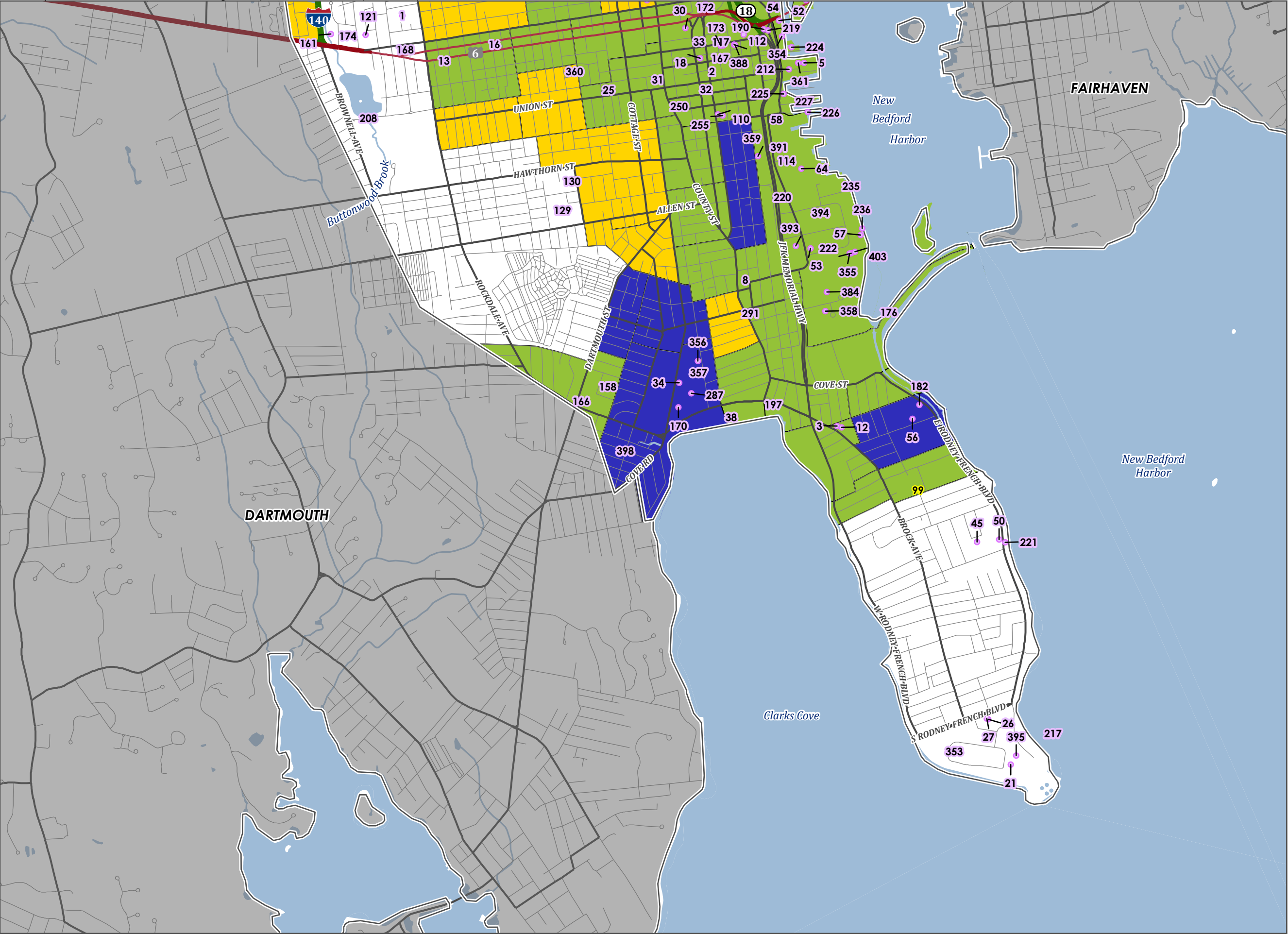
Local Road

Critical Facilities

Critical Facility

Critical Facility, Vulnerable Population

Shelter



Map D-1.4
Critical Facilities South

*This map is for informational purposes
and may not be suitable for legal,
engineering, or surveying purposes.*

Environmental Justice Populations

Criteria

- Minority
- Minority and income
- Minority, income and English

Transportation

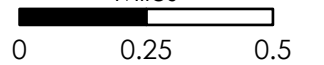
- Freight Rail
- █ Interstate
- █ State Highway
- █ Major Road
- █ Minor Road
- █ Local Road

Vulnerable Populations

- # Critical Facility, Vulnerable Population
- # Shelter
- # Vulnerable Population



Miles



Map E-1.1

Vulnerable Populations North

Date: 11/15/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, New Bedford LPMC

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

Environmental Justice Populations

- Criteria**
- Minority
 - Minority and income
 - Minority, income and English

- Transportation**
- Freight Rail
 - Interstate
 - State Highway
 - Major Road
 - Minor Road
 - Local Road

- Vulnerable Populations**
- Critical Facility, Vulnerable Population
 - Shelter
 - Vulnerable Population

DARTMOUTH

ACUSHNET

FAIRHAVEN



Miles

0 0.25 0.5



Map E-1.2
Vulnerable Populations North Central

Date: 11/15/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, New Bedford LHMC

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

Environmental Justice Populations

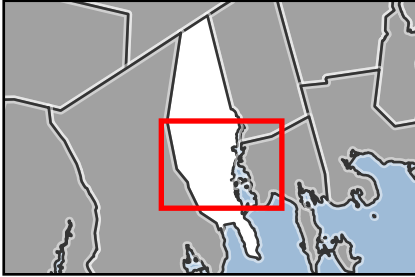
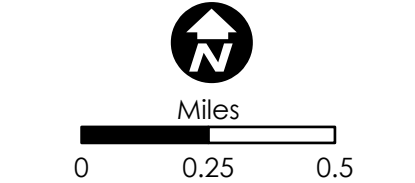
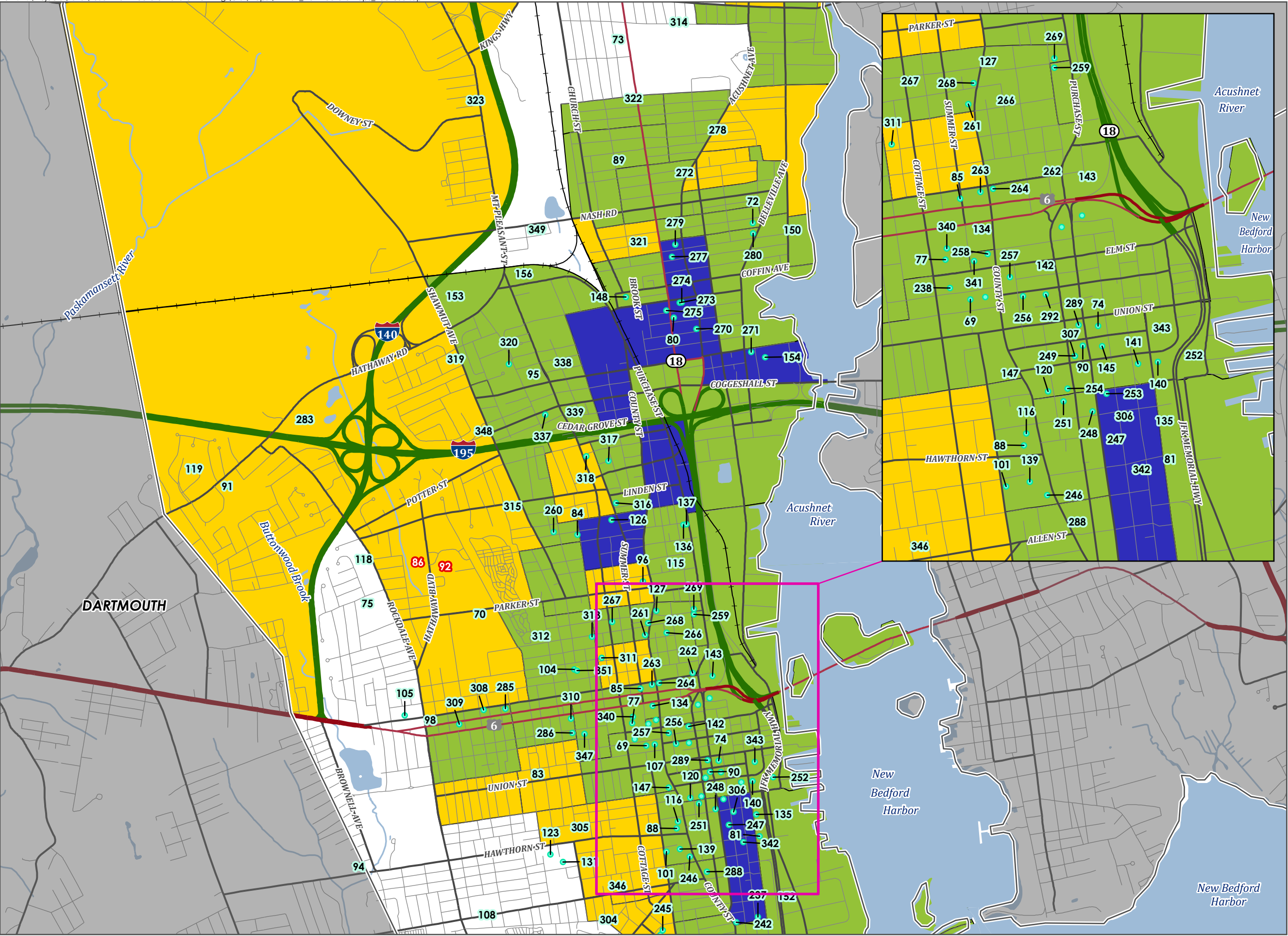
- Criteria
- Minority
 - Minority and income
 - Minority, income and English

Transportation

- Freight Rail
- Interstate
- State Highway
- Major Road
- Minor Road
- Local Road

Vulnerable Populations

- Critical Facility, Vulnerable Population
- Shelter
- Vulnerable Population



Map E-1.3
Vulnerable Populations South Central

Date: 11/15/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, New Bedford LPMC

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

Environmental Justice Populations

Criteria

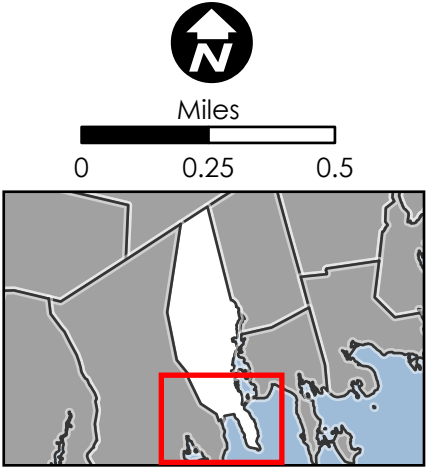
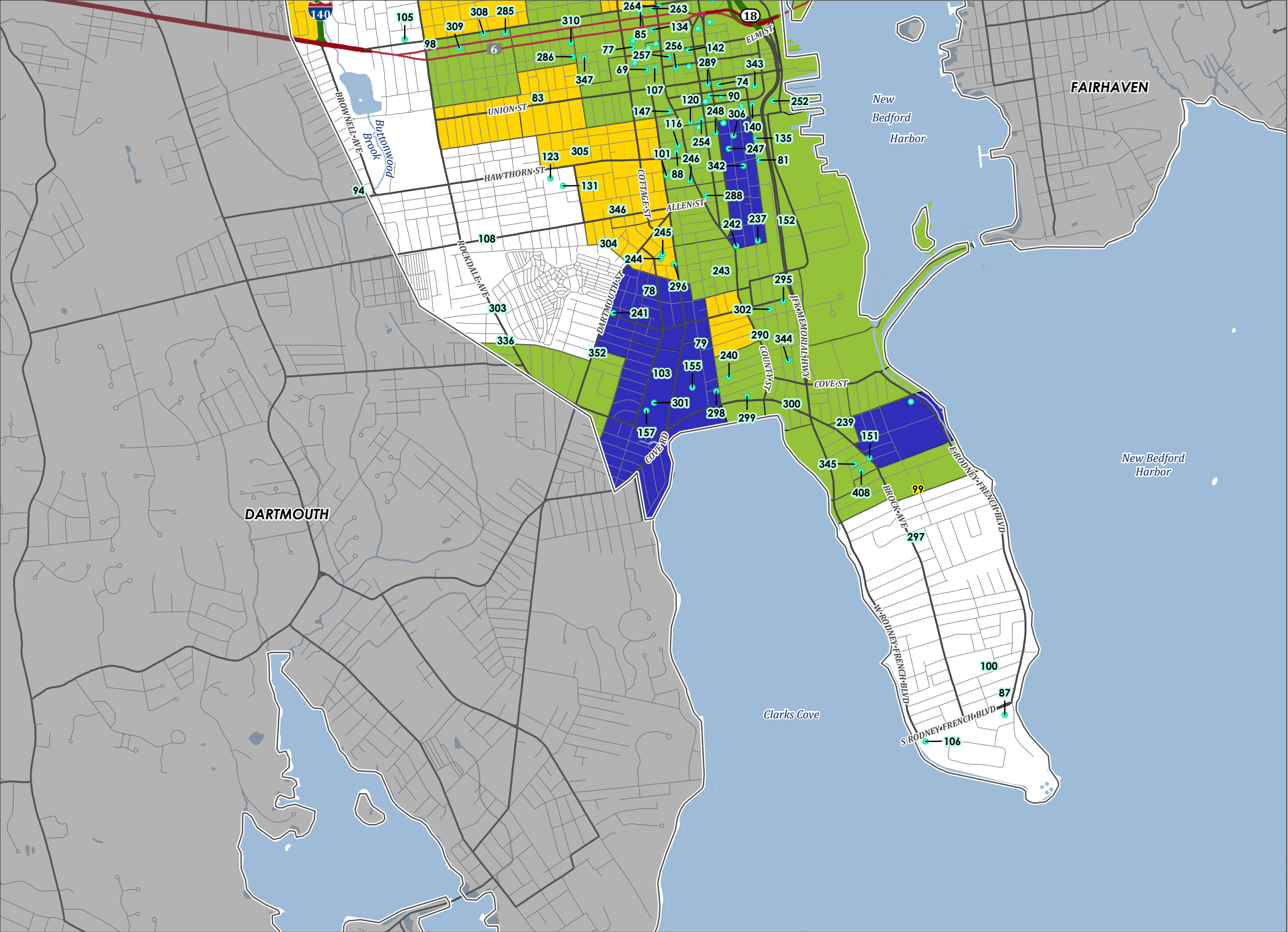
- Minority
- Minority and income
- Minority, income and English

Transportation

- Freight Rail
- Interstate
- State Highway
- Major Road
- Minor Road
- Local Road

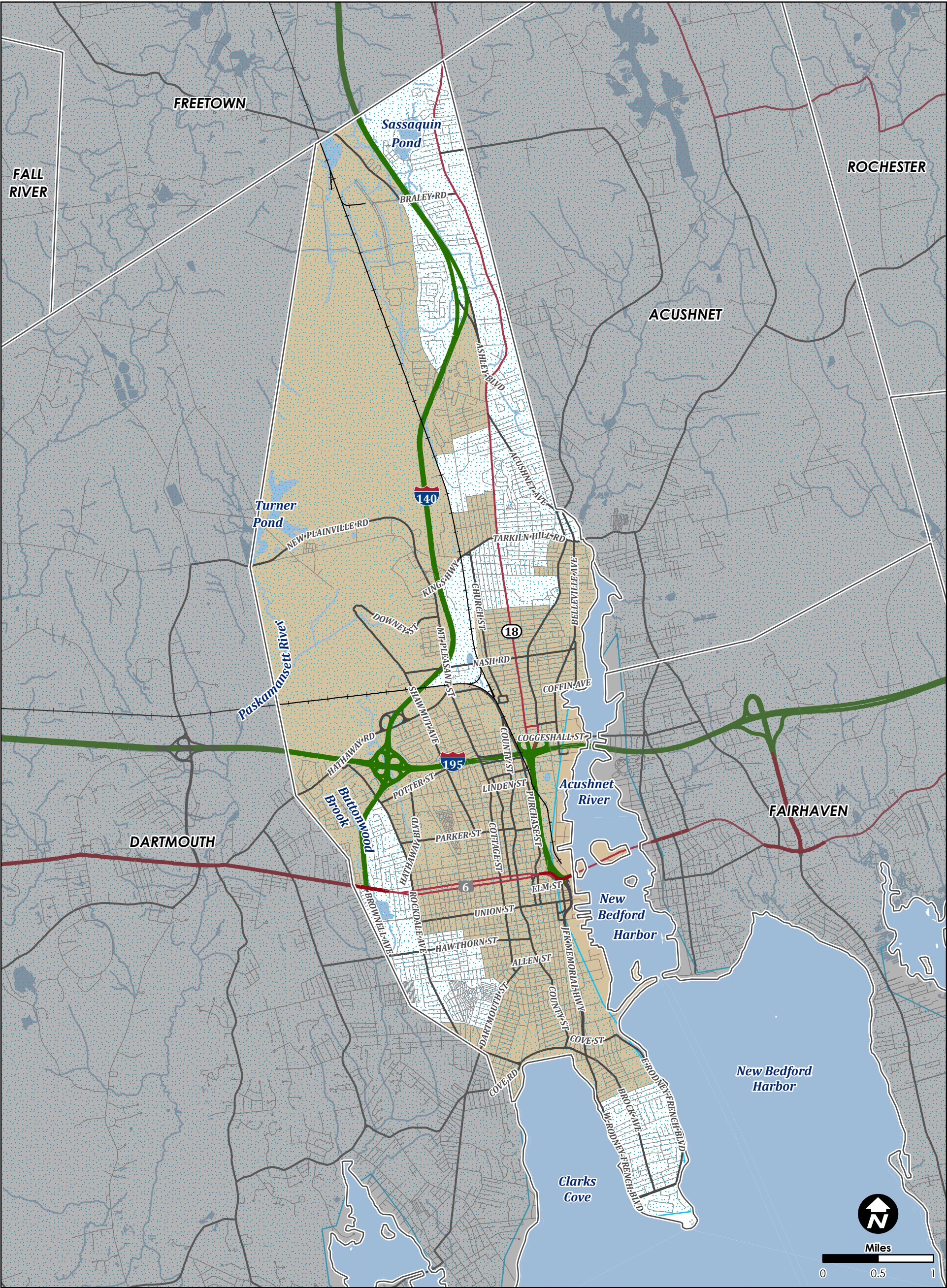
Vulnerable Populations

- Critical Facility, Vulnerable Population
- Shelter
- Vulnerable Population



Map E-1.4
Vulnerable Populations South








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Map F-1
Average Annual Snowfall

Date: 7/3/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

Transportation	Environmental Justice Populations
 Freight Rail	Average Annual Snowfall
 Interstate	 24.1 - 36.0 inches (Zone F)
 State Highway	
 Major Road	
 Minor Road	
 Local Road	

Date: 11/15/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, New Bedford LHM
This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

- Environmental Justice Populations
- Transportation**
- Freight Rail

Interstate

State Highway

Major Road

Minor Road

Local Road
- Hurricane Surge Inundation Zones**
- Category 1

Category 2

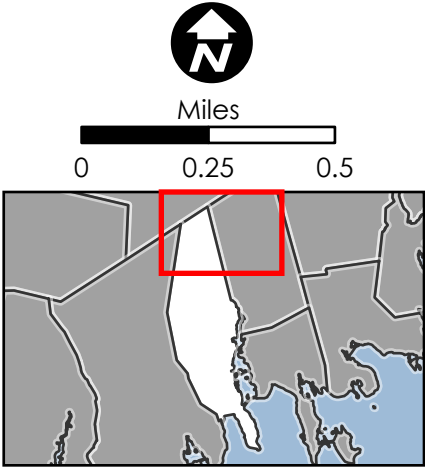
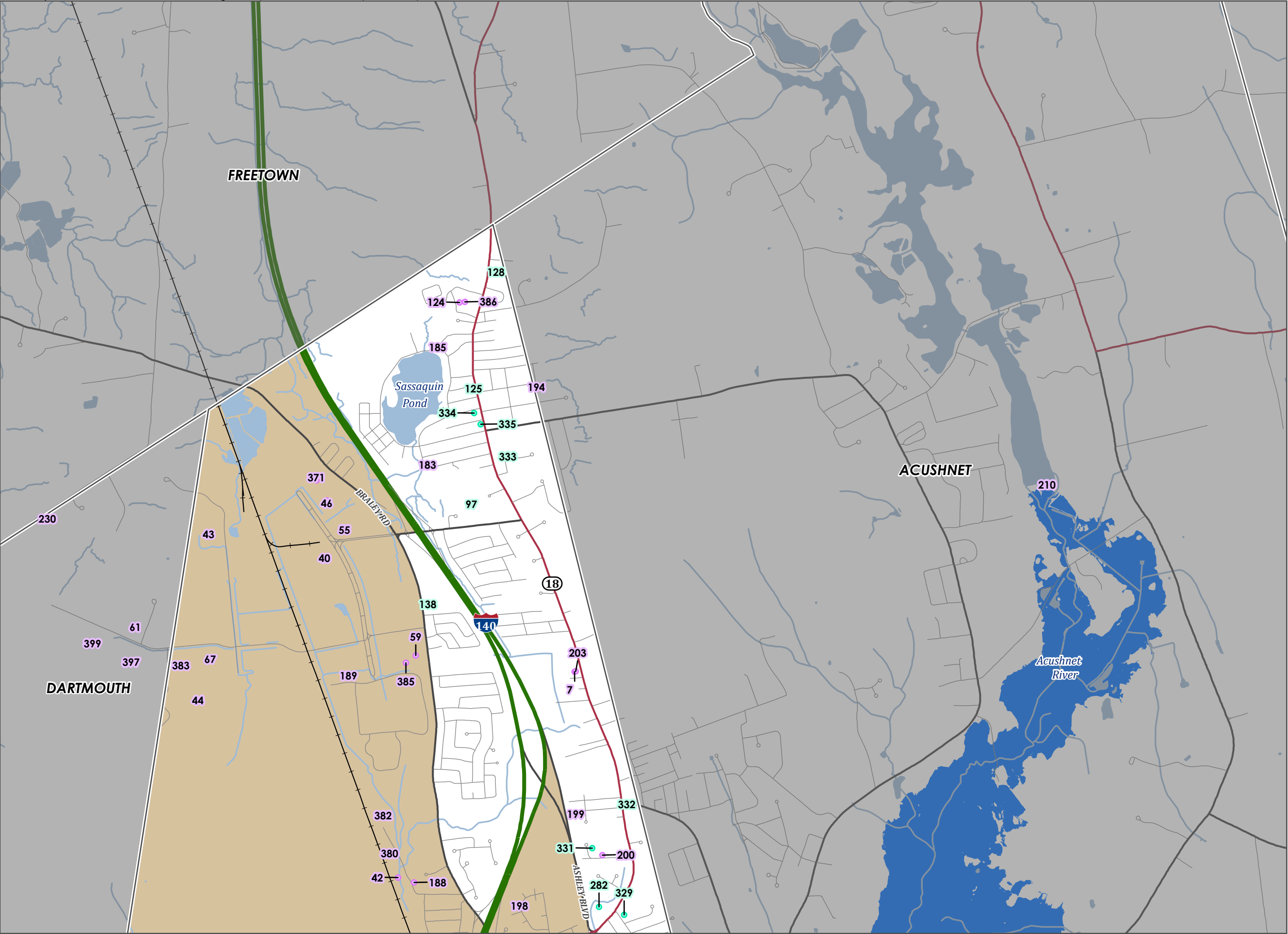
Category 3

Category 4
- Critical Facilities & Vulnerable Populations**
- Critical Facility

Vulnerable Population

Critical Facility, Vulnerable Population

Shelter



Map G-1.1
Hurricane Surge Inundation Zones North (SLOSH Zones)

Date: 11/15/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, New Bedford LHMC

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

- Environmental Justice Populations

Transportation

Hurricane Surge Inundation Zones

Critical Facilities & Vulnerable Populations
- Freight Rail

Interstate

State Highway

Major Road

Minor Road

Local Road
- Category 1

Category 2

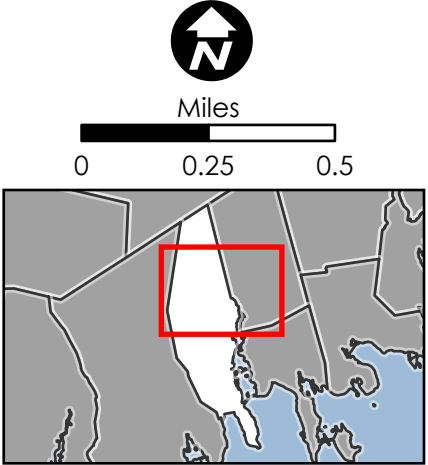
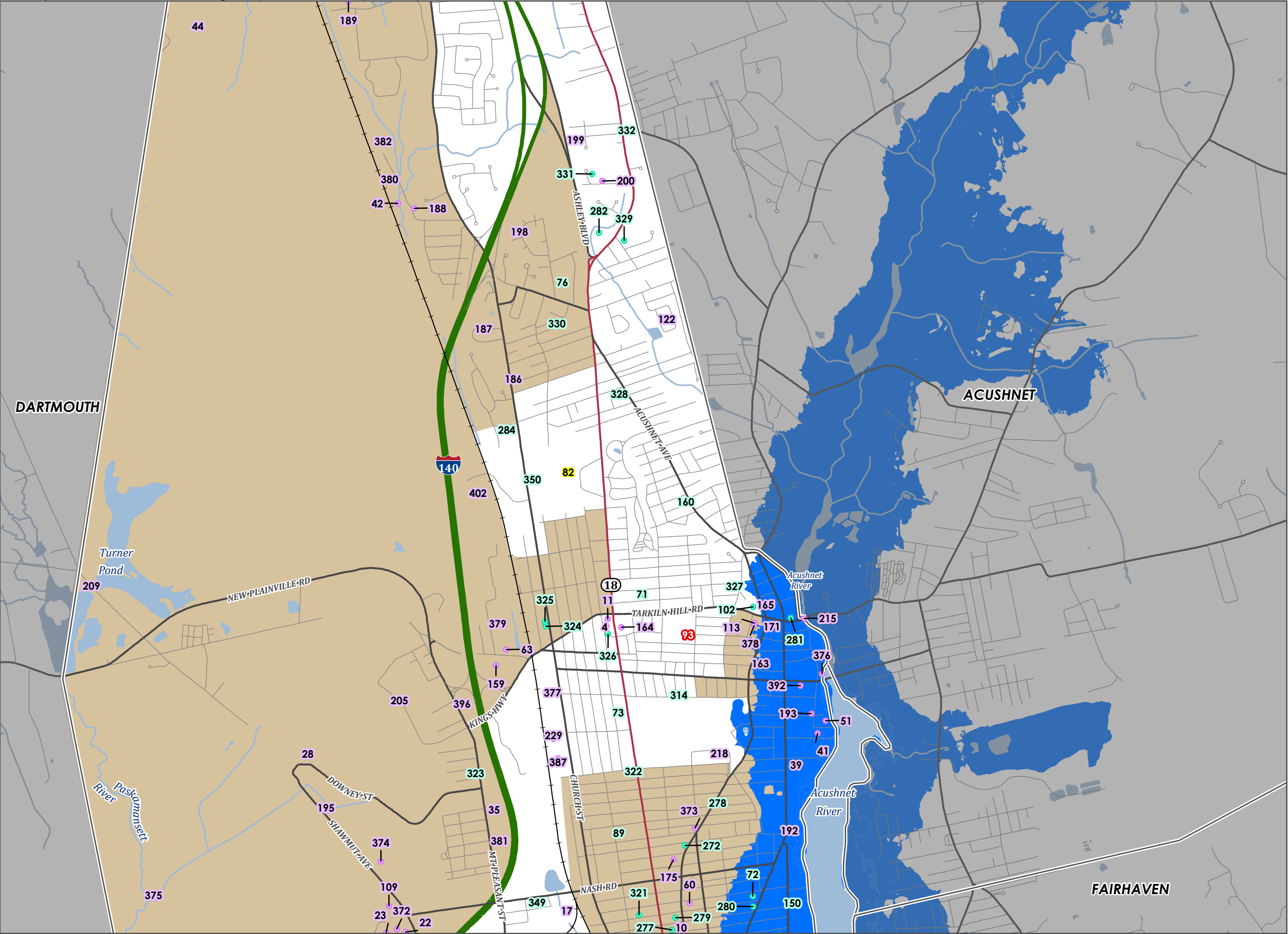
Category 3

Category 4
- # Critical Facility

Vulnerable Population

Critical Facility, Vulnerable Population

Shelter



Map G-1.2
Hurricane Surge Inundation Zones North Central (SLOSH Zones)

Date: 11/15/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, New Bedford LHMC

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

Environmental Justice Populations

Transportation

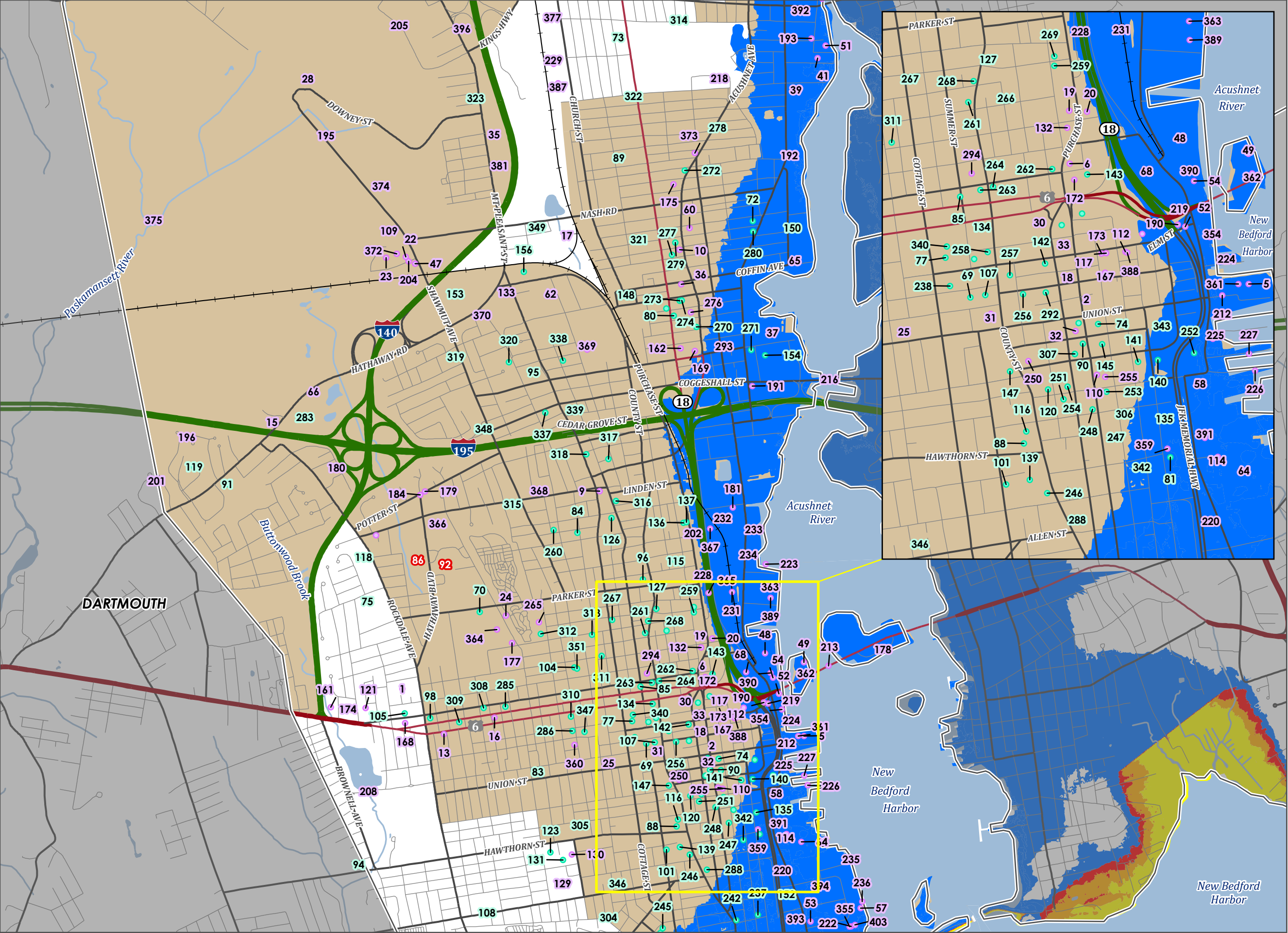
- Freight Rail
- Interstate
- State Highway
- Major Road
- Minor Road
- Local Road

Hurricane Surge Inundation Zones

- Category 1
- Category 2
- Category 3
- Category 4

Critical Facilities & Vulnerable Populations

- Critical Facility
- Vulnerable Population
- Critical Facility, Vulnerable Population
- Shelter




Map G-1.3
Hurricane Surge Inundation Zones South Central (SLOSH Zones)

Date: 11/15/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, New Bedford LHMC


This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.


- Environmental Justice Populations
- Transportation**
-  Freight Rail

 Interstate

 State Highway

 Major Road

 Minor Road

 Local Road
- Hurricane Surge Inundation Zones**
-  Category 1

 Category 2

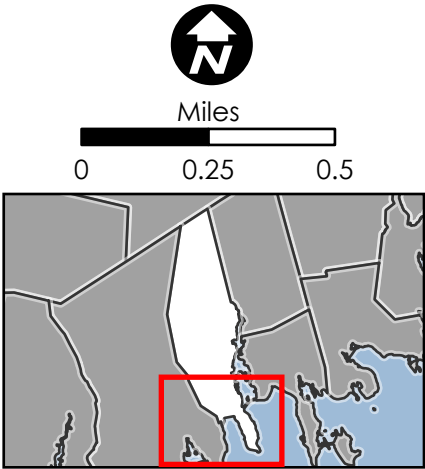
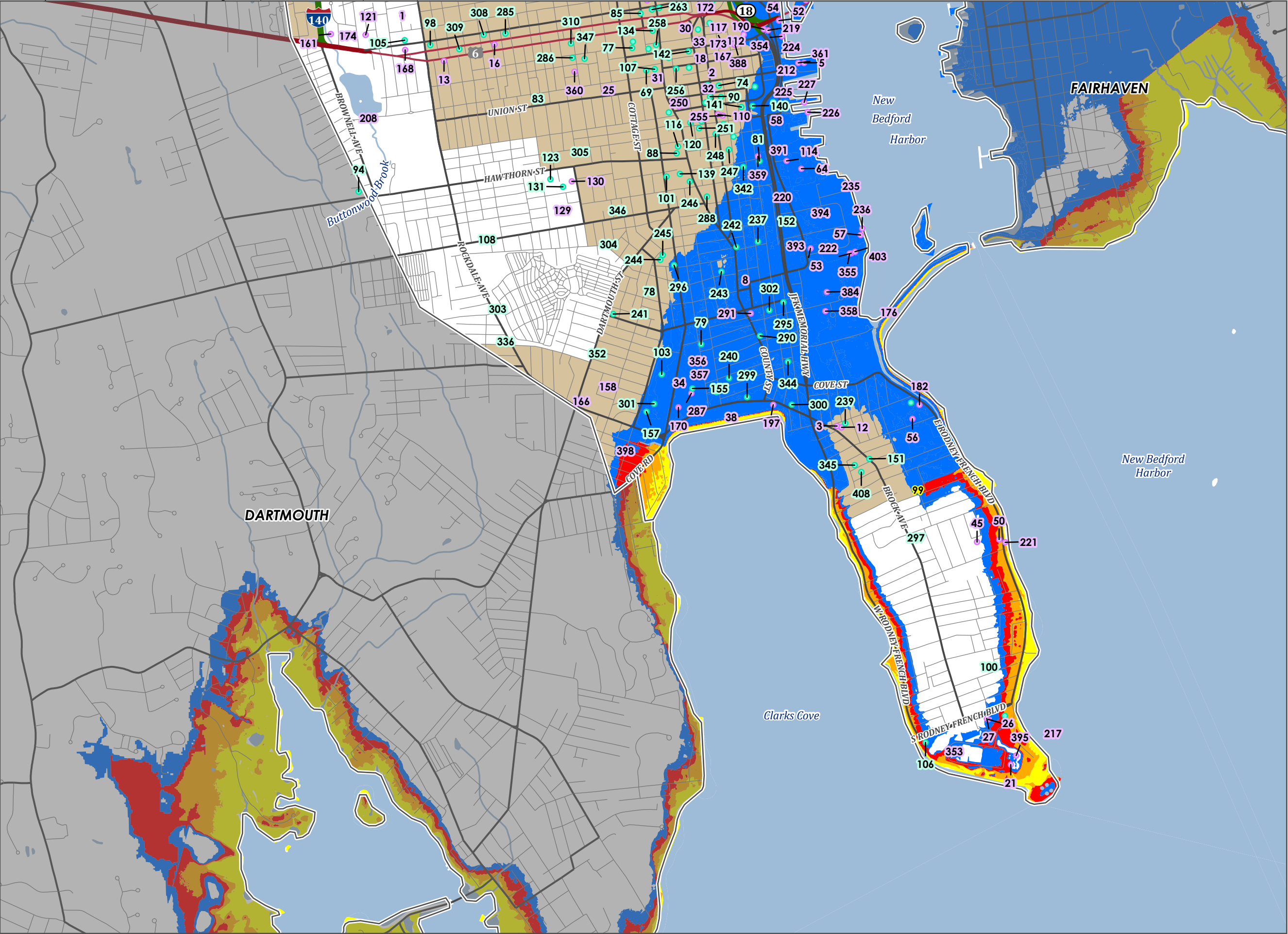
 Category 3

 Category 4
- Critical Facilities & Vulnerable Populations**
-  Critical Facility

 Vulnerable Population

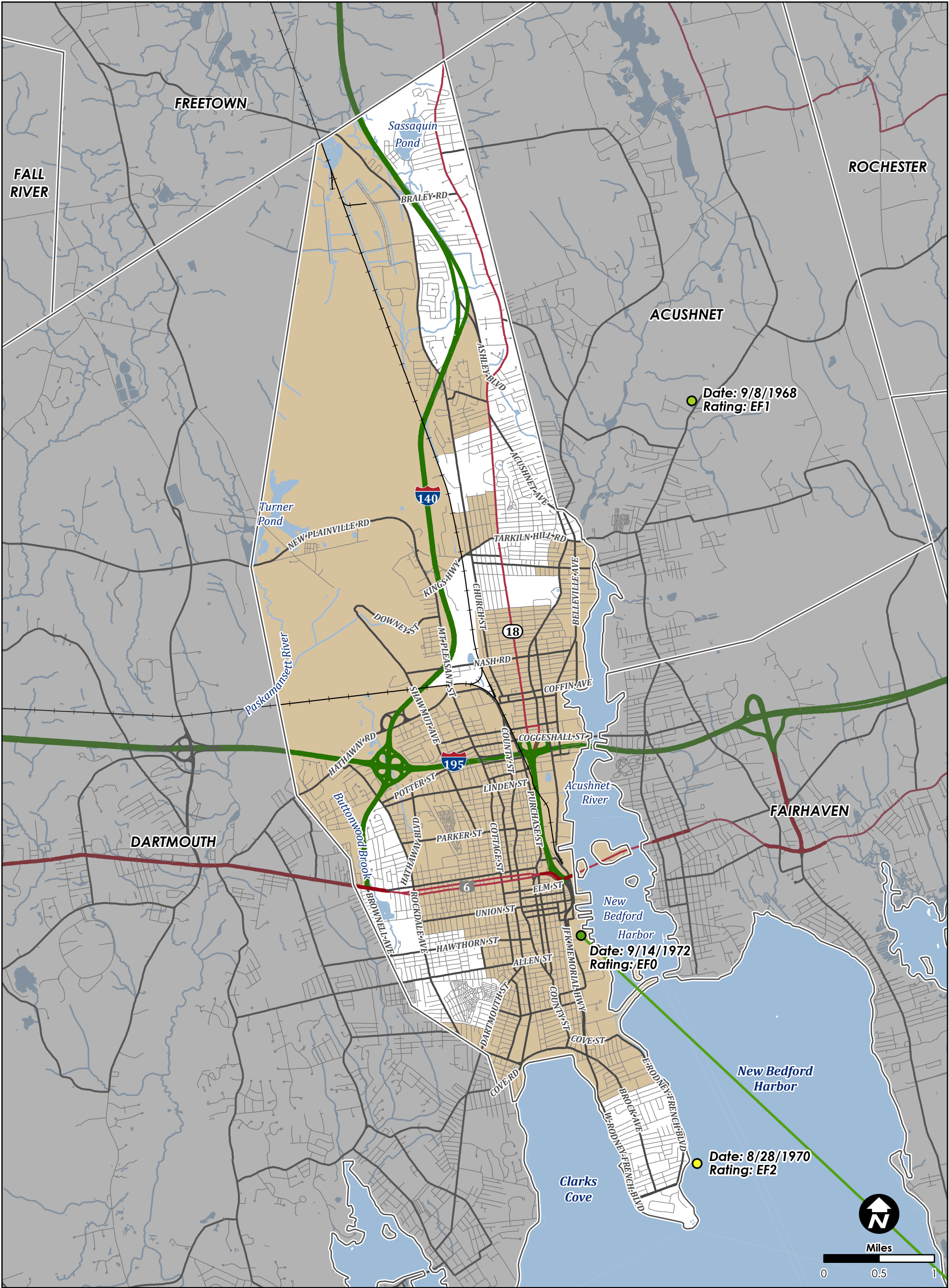
 Critical Facility, Vulnerable Population

 Shelter



Map G-1.4
Hurricane Surge Inundation Zones South (SLOSH Zones)

Path: I:\Projects\2023\23064 New Bedford Hazard Planning\GIS\Maps\240205_NewBedfordMaps.aprx



Map H-1
Tornado Incidence

Date: 12/22/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, NOAA's National Weather Service Storm Prediction Center

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

Transportation

- Freight Rail
- Interstate
- State Highway
- Major Road
- Minor Road
- Local Road

Environmental Justice Populations

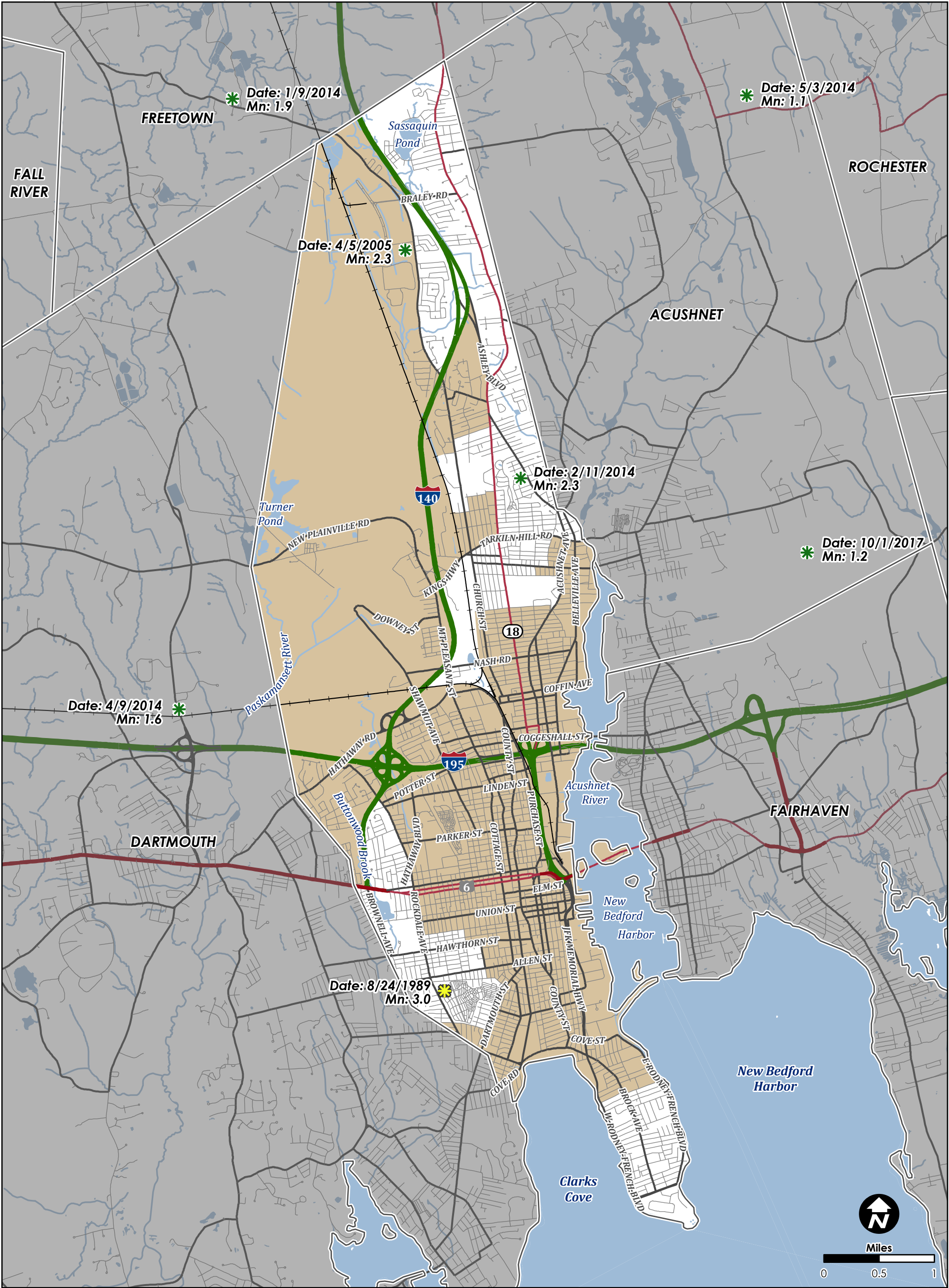
Tornadoes (1950-2022)

- Paths

Origin Points by Enhanced Fujita (EF) Scale Rating

- EF0 (65-85 mph 3-second gust)
- EF1 (86-110 mph 3-second gust)
- EF2 (111-135 mph 3-second gust)

Path: I:\Projects\2023\23064 New Bedford Hazard Planning\GIS\Maps\240205_NewBedfordMaps.aprx



Date: 11/18/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, U.S. Forest Service, New Bedford LHMC

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

- Environmental Justice Populations
- Transportation**
- Freight Rail

Interstate

State Highway

Major Road

Minor Road

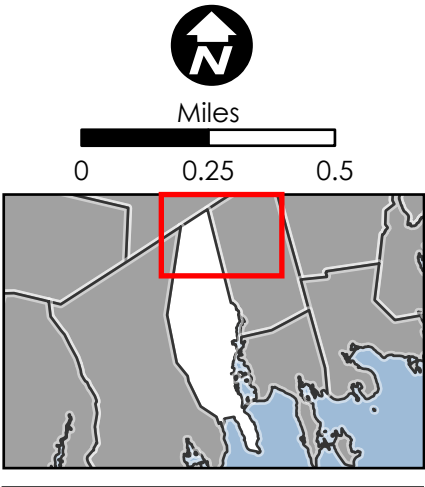
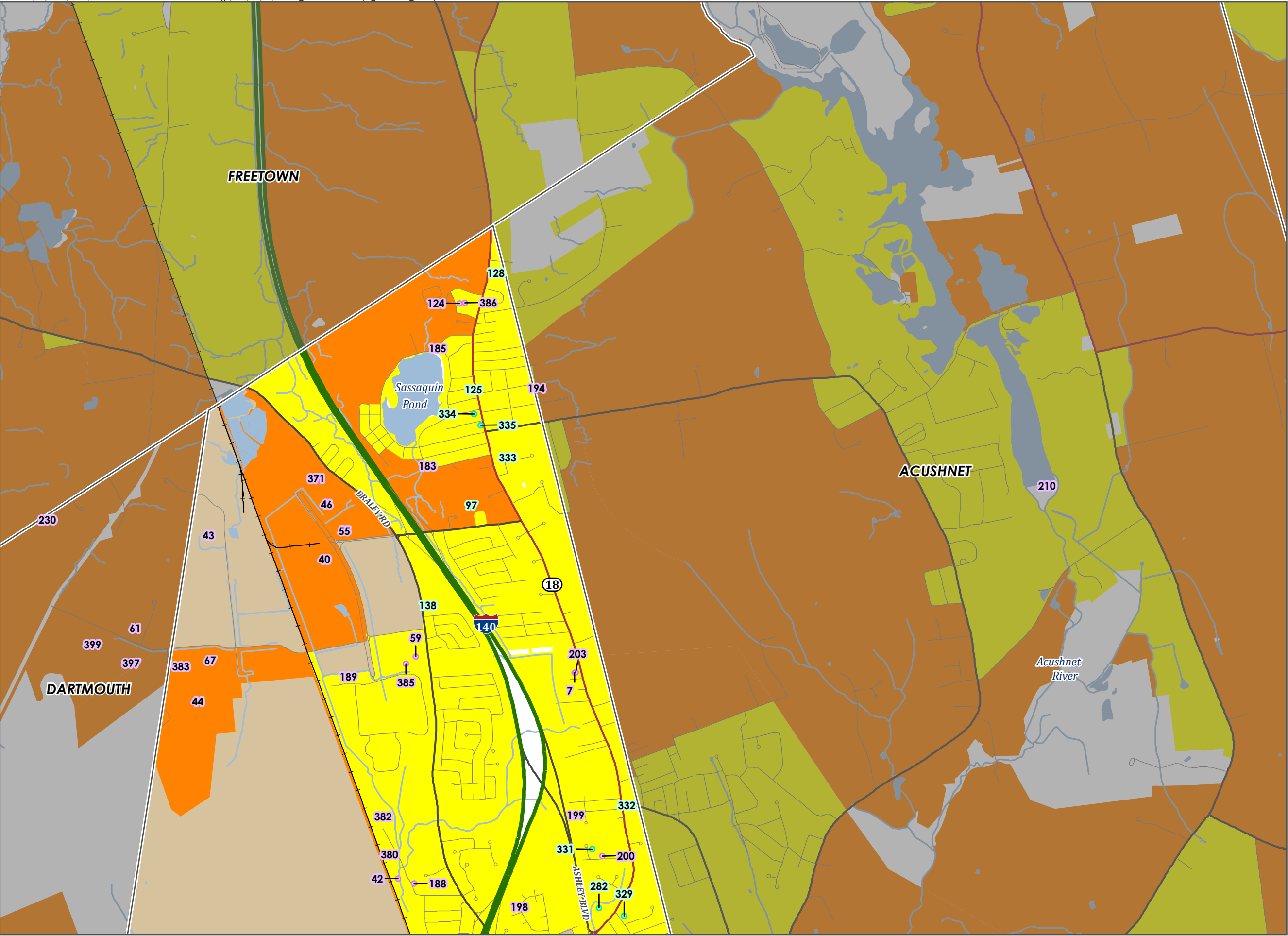
Local Road
- Wildland-Urban Interface (WUI)**
- Interface

Intermix
- Critical Facilities & Vulnerable Populations**
- # Critical Facility

Vulnerable Population

Critical Facility, Vulnerable Population

Shelter



Map J-1.1
Wildland Urban Interface
North

Date: 11/18/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, U.S. Forest Service, New Bedford LPMC

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

- Environmental Justice Populations

Transportation

Wildland-Urban Interface (WUI)

Critical Facilities & Vulnerable Populations
- Freight Rail

Interstate

State Highway

Major Road

Minor Road

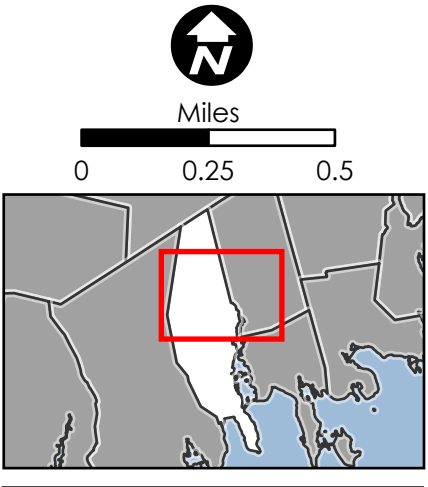
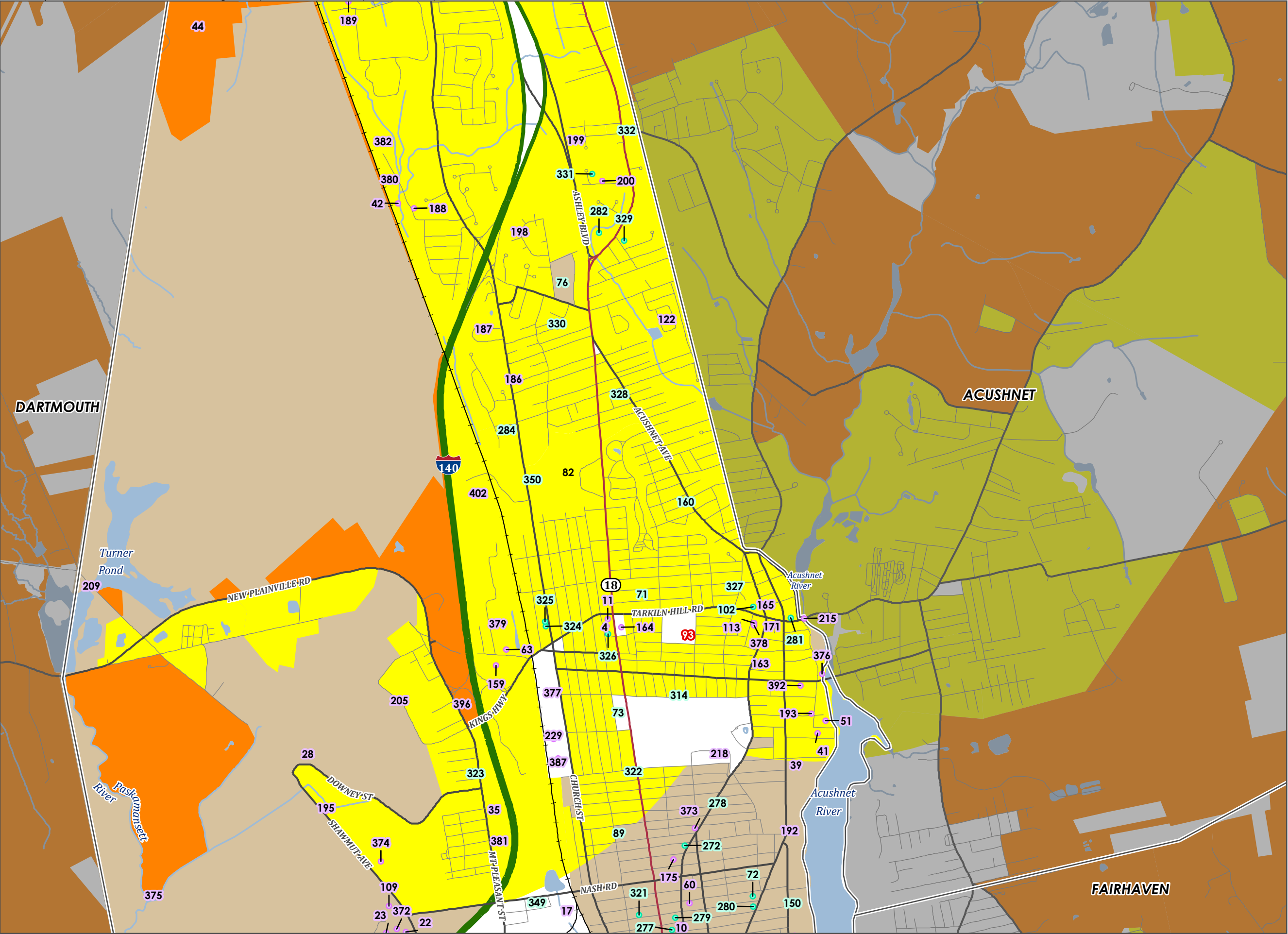
Local Road
- Interface

Intermix
- Critical Facility

Vulnerable Population

Critical Facility, Vulnerable Population

Shelter

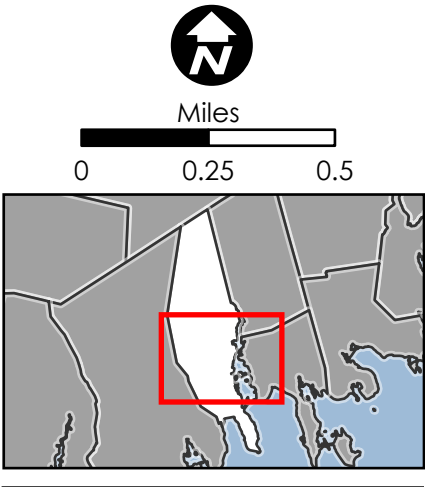
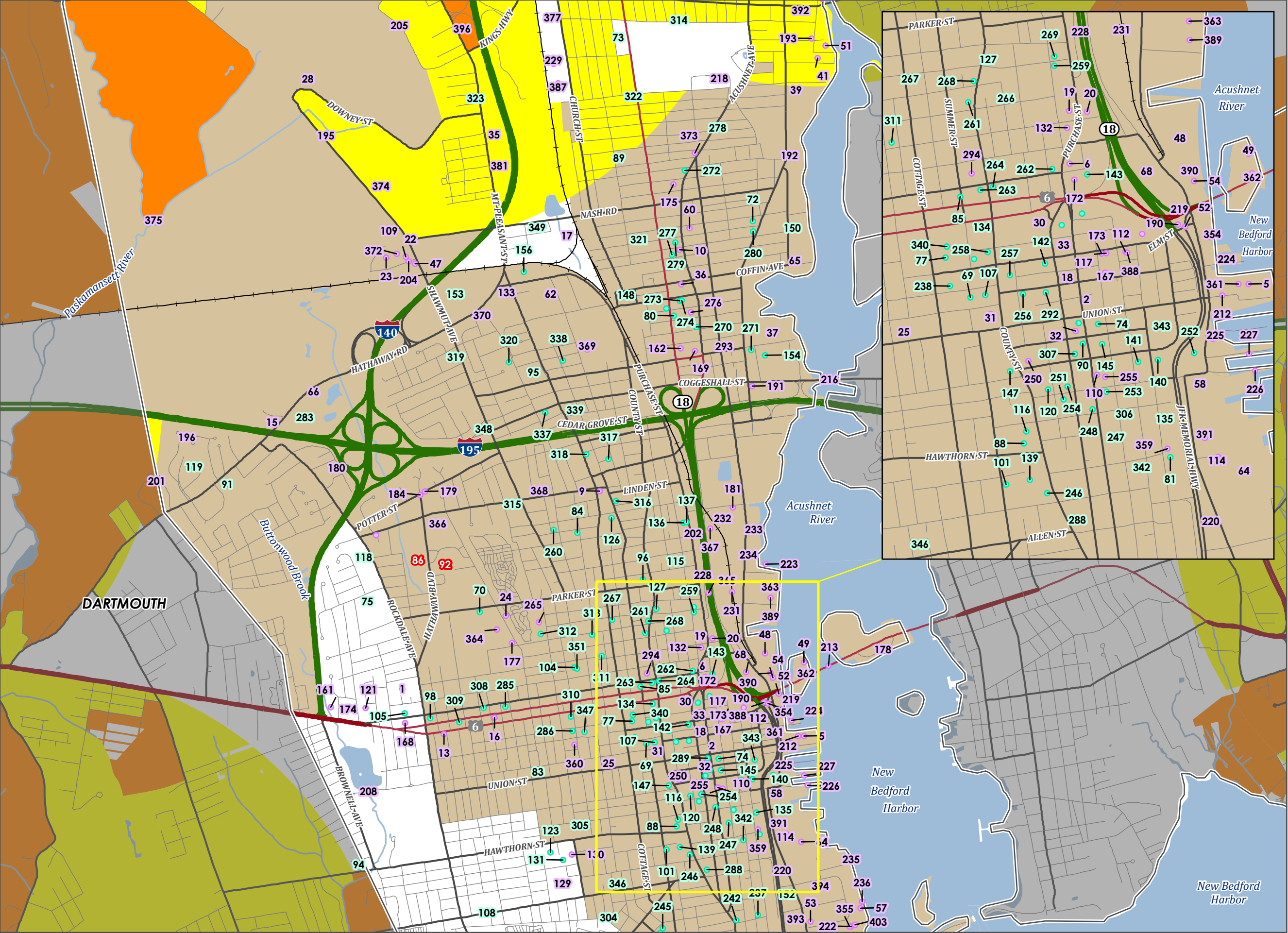


Map J-1.2
Wildland Urban Interface
North Central

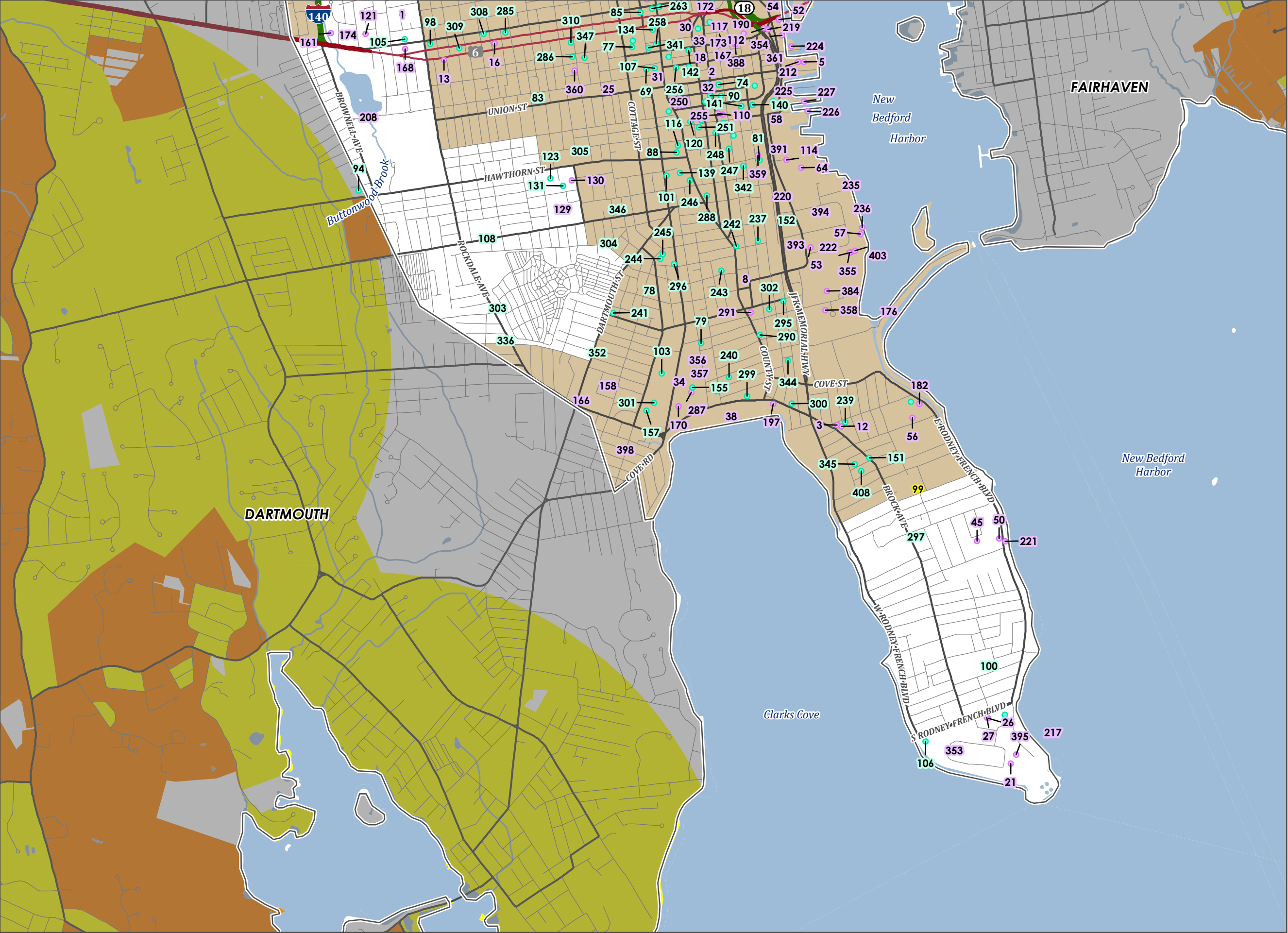
Date: 11/18/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, U.S. Forest Service, New Bedford LPMC

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

- Environmental Justice Populations
- Transportation**
 - Freight Rail
 - Interstate
 - State Highway
 - Major Road
 - Minor Road
 - Local Road
- Wildland-Urban Interface (WUI)**
 - Interface
 - Intermix
- Critical Facilities & Vulnerable Populations**
 - Critical Facility
 - Vulnerable Population
 - Critical Facility, Vulnerable Population
 - Shelter

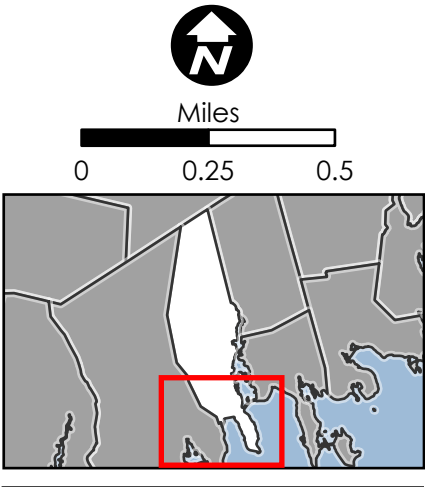


Map J-1.3
Wildland Urban Interface
South Central



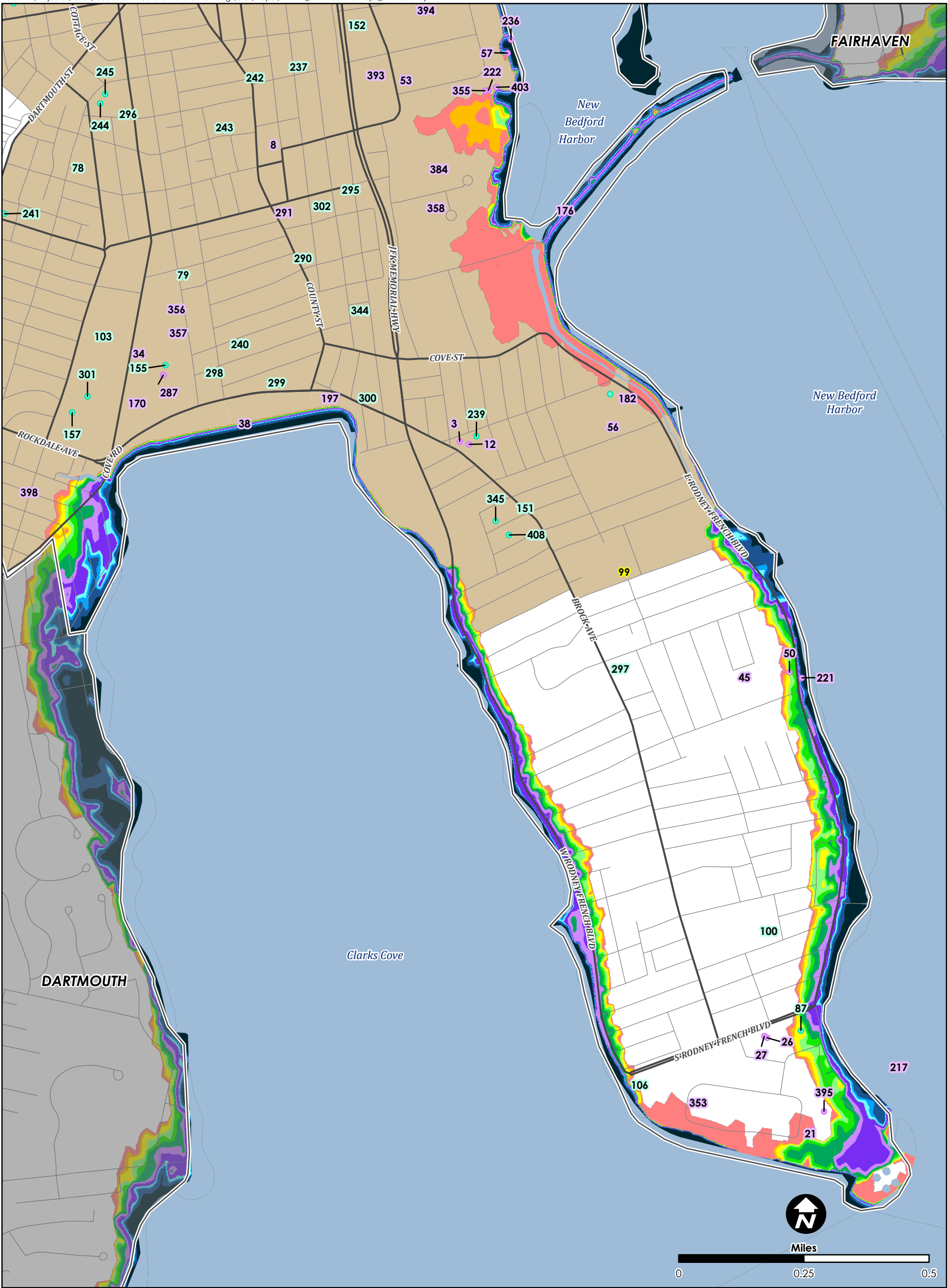
Date: 11/18/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, U.S. Forest Service, New Bedford LHMC
This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

- Environmental Justice Populations
- Transportation**
 - Freight Rail
 - Interstate
 - State Highway
 - Major Road
 - Minor Road
 - Local Road
- Wildland-Urban Interface (WUI)**
 - Interface
 - Intermix
- Critical Facilities & Vulnerable Populations**
 - Critical Facility
 - Vulnerable Population
 - Critical Facility, Vulnerable Population
 - Shelter



Map J-1.4
Wildland Urban Interface
South

Path: H:\Projects\2023\23064 New Bedford Hazard Planning\GIS\Maps\241104_NewBedfordMaps_PublicSet.aprx



Map K-1.1
MC-FRM Annual Coastal Flood
Exceedance Probability (2030):
Clarks Cove

Date: 11/15/2024
Data Sources: Bureau of Geographic
Information (MassGIS), ESRI, MA Executive
Office of Energy & Environmental Affairs,
New Bedford LHMC

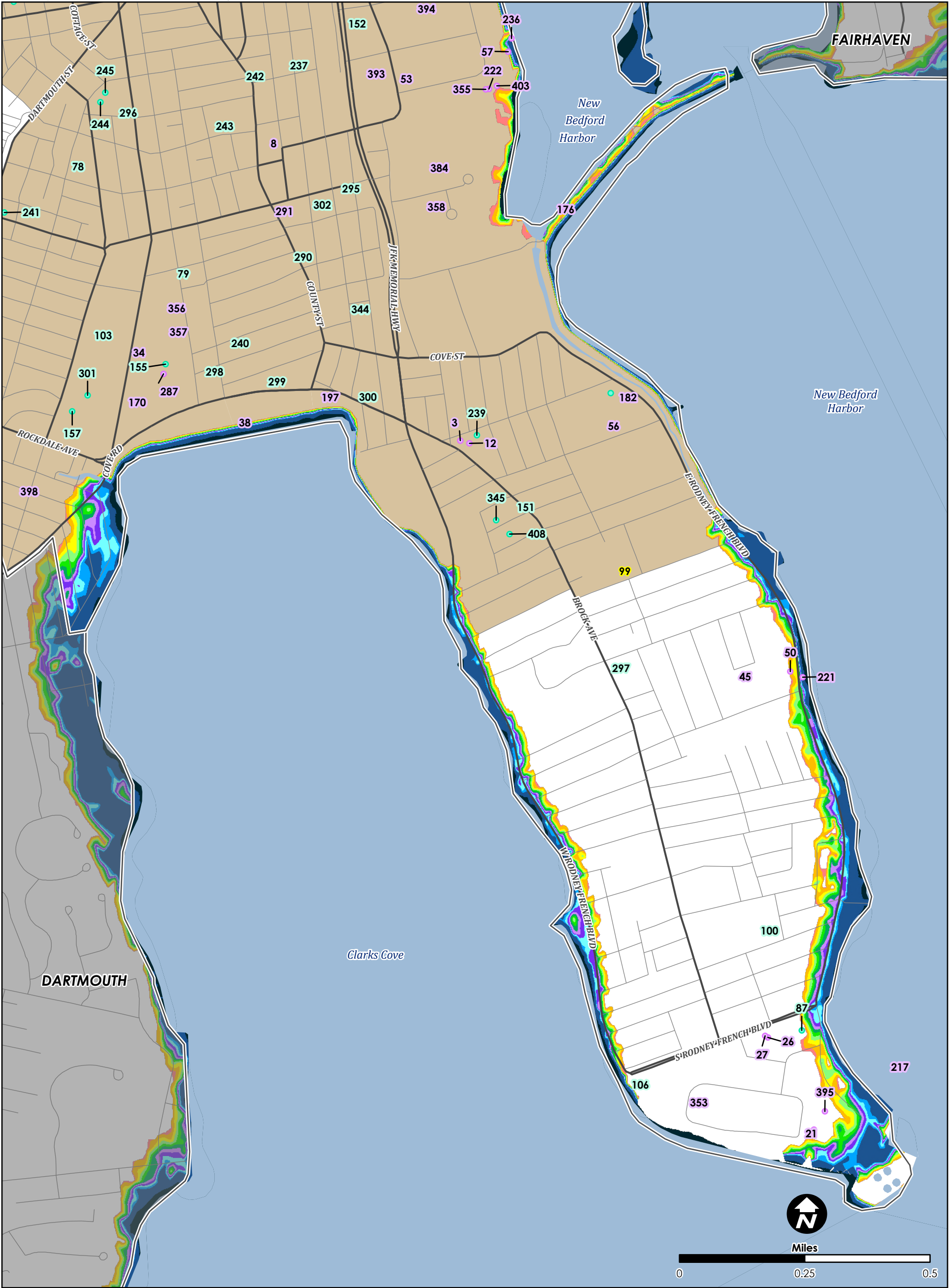
*This map is for informational purposes and
may not be suitable for legal, engineering,
or surveying purposes.*

- Environmental Justice
Populations
- Transportation**
- Freight Rail
- Interstate
- State Highway
- Major Road
- Minor Road
- Local Road

- Critical Facilities &
Vulnerable Populations**
- Critical Facility
- Vulnerable Population
- Critical Facility,
Vulnerable Population
- Shelter

- MC-FRM Annual Coastal Flood Exceedance
Probability**
- 0.1%
- 0.2%
- 0.5%
- 1%
- 2%
- 5%
- 10%
- 20%
- 25%
- 30%
- 50%
- 100%

Path: H:\Projects\2023\23064 New Bedford Hazard Planning\GIS\Maps\241104_NewBedfordMaps_PublicSet.aprx




Map K-1.2
MC-FRM Flood Depths for 1% Annual Coastal Flood Exceedance Probability (2030): Clarks Cove


Date: 11/15/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI, MA Executive Office of Energy & Environmental Affairs, New Bedford LHMC


This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.


Environmental Justice Populations


Transportation


 Freight Rail

 Interstate

 State Highway


 Major Road


 Minor Road

 Local Road

Critical Facilities & Vulnerable Populations


 Critical Facility


 Vulnerable Population


 Critical Facility, Vulnerable Population


 Shelter


MC-FRM Flood Depths for 1% Annual Coastal Flood Exceedance Probability


 0.5 ft


 1 ft


 1.5 ft


 2 ft


 2.5 ft


 3 ft


 3.5 ft

 4 ft

 4.5 ft

 5 ft

 10 ft

 >10 ft

Appendix B – Public Information and Outreach

Core Team Meetings

Project Webpage

Outreach Guide/Factsheets

LHMC Meetings

Technical Committee Meetings

Public Workshops

Ward-Specific Meetings

Listening Posts

Interviews

Online Survey

Core Team Meetings

January 30, 2023 – June 17, 2024



MEMORANDUM

To: Kate Galbo

From: Craig Pereira

Date: February 8, 2023

Re: New Bedford Multi-Hazard Mitigation Plan/ECEMP

cc: Nate Kelly, Kellie King

The following identifies the information/data needs (and procedures where noted) required to kick off the project:

1. Project Website
 - a. A dedicated project webpage should be developed and hosted on the City's website. This should include background information on the project, listing the Project Team, and identify points of contact should the public want to get in touch.
 - b. The webpage should have the capacity to include meeting announcements and posting of previous presentations, notice of availability of the community survey, and draft content for public review.
2. Project Announcement
 - a. Once the webpage is up and running, a project announcement should go out to all municipal departments, boards, and commissions letting folks know the Project Team may be reaching out for further data/coordination. This should also be a post on the City's main page under current events/news.
 - b. As we develop project protocols, please copy Craig Pereira and Kellie King on all correspondences. FEMA requires documentation of the planning process and many of these will need to be included in an appendix to the plan.
3. Community Profiles/Stakeholder Mapping/Equity Statements
4. Community Survey
 - a. The survey should be drafted early in the process for vetting by the Project Team. This is typically kicked off at the first public workshop.
5. Asset Inventory (Critical Facilities/Vulnerable Populations/Hazardous Materials Sites/Transportation Routes)
 - a. Excels Files

- i. HW has received various Excel files from previous plans.
 - ii. These lists need to be updated/confirmed by City staff. Police/Fire will likely have updated Vulnerable Populations data to share.
 - iii. City staff will need to identify data that is considered 'sensitive' and not for public consumption. This information will be removed from any draft/final content available to the general public but included in drafts/final plans to MEMA/FEMA.
 - 1. Michele Paul March 10, 2023 email regarding AskRail App for hazardous materials transport...limited access. And Brian Nobrega email 3/10/23.
 - b. GIS Data
 - i. GIS shapefiles will need to be updated and confirmed once the process in 5a above is completed. This data should include Parcel ID/PIN.
- 6. GIS Data
 - a. Current parcel shapefile with recent Computer-Assisted Mass Appraisal (CAMA) data (Assessor's Office) included is needed as part of the Vulnerability Assessment. GIS data should include:
 - i. Parcel ID/PIN
 - ii. Land Use Classification/Code
 - iii. Land assessed values
 - iv. Building assessed values
 - v. Other assessed values
 - vi. Total assessed values
 - b. 2016 Plan GIS project files (MXD files)
 - i. 2/27 Coordination Meeting:
 - 1. Shawn to locate original shapefiles from 2016 Plan
- 7. 2016 HMP
 - a. Plan in native format with applicable tables and figures
 - b. Excel tables of previous hazard events (from NOAA's National Climatic Data Center). HW will update events from 1/1/15 forward to update the Hazard Index.
 - c. 2016 Plan Report Card to be completed by City staff. Need to identify the following:
 - i. What has been accomplished (and list responsible party/department, data of completion, funding mechanism/amount).
 - ii. What was not accomplished, yet still relevant to be carried forward into the plan update.
 - iii. What was not accomplished and is no longer relevant (and to be removed).
- 8. Repetitive/Severe Repetitive Flood Loss Data – already received from MEMA/Jeff.
 - a. Jeff Zukowski 2/7/23 email...none.
- 9. State NFIP Coordinator/Deputy Hazard Mitigation Officer Coordination
 - a. City staff (Michele or Brian) to reach out to Joy Duperault and request updated NFIP data (since 1/1/2015) including total number of flood policies by flood zone,

coverage value, number of claims and value since 1978/1/1/2015, and number of claims and value paid out/closed.

Joy Duperault, CFM
State NFIP Coordinator & Deputy Hazard Mitigation Officer
(617) 626-1406 joy.duperault@mass.gov

10. Previous Plans, Studies, and Reports

- a. HW will need access to everything the City has completed since 2016 as part of the Capability Assessment. HW will review all and carry over any hazard-related actions into the MHMP. This should also include any changes/updates to regulations, ordinances/bylaws, and any regional coordination efforts.

11. Development Trends

- a. Need a list of large/major residential, commercial, and industrial development since 2016 (completed and proposed).
 - i. Name of development/project
 - ii. Physical location/GIS ID/PIN
 - iii. For Residential: Number of units, any subsidized
 - iv. For Commercial: total SF
 - v. Status: completed with date/approved/under review
 - 1. Craig coordinated with Rachel Mulroy 2/28/23 and clarified what is needed.

12. Funding Received since 2016 (FEMA and other)

- a. Event name/date
- b. Federal disaster declaration number (if applicable)
- c. Funding amount
- d. Brief description of what the funds were used for
 - i. Kate Galbo 2/9/23 email...forward from Dave Woodbury.



New Bedford HMP/CEMP/Evacuation Plan
Bi-Weekly Check-in Meeting
February 27, 2023 2:00 – 2:30pm

ACTION ITEMS

- City of New Bedford
 - Shawn to try to find original data/shapefiles from previous HMP
 - Rachel to provide case table with recent developments
- Consultant Team
 - HW team to schedule core team meeting to confirm LHMC members, provide template invite language
 - I-DIEM team to review equity commitments and community profiles (if available, or demographic data)
 - KLA team to schedule engagement strategy session and provide draft website language

OBJECTIVES

- Review and confirm data needs and upcoming tasks

AGENDA

Data Needs

- Review and follow up on data needs list
 - Community profiles – helpful to provide if it exists, otherwise can look to demographic data
 - Equity statements
 - City has been working with USDN to do equity training with core group that includes mayor's office, housing and community development, planning, health dept. parks & rec, community services
 - EO policy
 - Recent plans with equity commitments:
 - NB Resilient Climate Action and Resilience Plan
 - Green Infrastructure Master Strategy
 - Data for critical facilities, vulnerable populations, evacuation routes
 - In previous plan
 - Shawn to try to find original data/shapefiles
 - List sent each year to Brian with critical facilities
 - Major development trends
 - Rachel can provide case table

Review Upcoming Tasks

- Hold core team meeting to confirm LHMC members and coordination protocols
 - Michele coordinating to have invite go out from the Mayor
 - Consultant team can provide template language
- Review of existing plans and development of report card of mitigation actions



- Hold meeting to review/expand upon equity commitments
- Putting together updated community profiles
- Hold engagement strategy session
- Draft and review of webpage content

City Council Presentation

- Highlighted importance of translation and outreach to every segment of the community
- Confirmed their interest in being involved with neighborhood-level engagement



New Bedford HMP/CEMP/Evacuation Plan
Bi-Weekly Check-in Meeting
March 27, 2023 2:00 – 2:30pm

ACTION ITEMS

- City
 - Shawn to follow up with CDM for data
 - Adam to upload vulnerable population data to SharePoint
- Horsley Witten
 - Coordinate with Brian, Michele, Shawn on LHMC development
 - Share webpage language
 - Share updated hazards list
- KLA
 - Schedule engagement kickoff, include HW and I-DIEM
 - Use webpage language to post on NB Resilient dashboard

OBJECTIVES

- Prepare for upcoming engagement with key stakeholders and community
- Follow up on data needs
- Review approach to hazardous materials section and use of AskRail platform

AGENDA

- **Planning for Upcoming Engagement (10 min)**
 - LHMC Coordination
 - Brian, Shawn, Michele, Craig to coordinate
 - Have not yet reached out to members
 - Mayor's office may want to provide input
 - Current list needs to be narrowed down
 - Can break out list into multiple tiers
 - Core Group: More involved in the day-to-day
 - One tier for engagement through interviews
 - Communications/Engagement Strategy
 - KLA to confirm members for engagement kickoff, will schedule within next few weeks (to include I-DIEM and HWG)
 - Project Website/Project Announcement
 - Courtney to confirm with Michele process for developing webpage on City's website
 - Craig can provide some draft content for webpage
 - Will want to have I-DIEM review content
- **Data Request Status (10 min)**
 - Asset Inventory/GIS Data Status
 - Shawn coordinating with CDM to acquire data, will follow up



- In process of updating critical facilities list, hopefully will be complete by end of April
 - Does not include vulnerable populations datasets
- Received additional vulnerable population data from MEMA, Adam can upload to SharePoint
- If possible to connect pin in GIS data with Excel spreadsheet, that would be helpful
- **Hazardous Materials Section (10 min)**
 - Hazards Confirmation
 - Went through existing hazards in CEMP/HMP, have new list of proposed hazards
 - Craig to follow up with updated list for review
 - Development of CERC in progress
 - AskRail Email from State
 - Operational items should not be going into these plans
 - 96 Tier 2 facilities, have elected to become LEPC
 - Now that City is registered as LEPC, will be receiving a lot more information from tier 2 facilities
 - Could inform a mitigation action (e.g., emergency response plan for rail)



New Bedford HMP/CEMP/Evacuation Plan
Bi-Weekly Check-in Meeting
May 22nd, 2023 2:00 – 2:30pm

ACTION ITEMS

- City of New Bedford
 - Michele to share LHMC list with Carley
 - City to send out project announcement before end of this week
 - Core team to review Project Report Card (anything highlighted in yellow is outstanding)
 - Jim will check with Shawn on information related to dams and status of shapefiles
 - Rachel to share status of development projects next week
 - Brian to provide list of COVID funds the City has received
 - Brian to begin drafting initial Evacuation Plan checklist
- Horsley Witten
 - Craig to check publicly-available MEMA maps to see what's included, follow-up if more information is needed
- I-DIEM
 - Begin outreach to equity partners next Tuesday
 - Review Evacuation Plan checklist, once provided by City
- KLA
 - Carley to add LHMC members (department/organization names) to project webpage

OBJECTIVES

- Provide status updates on stakeholder coordination, finalization of report card, and data/information requests

AGENDA

LHMC/Stakeholder Coordination (10 min)

- LHMC confirmation
 - Michele has not received any additional confirmations
 - Typically, if no response – assume they will be on Committee
 - KLA to include LHMC list (department/organization names) on project webpage
 - Michele to share list with Carley
- Project announcement
 - City can send out before end of this week
- Equity Partners outreach conducted to date
 - I-DIEM will begin outreach after holiday weekend/early next week

Report Card (5 min)

- 2016 Plan Report Card resolution
 - Anything in yellow highlight remains outstanding – City to review



Data Status (15 min)

- Asset Inventory confirmation/data
 - Critical facilities list was uploaded to SharePoint site
 - Jim will check with Shawn on information related to dams and status of shapefiles
 - Vulnerable Pops. Data from MEMA:
<https://memamaps.maps.arcgis.com/home/index.html>
 - Craig to check MEMA maps to see what's included, follow-up if more information is needed
- Development Trends confirmation on status
 - Need to know status of development projects (completed, under construction, under review/approval)
 - Rachel in process of wrapping up and will share next week
- Funding (COVID funds)
 - Need date of award, funding amount, what funds were used for (bulleted list), disaster declaration number (if relevant)
 - Brian to provide list
 - Need to include all funding from FEMA, ideally include other funding sources as well
 - So far, have received \$1.2 mill from FEMA

Evacuation Guide

- Brian will draft initial checklist
 - I-DIEM will review
- Will revisit evacuation guide again at end of process as originally planned to make updates



New Bedford HMP/CEMP/Evacuation Plan
Bi-Weekly Check-in Meeting
May 8th, 2023 2:00 – 2:30pm

OBJECTIVES

- Confirm LHMC
- Follow up on GIS data and approach to updating datasets

AGENDA

Local Hazard Mitigation Committee (10 min)

- Confirm LHMC and next steps
 - Email sent out from the Mayor today
 - Assuming that every person from the City invited will participate or designate alternative person
 - Michele to CC Craig on responses to those who are designating alternative point person
 - Michele to post list to SharePoint site
- Large group, short amount of time for meetings
 - Make sure we're doing as much as we can in advance (sharing materials in advance for their review)

Data Status (15 min)

- Follow up on GIS data
 - Data in progress
- Reconciliation/approach to update critical infrastructure/vulnerable populations data sets
 - Brian noted their dept. does not have capacity to update data
 - Some datasets can be combined
 - Medical facilities inclusive of vulnerable population data, not as directly related to critical infrastructure
 - Proposing to have HW go through datasets and group entries related to critical infrastructure and vulnerable populations, then have relevant departments make updates to datasets
 - Craig to update and upload to SharePoint
 - Michele will review and identify relevant depts/point people
 - Shawn proposed including a mitigation action to set protocols/policies to keep dataset active
 - Not sure if Police/Fire updating critical infrastructure/vulnerable population dataset



- DPI typically sends updated critical infrastructure list at least yearly to Emergency Management
- Critical facilities updates should go through Brian
 - There were errors in the existing dataset, Brian to update and share by end of next week, will include relevant dept/agency
 - A lot of repeats
- Involves a lot more than City depts (utilities, schools, etc.)
- Question of whether daycares need to be tracked
- Craig to revise original list, remove duplicates
 - Will wait for Brian's updated list before sharing with Michele for review
- Will want name, address, primary contact, phone number
 - Can pull name and address from building records
- Schools no longer considered critical infrastructure
- Emergency Management establishes what's included on critical infrastructure list on electricity side
- Data requests
 - Craig made updates to data request document on SharePoint site
 - Red: still needed
 - Green: completed
- Capability assessment
 - HW completed review of plans completed since 2017 that has hazard mitigation applicability
 - Includes studies on SharePoint site, as well as ~20 additional studies gathered from City's website
 - NBPA Harbor Strategic Plan – in process
 - Can extract information on this process in an interview
 - Michele to find out timeline
 - Brought actions from those studies into capability assessment
 - DPI to provide update on status of implementation of actions-
 - New Bedford Pump Station Floodproofing project
 - Long-term CSO Control & Integrated Plan

Report Card

- HW responded to comments on report card, still some outstanding questions
 - Some actions are completed but ongoing – may move to capability assessment
 - Actions with definitive information for – highlighted in green
 - Outstanding items to address – highlighted in yellow
 - Action 5.3.1.1 – completed and ongoing



- Are there other facilities in need of generators
- Special needs registry – states completed but carried forward
 - Identified City needs consultant to keep that current
- 5.3.6.1 – sewer pump station
 - Some work completed, some remains
 - Would be helpful to understand what is still needed
- Clocks cove hurricane barrier
 - Some improvements completed
 - Would be helpful to know what work is still outstanding
- Communications updates
 - What improvements were completed? What still remain outstanding?
- City to review outstanding items, highlight in different color once addressed
 - Target date for completion of report card: aim for completion by Fri 5/19
 - Will be basis for discussion with LHMC during 1st meeting and 1st public workshop
- Plan Format/Layout
 - HW reviewed existing plan, has suggestions for updated layout for plan update
 - HW to post to SharePoint, City to review in next few weeks
 - Will want to present to LHMC to get their input

Engagement Strategy

- Kate to follow up with Antoine with updated engagement strategy
- I-DIEM to start outreach to equity partners

Project Coordination

- Establish protocol moving forward – if uploading/changing something on SharePoint, notify relevant point person



New Bedford HMP/CEMP/Evacuation Plan

Bi-Weekly Check-in Meeting

June 12th, 2023 2:00 – 2:30pm

ACTION ITEMS

- City of New Bedford
 - Michele to share LHMC contact info with Craig
 - Michele will confirm project announcement went out to boards and commissions
 - Jim to provide list of completed/not completed SCADA system installations and pump station upgrades (Report Card)
 - Michele to follow up with Scott Durkee on microgrids status (Report Card)
 - Brian/Michele to schedule meeting with Planning and Health Dept to confirm remaining items on critical facilities list
 - Michele to follow up with Rachel on development trends status
 - Brian to coordinate with I-DIEM offline on Evacuation Plan scope
 - Core team to share list of COVID funding that dealt with hazards or infrastructure updates
- I-DIEM
 - Upload equity partner outreach language to SharePoint
- KLA
 - Complete draft survey questions and factsheet updates to share with HW and I-DIEM next week

AGENDA

LHMC/Stakeholder Coordination

- LHMC confirmation
 - Added to project webpage
 - HW needs contact information for LHMC members to add to distribution list
 - Michele will get information over to Craig
 - Concerned about getting critical mass during summer, may need to push to first committee meeting in early Sept
 - Could still hold first workshop in early Fall (late Sep/early Oct)
- Project announcement to boards and commissions
 - Believe this went out, Michele will confirm
- Equity Partners outreach
 - Confirming content/objectives for outreach language
 - Equity statements
 - Project goals and objectives
 - Upcoming dates
 - LHMC meeting
 - General timeframe for engagement work
 - I-DIEM to upload content to SharePoint



- Providing context is important as some partners are working on variety of resilience/climate-related initiatives
 - Working with Buddy on morse cutting tool
 - Equity nexus USDN project – have reached out to community partners

Report Card

- 2016 Plan Report Card resolution
 - Updated, however, outstanding questions remain
 - Anything highlighted in yellow has outstanding questions about whether should be carried forward into plan update
 - Jim to provide list of completed/not completed SCADA system installations and pump station upgrades
 - Microgrids – Michele to follow up with Scott Durkee

Data Status (15 min)

- Asset Inventory confirmation/data
 - Critical facilities list was uploaded to SharePoint site (Jim Costa)
 - Point data, but no geoid
 - Michele uploaded to SharePoint, Craig to check to confirm
 - Mostly complete, stuck on residential housing and parks
 - HW does not consider parks critical, up to City's discretion about what they want to track
 - Brian/Michele to schedule meeting with Planning and Health Dept to confirm remaining items
 - Vulnerable Pops. Data from MEMA:
<https://memamaps.maps.arcgis.com/home/index.html>
 - Excel spreadsheets update
 - Can add mitigation action to this plan to update critical facilities dataset on regular basis
- Development Trends confirmation on status
 - Need to know status of development projects (completed, under construction, under review/approval)
 - Michele to follow up with Rachel
- Capability Assessment
 - Review of existing plans/reports and identification of anything related to hazards
 - NB Pump Station Floodproofing Report update
 - Done off modeling effort completed number of years ago, that model has been updated to reflect updated storm surge/SLR data
 - HW to update recommendations in report based on updated modeling
 - Long Term CSO Control/Integrated CIP update
- Funding (COVID funds)
 - Need date of award, funding amount, what funds were used for (bulleted list), disaster declaration number (if relevant)
 - Core team to share list of COVID fund projects
 - Any funding that has dealt with hazards or infrastructure updates



- Need to include all funding from FEMA, ideally include other funding sources as well
- So far, have received \$1.2 mill from FEMA

Evacuation Guide

- Brian will draft initial checklist
 - Brian working with Police Chief to draft Evacuation Plan
 - Will be an internal checklist to use in short-term
 - Mayor wants this ASAP in time for hurricane season
- City intending to revisit Evacuation Plan next year, will want full plan, not just a checklist
- Brian will communicate with I-DIEM offline to discuss scope



New Bedford HMP/CEMP/Evacuation Plan
Bi-Weekly Check-in Meeting
July 10th, 2023 2:00 – 2:30pm

ACTION ITEMS

- City of New Bedford
 - Michele to share LHMC contact information (name/title/organization/email)
 - Michele to coordinate project announcement release and copy Craig
 - 2018 Plan Report Card. Items with yellow highlight represent outstanding data needs (primarily Actions 5.3.5 and 5.3.6)
 - New Bedford team to review/collect outstanding data needs
 - Jim to provide list of completed/not completed SCADA system installations and pump station upgrades (Report Card)
 - Michele to follow up with Scott Durkee on microgrids status
 - Michele/Brian/Shawn to wrap up critical facilities spreadsheets (need to identify unique PIN or at a minimum, street address)
 - Rachel and Lynn Coish still waiting on confirmation of some vulnerable populations data
 - Rachel to finish development trends data request (status of development projects (completed, under construction, under review/approval)
 - Michele to provide list of MVP funding (received 7/11/23) and ARPA funds.
 - Michele/Brian to review Craig's summary of funding received since 2018 and provide outstanding information (disaster number/name/event name/bullet list of what funds were used for)
 - Michele to put request into MIS to remove prior HMP Update project on Emergency Management's web page
 - Brian to pull together content for NB-Alert (resident recruitment/signup) for neighborhood meetings
 - City to review draft survey and get feedback to Tacy by 7/13/23. Michele/Brian/Shawn to identify paper copy locations and languages for translation.
 - Brian to reach out to Craig post vacation and 'feast mode' to begin discussing CEMP Update component of this project.
- HW
 - Craig to develop summary of funding received since 2018 and provide to Michele/Brian for confirmation/clarification
 - Craig to check Sharepoint site and download Parcels data
 - Craig to develop summary of neighborhood meetings objectives and provide to Carley/Tacy
- KLA
 - Tacy to recirculate updated draft survey to project team (received 7/10/23)
 - Working on update of fact sheets. Coordinate with City to identify languages for translation.
 - Kate to provide Ardena access to Sharepoint site.



- I-DIEM
 - Team to review draft survey and get feedback to Tacy by 7/13/23
 - Ardena to forward copy of email that went out to equity partners (received 7/10/23)
 - Marcus/Antoine/Ardena to send follow up email to equity partners to grab their attention.
 - Team to post materials to NB Project Team Sharepoint site.

AGENDA

LHMC/Stakeholder Coordination

- Neighborhood Meetings Objectives (KLA)
 - Anticipated to start in September. Craig requested the first LHMC meeting to occur first, before any neighborhood meetings.
 - Brian requested that these meetings also serve as an educational opportunity/recruitment for NB-Alert (resident signup).
 - Translation needs to be coordinated between the City and KLA
 - Stated that perhaps draft maps (Citywide and at the Ward-scale) be developed for these meetings so residents can mark-up maps.
 - Objectives/Overview
 - Project overview/Dashboard
 - Process
 - Timeline
 - Hazards to be profiled
 - 2018 Plan Report Card
 - Vulnerabilities of most concern
 - Mapping exercise
 - Survey distribution (if ready)
- LHMC confirmation
 - HW needs contact information for LHMC members to add to distribution list (name/title/organization/email)
 - Michele will get information over to Craig
- Project announcement to boards and commissions
 - Believe this went out, Michele will confirm, copy to Craig
- Equity Partners outreach
 - Any updates?
 - Email went out to all members (no responses to date)
 - Marcus/Antoine/Ardena to send another email out with something to catch folks attention (to get a reaction/response)

Community Survey

- Feedback received? (7/13/23 deadline)
 - Craig and Brian have commented. Craig expanded the survey to include all-hazards (natural, human-caused, and technological) as the first draft was primarily focused on extreme heat.



- Translation services will need to be coordinated.
- Paper copies throughout the City will need to be coordinated.

Report Card

- 2016 Plan Report Card resolution
 - Anything highlighted in yellow has outstanding questions about whether should be carried forward into plan update (primarily Sections 5.3.5/5.3.6)
 - Jim to provide list of completed/not completed SCADA system installations and pump station upgrades?
 - Microgrids – Michele to follow up with Scott Durkee?

Data Status (15 min)

- Asset Inventory confirmation/data (internal team met June 27, 2023)
 - Excel spreadsheets update? (addresses...since 6/27/23 meeting)
 - Vulnerable Populations...Rachel Mulroy/Lynn Coish still working on this update. Brian commented that they should use the 'office location' for housing developments (several span several city blocks).
- Development Trends confirmation on status
 - Need to know status of development projects (completed, under construction, under review/approval)
 - Rachel to finish this
- Funding
 - MVP/ARPA funds?
 - Craig to develop draft...data needs sorting out.
- Parcels data
 - Jim Costa posted the Parcels data set onto the Sharepoint site.
- Fact Sheets
 - KLA working on updating fact sheets for distribution.
 - Translation services may need to be coordinated with the City.



New Bedford HMP/CEMP/Evacuation Plan
Bi-Weekly Check-in Meeting
August 21st, 2023, at 2:00 – 2:30pm

ACTION ITEMS

- **City of New Bedford**
 - Brian to confirm availability for LHMC meeting – 9/13 (morning) or 9/22
 - Brian to confirm status of critical facilities/vulnerable populations data
 - Michele to share dates/locations of ward meetings once confirmed
- **Consultant Team**
 - KLA to share meeting-in-a-box materials for review
 - KLA to share social posts for 9/1 survey launch
 - KLA to translate survey, factsheet, social posts into Spanish, Portugues, Cape Verdean Creole

NOTES

LHMC Logistics

- Confirm date/time/location
 - 9/13 (morning), 9/22
 - **Need to confirm with Brian**
 - Fort Taber Community Center (larger, no wi-fi), Buttonwood Park Zoo, Wastewater Treatment Plant (doesn't accommodate as many people, has smart board), Library
 - Will need to know AV/technology of the space
 - Need space for at least 2 hours
- Confirm translation needs for materials/interpreter services
 - Don't need for steering committee meetings
 - CBO representatives can provide guidance on translation needs for ward meetings

Critical Facilities/Vulnerable Populations Data

- Confirm status
 - Last coordination meeting action item stated Shawn to confirm final spreadsheet
 - **Shawn/Jim need to sit down to confirm critical facilities from DPI perspective**
 - **Need to confirm with Brian**

Community Engagement

- Ward meetings
 - Confirm status of identifying dates/locations
 - Week of Sep 25th – Mon
 - Week of Oct 2nd – Mon, Wed, Thu
 - Shawn not available that week, Jim not available on Mon
 - Week of Oct 16th – Mon, Wed
 - **Michele hoping to have dates/locations confirmed by end of this week**



- Walk through meeting-in-a-box materials, outreach toolkit, and factsheet
 - Need to include more diverse people in pictures
 - Remove jargon
 - KLA to share materials with team to review
- Review next steps for equity partners coordination
 - Once ward meeting dates confirmed, share outreach toolkit
 - Have received negative feedback from some about the process, outreach should be led by someone with more direct connection to CBOs
- Confirm survey launch: 9/1
 - KLA to share survey launch social posts
 - Translation: Spanish, Portuguese, Cape Verdean creole
 - KLA to translate survey, factsheet, social posts



New Bedford HMP/CEMP/Evacuation Plan
Bi-Weekly Check-in Meeting
September 18th, 2023, at 2:00 – 3:00pm

ACTION ITEMS

- City of New Bedford
 - Michele to follow up with Housing Authority
 - Rachel to complete updates to critical facilities
 - Rachel to coordinate posting survey to Planning social media pages
- Consultant Team
 - Craig to upload LPMC slide deck – DONE
 - KLA to work with Michele on Ward Meeting printing logistics
 - KLA to update schedule in Ward Meeting slides/webpage
 - KLA to share equity partner outreach toolkit email with City/I-DIEM
 - Craig to share list of hazard index technical group participants for review

AGENDA

Preparing for Upcoming LPMC Meeting (15 min) - HW

- Discuss how to handle invite forwards
 - Already have 30 people on committee – fairly large
 - Invite has been forwarded to additional equity partners, mostly from Human Relations Committee
 - There is equity partner representation on committee
 - Concerns about facilitation/getting through all objectives with larger group in just 2 hours
 - Could be concern about discussing information about critical facilities/information
 - Could adjust the way we're presenting information at the next meeting (showing locations on a map without the full detailed table/legend)
- Confirm remaining logistics
 - Brian to provide opening remarks
- Walk through objectives/agenda
 - Introductions
 - Overview of the process (MHMP, CEMP), engagement approach
 - Schedule
 - Next steps
- Note all equity partners where initial contact has been made (regardless of their confirmation)
 - Housing Authority never responded
 - Director – Steven Beauregard
 - Michele can follow up with Housing Authority
 - May want to include Housing Authority on Steering Committee (future meetings)
 - Need to think strategically about how to engage with Housing Authority
- Did not get a response from Public Schools



- Facilities – Doug Bright
- Port has been included on invite (Gordan, Caesar), Gordon tentatively accepted
- Mayor is not on invite, Chief of Staff has been invited
- Craig to post draft presentation to SharePoint staff
- Will be arriving 30-45 min early to setup

Ward Meetings (10 min) - KLA/I-DIEM

- Follow up on confirmation of dates
 - Brian shared schedule via email
- Discuss how to handle printing of materials
 - City will print factsheets, hard copy surveys, presentation slides, sign up sheets
 - For larger print outs (maps) – may have KLA send to staples?
 - Kate to follow up with Michele on printing logistics
- Presentation will be shown in English, will have presentation printed in Spanish and Portuguese
 - Will have translators present
- KLA to update project schedule on the ward meeting presentation and project webpage
- Core team will meet after LHMC meeting to review materials for ward meetings/make sure everyone is comfortable with it
 - KLA can support with questions on facilitation if needed
- Opportunity for hybrid meetings?
 - Would have Cable Access host virtual meeting
 - Participants can submit comments, could post specific questions for feedback in the chat during activities
- Could re-frame as “open house”, “event” rather than “meeting”
 - If people coming/going, may miss presentation and would need to give quick recap on intent/instructions for activity

Community Survey (10 min) - KLA

- Update on responses – only 5 responses so far
- Will be sending out press release once ward meetings all confirmed
 - Will also release press release on social media
- Rachel to try to share survey on Planning Facebook page

Technical Analysis (15 min) - HW

- Final confirmation on critical facilities/vulnerable populations
 - Lat/long included for all buildings
 - Having trouble identifying homeless shelter data/locations
 - Rachel to copy Brian/Jen on email requests
 - Data should not be shared
 - Might make sense to just include largest shelters on the list
 - City will need to flag data that is sensitive in the spreadsheet
- Hazard index development (smaller, technical committee)
 - Typically LHMC would go through this exercise
 - Use FEMA criteria to rank/score hazards



- Better done with smaller, technical group (6-7 people); not all LHMC members have institutional knowledge to go through this process
- Recommend holding meeting with smaller group, presenting results to full LHMC
- Craig to share list of proposed participants before scheduling
 - Should include someone from MIS
- Will want to schedule in-person (DPI conference room, wastewater plant)

Evacuation Guide (5 min) - I-DIEM

- Clarify expectations/timing
- Do not want a guide/checklist, City already has this
- Looking for a plan
- Brian already in process of adapting state evacuation plan
 - Hoping to wrap up process by next hurricane season, if not sooner
- Evacuation Plan will not be part of MHMP



New Bedford HMP/CEMP/Evacuation Plan
Monthly Check-in Meeting
October 16th, 2023, at 2:00-3:00pm

OBJECTIVES

- Finalize outstanding deliverables and data requests
- Schedule upcoming meetings and events

AGENDA

Report Card (10 min)

- Deadline for Core Team to finalize: Friday, October 28th
- It is essential for this to be completed to move forward with the project
- Can take time to go through any questions during this call, if needed

Mapping Risks and Vulnerabilities (10 min)

- Need City to sign off on vulnerable populations/critical facilities dataset

Scheduling Meetings/Events (10 min)

- Public Workshop: Identify potential dates and locations (targeting early Dec)
- 2nd LHMC Meeting: Identify potential dates

Admin Items (5 min)

- Moving forward, Core Team should upload any files to [Upload folder](#) in SharePoint. Consultant team will receive notification and can move it to the appropriate folder.



New Bedford AHMP/CEMP/Evacuation Plan
Monthly Check-in Meeting
November 20th, 2023, at 2:00-3:00pm

ACTION ITEMS

- Consultant Team
 - Craig to develop punch list of different approaches with inputs/outputs
 - Craig to develop template for stakeholder tracking sheet
 - KLA to schedule call with smaller group to coordinate on Listening Post
 - KLA to provide Michele/Rachel email template to send to priority list of equity partners
- City Core Team
 - Shawn/Jim to share schedule of events
 - Michele/Rachel to support with outreach to equity partners

AGENDA

Debrief Engagement Thus Far

- Debrief ward meetings and discuss alternative approaches to reach more (quantity and diversity) residents
 - Ward meetings – averaging 0-5 people participating per meeting
 - Tabor Mills meeting – ~12 people
- Coordination with equity partners
 - Received push back from some on the approach for reaching equity partners

Brainstorm on Alternative Engagement Approaches

- Could send information through schools to get to parents
 - Can be challenging to work through public schools
 - Could work with charter schools or religious schools
 - Rachel mentioned contact at Alma del Mar Charter School
- Tacking on to existing community events
 - Michele/Courtney will be going to upcoming neighborhood meetings
 - Will likely only have ~20 min, not a lot of time for engagement
 - Are there additional community events (e.g., for the holidays?) we could table at?
 - DPI can request schedule of events
 - Passive opportunities for people to provide feedback at various locations
 - Ex: Community organization, library, church hosts activity in their lobby (feedback board)
 - Listening Post
 - QR code for survey, hard copy surveys
 - Prioritize libraries, City hall
 - Consider posting at public housing, Rachel's suggestions:
 - Satellite Village



- Dottin Place
- Brickenwood
- Presidential Heights
- Shawmut Village
- Ben Rose Gardens – proximity to Waterfront Bay Village
- Blue Meadows
- Strategies to work more closely with equity partners
 - First step: reach out to equity partners for input on process
 - Two options to propose: Team comes to your existing event/meeting or provide you with materials to hold your own workshop
 - Go into conversation knowing that there could be other options that would be preferred
 - Meeting-in-a-box for equity partners to use with their constituents
 - Host a training for equity partners (train-the-trainer model)
 - Can we prioritize 5-7 equity partners from the equity partner list to target first?
 - B/c we can't provide compensation – focus on community groups with EJ focus that have existing funds to work on these issues
 - Already working with CEDC
 - Dennison Memorial Community Center
 - Michele has contact
 - Boys & Girls Club
 - Rachel has contact
 - Rachel could check-in with Mary Rapoza about generating list of folks who are members of the Rec Center
 - Coalition for Social Justice, may have environmental justice branch
 - Rachel has contact, Sabrina Davis

Project Schedule & Roles

- Discuss changes to overall project schedule based on engagement approach confirmed above
 - Extension of engagement timeline will by nature extend the overall project timeline
- Confirm roles for moving engagement approach forward
 - Will need to identify on-the-ground person in New Bedford who can lead with materials distribution to equity partners/community locations
 - May want to consider Brian's assistant

Reminders

- Next scheduled call with Core Team: Mon Dec 18th at 2pm



New Bedford AHMP/CEMP/Evacuation Plan
Monthly Check-in Meeting
January 22, 2024, 2:00-3:00 pm

OBJECTIVES

- Review status of in-progress and upcoming tasks.

AGENDA

Engagement Updates (35 min)

- Survey response update (Carley)
 - 112 responses to date...not many additional since survey push.
- Updates on equity partner engagement
 - Listening Posts (Michele)
 - Libraries – early January 2024.
 - Ready to go, printing/easels needed
 - Howland Library
 - Main Library
 - Lawler Library
 - Wilkes Library
 - Intern at KLA can help be boots on the ground. Carley to coordinate with intern this week. Perhaps they can check listening posts once set up.
 - Dennison Memorial Community Center - early January 2024.
 - Ready to go, printing/easels needed
 - Global Learning Charter – requested.
 - Ready to go, printing/easels needed
 - Individual Meetings
 - NB CEDS Coordination: Michele/Courtney/Health Dept. (Luz Ortega) Spanish listening session in early January.
 - Requires follow up (Michele)
 - Old Bedford EDC (Buddy Andrade) Coordination: January 16, 2024 neighborhood meeting at Gomes School (Michele).
 - Buddy canceled (no advance notice) due to weather
 - Michele waiting to hear back from Buddy regarding reschedule
 - Brian/EMD hoisting 'Winter Preparedness Class' on January 17th at FTCC.
 - 11:00 AM: Council on Aging transporting seniors
 - COA pulled out from participating
 - 6:00 PM: General residents
 - No one showed. Reschedule may not happen
 - Survey/Fact Sheets Push
 - Coalition for Social Justice (Rachel: sent 12/6/23)
 - Went out



- Alma Del Mar Charter School (Rachel: 1/12/24) fact sheets/surveys out to 700+ families.
 - Went out
- Global Learning Charter (Michele: 12/7/23) fact sheets out to families (English/Spanish/Portuguese)
 - Will be a listening session (Michele to follow up)
 - Public schools to send out fact sheets
- LHMC: Scheduling 2nd meeting? Mid-February 2024 (week of February 12th): any dates to avoid?
 - Avoid week of President's Day...week before, week after?
 - Location: Zoo/Fort Taber? Fort Taber may be best. Craig to coordinate with Michele

Technical Assessment Updates (10 min)

- Draft Hazard Index out to LHMC 12/21/24
 - No comments/feedback returned.
- Critical Facilities/Vulnerable Populations data set
 - Clarifications are needed.
 - Craig working on rectifying data merge (Excel spreadsheet provided by City with Parcels shapefile)...some outstanding data needs/clarifications needed.
 - Craig to coordinate with Shawn Syde and Jim Costa.
 - Will need quick turn-around, holding up next phase (Vulnerability Assessment)

CEMP (10 min)

- Core Committee (day-to-day)/Subcommittee (review of draft content).
 - Craig had coordination with colleague Quinn McWatters, then with KLA/I-DIEM. Core Team will be small (day-to-day) and a Subcommittee will be created to 'review content'. I-Diem will also review content as ready
 - Anticipate a July 2024 draft available
 - Craig to coordinate with Brian (Michele has offered to help as needed)

Admin (5 min)

- Michele reached out to Shane with SRTA to see if staff can canvass bus stops/shelters, and/or ride the bus for the day to get input. Rachel also coordinated with Shane and suggested we reach out to 'Bus Riders United' for input into the plan (Craig). Craig suggested perhaps the KLA intern can canvas bus shelters/stops and/or ride the bus and get input into the plan. Craig also suggested to develop 'project business cards' with project webpage on front, survey link/QR code on back. KLA intern can distribute at listening post locations, distribute to bus ridership.
- Carley also coordinated with Bob Rocha, curator at the Whaling Museum. They have a new exhibition as of 1/12/24 with a special screening on 1/24/24. Carley will try to coordinate with Bob regarding hosting a listening post.
- Next check-in call scheduled for February 19th (President's Day) – need to reschedule
 - Proposed change: Monday, February 26, 2024 2 – 3 PM.
 - Craig will send out meeting invite.



New Bedford AHMP/CEMP/Evacuation Plan
Monthly Check-in Meeting
March 4, 2024, 2:00-3:00 pm

OBJECTIVES

- Review status of in-progress and upcoming tasks.

AGENDA

Engagement Updates (35 min)

- Survey response update (Carley)
 - As of 3/4/24: 164 responses.
 - Going to keep the survey open through the first public workshop (tentative date: April 11, 2024).
 - New Bedford Light putting it back out, currently going through NB PIO (Michele).
- Updates on equity partner engagement
 - Listening Posts
 - Completed...what we have heard so far...
Howland Library/Main Library/Lawler Library/Wilkes Library/Whaling Museum (January 30, 2024)
 - ❖ Flood Damage: 13
 - ❖ Damage from storms (wind/snow/ice/heavy rain): 9
 - ❖ Higher cooling costs: 16
 - ❖ Higher heating costs: 18
 - ❖ Heat stress/illness: 6
 - ❖ Loss of business due to extreme weather: 4
 - ❖ Tree/Plant stress: 7
 - ❖ Something else: 4
 - Still to do/retrieve
 - Denison Memorial Community Center
 - Collected, summary photo posted to Sharepoint.
 - Global Learning Charter
 - Collected, no participants/no summary
 - Whaling Museum (February 23, 2024 (February vacation free pass))
 - Collected, summary photo posted to Sharepoint.
 - New Bedford Science Café
 - Collected, summary photo on Sharepoint.
 - KLA Intern update (Carley)
 - Carley to check in with Nathan on upcoming availability.
 - Individual Meetings
 - NB CEDS Coordination: Michele/Courtney/Health Dept. (Luz Ortega) Spanish listening session in early January...Michele waiting for update from Luz/Health Office.



- Old Bedford EDC (Buddy Andrade) Coordination: Neighborhood meeting at Gomes School (Michele)...canceled 2nd time...not being re-scheduled.
- LHMC Meeting #2: February 14, 2024
 - Report Out
 - 12 participants
 - Reviewed Hazard Index/Report Card
 - Resolved some GIS data needs regarding the Port
 - Public Workshop #1
 - Week of March 25, 2024 or April 1, 2024 as targeted timing?
 - Dates to avoid?
 - 3/26 not good for Michele.
 - First week of April: Brian N. on vacation.
 - Shawn: Mondays/Tuesdays not good.
 - Location?
 - Library (main)
 - Second choice
 - 2nd floor meeting space
 - Art Museum (first floor)
 - First Choice
 - During AHA! (Art, History, and Architecture) with events throughout downtown.
 - April 11, 2024 Thursday (Sustainable Southcoast is the theme this night)
 - A lot of events outdoors, so potential for good foot traffic.
 - Consider longer open house session with short presentation, then run presentation on a loop.
 - New Bedford Harbor Hotel
 - Rental cost...maybe not best choice.
 - Michele will coordinate with the Art Museum regarding availability of space and potential booking.
 - Once confirmed, Craig will develop flyer for distribution.
 - Craig to coordinate with Carley on intern Nathan distributing flyers...within each ward, at bus shelters.
 - Coordinate with SRTA regarding posting workshop inside buses.
- Interviews/Focus Groups
 - HW beginning to schedule these out.

Technical Assessment Updates (10 min)

- Critical Facilities/Vulnerable Populations data set
 - Clarifications are still needed...ASAP to begin Vulnerability Assessment (Shawn and Jim to provide Map/Lot).
 - Irish Monument Sea Wall (East Rodney French Blvd.)
 - South Coast MBTA Facilities/Stations
 - Taber Park Pier
 - Hurricane Barrier System (Harbor and Cove Segment)



- Municipal Outreach
 - Water Supply/System
 - Shawn to provide Distribution Plan (2009) which should provide good description.
 - Sewer System
 - See Chapter 3: Long Term CSO Control and Integrated Capital Improvements Plan (January 2017)
 - Stormwater System
 - See Chapter 3: Long Term CSO Control and Integrated Capital Improvements Plan (January 2017)
 - Transportation Systems (including TIP projects)
 - ADA transition plan for transportation systems
 - Shawn to provide to Craig
 - Craig to provide Dams section of hazard profile to Shawn.

CEMP (10 min)

- Core Committee (day-to-day)/Subcommittee (review of draft content).
- Working on timeline/tasks
 - To be drafted prior to Memorial Day, if possible. Difficult to meet during summer months.

Admin (5 min)

- Next check-in call scheduled for March 25, 2024...possible push this out, but prior to Public Workshop #1...TBD.



New Bedford AHMP/CEMP/Evacuation Plan
Monthly Check-in Meeting
March 25, 2024, 3:00-4:00 pm

OBJECTIVES

- Review status of in-progress and upcoming tasks.

AGENDA

Engagement Updates (35 min)

- Survey response update (Carley)
 - As of 3/25/24: 170 responses.
 - Going to keep the survey open through the first public workshop (April 11, 2024).
- Public Workshop #1
 - Confirmed for Thursday, April 11, 2024, 6 pm – 8 pm
 - The Vault (791 Purchase Street)
 - In collaboration with annual AHA Celebration (Art, History, and Architecture)...theme is 'Sustainable Southcoast'.
 - Michele identified our messaging, "Help New Bedford plan for sustainable growth! Join us inside to discuss what you've been experiencing with our changing weather patterns and what your personal and community priorities are."
 - Timing:
 - Michele to find out what time we can get into the space for setup/what time we have to be out of the space.
 - AHA parade runs from 5:15 pm – 6:15 pm so we should be ready to go at 6 pm.
 - Brian plans to have staff/truck (with lights flashing) in front of the building during parade to draw people in.
 - Brian mentioned potential of parade being re-scheduled if rain...workshop will still go on as planned (indoors)
 - Workshop Flow:
 - Craig will provide a brief PPT presentation covering the HMP process, Hazard Index, and 2016 Plan Report Card for those interested in staying/participating at 6 pm. Afterwards, the presentation will run on a loop for people dropping by. Should there be enough new people around at the 7 pm time interested in hearing the PPT presentation, Craig will provide another brief overview.
 - Additional staff (so far: Michele Paul/Brian Nobrega/Courtney Cohen/Craig Pereira/Kellie King/possibly others?) will also be on hand to receive people looking to 'pop in' and:
 - Provide information or get their input on the plan/process. Craig will develop comment cards that people can fill out/document their input.
 - Take the online Survey. Brian will supply I-pads for people to take the survey that night.



- Mark up maps with local, personal knowledge.
- Distribute project business cards (project website/Survey link and QR Code)
- Advertising:
 - City staff to post flyer on NB dashboard and push out via social media (Michele)
 - Craig will develop flyer for distribution.
 - Michele will share flyer with AHA contact.
 - Carley to coordinate with Nathan (KLA intern) to post flyers throughout various wards (bus shelters, corner stores, markets, libraries, City Hall).
 - Craig will distribute flyer to Core Team, LHMC, Equity Partnership and ask that they distribute to networks.
- Workshop Materials:
 - Craig:
 - PPT Presentation
 - Sign-in Sheet
 - Comment cards
 - Projector
 - 24 x 36 Welcome poster (2 for both sides of sandwich board on the sidewalk)
 - 24 x 36 Survey poster (for inside building)
 - Foam Core (5 -24 x 36) and clips
 - Pens/Markers/Sticky Notes
 - Name tags
 - Brian:
 - Dept. Personnel/Truck
 - Screen for PPT presentation
 - Sandwich board
 - I-pads (with hot spot)
 - Tables (two 4-foot and two 6-foot)
 - Coloring/Activity books/crayons for youth activity
 - Preparedness materials
 - Michele:
 - Project business cards
 - City Maps (leftover from Ward meetings)
 - Table (one)
 - Easels (5)
 - Hand-crank flashlights (leftover for give-aways?)

Technical Assessment Updates (10 min)

- Critical Facilities/Vulnerable Populations data set
 - Clarifications are still needed...ASAP to begin Vulnerability Assessment (Shawn to coordinate provision of Map/Lot):
 - Irish Monument Sea Wall (East Rodney French Blvd.)
 - South Coast MBTA Facilities/Stations
 - Taber Park Pier
 - Hurricane Barrier System (Harbor and Cove Segment)



- Greater New Bedford Regional Refuse Management District (landfill)
- Route 18 pedestrian bridge (under construction)
- Craig confirmed Michele's question: Northern Wind (75 MacArthur Boulevard) is on the updated GIS HazMat Facility list (Tier 2 release in 2020/2022?)

CEMP (10 min)

- Core Committee (day-to-day)/Subcommittee (review of draft content).
 - First Planning meeting scheduled for Thursday, March 28, 2024, (virtual) 9 am – 12 pm.
 - Craig to provide status of invitees to Michele/Brian.

Admin (5 min)

- Next check-in call scheduled for April 22, 2024.



New Bedford AHMP/CEMP/Evacuation Plan
Monthly Check-in Meeting
June 17, 2024, 2:00-3:00 pm

OBJECTIVES

- Review status of in-progress and upcoming tasks.

AGENDA

Engagement Updates

- Survey response update
 - As of 6/4/24: 198 responses.
 - To be closed/summarized on July 1, 2024
- Public Workshop #1
 - April 11, 2024 (The Vault)
 - 7 participants
- Interviews completed/summary of findings:
 - Cynthia Spence (NB Housing Authority)
 - New requirements for high-impact windows/rain gardens...not originally budgeted, but will be moving forward.
 - Grid capacity concerns: Tenants don't pay for, Authority does. A concern for the future rate increases
 - Envision Resilience student competition...CSP to review...Courtney knows of this...NERD (sp?) group that meets every other month. Northeastern University...4 projects in the City (Riverside Park upgrades/North End infrastructure improvements. Early May/April 2024...Courtney
 - Ashley Payne/Amy Desrosiers (Tourism/Marketing), Gary Lunsford (Zoo)
 - Recent damage to piers...fishing industry/tourism
 - Increasing concern for animal/zoonotic diseases (bird flu considerations)
 - Future climate impacts could impact tourism...better information on what to expect to inform marketing efforts.
 - Not a lot of space for temporary shelters if needed...EPA building used by zoo to house birds/will be disappearing shortly. Animal Control...they need space for non-zoo birds coming into the zoo
 - Sidewalks already inaccessible, never mind hazards
 - Restroom shortages an issue
 - Flooding/power outages are an issue at zoo...they do have EAPs in place
 - Improve walkability/mass transit
 - Shayne Trimball (Southeastern Regional Transit Authority)
 - Winter storms and narrowing of streets/steep slopes a concern, as well as clearing of pedestrian paths, and bus stops/shelters



- Flooding and blocked roadways/delays, and electrification (battery-power) of fleet
- A critical, equity concern citywide
- Incorporate fleet into evacuation planning...a company the City would call
- Council on Aging/Community Services/Veteran's Services: re-scheduled for next week

Technical Assessment Updates

- Critical Facilities/Vulnerable Populations data set confirmed/final (404 records v. 190 in 2018 plan)
 - Brian to review list that Craig sent and flag 'sensitive data records'.
 - Coordinate with Ceasar Duarte also...Port 'sensitive data records'.
- Map series confirmed by Michele/Brian
 - 4 quadrants/not 2...ease of read
 - 11 x 17 for inclusion in plan
 - 24 x 36 provided for City use
 - Separate map showing assets outside of City limits
 - Maps:
 - Environmental Justice Areas
 - Flood Risks
 - MC FRM
 - Critical Facilities
 - Vulnerable Populations
 - Average Annual Snowfall
 - SLOSH
 - Tornado Incidence
 - Earthquake Incidence
 - Wildland Urban Interface
- Overlay Analyses completed...
 - FEMA Flood Zones
 - 100-yr/500-yr/D zone (reduced risk due to levee)
 - Craig indicated this is from a 'birds eye perspective' not topographic analysis.
 - Shawn mentioned that Letter of Map Amendments (LOMA's) won't necessarily be reflected in some of the flooding analyses. Sea level rise/climate change analysis for the WWTF was completed...our overlay analysis may show it floods, however, it does not flood. LOMA's exist, is City tracking? Craig to check with Danny Romanowicz (CFM).
 - SLOSH Zones (category 1 – 4)
 - MC FRM (annual exceedance probability 2030/2050/2070)

CEMP

- Planning Workshops
 - Conducted 2 workshops
 - Working draft out to Core Team for review/edits (by June 28, 2024)
- Next Steps...



- Incorporate revisions/edits into one succinct version, then out to all departments listed in the plan for review/comment
- Mid-July Planning Workshop #3 to review full draft

Admin

- Next check-in call: TBD based on work flow/tasks

Outreach Guide/Factsheets



New Bedford Multi-Hazard Mitigation Plan Outreach Guide

The City of New Bedford needs your help to support community engagement for this planning process! In order to pursue a wide and equitable engagement process, we ask that you share project materials with your audience and network.



Follow the City accounts on [Facebook](#) and [Twitter](#) and share posts about the project to your organization's social media #NBResilient



Share the link to the online Community Survey on social media

- Survey link: <http://bit.ly/new-bedford-hazard-survey>
- [Social media posts](#)
- Available in English, Spanish and Portuguese



Print the [hard copy survey](#) to share with your constituents at in-person events

- Completed surveys may be submitted to carley@kimlundgrenassociates.com



Advertise the upcoming in-person Ward Meetings to your network

- [Social media posts](#)
- [Newsletter content](#)



Print the flyer and QR code for the Community Survey and Ward Meetings to have available in your office or at in-person events

- [Survey flyer](#)
- [Ward Meetings flyer](#)



Planning for New Bedford's Future

Identifying Hazards and Solutions

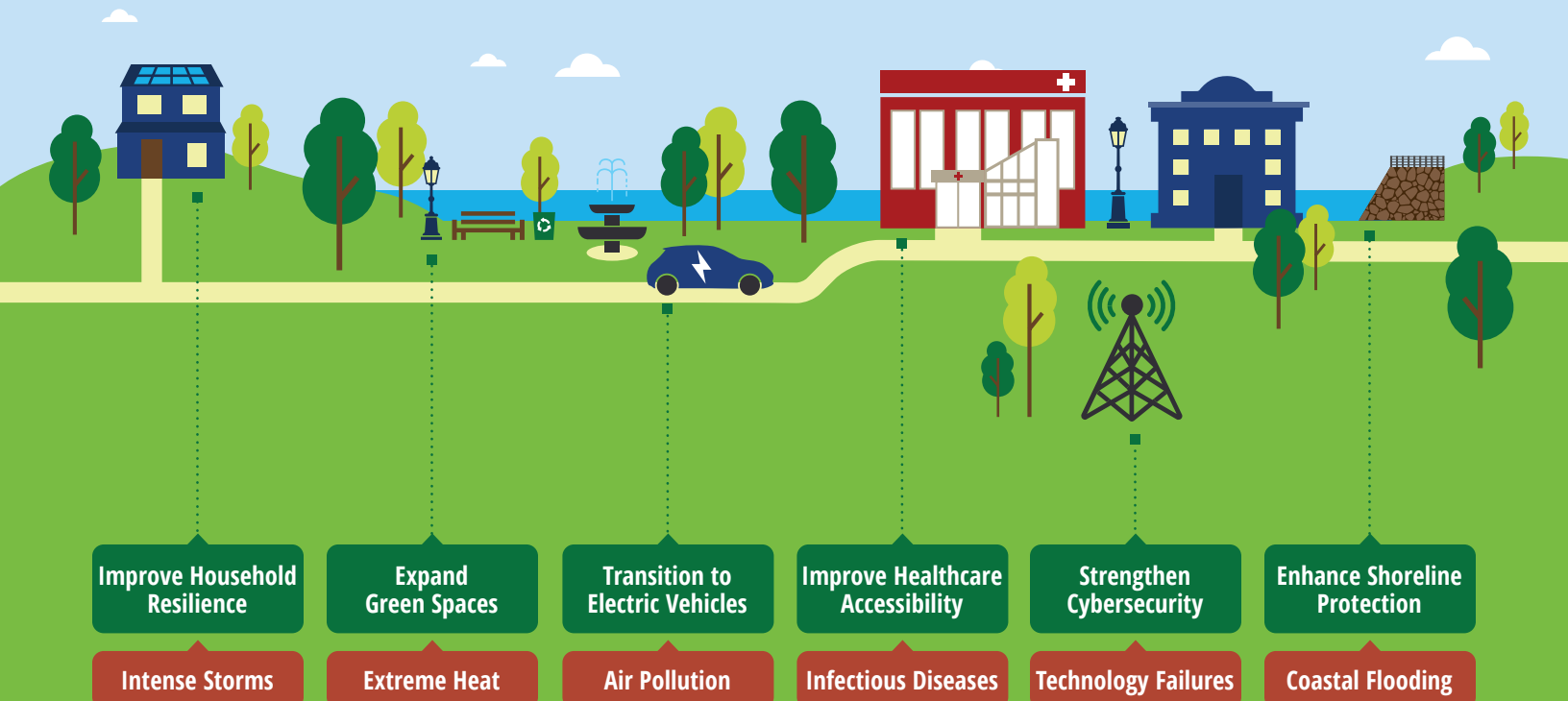
New Bedford is home to a bustling waterfront, a historic downtown, and abundant natural resources. However, we need to plan to ensure that climate change as well as other human-caused and technological hazards do not negatively impact our longstanding institutions and vibrant communities in the future. Already, we are seeing all types of hazards, from extreme storms and heat waves to infectious diseases and technology failures, take a toll on people and property. As New Bedford looks ahead, mitigating and preparing for these hazards is critical to creating a more resilient future for all.

NATURAL, HUMAN-CAUSED, & TECHNOLOGICAL HAZARDS

Occurrences that pose immediate and long-term threats to humans and the environment.

MITIGATION & ADAPTATION SOLUTIONS

Examples of actions that reduce emissions of climate warming gases and minimize vulnerability to hazards.





EXTREME HEAT

Historic Trends

9.17

days per year
above 90 degrees F
(2015-2020)¹



INTENSE STORMS

55%

increase in total
volume of rainfall
during extreme
events since 1950³



FLOODS

8,295

housing units
are within FEMA
designated flood
hazard areas⁵



SEA LEVEL RISE

IT TOOK 36

years (1980-2016) for
the sea level to rise
around 6 inches⁷

Future Projections

(compared to 1961-1990)

24.8

days per year above
90 degrees F by 2050²

**UP TO AN
ADDITIONAL
48%**

increase in total
annual precipitation
by 2050⁴

UP TO 130%

increase in days
with 1" or more of
precipitation by 2050⁶

**IN THE NEXT
15**

years (2017-2032),
the sea level is
projected to rise
another 6 inches⁸

^{1,5} CDC National Public Health Tracking Network (2023), accessed from <https://ephtracking.cdc.gov/DataExplorer>.

^{2,4,6} U.S. Federal Government (2022), Climate Mapping and Resilience Assessment, accessed from <https://resilience.climate.gov>.

^{7,8} Sea Level Rise (2023), The Future of Sea Level Rise, accessed from <https://sealevelrise.org/>.

Why Hazard Mitigation Planning?



Hazard mitigation planning will enable New Bedford to identify risks and vulnerabilities associated with hazards and develop long-term strategies for protecting people and property. Learn more on the [NB Resilient Dashboard](#).



PRIORITIZING EQUITY

New Bedford has connected with 23 community organizations so far to ensure equitable engagement is at the forefront of the hazard mitigation planning process. To connect your organization, please contact Michele.Paul@newbedford-ma.gov

**Get
Involved**



Share your personal
experiences with
hazards through our
community survey



Attend your
local neighborhood
meeting



Learn more about
Hazard Mitigation
on the NB Resilient
Dashboard



Planeamento para o Futuro de New Bedford

Identificação de Perigos e Soluções

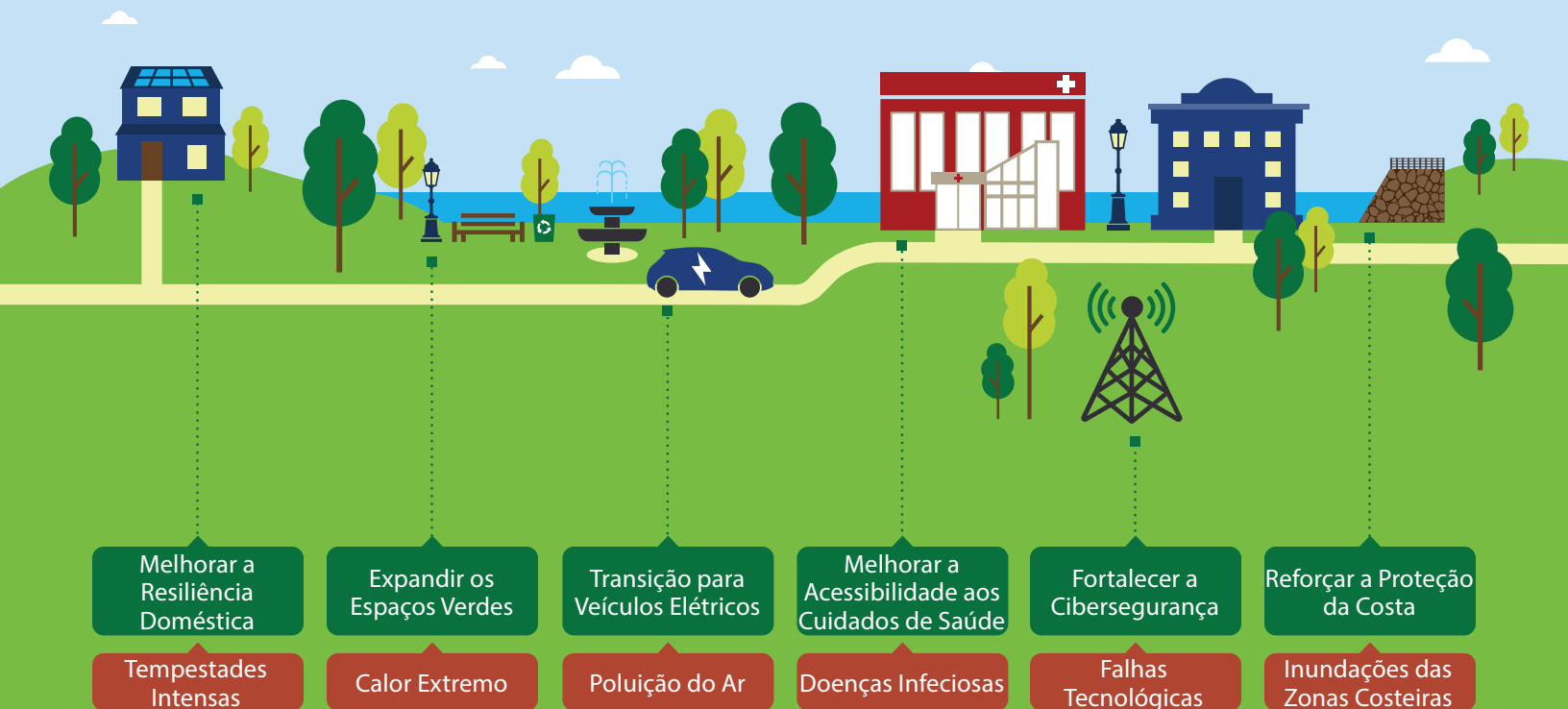
New Bedford é o lar de uma movimentada orla marítima, um centro histórico e abundantes recursos naturais. No entanto, precisamos de planear para garantir que as alterações climáticas, assim como outros perigos tecnológicos e causados pelo homem não afetem negativamente as nossas instituições de longa data e comunidades vibrantes no futuro. Estamos já a assistir a todos os tipos de perigos, desde tempestades extremas e ondas de calor até doenças infecciosas e falhas tecnológicas, afetarem pessoas e bens. À medida que New Bedford olha para o futuro, é fundamental mitigar e preparar-se para esses perigos de forma a criar um futuro mais resiliente para todos.

PERIGOS NATURAIS, CAUSADOS PELO HOMEM E TECNOLÓGICOS

Ocorrências que representam
ameaças imediatas e de longo prazo
para os seres humanos e o meio
ambiente.

SOLUÇÕES DE MITIGAÇÃO E ADAPTAÇÃO

Exemplos de ações que reduzem as
emissões dos gases de efeito estufa
e minimizam a vulnerabilidade aos
riscos.





CALOR EXTREMO

Tendências Históricas

9,17

dias por ano acima dos 90 graus F (2015-2020)¹



TEMPESTADES INTENSAS

55%

de aumento no volume total de chuvas durante eventos extremos desde 1950³



INUNDAÇÕES

8.295

unidades habitacionais estão dentro das áreas de risco de inundação designadas pela FEMA⁵



ELEVAÇÃO DO NÍVEL DO MAR

DEMOROU 36

anos (1980-2016) para que o nível do mar subisse cerca de 6 polegadas (15 cm)⁷

Projeções futuras

(em comparação com 1961-1990)

24,8

dias por ano acima dos 90 graus F até 2050²

UM AUMENTO ADICIONAL DE ATÉ 48%

na precipitação anual total até 2050⁴

UM AUMENTO DE ATÉ 130%

em dias com 1" (2,5 cm) ou mais de precipitação até 2050⁶

NOS PRÓXIMOS 15

anos (2017-2032), prevê-se que o nível do mar suba mais 6 polegadas 15 cm⁸

^{1,5} CDC National Public Health Tracking Network (2023), consultado em <https://ephrtracking.cdc.gov/DataExplorer>.

^{2,4,6} U.S. Federal Government (2022), Climate Mapping and Resilience Assessment, consultado em <https://resilience.climate.gov>.

^{7,8} Sea Level Rise (2023), The Future of Sea Level Rise, consultado em <https://sealevelrise.org/>.

Porquê o Planeamento da Mitigação de Perigos?



O planeamento da mitigação de perigos permitirá que New Bedford identifique os riscos e as vulnerabilidades associados aos perigos e desenvolva estratégias de longo prazo para proteger pessoas e bens. Saiba mais no [NB Resilient Dashboard](#).



Priorização da Equidade

Até ao momento, New Bedford associou-se a 23 organizações comunitárias de forma a garantir que o envolvimento equitativo esteja na vanguarda do processo de planeamento da mitigação de perigos.

Para associar a sua organização, contacte

Michele.Paul@newbedford-ma.gov

Envolve-se



Partilhe as suas experiências pessoais com riscos através do nosso inquérito à comunidade



Participe na sua reunião de bairro local



Saiba mais sobre a Mitigação de Riscos no Painel do NB Resilient



Planificación para el futuro de New Bedford

Identificación de peligros y soluciones

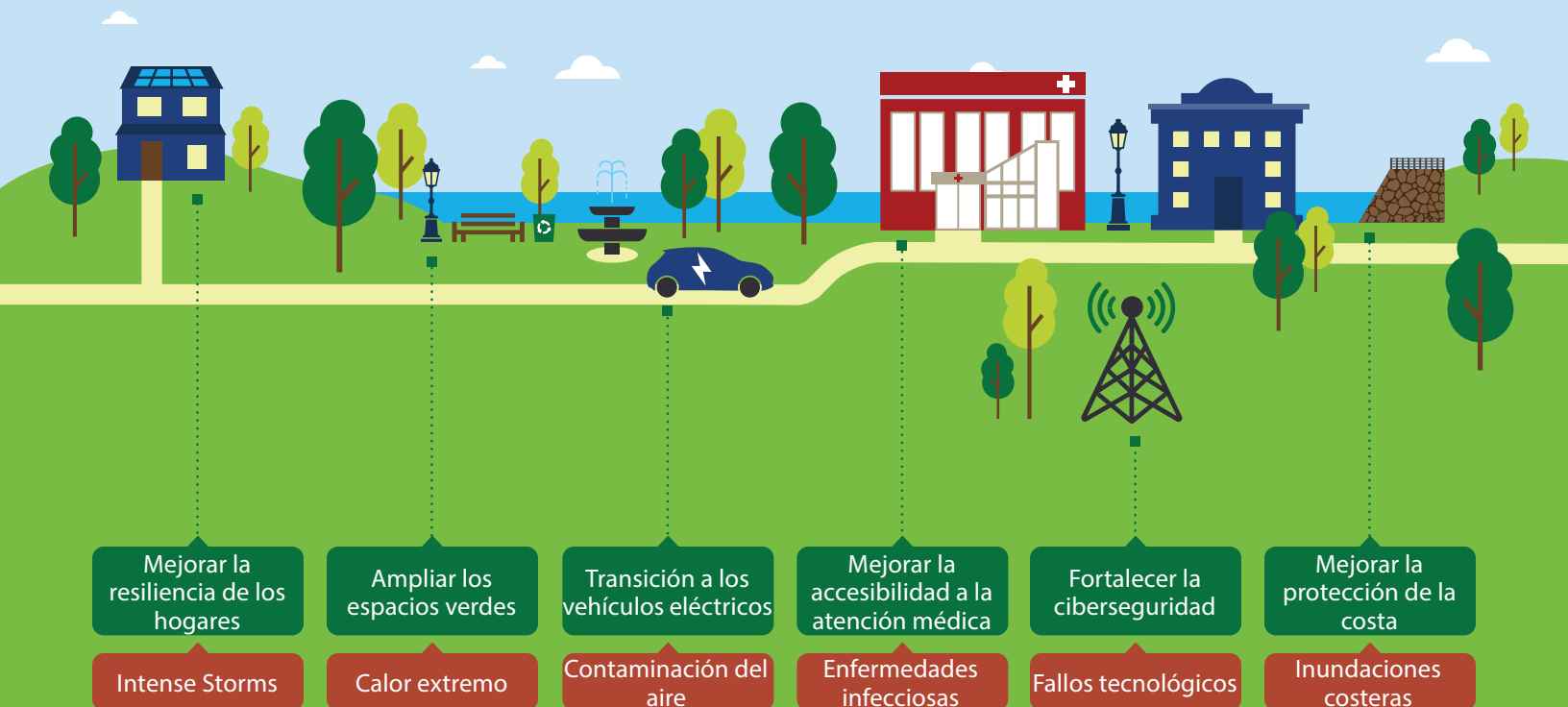
New Bedford cuenta con un animado paseo marítimo, un centro histórico y abundantes recursos naturales. Sin embargo, es necesario planificar para garantizar que el cambio climático, así como otros peligros provocados por el hombre y la tecnología, no afecten negativamente a nuestras duraderas instituciones ni a nuestras comunidades en el futuro. Ya estamos viendo todo tipo de peligros, desde tormentas y olas de calor extremas, hasta enfermedades infecciosas y fallos tecnológicos que afectan a personas y propiedades. A medida que New Bedford mira hacia el futuro, es fundamental mitigar y prepararse para estos peligros para crear un futuro más resiliente para todos.

PELIGROS NATURALES PROVOCADOS POR EL HOMBRE Y LA TECNOLOGÍA

Sucesos que representan amenazas inmediatas y a largo plazo para los seres humanos y el medioambiente.

SOLUCIONES DE MITIGACIÓN Y ADAPTACIÓN

Ejemplos de acciones que reducen las emisiones de gases de efecto invernadero y minimizan nuestra vulnerabilidad a los peligros.





CALOR EXTREMO

Tendencias históricas

9,17

días al año por encima de 90 grados F (2015-2020)¹



TORMENTAS INTENSAS

55%

en el volumen total de precipitaciones durante eventos extremos desde 1950³



INUNDACIONES

8.295

viviendas se encuentran dentro de las áreas de riesgo de inundaciones



SUBIDA DEL NIVEL DEL MAR

SE HA TARDADO 36

años (1980-2016) en que el nivel del mar subiera alrededor de 6

Proyecciones de futuro

(comparado con el periodo 1961-1990)

24,8

días al año por encima de 90 grados F para 2050²

HASTA UN AUMENTO ADICIONAL DEL 48%

en precipitaciones anuales totales para 2050⁴

AUMENTO DE HASTA EL 130%

en días con 1" o más de precipitaciones para 2050⁶

EN LOS PRÓXIMOS 15

años (2017-2032), se prevé que el nivel del mar aumente otras 6 pulgadas⁸

^{1,5} CDC National Public Health Tracking Network (2023), consultado en <https://ephtracking.cdc.gov/DataExplorer>.

^{2,4,6} U.S. Federal Government (2022), Climate Mapping and Resilience Assessment, consultado en <https://resilience.climate.gov>.

^{7,8} Sea Level Rise (2023), The Future of Sea Level Rise, consultado en <https://sealevelrise.org/>.

¿Por qué planificar la mitigación de riesgos?



La planificación de la mitigación de riesgos permitirá a New Bedford identificar los riesgos y vulnerabilidades asociados con los peligros y desarrollar estrategias a largo plazo para proteger a las personas y las propiedades. Obtenga más información en el tablón de anuncios [NB Resilient Dashboard](#).



PRIORIZAR LA EQUIDAD

New Bedford se ha conectado con 23 organizaciones comunitarias hasta el momento para garantizar que la participación equitativa se encuentre al frente del proceso de planificación de la mitigación de riesgos. Para conectar su organización, por favor, póngase en contacto con

Michele.Paul@newbedford-ma.gov

Participe



Comparta sus experiencias personales con los peligros a través de nuestra encuesta a la comunidad



Asista a la reunión de su barrio



Obtenga más información sobre la mitigación de riesgos en el tablón de anuncios NB Resilient Dashboard

LHMC Meetings

LHMC Meeting #1: September 22, 2023

LHMC Meeting #2: February 14, 2024

LHMC Meeting #3: September 17, 2024

LHMC Meeting #4 (Part 1): December 4, 2024

LHMC Meeting #4 (Part 2): January 24, 2025

LHMC Meeting #1: September 22, 2023



**New Bedford Multi-Hazard Mitigation Plan Update
Local Hazard Mitigation Committee Meeting #1**

September 22, 2023
New Bedford Free Public Library – 3rd Floor Meeting Room
613 Pleasant Street
New Bedford, MA 02740
10:00 AM – 12:00 PM

Agenda

1. Introductions
2. Project Components
3. Project Schedule
4. Proposed Plan Update Layout
5. Hazards to be Profiled
6. Community Outreach and Engagement
7. Work in Progress
8. Next Steps

New Bedford, MA Multi-Hazard Mitigation Plan Update

Local Hazard Mitigation Committee Meeting #1
September 22, 2023 10:00 AM – 12:00 PM
New Bedford Free Public Library – 3rd Floor Meeting Room



1

WELCOME!

2

Today's Agenda

- Consultant Team
- Local Hazard Mitigation Committee
- Project Components
- Schedule
- Proposed Plan Layout
- Hazards to be Profiled
- Community Outreach and Engagement
- Work In Progress
- Next Steps



3

Consultant Team

Kim Lundgren Associates

- Kim Lundgren – Chief Executive Officer
- Kate Galbo – Climate Action Planning Manager
- Carley Petrone – Senior Resilience Planner
- Tacy Lambiase – Climate Communications and Storytelling Manager



Horsley Witten Group

- Nate Kelly – President
- Craig Pereira – Senior Planner
- Kellie King – Environmental Planner



Institute for Diversity and Inclusion in Emergency Management

- Chauncia Willis – Chief Executive Officer
- Antoine Richards – Chief of Staff
- Marcus Martin – Program Manager



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Local Hazard Mitigation Committee

City of New Bedford

- Joshua Amaral – Director of Housing and Community Development
- Amy Arpke – Chief Financial Officer/Auditor
- Jennifer Carloni – City Planner
- Gordon Carr – Executive Director New Bedford Port Authority
- Christina Connelly – Chief Operations Officer
- Cesar Duarte – Director of Engineering and Operations
- Holly Huntoon – Public Information Officer
- Scott Kruger – Chief, Fire Department
- **Rachel Mulroy – Planning Department**
- **Brian Nobrega – Director of Emergency Management**
- Andrew O'Leary – Superintendent, NB Schools
- Paul Oliveira – Chief, Police Department
- **Michele Paul – Director of Resilience and Environmental Stewardship**
- Chance Perks – Conservation Agent
- Jamie Ponte – Commissioner of Public Works
- Travis Rebello – Hazardous Materials Coordinator
- Danny Romanowicz – Building Commissioner
- Stephanie Sloan – Director of Public Health
- **Shawn Syde – City Engineer**
- Michael Thomas – Director of Emergency Medical Services
- Jennifer Vieira – Commissioner, Department of Facilities and Fleet Management



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Local Hazard Mitigation Committee

Massachusetts Emergency Management Agency

- Nate Cochran – Local Coordinator, Region 2
- Jeff Zukowski – Hazard Mitigation Planner



Equity Partners

- John Andrade – Old Bedford Village Economic Development Corporation
- Helena Dasilva-Hughes – Immigrants' Assistance Center
- Renee Ledbetter – Director, NB Shannon Program
- Marci Pina-Christian – Executive Director, NB Human Rights Commission
- Cynthia Spence – Director of Modernization/Planning/Development, New Bedford Housing Authority
- Darlene Spencer – President, NB Cape Verdean Association
- Corinn Williams – Executive Director, NB Community Economic Development Center

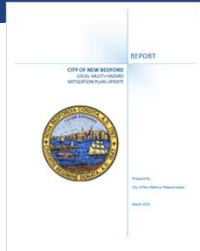
6

Project Components

- **Multi-Hazard Mitigation Plan Update**
- Comprehensive Emergency Management Plan Update
- Evacuation Planning Support

What's new for this MHMP 2024 update?

- Climate Change Impacts on...
- Equity Focus
- Human-Caused Hazards
- Technological Hazards



Project Timeline MHMP

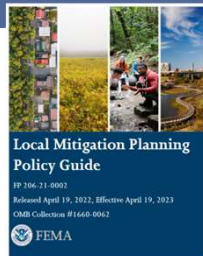


7

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Proposed Plan Layout

- Introduction/Overview
- Community Profile
- Hazard Identification and Risk Assessment
- Capability Assessment
- Mitigation Strategy
- Plan Implementation and Maintenance



Natural Hazards to be Profiled

Flood-Related Hazards <ul style="list-style-type: none"> • Riverine/Flash Flooding • Inland/Urban Flooding, Heavy Rain • Dam Failure • Coastal Flooding/Erosion • Storm Surge 	Winter-Related Hazards: <ul style="list-style-type: none"> • Blizzards/Snow/Nor'easters • Ice Storms • Extreme Cold 	Wind-Related Hazards: <ul style="list-style-type: none"> • Hurricanes/Tropical Storms • High Winds • Tornadoes/Waterspouts • Lightning/Thunderstorms • Hail
Geologic-Related Hazards <ul style="list-style-type: none"> • Earthquakes • Landslides • Tsunamis 	Extreme Heat-Related Hazards: <ul style="list-style-type: none"> • Extreme Heat 	Drought-Related Hazards: <ul style="list-style-type: none"> • Drought

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Natural Hazards to be Profiled

Wildfire/Brushfire-Related Hazards <ul style="list-style-type: none"> • Wildfire/Brushfire 	Communicable (Infectious) Disease-Related Hazards: <ul style="list-style-type: none"> • Epidemic/Pandemic 	Invasive Species-Related Hazards: <ul style="list-style-type: none"> • Aquatic Plant Species
Vector-Borne-Related Hazards <ul style="list-style-type: none"> • Multiple 		

Human-Caused Hazards to be Profiled

Terrorism (Intentional) Hazards: <ul style="list-style-type: none"> • Biological Incident • Chemical Incident • Cybersecurity Incident • Explosive Incident • Radiological/Nuclear Incident • Civil Disobedience/Unrest 	Other (Accidental) Hazards: <ul style="list-style-type: none"> • Urban Fire • Hazardous Materials Release • Mass Casualty Incident • Major Aircraft Crash • Special/VIP Events
--	--

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Technological Hazards to be Profiled

Technological Hazards:

- Communications
- Emergency Services
- Energy
- Information Technology
- Transportation Systems (includes the Port)
- Water/Wastewater Systems
- Hurricane Barrier



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Community Outreach & Engagement

- Equity Partners
- Project Webpage
- Online Survey
- Factsheet
- Local Hazard Mitigation Committee Meetings (4)
- Ward-specific Meetings (6)
- Public Workshops (2)
- Stakeholder Interviews/Focus Groups
- Public Comment Period – Draft Plan



Engage a Wide &
Diverse Audience



Grow
Climate Literacy



Build Capacity to
Take Action



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Equity Partners

- Eldric Abreu – Community Outreach Coordinator, Waterfront Historic Area League
- Carl Alves – Chief Executive Officer, Positive Action Against Chemical Addiction, Inc.
- John Andrade – Old Bedford Village Economic Development Corporation
- Jan Baptiste – Vice President, Cape Verdean Association
- Wendy Bluis – Program Director, Highpoint Treatment
- Stan Brajer – Director, NB Community Connections Coalition/United Way of Greater New Bedford
- Dannielle Brown – Program Director, Steppingstone
- Sheila Chasse – Director of Housing, Catholic Social Services
- Helena Dasilva-Hughes – Immigrants' Assistance Center
- Sabrina Davis – Coalition for Social Justice
- Allie Donahue – Disaster Program Manager, American Red Cross
- Genesis Galan – People Acting for Community Endeavors
- Sean Hargraves – Dennison Memorial Community Center



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Equity Partners

- Debra Kelsey – Navigator/Certified Recovery Coach, Fishing Partnership Support Services
- Pam Kuechler – People Acting for Community Endeavors
- Renee Ledbetter – Director, NB Shannon Program
- Rev. David Lima – Rise Up for Homes
- Moises Muniz – Corps Officer, Salvation Army
- Sylvia Nobre-Hilton – Chief Operating Officer, Coastline Elderly Services
- Marci Pina-Christian – Executive Director, NB Human Rights Commission
- Marlene Pollock – Coalition for Social Justice
- Ron Raymond – President, Longshoremen's Association Local 1413
- Rev. Michael Racine – Collaborative Staff, Whaling City Catholic Community
- James Reid – Executive Director, Veteran's Transition House
- Connie Rocha-Mimoso – Director of Community Health Services, Seven Hills
- Cynthia Spence – New Bedford Housing Authority
- Darlene Spencer – President, NB Cape Verdean Association
- Corinn Williams – Executive Director, NB Community Economic Development Center



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Project Webpage

- Take Our Survey!
- What is Hazard Mitigation Planning?
- Prioritizing Equity
- Our Process
- Local Hazard Mitigation Committee
- Contact Us for More Information
- Additional Resources



www.newbedford-ma.gov/emergency-management/new-bedford-multi-hazard-mitigation-plan/



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Online Survey

- Visit nbresilient.com
- Take the online Community Survey:
<https://www.surveymonkey.com/r/6KTNVMJ>
- Share the link/QR Code with family, friends, coworkers

- **Participate and be entered to win a \$50 gift card!**

Scan me to
take the
survey!



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Factsheet

Planning for New Bedford's Future Identifying Hazards and Solutions

New Bedford's future is a bright horizon, a blank canvas and abundant natural resources. However, we need to plan to ensure that future generations will be able to enjoy the city's natural resources and the economic and social benefits that come with them. This factsheet provides information on the city's current and future hazards and the solutions that are being developed to address them.

Key Statistics:

- Population:** 9,177
- Area:** 1,295 sq. miles
- Waterfront:** 3.17 miles
- Waterfront Development:** 48%
- Waterfront Investment:** \$1.2 billion
- Waterfront Jobs:** 1,200
- Waterfront Revenue:** \$1.2 million
- Waterfront Investment:** \$1.2 billion
- Waterfront Jobs:** 1,200
- Waterfront Revenue:** \$1.2 million

Why Hazard Mitigation Planning?

Hazard mitigation planning will enable New Bedford to identify risks and vulnerabilities associated with hazards and develop long-term strategies for protecting people and property. Learn more on the [NB Hazards Dashboard](#).

Get Involved

Have your voice heard? Share your thoughts and ideas with the city. Visit [www.newbedford.gov/hazards](#) for more information.

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Meetings

- Local Hazard Mitigation Committee Meetings
 - September 2023
 - November 2023...TBD
 - January 2024...TBD
 - March 2024...TBD
- Ward-Specific Meetings (all meetings 6:00 PM – 7:30 PM)
 - Ward 1: November 6, 2023
Campbell School (cafeteria)
 - Ward 2: September 25, 2023
Wilks Library (meeting room)
 - Ward 3: October 16, 2023
Keith Middle School (community room)
 - Ward 4: November 2, 2023
McCoy Recreation Center (multi-use room)
 - Ward 5: October 4, 2023
Hathaway Elementary School (auditorium)
 - Ward 6: October 30, 2023
Hazelwood Park Community Center (community room)
- Public Workshops
 - Workshop #1: Project Kickoff Process, 2016 Plan Report Card, Hazard Index
 - Workshop #2: Project Update, Mitigation Actions under Consideration

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Stakeholder Interviews/Focus Groups

City of New Bedford

- Buttonwood Park Zoo
- Community Services
- Council on Aging
- City Solicitor
- Housing and Community Development
- Management Information Systems
- NB Airport
- NB Economic Development Council/Industrial Park
- Tourism
- Veteran's Services

Utility Providers

- Eversource
- Verizon
- Comcast
- Open Cape

Other Community Stakeholders

- SouthCoast Hospitals Group
- NB Community Health Center
- Army Corps of Engineers
- Chamber of Commerce
- DCR Flood Hazard Management Program
- Greater NB Regional Refuse Man. District

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Public Comment Period – Draft Plan


- Draft Plan
 - Posted to Project Webpage
 - Hard Copies available at strategic locations
 - Emailled notice of availability:
 - Freetown
 - Acushnet
 - Dartmouth
 - Fairhaven
 - New Bedford Departments/Boards/Commissions
- Public Workshop #2/Public Hearing



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Work in Progress


- Critical Facilities data set update
- Vulnerable Populations data set update
- Development trends since 2016
- Capability Assessment
- 2016 Plan Report Card
- Funding since 2016



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Work in Progress

- Critical Facilities data set update
 - Public Safety
 - City Infrastructure
 - Utilities
 - Transportation
 - City Buildings
 - Medical Facilities
- Vulnerable Populations data set update
 - Schools
 - Public Assembly
 - Congregate Care Housing
 - High-Density Residential areas
- Development trends since 2016



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Capability Assessment

- Planning and Regulatory Capabilities
 - MVP (June 2018)
 - Resilient Design Guidelines, NB Harbor (June 2020)
 - Strategies to Promote Attainable Housing for All (March 2023)
 - Open Space and Recreation Plan (2014 – 2021)
 - A City Master Plan (2020)
 - Subdivision Regulations/MA Wetlands Protection Bylaw
 - Pump Station Floodproofing Project (2016)
- Administrative and Technical Capabilities
 - GI Master Strategy Roadmap Report (June 2022)
 - NB Resilient (2018)
 - North/South End Resilience Hub Business Planning
 - Maritime Business Resilience Toolkit (June 2020)
 - Port of New Bedford Strategic Plan (2018 – 2023)
 - Municipal Website
- Financial Capabilities
 - Federal/State Grant Opportunities



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2016 Plan Report Card

- Emergency Management Department
- Police Department
- Fire Department
- Planning Department
- Harbor Development Commission
- Department of Public Infrastructure



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Funding Since 2016

MVP Program

- Initial MVP Planning Grant (\$36,000)
- NB Resilient Climate Action and Resilience Plan (\$165,120)
- Initial NB Harbor Resilience Plan (\$58,662)
- GI Master Strategy/Implementation Roadmap (\$432,440)
- Kempton Street Corridor GI Engineering/Permitting (\$161,800)

FEMA

- DR-4372 Severe Winter Storm (\$192,285)
- DR-4496 COVID (\$2,507,333)
- DR-4651 Severe Snowstorm (\$330,451)

CARES Act

- (\$8,253,277)



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Next Steps

- Risk Assessment
 - History of Events since 2016
 - Background Data
 - Climate Change Impacts On...
 - Property at Risk
 - Probability of Future Occurrence
- Hazard Index
- Vulnerability Assessment
 - Overlay Analyses
- Ward-Specific Meetings
- Public Workshop #1
- Interviews/Focus Groups
- Continue Online Survey Roll-out



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The Planning Process will...

- ✓ Result in an actionable plan update
- ✓ Analyze effectiveness of existing policies, programs, and capabilities
- ✓ Provide the framework to chart our path forward to a resilient future
- ✓ Build capacity of community members to take action and raise awareness of impacts and solutions



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Questions?

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New Bedford 2016 Plan Report Card...updated July 9, 2023

5.3.1 Emergency Management Department

5.3.1.1 Purchase and Install Auxiliary Generators

The City proposes to purchase and install auxiliary generators for critical local government department operations centers at the following locations:

1. Health Department – 1213 Purchase Street. Installed in Sept 2022. Used ARPA funds. For vaccines only – not entire office.
2. Emergency Management Department – 834 Kempton Street. No but moving to a building that will be.
3. DPI Complex – 1105 Shawmut Avenue. Building is on generator power.
4. Emergency Medical Services Department – 181 Hillman Street. NO. Huge issue and needs to be addressed...carry forward into 2024 update.

Engineering and planning services will determine each facility's individual power needs. Appropriate generators and fuel containment facilities will be installed at each location thereafter.

Priority: High

Completed Yes or No: Partially

Month/Year: Health Dept. 2022

Responsible Party:

Funding mechanism/Grant amount: Health Dept.: ARPA funds

5.3.1.2 Improve Warning Capabilities

The City proposes to improve the City's emergency warning capabilities through the purchase of a "Reverse 911" geo-based telephone notification service. Training of appropriate E911 Center personnel in the use of this system will be required for the system to reach full functionality. Education activities will be held to educate the public on the City's use of the system and promote "opt-in" for residents' cellular or Voice Over Internet Protocol (VoIP) phones.

Priority: High

Completed Yes or No: Yes

Month/Year: Feb 2019

Responsible Party: EMA

Funding mechanism/Grant amount: Partners for Places Grant supplemented by general fund.

5.3.1.3 Special Needs Registry

The City proposes to revive its "Special Needs Registry" and promote voluntary registration (or participation) by residents who may require additional assistance, transportation, and/or sheltering in the event of a major emergency or disaster. The program will be implemented within the next calendar year and will be continually carried out via the following action items:

1. Conduct community outreach efforts to encourage persons with access and functional needs to register.
2. Provide specialized, pre-disaster emergency information to this population.
3. Update and maintain registry database for use in emergency situations.

Priority: High

Completed Yes or No: Yes Difficult/impossible to manage. Need outside consultant support to manage...carry forward into 2024 Update (update description for Consultant services)

Month/Year: prior to 2018.

Responsible Party: Health Department

Funding mechanism/Grant amount: No funding. Internal form.

5.3.1.4 Community Preparedness Outreach/Messaging Efforts

The City proposes to improve community preparedness and outreach by implementing the following action items:

1. Distribute all-hazard and hazard-specific disaster safety information through various media.
2. Continue "Know Your Zone" outreach efforts to residents in hurricane evacuation areas.
3. Develop disaster education programs for specific vulnerable populations.
4. Make locally-developed disaster preparedness material available in multiple languages.

Priority: High

Completed Yes or No: Yes, remains ongoing...move to Capability Assessment

Month/Year: 2020

Responsible Party: City Wide

Funding mechanism/Grant amount: Municipal staff

5.3.1.5 Community Rating System Participation

Over the next several years the City will be exploring participation in the federal Community Rating System (CRS) program. Staff will evaluate program requirements, review existing activities eligible for program "credits" and explore potential activities that could be initiated and/or implemented to secure additionally needed "credits" to secure a CRS rating classification. Participation in this program will allow a discount in flood insurance premium rates, which reflect the reduced flood risk as a result of meeting the goals of the CRS program.

Priority: High

Completed Yes or No: No...carry forward into 2024 update

Month/Year:

Responsible Party: Building Department

Funding mechanism/Grant amount:

5.3.1.6 Debris Management Plan

The City proposes to develop a Debris Management and Monitoring Plan. The plan will address the collection, monitoring and disposal of debris after a storm event. Development of such a plan will enhance the City's efforts to secure reimbursement under FEMA's Public Assistance Program in a declared disaster for debris removal operations.

Priority: High

Completed Yes or No: No. We do most of this already, just need to formalize it into an SOP and Plan approved by FEMA...carry forward into 2024 Update

Month/Year:

Responsible Party: EMA/DPI

Funding mechanism/Grant amount:

5.3.1.7 Update Local Multi-Hazard Plan

The City will update the Local Multi-Hazard Plan at least every five years, as required by FEMA, or as needed. Section 6 of this Plan provides a detailed discussion of the City's procedure for monitoring, updating and evaluating the Plan.

Priority: High

Completed Yes or No: Yes, in progress

Month/Year: 2023

Responsible Party: DPI/Enviro/EMA

Funding mechanism/Grant amount: FEMA Grant - \$108k.

5.3.2 Police Department

5.3.2.1 New Roof for Police Station #1

The roof for Police Station #1 is aging and in need of repairs. Accordingly, the City proposes to install a new roof at Police Station #1 over the next two years. Having a new roof will mitigate potential structural damage during a natural disaster.

Priority: High

Completed Yes or No: Station is closed and will be converted to office space. Roof has not been fixed...carry forward into 2024 Update

Month/Year:

Responsible Party:

Funding mechanism/Grant amount:

5.3.2.2 New Parking Lot Drainage System at Police Headquarters

The parking lot at Police Headquarters is subject to localized flooding during heavy precipitation events. The City is proposing to install new drainage system in the parking lot. Alleviating the flooding will allow the Police Department to better respond to disaster events.

Priority: High

Completed Yes or No: No. Design is in progress...ongoing, move to Capability Assessment

Month/Year:

Responsible Party: DPI/DFFM

Funding mechanism/Grant amount:

5.3.2.3 New Communications Systems

The technology currently used by emergency personnel at the City's Emergency Radio Broadcast Towers is aging. To address this aging infrastructure, new radio antenna repeaters and satellite receivers, including any associated battery backup systems, are proposed to aid emergency personnel during natural disasters.

Priority: High

Completed Yes or No: In the works...ongoing, move to Capability Assessment

Month/Year:

Responsible Party: MIS

Funding mechanism/Grant amount: City GO Funding

5.3.3 Fire Department

5.3.3.1 Emergency Generators for Radio Transmitters

The main radio transmitters for the New Bedford Fire Department and the New Bedford Police Department located at the Regency Towers are not supported by the emergency generator. The generator at this facility is currently at capacity with a battery backup in place that has limited duration. To address this adverse weather public safety infrastructure problem, the City proposes to add a generator to the radio room or relocate the radio equipment to the New Bedford Hotel, which does have generator capacity available.

Priority: High

Completed Yes or No: Part of the 5.3.2.3 project. Regency is going away as part of this project...ongoing, move to Capability Assessment

Month/Year:

Responsible Party: MIS

Funding mechanism/Grant amount:

5.3.3.2 Upgrade of Fire Alarm System

The present fire alarm system uses wire-based technology, which is subject to damage every time there is moderately severe weather. Upgrading of the system to a wireless-based system would address this problem. It will require the upgrading of all municipal buildings to this new technology. With 80 buildings and an average cost of \$10,000 per unit, the cost will be \$800,000 for the full program.

Priority: High

Completed Yes or No: In progress...remains ongoing, carry forward into 2024 Update. The aging Gamewell system is slowly being phased out. The wired Gamewell system is consistently being removed from private occupancies throughout the City. The holdup is in municipally owned buildings where the City will need to secure funding to upgrade to wireless master alarm communicators. Once this is completed, then the remainder of the Gamewell system can be removed from service.

Month/Year:

Responsible Party: Fire/MIS

Funding mechanism/Grant amount:

5.3.3.3 Replace/Renovate Existing Fire Stations

The fire stations in the City have an average age of 102 years of age with the newest having been constructed in the early 1950's. None of these buildings were constructed to seismic standards and are of unreinforced masonry. These types of buildings are the most prone to catastrophic failure in the event of a seismic event. This would result in the possible complete loss of fire protection during a moderate event. In addition, these structures located throughout the City would be logical locations for mass care facilities in the event of a catastrophic event. At present none of our buildings have this capability in their design and this should be a future consideration.

Priority: High

Completed Yes or No: In progress. Completed public safety complex in the South End and working to site a North End Safety Building...remains ongoing, carry forward into 2024 Update (update description to include a North End Safety Building)

Month/Year: FY 24 – placeholder \$17M

Responsible Party: DFFM

Funding mechanism/Grant amount: City GO Funding

5.3.3.4 EMT Training for Fire Department Members

The New Bedford Fire Department has 230 uniform members who are currently medically trained to the first responder level. The concept of a citizen's emergency response team has not had the impact that was anticipated. By providing EMT training to the members of the New Bedford Fire Department, the City would be able to increase the level of services provided to the citizens in the aftermath of a catastrophic event. This would also have a positive impact on day to day operations as medical responses account for over 60 percent of emergency calls. By using the New Bedford Fire Department in this way, the City would have the ability to have a surge capacity of EMT trained personnel for major events.

Priority: High

Completed Yes or No: Yes...In 2022, the City and NB Firefighters Local 841 agreed to a new CBA which included an annual EMT stipend. Since that time, the number of certified EMTs continues to increase. Currently, there are approximately three dozen EMTs and Paramedics employed by the NBFD.

Month/Year:

Responsible Party: Fire

Funding mechanism/Grant amount:

5.3.3.5 Stockpile Supplies for Operations Crews and Local Population

The City's emergency services, police, fire, EMS, DPI, DFFM and others, must be able to sustain operations continuously from the onset of the disaster until outside help arrives during a major natural disaster. When a major natural disaster occurs, outside help will frequently not be available for 72 hours at a minimum. For widespread events, such as hurricanes and earthquakes, when the local infrastructure no longer functions, it can take longer for that help to be effective. From a service continuation standpoint, the ability of emergency service agencies to operate beyond 24 hours begins to deteriorate when there is a lack of food, potable water and fuel. Thus, the City proposes to stage large supplies of water and meals-ready-to-eat to be available to sustain operations crews. These supplies will also be available to support the local population at mass care shelters if needed. With the extended shelf life of these supplies, they are a long term investment. This mitigation action will include a study to find an appropriate location for this facility.

Priority: High

Completed Yes or No: Yes. We need to re-evaluate if this is a priority. The program is expensive and food expires and needs to be disposed of if not used...remains ongoing, re-evaluate if carried forward into 2024 Update

Month/Year: Completed annually over the previous 5 years.

Responsible Party: Emergency Management

Funding mechanism/Grant amount: Emergency preparedness grants

5.3.4 Planning Department

5.3.4.1 Adopt Stormwater Ordinance

The Planning Department has implemented a stormwater ordinance. Stormwater regulations that address Low Impact Development (LID) to increase the efficiency of stormwater control at the source

have been drafted. A public hearing will be held prior to finalizing the regulations. The City intends to implement the new regulations during the 2016 calendar year.

Priority: Medium

Completed Yes or No: Yes

Month/Year: Jan 2017

Responsible Party: DPI

Funding mechanism/Grant amount: DPI Funding

5.3.4.2 Integrate Disaster Mitigation into Comprehensive Master Plan

The Planning Department intends to integrate disaster mitigation into the next comprehensive master plan for the City. Disaster mitigation will be addressed during all phases of the City's next planning cycle. This will assist the City evaluating future development projects and zoning changes, and in developing new ordinances.

Priority: Medium

Completed Yes or No: No. On going. Just started new Master Plan now...carry forward into 2024 Update

Month/Year:

Responsible Party: Planning/EMA

Funding mechanism/Grant amount: Urban Agenda Grant - \$200k.

5.3.5 Harbor Development Commission

5.3.5.1 Installation of a Wave Attenuator at Pope's Island Marina

The City is proposing to install a wave attenuator on the southwestern side of Pope's Island Marina. The wave attenuator will help to protect the structures and vessels in the marina during significant storm events.

Priority: High

Completed Yes or No: No...Carry forward into 2024 update?

Month/Year:

Responsible Party:

Funding mechanism/Grant amount:

5.3.5.2 Installation of a Storm Mooring System at Pope's Island

The Environmental Protection Agency is overseeing the dredging of contaminated soils in New Bedford Harbor. These removed soils are buried in a CAD cell field north of Pope's Island. The City is proposing to install a mooring system in the CAD cell field to protect this area during significant storm events.

Priority: High

Completed Yes or No: No...carry forward into 2024 update?

Month/Year:

Responsible Party:

Funding mechanism/Grant amount:

5.3.5.3 Repair, Bolster and Expand Commercial Fishing Piers

The City is proposing to repair, bolster and expand the commercial fishing piers in the harbor. These improvements to the commercial fishing piers will allow the piers to secure larger fishing vessels during storm events. Protection of the fishing vessels during storm events will reduce the impact to the fishing industry.

Priority: High

Completed Yes or No: In progress...Pier fendering replacement in in progress on three of the five piers. Carry remainder forward into 2024 update?

Month/Year: 2023

Responsible Party: New Bedford Port Authority

Funding mechanism/Grant amount: part of a larger \$11 M Economic Development Agency grant.

5.3.5.4 Dredge New Bedford Harbor

The City is proposing to dredge all the required areas identified in the Phase V of the Harbor Development Commission's dredging project. This project will permanently open up new berths within the hurricane barrier for commercial and recreational vessels, which will allow these vessels to be protected during storm events.

Priority: High

Completed Yes or No: No, pending June 2023 bidding...move to Capability Assessment?

Month/Year: 2023

Responsible Party: New Bedford Port Authority

Funding mechanism/Grant amount: MassWorks \$35 M

5.3.5.5 Expansion of Pope's Island Marina

The City is proposing to expand Pope's Island Marina to create more berths for recreational vessels. Expansion of the marina will allow these vessels to be protected during storm events. Phase 1 of this project will occur during the effective period of the Local Multi-Hazard Mitigation Plan.

Priority: Medium

Completed Yes or No: No...carry forward into 2024 Update?

Month/Year:

Responsible Party:

Funding mechanism/Grant amount:

5.3.5.6 Replacement of Mooring Anchors and Gear

The City is proposing to replace all the existing mooring anchors to a helix-style and replace all the gear to hazelett-style. Replacing these fixtures will make them more resistant to storms.

Priority: High

Completed Yes or No: Partial replacement but data unavailable?

Month/Year: unknown

Responsible Party: New Bedford Port Authority

Funding mechanism/Grant amount: unknown

5.3.5.7 Fund Unified Command Center for Local, State and Federal Emergency Response Agencies

The City is proposing to fund a Unified Command Center for local, state and federal emergency response agencies. During natural disasters this center will be activated and used to coordinate the City's response to the natural disaster.

Priority: High

Completed Yes or No: Yes

Month/Year: 2020

Responsible Party: New Bedford Port Authority

Funding mechanism/Grant amount: Seaport Economic Council grant (\$1 M)

5.3.5.8 Assess and Mitigate Utility and Infrastructure Weaknesses on the Waterfront

The City is proposing to conduct an assessment of the utilities and infrastructure on the waterfront to identify any weaknesses. Based on this assessment, the City will implement mitigate measures to address any deficiencies that are identified.

Priority: High

Completed Yes or No: Yes

Month/Year: 2021

Responsible Party: Resilience and Environmental Stewardship/New Bedford Port Authority

Funding mechanism/Grant amount: FY20 MVP grant (\$58,662) and FY21 CZM Grant (\$154,178)

5.3.6 Department of Public Infrastructure

5.3.6.1 Install New SCADA System at Sewer Pump Stations

The City will continue to expand the installation program of new SCADA systems within pumping stations to ensure remote monitoring of all stations in the event of a disaster. This improved system will also eliminate the potential for prolonged system failures that result in flooding.

Priority: High

Completed Yes or No: Ongoing...move to Capability Assessment?

Month/Year:

Responsible Party: DPI

Funding mechanism/Grant amount: Wastewater Funding/SRF

5.3.6.2 Clarks Cove Pump Station and Hurricane Barrier Localized Flooding Improvements

Inadequately sized sewer and stormwater drainage systems cause localized flooding near Clarks Cove Pump Station and near the hurricane barrier. Therefore, in conjunction with the Army Corps of Engineers, the City will undertake further improvements to the Clarks Cove Pump Station, to low-lying areas near the hurricane barrier, and to the sewer and stormwater drainage systems.

Priority: High

Completed Yes or No: In progress...Some pumping station improvements completed. Which ones?

Month/Year:

Responsible Party: DPI

Funding mechanism/Grant amount: Wastewater Funding

5.3.6.3 Flood-proof Sewer Pump Stations within Flood-prone Areas

The City proposes to complete flood-proofing the wastewater and flood control pump stations, and the emergency power facilities located within the FEMA 100-year floodplain boundary. Upgrading these facilities will ensure that critical wastewater facilities continue to operate during natural disaster events.

Priority: High

Completed Yes or No: Yes

Month/Year: 2016/2017

Responsible Party: DPI

Funding mechanism/Grant amount: CZM Grant

5.3.6.4 Coggeshall Street Area Stormwater Drainage Improvements

The City is working to complete stormwater drainage system improvements projects in the Coggeshall Street, Sawyer Street, Deane Street, Logan Street, Purchase Street, Belleville Avenue, and Acushnet Avenue areas in order to increase stormwater drainage capacity in these streets. These measures will mitigate or eliminate localized flooding problems and aid in drainage capacity during disaster events.

Priority: Medium

Completed Yes or No: Yes

Month/Year: 2016

Responsible Party: DPI

Funding mechanism/Grant amount: Wastewater Funding/SRF

5.3.6.5 Maple and Chancery Streets Stormwater Drainage Improvements

The City is proposing to undertake drainage infrastructure improvements to address localized street flooding in the vicinity of Maple and Chancery Streets. Some improvements have been already undertaken and future improvements would also address capacity problems in the stormwater drainage and sewer systems in this area.

Priority: Medium

Completed Yes or No: No. Meters installed to remotely monitor location to proactively monitor flooding. Prioritized in Integrated Plan...carry forward into 2024 Update

Month/Year:

Responsible Party:

Funding mechanism/Grant amount:

5.3.6.6 Page Street Stormwater Drainage Improvements at St. Luke's Hospital

The City is proposing to undertake stormwater drainage system improvements to address flooding issues at Page Street, near St. Luke's Hospital. Addressing flood problems in this area will help to ensure access to the hospital during natural disasters.

Priority: Medium

Completed Yes or No: No. Prioritized in the Integrated Plan...carry forward into 2024 Update

Month/Year:

Responsible Party:

Funding mechanism/Grant amount:

5.3.6.7 Buttonwood Park Pond and Dam Improvements

The City is proposing to undertake improvements to the Buttonwood Park Pond and Dam and conveyance structures downstream to address overtopping during storm events. Mitigation of overtopping will alleviate flooding in surrounding areas.

Priority: Medium

Completed Yes or No: No. Starting with Kempton Street GI work in 2024...carry forward into 2024 Update

Month/Year:

Responsible Party: DPI

Funding mechanism/Grant amount:

5.3.6.8 Pearl Street Stormwater Drainage Improvements

The City is proposing to undertake stormwater drainage system improvements to address street flooding within Route 18, Hillman Street, Pearl Street, and at the intersection of Acushnet Avenue and Pearl Street in the vicinity of the Railyard, Division of Career Services, and Whale's Tooth Parking Lot. Stormwater drainage system improvements in these areas will help to provide continued access to these roads during natural disaster events.

Priority: Medium

Completed Yes or No: Yes

Month/Year: 2023

Responsible Party: DPI

Funding mechanism/Grant amount: Completed as part of South Coast Rail improvements.

5.3.6.9 Brownell Avenue and Hawthorne Street Stormwater Drainage Improvements

The City will undertake stormwater drainage system improvements to address localized flooding in the area of Brownell Avenue and Hawthorne Street and conveyance structures downstream during major precipitation events. Addressing localized flooding in this area will help mitigate flooding impacts during natural disaster events.

Priority: Medium

Completed Yes or No: No. Working to address inflows upstream and will reassess...carry forward into 2024 Update

Month/Year:

Responsible Party: DPI

Funding mechanism/Grant amount:

5.3.6.10 New Bedford Reservoir Dam and Turner's Pond Dam Improvements

The City will undertake improvements at the New Bedford Reservoir Dam and Turner's Pond Dam. These improvements will address deficiencies identified at these dams and will help to ensure that these dams remain stable during significant precipitation and disaster events.

Priority: Medium

Completed Yes or No: Doing Turners Pond now. Design under way...carry forward into 2024 Update

Month/Year:

Responsible Party: DPI

Funding mechanism/Grant amount: Wastewater Funding/GO

5.3.6.11 Establish “Micro-Grid” within City for Auxiliary Power

The City proposes to establish “micro-grids” within key City locations for auxiliary power. These “micro-grids” will mitigate power outages during disaster events, enabling the City to respond to emergency situations in a timely and more efficient manner.

Priority: Medium

Completed Yes or No: No...several locations were assessed for micro-grids but were not completed due to funding and/or logistical reasons...carry forward into 2024 update?

Month/Year:

Responsible Party:

Funding mechanism/Grant amount:

5.3.6.12 Route 18 and Wamsutta Street Stormwater Drainage Improvements

The City will undertake stormwater drainage system improvements to address flooding at the intersections of Route 18 and Wamsutta Street, Wamsutta Street and North Front Street, Wamsutta Street and Acushnet Avenue, and at the Wamsutta Street Pump Station. Improvement of the drainage capacity in these areas will alleviate flooding during heavy precipitation and natural disaster events and help to ensure continued access to these roads during a disaster event.

Priority: Low

Completed Yes or No: No. Prioritized under the Integrated Plan...carry forward into 2024 Update

Month/Year:

Responsible Party:

Funding mechanism/Grant amount:

5.3.6.13 Sheffield Street/ Stratford Street Stormwater Drainage Improvements

The City is proposing to correct localized flooding problems associated with an unnamed stream to the east of Acushnet Avenue. Flooding generally occurs in the area of Sheffield Street, southerly to Stratford Street and in the downstream portion of the City’s 027 drain system in the northern part of the City. Addressing flooding this area by improving the stormwater drainage system will help to ensure continued access to these roads during a disaster.

Priority: Low

Completed Yes or No: No. Prioritized under the Integrated Plan...carry forward into 2024 Update

Month/Year:

Responsible Party:

Funding mechanism/Grant amount:

5.3.6.14 Mitigation of Drainage Issues from Tarkiln Hill Road to Nash Road Pond

The Copper Brook drain system was originally constructed as a water supply for Revere Copper located within New Bedford, conveying water from the Nash Road Pond to the Copper Brook Pond at the mills. The drain is a patchwork of various pipe diameters, materials and ages; some of which consists of stone blocks and granite rubble. The drain traverses some of the busiest streets in the City, crosses under both Route 18 and Route 195 before discharging to the Copper Brook Pond. The pond overflows to a stream located adjacent to Wamsutta Street and eventually to the Acushnet River. The drain and

pond systems have historically been susceptible to flooding during wet weather events due to inadequate capacity and the condition of the pipe. Under heavy rainfall events, the Nash Road Pond overtops and floods Nash Road, making it impassable. Most recently, a section of the Copper Brook pipe partially collapsed within Acushnet Avenue, one of the City's busiest streets. In addition, there are direct overflow points from the drain to the City's sewer system contributing to the City's combined sewer overflow (CSO) problem. The pond and stream at the downstream end of Copper Brook create a bottleneck for water to flow to the Acushnet River. Therefore, both the pond and stream need to be addressed as part of the overall solution to mitigate flooding resulting from the brook. This project will be coordinated with flooding that occurs at Wamsutta Street and Route 18, as both flooding areas result from issues with the Copper Brook system and Wamsutta Street stream.

Priority: Low

Completed Yes or No: No. Working on design of a portion of the project with DOT to be constructed under the RT 195 Viaduct Replacement...carry forward into 2024 Update (update description)

Month/Year:

Responsible Party: DPI

Funding mechanism/Grant amount: Wastewater Funding/SRF

5.3.6.15 West End CSO Separation Contract Phase IV

Phase IV of the West End CSO Separation project consists of constructing the main intercepting drain (7,600-feet) for the separation of approximately 12,500-feet of combined sewer in the West End Sewer Separation – Phase V portion of the program. This portion is the fourth phase of sewer separation in the West End area of New Bedford. Construction of Phase I was completed in 2001 and the construction of Phase II and III was completed in the summer of 2006. In addition to reducing CSO discharges to Clarks Cove, the Phase IV Sewer Separation will discharge stormwater from the project area to the Inner Harbor. This is important because the removal of stormwater, in addition to the reduction in CSOs, is required to attain maximum use of the shellfish beds in Clarks Cove. The project also provides the main trunk drain to address critical flooding areas at the intersection of Maple Street and Chancery Street, as well as the western portion of St. Luke's Hospital.

Priority: Low

Completed Yes or No: No. Prioritized in Integrated Plan...carry forward into 2024 Update

Month/Year:

Responsible Party:

Funding mechanism/Grant amount:

5.3.6.16 West End CSO Separation Contract Phase V

Phase V of the West End CSO Separation project consists of separating approximately 12,500-feet of combined sewer in the West End area of New Bedford. The Phase V sewer separation is the fifth phase of sewer separation in the City's West End. The West End Sewer Separation – Phase IV portion of the project will provide the main intercepting drain for this portion of the program and has been described in Section 5.2.6.15. As is the case with the Phase IV Sewer Separation project, the Phase V portion of the program will also reduce CSO discharges to Clarks Cove by separating the combined sewer system. Stormwater from the project area will be discharged to the Inner Harbor, helping to attain maximum use of the shellfish beds in Clarks Cove. In addition to reducing CSO's, Phase V sewer separation will also provide the sideline drains required to mitigate sewer system flooding at the intersection of Maple and Chancery Streets and along the western portion of St. Luke's Hospital that occurs due to wet weather. This will address a public health issue and safety issue that occur.

Priority: Low

Completed Yes or No: No. Prioritized in Integrated Plan...carry forward into 2024 Update

Month/Year:

Responsible Party:

Funding mechanism/Grant amount:

5.3.6.17 Assawompsett Dam Improvements

The City is proposing to undertake improvements to the Assawompsett Dam and associated downstream conveyance facilities. These improvements will repair any defects with the dam and ensure that the downstream conveyance systems will have adequate capacity during heavy precipitation and disaster events.

Priority: Low

Completed Yes or No: No. Talk to Dom Galotti...carry forward into 2024 Update

Month/Year:

Responsible Party:

Funding mechanism/Grant amount:

5.3.6.18 Improve the Inter-Municipal Agreement with Taunton for Assowompsett Dam

The City will pursue the development of a clearer agreement between the City of Taunton and the City of New Bedford on the ownership, maintenance, and control of the Assawompsett Dam. Restructuring this contract will provide each party with a clear understanding of their responsibilities regarding dam operations and expedite procedures during disaster events.

Priority: Low

Completed Yes or No: No. Talk to Dom Galotti...carry forward into 2024 Update

Month/Year:

Responsible Party:

Funding mechanism/Grant amount:

5.3.6.19 Improve Communications and Data Gathering for Infrastructure Systems

The City will continue in its pursuit to purchase and upgrade equipment required to implement asset management strategies, improvements in communication and data gathering in the field. These technologies will meet Administrative Order and CMOM program requirements, and ensure proper operation and maintenance of the City's stormwater, flood protection, and sewer systems.

Priority: High

Completed Yes or No: Yes/Ongoing, carry forward into 2024 Update (update description)

Month/Year: 2017 with ongoing technology updates. Big thing for DPI. This needs to be continued.

Routinely purchasing equipment too.

Responsible Party: DPI

Funding mechanism/Grant amount: SRF Funding

5.3.6.20 Implement Snow Plowing Tracking System

The City will work to implement a snow plow tracking system to more efficiently clear City streets during snow events. This plan will be based on GPS and GIS technologies that will enable staff to efficiently route plows throughout the City.

Priority: High

Completed Yes or No: Yes

Month/Year:

Responsible Party: DPI

Funding mechanism/Grant amount: DPI Budget

5.3.6.21 Incorporate Disaster Mitigation Plan Projects into City Projects

The City will incorporate the Disaster Mitigation Plan capital and operation and maintenance projects identified in this Plan into the City's updated Long Term CSO Control Plan (LTCP) and Capital Improvements Plan (CIP) as appropriate. Integrating these projects into the LTCP and CIP will help to ensure that these projects are completed. The authority behind that integration of the Long Term CSO and Capital Improvements Plan into the Disaster Mitigation Plan is the Commissioner of Department Public Infrastructure.

Priority: Medium

Completed Yes or No: Yes/On going...move to Capability Assessment

Month/Year: Jan 2017

Responsible Party: DPI

Funding mechanism/Grant amount: City GO Funding/Water/Wastewater

Memorandum of Meeting

To: Brian Nobrega, Michele Paul, Shawn Syde and New Bedford Local Hazard Mitigation Committee
From: Craig Pereira
Date: September 28, 2023
Re: New Bedford Multi-Hazard Mitigation Plan (MHMP) Update—LHMC Meeting #1

In attendance:

Emily Arpke – Chief Financial Officer/Auditor
Janet Barbosa – Director of Special Projects
Doug Brites – Director of Facilities, NB Schools
Jennifer Carloni – City Planner
Kevin Clapper – NB Schools Facilities Coordinator
Jim Costa – Wastewater Superintendent
Scott Kruger – Fire Chief
Rachel Mulroy – Planning Department
Brian Nobrega – Director of Emergency Management
Michele Paul – Director of Resilience and Environmental Stewardship
Chance Perks – Conservation Agent
Jamie Ponte – Commissioner of Public Works
Stephanie Sloan – Director of Public Health
Shawn Syde – City Engineer
Michael Thomas – Director of Emergency Medical Services
Jennifer Vieira – Commissioner, Dept. of Facilities and Fleet Management

John Andrade – Old Bedford Village Econ. Development Corp.
Adelsa Mendes – TDI Fellow
Marci Pina-Christian – Ex. Director, NB Human Rights Commission
Cynthia Spence – Director of Modernization/Planning/Development, NB Housing Authority
Corinn Williams – Ex. Director, NB Community Econ. Development Center

Craig Pereira – Horsley Witten Group (HW), Project Manager
Kellie King – HW, Environmental Planner

The first New Bedford Local Hazard Mitigation Committee (LHMC) meeting was held on September 22, 2023, at the New Bedford Free Public Library to discuss the update of the Multi-Hazard Mitigation Plan (MHMP). The following items were discussed:

1. Introductions

Michele Paul provided opening statements to welcome the LHMC members. Craig Pereira introduced the consultant team (Kim Lundgren Associates, HW, and Institute for Diversity and Inclusion in Emergency Management (IDIEM)) and the LHMC.

- John Andrade expressed concern about the use of equity partners and diversity, equity, and inclusion related language. Craig noted that outreach and engagement began in August 2023,

and that IDIEM has been in contact with the identified equity partners (electronically, not in person). Michelle Paul noted that she would connect with John Andrade after the meeting to clarify.

2. Project Components

- Scope of Work: Craig provided an overview of the project components and noted new items for the MHMP Update (climate change, equity focus, human-caused hazards, and technological hazards).
- Project Timeline: Craig reviewed the project timeline:
 - January – October 2023: assess hazards
 - August 2023 – April 2024: community engagement
 - February – April 2024: action planning and final update

3. Proposed Plan Layout

Craig presented the proposed plan layout, which is aligned with FEMA’s Plan Review Tool. The Plan Review Tool is used by FEMA to determine whether a community’s draft HMP or MHMP complies with all relevant federal regulations. The proposed layout is as follows: Introduction/Overview, Community Profile, Hazard Identification/Risk Assessment, Capability Assessment, Mitigation Strategies, Plan Implementation/Maintenance. Craig will provide a full 2024 Plan Update outline when ready.

4. Hazard Index

New to this plan update, the MHMP will profile/assess human-caused and technological hazards. The MHMP will also include all natural hazards profiled/assessed in New Bedford’s 2016 Plan; natural hazards identified in the Commonwealth’s HMP will also be included (unless the hazard does not pose a threat to the City).

- Natural Hazards: This section will be updated to include Hail (categorized under Wind-Related Hazards). Extreme Heat and Drought will be separated into their own categories. Communicable (Infectious) Disease-Related Hazards (Epidemic/Pandemic), Invasive Species-Related Hazards (Aquatic Plant Species), and Vector-Borne-Related Hazards (Multiple) will also be added to this section. A “climate change impacts on...” discussion will be included for natural hazard to evaluate projected trends.
- Human-Caused Hazards: This section will evaluate Terrorism (Intentional) Hazards (Biological, Chemical, Cybersecurity, Explosive, Radiological/Nuclear Incidents and Civil Disobedience/Unrest) and Other (Accidental) Hazards (Urban Fire, Hazardous Materials Release, Mass Casualty Incident, Major Aircraft Crash, and Special/VIP Events).
- Technological Hazards: This section will review Communications, Emergency Services, Energy, Information Technology, Transportation Systems (including the Port), Water/Wastewater Systems, and Hurricane Barrier technological hazards.

Craig explained that the LPMC Technical Sub-Committee will, in coordination with HW, complete the draft Hazard Index. The draft Hazard Index will use FEMA’s Criteria for Ranking Hazards and consider the rankings from the 2016 Plan (for comparison), priority hazards identified from the City’s MVP process (should be relatively aligned), and draft rankings based on the NOAA Severe Events Database completed by HW. The results of the draft Hazard Index will be presented at the next full LPMC meeting in November.

5. Community Outreach & Engagement

Craig provided an overview of the MHMP community outreach and engagement strategies. Craig noted that engagement work just started in August 2023. IDIEM has communicated with equity partners (see PowerPoint presentation). Materials developed so far include a project webpage, online survey, and factsheet. In addition to online engagement, there are six ward-specific meetings scheduled between September – November 2023. There will also be two public workshops and a number of stakeholder/focus group interviews.

- John Andrade suggested alternative locations for ward-specific meetings to encourage more residents to attend (Gomes Elementary School: a different type of population between this location and the Recreation Center area). Michelle Paul emphasized that LHMC members can provide recommendations on meeting locations and special accommodations (e.g., language translation/interpretation) to facilitate more community engagement and that the City will work to meet those needs.
- John Andrade suggested that public transportation entities be included in stakeholder/focus group interviews.

6. Work In Progress

Craig reviewed MHMP elements that are currently under development in coordination with the City:

- Critical Facilities and Vulnerable Populations datasets update
 - John Andrade asked if vacant buildings are considered part of the Critical Facilities dataset. Craig noted that the datasets and hazard overlay analyses would help identify areas with less exposure to hazards, and that the City could consider identifying potential secondary and tertiary shelter/emergency response sites based on that information. The City could consider vacant buildings as part of that analysis.
- Summary of development trends since 2016
- Capability Assessment
- 2016 Plan Report Card (see below)
- Summary of mitigation funding received by the City since 2016

7. 2016 Plan Report Card

Craig provided an overview of the purpose and organization of the 2016 Plan Report Card. The 2016 Plan Report Card will be used to identify which mitigation strategies from the 2016 Plan were completed, in progress, and not started and which mitigation strategies should be carried forward into the 2024 MHMP update. MHMP Core Team members need to complete the remaining data requested. The results of the 2016 Plan Report Card will be presented at the second LHMC meeting for review.

- Brian Nobrega emphasized that all members of the LHMC can propose mitigation strategies for the MHMP, and that mitigation strategies are not just limited to the implementing parties identified in the 2016 Plan. John Andrade asked why the 2016 Plan did not identify resident/civilian-focused mitigation strategies. Craig noted that the Mitigation Strategies section is suggested to be updated to reflect categories similar to MEMA/FEMA's approach organized by topic (e.g., Public Information & Awareness, Property Protection, Natural Resource Protection, Emergency Services, Structural Projects, and Planning & Prevention). Responsible/Implementing parties (Lead/Supporting) would still be included.

8. General Comments

- Marci Pina-Christian asked whether the City was protected for an emergency situation now given the time between the 2016 Plan and the 2024 MHMP update. Brian Nobrega emphasized that the City has emergency response plans in place and is capable of responding to emergency situations today (and everyday). However, Michele Paul acknowledged that the City does not have a compliant plan (the 2016 Plan is expired) and thus does not have access to certain types of mitigation funding.
- Jennifer Carloni followed up on the previous question, asking whether the City is ineligible to apply for mitigation funding now. Craig reiterated that New Bedford is not in compliance and is unable to access certain types of mitigation funding but noted that the City is eligible for MVP funding through the Commonwealth (and has received multiple awards since becoming an MVP-certified community).
- John Andrade emphasized that natural disasters are not new to New Bedford and pointed out that many community members have experience with natural disasters outside of New Bedford (e.g., Puerto Rico and Hurricane Maria). John emphasized that those community members could be important resources for the 2024 MHMP update. John also noted the importance of plain language communications, such as that used in today's presentation.
- Marci Pina-Christian asked whether the lack of an HMP can prevent some communities from recovering quickly after disasters. Craig noted that an HMP is an important resource for disaster recovery but said that there may be larger capacity issues at play as well, dependent on the community.
- Corinn Williams expressed agreement with John Andrade's previous point about community members being resources for the 2024 MHMP update and asked how other community topics (e.g., housing) could be incorporated into the plan. John Andrade asked whether food security could be referenced in the plan. Craig noted that other community topics could be included as part of the 2024 MHMP update's vulnerability assessment (social vulnerability).
- Marci Pina-Christian said that the current list of equity partners is a good list and asked about opportunities for grassroots engagement. Craig said that I-DIEM has just kicked off public engagement and, in addition to the City, will reach out to equity partners about engagement and coordination. John Andrade expressed that it would be important to let community members lead conversations and talk about hazard mitigation at the neighborhood level as well. Craig agreed and introduced the concept of "meetings-in-a-box" that is included in the community engagement and outreach strategies. Brian Nobrega emphasized that I-DIEM has extensive experience with community engagement.

9. Next Steps

The second LHMC meeting will be held in November 2023. Craig will send out the meeting invitation when the meeting date and location are finalized.

New Bedford Local Hazard Mitigation Committee Meeting #1**New Bedford Free Public Library - 3rd Floor Meeting Room****613 Pleasant Street****New Bedford, MA 02740****September 22, 2023 10:00 AM - 12:00 PM**

LAST NAME	FIRST NAME	DEPARTMENT/AFFILIATION	Present Y or N
CITY OF NEW BEDFORD			
Amaral	Joshua	Director Housing & Community Development	
Arpke	Emily	Chief Financial Officer/Auditor	YES
Carlioni	Jennifer	City Planner	YES
Carr	Gordon	Ex. Director New Bedford Port Authority	
Connelly	Christina	Chief Operations Officer	
Duarte	Cesar	Director of Engineering and Operations	
Huntoon	Holly	Public Information Officer	
Kruger	Scott	Chief, Fire Department	YES
Mulroy	Rachel	Planning Department	YES
Nobrega	Brian	Director of Emergency Management	YES
O'Leary	Andrew	Superintendent of Schools	
Oliveira	Paul	Chief, Police Department	
Paul	Michele	Director of Resilience & Environmental Stewardship	YES
Perks	Chance	Conservation Agent	YES
Ponte	Jamie	Commissioner of Public Works	
Rebello	Travis	Hazardous Materials Coordinator	
Romanowicz	Danny	Building Commissioner	
Sloan	Stephanie	Director of Public Health	YES
Syde	Shawn	City Engineer	YES
Thomas	Michael	Director of Emergency Medical Services	YES
Vieira	Jennifer	Commissioner, Dept. of Facilities & Fleet Man.	YES
MASSACHUSETTS EMERGENCY MANAGEMENT			
Cochran	Nate	Local Coordinator, Region 2	
Zukowski	Jeff	Hazard Mitigation Planner	
EQUITY PARTNERS			
Andrade	John	Old Bedford Village Econ Development Corp.	YES
Dasilva-Hughes	Helena	Immigrants' Assistance Center	
Ledbetter	Renee	Director, New Bedford Shannon Program	
Pina-Christian	Marci	Ex. Director, NB Human Rights Commission	YES
Spence	Cynthia	Dir. Modernization/Planning/Dev., NB Housing Auth.	YES
Spencer	Darlene	President, NB Cape Verdean Association	
Williams	Corinn	Ex. Director, NB Community Econ. Dev. Center	YES
CONSULTANT TEAM			
Galbo	Kate	KLA	
Lundgren	Kim	KLA	
Kelly	Nate	HWG	
King	Kellie	HWG	YES
Pereira	Craig	HWG	YES

September 22, 2023 10:00 AM - 12:00 PM

[illegible]

LHMC Meeting #2: February 14, 2024



**New Bedford Multi-Hazard Mitigation Plan Update
Local Hazard Mitigation Committee Meeting #2**

February 14, 2024
Fort Taber Community Center
1000A S. Rodney French Boulevard
New Bedford, MA 02740
10:00 AM – 12:00 PM

Agenda

1. Federal/State Guidance
2. Hazard Index
 - a. Technical Committee
 - b. Natural Hazards
 - c. Human-Caused/Technological Hazards
3. Community Outreach and Engagement
 - a. Ward-Specific Meetings
 - b. Outreach and Engagement Re-boot
4. Work in Progress
5. Next Steps

New Bedford, MA Multi-Hazard Mitigation Plan Update

Local Hazard Mitigation Committee Meeting #2
February 14, 2024 10:00 AM – 12:00 PM
Fort Taber Community Center



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WELCOME!

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Today's Agenda

- Federal/State Guidance
- Hazard Index
 - Technical Committee
 - Natural Hazards
 - Human-Caused/Technological Hazards
- Community Outreach & Engagement
 - Ward-specific Meetings
 - Outreach & Engagement Reboot
- Work In Progress
- Next Steps



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Federal and State Guidance

Federal

- FEMA's *Local Mitigation Planning Policy Guide* (April 19, 2023)

State

- 2022 MA Climate Change Assessment, Volume I Executive Summary
- 2022 MA Climate Change Assessment, Volume II Statewide Report
- 2022 MA Climate Change Assessment, Volume III Regional Report
- **ResilientMass Plan: 2023 MA State Hazard Mitigation and Climate Adaptation Plan**

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State Guidance

ResilientMass Plan: 2023 MA State Hazard Mitigation Plan and Climate Adaptation Plan

Considers the exposure and vulnerability of state assets, human populations, lifelines, critical facilities, economic activity, natural resources, and other infrastructure/resources across five sectors:

- Human Sector
- Governance Sector
- Infrastructure Sector
- Natural Environment Sector
- Economy Sector



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State Guidance

2022 MA Climate Change Assessment, Volume II Statewide Report

Includes an analysis of the most significant impacts that climate change poses to the Commonwealth across the five sectors and based on three factors:

- Magnitude of consequence: How large of a climate effect is expected?
- Disproportionality of exposure: Will populations in environmental justice areas be disproportionately affected?
- Need for effective adaptation: is enough currently being done to adapt to this impact?

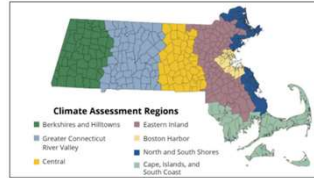
6

State Guidance

2022 MA Climate Change Assessment, Volume III Regional Report

Subdivides the state into seven climate regions and summarizes the highest urgency climate impacts across the five sectors:

- New Bedford falls within the Cape, Islands, and South Coast Region
- Particularly vulnerable to climate stressor including:
 - Sea Level Rise
 - Storm Surge
 - Increasing Temperatures
 - Extreme Precipitation



State Guidance

2022 MA Climate Change Assessment, Volume III Regional Report

Human Sector

- Increase in Vector-Borne Diseases Incidence and Bacterial Infections
- Health and Cognitive Effects from Extreme Heat, Health Effects of Extreme Storms and Power Outages, Emergency Service Response Delays and Evacuation Disruptions, Reduction of Food Safety and Security, and Damage to Cultural Resources

Infrastructure Sector

- Damage to Electric Transmission and Distribution Infrastructure
- Reduction in Clean Water Supply

Natural Environment Sector

- Marine Water Ecosystem Degradation
- Coastal Wetland Degradation
- Coastal Erosion

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State Guidance

2022 MA Climate Change Assessment, Volume III Regional Report

Governance Sector

- Increase in Demand for State and Municipal Government Services
- Reduction in State and Municipal Revenues

Economy Sector

- Reduction in the Availability of Affordably Priced Housing
- Decrease in Marine Fisheries and Aquaculture Productivity

2030	2050	2070	2090
NEAR TERM The summer mean temperature could increase by 3.6°F from the historical period (1950-2013), increasing tick activity and the risks of Lyme disease.	MID-CENTURY Sea surface temperatures increase by 3.1°F, reducing marine fish catch and increasing risks from harmful bacterial infections.	MID-LATE CENTURY The historical 10 percent annual chance daily rainfall event (2.4 to 4 inches) could occur five times more frequently.	END OF CENTURY Tropical cyclone frequency could increase by nearly 50 percent, leading to damage from storm surge, heavy rainfall, and high winds.

New Bedford MHMP 'Technical' Committee

City of New Bedford

- Courtney Cohen – Project Manager, Environmental Stewardship
- Christina Connelly – Chief Operations Officer
- Jim Costa – DPW, Superintendent of Wastewater
- John Costa – Director, Information Technology
- Cesar Duarte – Director of Engineering and Operations
- Scott Kruger – Chief, Fire Department
- Brian Medeiros – Deputy Chief, Fire Department
- Neil Mello – Chief of Staff
- Brian Nobrega – Director of Emergency Management
- Paul Oliveira – Chief, Police Department
- Michele Paul – Director of Resilience and Environmental Stewardship
- Chance Perks – Conservation Agent
- Jamie Ponte – Commissioner of Public Works
- Travis Rebello – Hazardous Materials Coordinator
- Danny Romanowicz – Building Commissioner
- Scott Servis – Director, New Bedford Airport
- Stephanie Sloan – Director of Public Health
- Adolino Souza – Deputy Chief, Police Department
- Shawn Syde – City Engineer
- James Sylvia – Superintendent, Dept. of Facilities and Fleet Management
- Michael Thomas – Director of Emergency Medical Services
- Jennifer Vieira – Commissioner, Department of Facilities and Fleet Management
- David Zander – Deputy Director, Emergency Medical Services



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Natural Hazards Profiled

Flood-Related Hazards

- Riverine/Flash Flooding
- Inland/Urban Flooding, Heavy Rain
- Dam Failure
- Coastal Flooding/Erosion
- Storm Surge

Winter-Related Hazards:

- Blizzards/Snow/Nor'easters
- Ice Storms
- Extreme Cold

Wind-Related Hazards:

- Hurricanes/Tropical Storms
- High Winds
- Tornadoes/Waterspouts
- Lightning/Thunderstorms
- Hail

Geologic-Related Hazards

- Earthquakes
- Landslides
- Tsunamis

Extreme Heat-Related Hazards:

- Extreme Heat

Drought-Related Hazards:

- Drought



Natural Hazards Profiled

Wildfire/Brushfire-Related Hazards

- Wildfire/Brushfire

Communicable (Infectious) Disease-Related Hazards:

- Epidemic/Pandemic

Invasive Species-Related Hazards:

- Aquatic Plant Species

Vector-Borne-Related Hazards

- Multiple

Changes to Groundwater-Related Hazards

- Changes to Groundwater



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Natural Hazard Index

FEMA Ranking Criteria Guidance

Criteria for Frequency/Likelihood Categorization:

- Unlikely (0):** Events that occur at least once in the next 100 years. Less than 1% probability in the next 100 years.
- Possible (1):** Between 1-10% probability in the next year, or at least one chance in the next 100 years.
- Likely (2):** Between 10-100% probability in the next year, or at least one chance in 10 years.
- Highly Likely (3):** Near 100% probability in the next year.

Criteria for Impact/Land Area Affected:

- Small (1):** Less than 10% of the city affected
- Medium (2):** 10 to 50% of the city affected
- Large (3):** More than 50% of the city affected

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Natural Hazard Index

FEMA Ranking Criteria Guidance

Criteria for Magnitude/Severity Categorization (based on past hazard events):

- Negligible (0):** Injuries and/or illnesses are treatable with first aid
Minor quality of life lost
Shutdown of critical facilities and services for 24 hours or less
Property severely damaged < 10%
- Limited (1):** Injuries and/or illness do not result in permanent disability
Complete shutdown of critical facilities for more than one week
Property severely damaged < 25%, > 10%
- Critical (2):** Injuries and/or illness result in permanent disability
Complete shutdown of critical facilities for at least two weeks
Property severely damaged < 50%, > 25%
- Catastrophic (3):** Multiple deaths
Complete shutdown of facilities for 30 days or more
Property severely damaged/destroyed > 50%

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Natural Hazard Index

Hazard	2003 Frequency (2 = Possible, 1 = Likely, 0 = Highly Likely)	2003 Location (2 = Local/Local, Medium/Regional, Large/National, Continental)	2003 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2004 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2005 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2006 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2007 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2008 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2009 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2010 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2011 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2012 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2013 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2014 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2015 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2016 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2017 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2018 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2019 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2020 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2021 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2022 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2023 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2024 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2025 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	
	2003 Frequency (2 = Possible, 1 = Likely, 0 = Highly Likely)	2003 Location (2 = Local/Local, Medium/Regional, Large/National, Continental)	2003 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2004 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2005 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2006 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2007 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2008 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2009 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2010 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2011 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2012 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2013 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2014 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2015 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2016 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2017 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2018 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2019 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2020 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2021 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2022 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2023 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2024 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	2025 Severity (2 = Local/Local, Medium/Regional, Large/National, Continental)	
Physical Natural Hazards																										
Air Pollution	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Aviation Incident	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Incident	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Release	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Spill	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Storage	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Transport	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Use	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Waste	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Work	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Storage	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Transport	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Use	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Waste	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Work	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Storage	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Transport	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Use	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Waste	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Work	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Storage	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Transport	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Use	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Waste	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Work	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Storage	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Transport	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Use	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Waste	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Work	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Storage	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Transport	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Use	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Waste	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Work	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Storage	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Transport	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Use	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Waste	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Work	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Storage	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Transport	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Use	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Waste	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Work	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Storage	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Transport	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Use	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Waste	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Work	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Storage	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Transport	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Use	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Waste	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Work	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Storage	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Transport	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Use	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Waste	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Work	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Storage	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Transport	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chemical Use	2	1	1																							

Human-Caused/Technological Hazard Index

FEMA Ranking Criteria Guidance

Criteria for Magnitude/Severity Categorization:

Negligible (1): **Populations:** Minor or no injuries including first responders.
Government: Minor/No impacts to municipal operations for very short amount of time (minutes to several hours).
Built Environment: No shutdown of critical infrastructure/facilities, only scattered incidental residential and commercial structure damage.
Natural Resources/Environment: Impacts less than 5% of natural resources.
Economy: Minor or no impacts to business sectors, low damage/replacement costs, very little recovery needed.

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Human-Caused/Technological Hazard Index

FEMA Ranking Criteria Guidance

Criteria for Magnitude/Severity Categorization:

Limited (2): **Populations:** Some injuries, some injury to first responders.
Government: Small impacts to municipal operations for short amount of time (multiple hours to several days).
Built Environment: Short shutdown of some critical infrastructure
And facilities, less than 10% of residential/commercial structures damaged.
Natural Resources/Environment: Impacts 5% - 20% of natural resources.
Economy: Some impacts to business sectors, moderate damage/replacement costs, recovery lasts weeks.

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Human-Caused/Technological Hazard Index

FEMA Ranking Criteria Guidance

Criteria for Magnitude/Severity Categorization:

Significant (3): **Populations:** Multiple deaths and severe injuries including to first responders
Government: Large impacts to municipal operations for long amount of time (multiple days to weeks), substantial COOP and loss of services.
Built Environment: Medium/significant shutdown of some critical infrastructure, complete shutdown/facilities, 20% - 50% of residential and 10% - 25% of commercial structures severely damaged.
Natural Resources/Environment: Impacts more than 20% of natural resources.
Economy: Serious impacts to business sectors, high damage/replacement costs, recovery lasts months.

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Human-Caused/Technological Hazard Index

Hazard	Probability (i.e. Unlikely, Potentially Likely, Highly Likely) 1 to 4	Location/Extent (i.e. Small, Medium, Large) 1 to 3	Consequence Analysis 1 to 3					Consequence Analysis	2002 Hazard Index: High = 10 to 9 Moderate = 8 to 4 Low = 3 to 2	2009 Hazard Index: High = 10 to 9 Moderate = 8 to 6 Low = 5 to 3	
			Populations	Government	Built Environment	Natural Resources/Environment	Economy				
Technological Hazards											
Infrastructure Failure											
- Communications	4	2	1	3	2	1	1	1.5	7.5	N/A	
- Emergency Services	1	1	1	1	1	1	1	1	3	N/A	
- Energy	4	1.5	2	2	1	1	2	1.5	7.5	Moderate	
- Information Technology	3	1	1	2	1	1	1	1.2	5.2	N/A	
- Transportation Systems	2	1	1	1	1	1	1	1	4	Moderate	
- Water/Wastewater Systems	2	2	1	1	2	2	2	1.5	6.5	Moderate	
Nuclear Power Plant Incident											
Hazardous Materials Accident/Spill	4	1	2	1	1	2	1	1.4	5.4	High	
Major Aircraft Crash	2	1	1	1	1	1	1	1	4	Moderate	
Maritime Safety Failure	2	1	1	1	1	1	1	1.5	4.5	Low	
Human-Caused (Deliberate) Hazards											
Cyber Incident											
Terrorism	3	2	1	3	2	1	3	1.5	6.5	Low	
Improvised Explosive Devices											
- Vehicle-borne IEDs	2	2	3	2	2	1	2	2	6	Low	
- Active Shooter											
- Vehicle-into crowds											
- Drones											
Other Fire											
Other Fire	4	1	2	1	1	1	1	1.2	5.2	High	
Civil Unrest/Disobedience	2	2	1	2	2	1	1	1.4	5.4	Low	
Chemical, Biological, Radiological, Nuclear Agent (CBRN)	2	1	2	1	1	1	1	1.2	4.2	Low	

Note:
1: All Technological and Human-Caused hazards ranked by New Bedford Technical Committee.

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2016 Plan Report Card

5.3.1 Emergency Management Department

- 5.3.1.1 Purchase and Install Auxiliary Generators...*partially completed*
- 5.3.1.2 Improve Warning Capabilities...*completed, remains ongoing*
- 5.3.1.3 Special Needs Registry...*completed*
- 5.3.1.4 Community Preparedness Outreach/Messaging Efforts...*completed, remains ongoing*
- 5.3.1.5 Community Rating System Participation...*not completed, carry forward*
- 5.3.1.6 Debris Management Plan...*in progress*
- 5.3.1.7 Update Local Hazard Mitigation Plan...*in progress*

5.3.2 Police Department

- 5.3.2.1 New roof for Police Station #1...*not completed, station is closed*
- 5.3.2.2 New parking lot drainage system at Police Headquarters...*not completed, design in progress*
- 5.3.2.3 New Communications Systems...*in progress*

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2016 Plan Report Card

5.3.3 Fire Department

- 5.3.3.1 Emergency generators for radio transmitters...*in progress*
- 5.3.3.2 Upgrade of Fire Alarm System...*in progress*
- 5.3.3.3 Replace/Renovate Existing Fire Stations...*in progress*
- 5.3.3.4 EMT Training for Fire Department members...*completed, remains ongoing*
- 5.3.3.5 Stockpile Supplies for Operations Crew and local population...*completed, remains ongoing*

5.3.4 Planning Department

- 5.3.4.1 Adopt Stormwater Ordinance...*completed*
- 5.3.4.2 Integrate Disaster Mitigation into Comprehensive Master Plan...*in progress*

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2016 Plan Report Card

5.3.5 Harbor Development Commission

- 5.3.5.1 Installation of a wave attenuator at Pope's Island Marina...**not completed, carry forward**
- 5.3.5.2 Installation of a storm mooring system at Pope's Island...**not completed, carry forward**
- 5.3.5.3 Repair/Bolster/Expand commercial fishing piers...**in progress**
- 5.3.5.4 Dredge New Bedford Harbor...**not completed, carry forward**
- 5.3.5.5 Expansion of Pope's Island Marina...**not completed, carry forward**
- 5.3.5.6 Replacement of mooring anchors and gear...**partially completed**
- 5.3.5.7 Fund Unified Command Center for local/state/federal emergency response agencies...**completed**
- 5.3.5.8 Assess/Mitigate utility and infrastructure weaknesses on the waterfront...**completed**

5.3.6 Department of Public Infrastructure

- 5.3.6.1 Install new SCADA System at Sewer Pump Stations...**in progress**
- 5.3.6.2 Clarks Cove Pump Station/Hurricane Barrier flooding improvements...**in progress**
- 5.3.6.3 Flood-proof sewer pump stations within flood-prone areas...**completed**
- 5.3.6.4 Coggeshall St. area stormwater drainage improvements...**completed**
- 5.3.6.5 Maple/Chancery Streets stormwater drainage improvements...**not completed, carry forward**
- 5.3.6.6 Page St. stormwater drainage improvements at St. Luke's Hospital...**not completed, carry forward**

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2016 Plan Report Card

5.3.6 Department of Public Infrastructure

- 5.3.6.7 Buttonwood Park Pond and Dam Improvements...**not completed, carry forward**
- 5.3.6.8 Pearl St. stormwater drainage improvements...**completed**
- 5.3.6.9 Brownell Ave./Hawthorn St. stormwater drainage improvements...**not completed, carry forward**
- 5.3.6.10 New Bedford Reservoir Dam/Turner's Pond Dam improvements...**partially completed**
- 5.3.6.11 Establish 'Micro-Grid' within City for auxiliary power...**not completed, remove/no longer relevant**
- 5.3.6.12 Route 18/Wamsutta St. stormwater drainage improvements...**not completed, carry forward**
- 5.3.6.13 Sheffield St./Stratford St. stormwater drainage improvements...**not completed, carry forward**
- 5.3.6.14 Mitigation of drainage issues Tarklin Hill Rd. to Nash Rd. Pond...**not completed, carry forward**
- 5.3.6.15 West End CSO separation contract phase IV...**not completed, carry forward**
- 5.3.6.16 West End CSO separation contract phase V...**not completed, carry forward**
- 5.3.6.17 Assawompsett Dam improvements...**not completed, remove/no longer relevant**
- 5.3.6.18 Improve the inter-municipal agreement with Taunton for Assawompsett Dam...**not completed, remove/no longer relevant**
- 5.3.6.19 Improve communications/data gathering for infrastructure systems...**completed**
- 5.3.6.20 Implement snow-plowing tracking system...**completed**
- 5.3.6.21 Incorporate disaster mitigation plan projects into City projects...**completed, remains ongoing**

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Community Outreach & Engagement

Ward-Specific Meetings

- Ward 1: Pulaski School, November 6, 2023
 - Identified Issues/Concerns:
 - Kelton Street: no street lights (safety)
 - Route 140/Route 18/Belleville Avenue/Welbey Road: flooding
 - Sassaquin Pond: invasive species/bird concerns
 - Samuel Barnett Boulevard: access blocked for emergencies
 - Residential areas south of Phillips: sewer capacity issues
 - Airport Road/Shawmut Avenue: invasive species
 - Residential areas east of Theodore Rice: water pressure issues for fire flow
 - Upper Acushnet River: catch basin left in place
 - Hurricane Barrier: parts for repair on reserve?
 - Brittany Dye: vulnerable to storm surge?



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Community Outreach & Engagement

Ward-Specific Meetings

- Ward 2: Wilks Library, September 25, 2023
 - Identified Issues/Concerns:
 - Riverside Park/Brooklawn Park/Whaler's Place: flooding
 - River Rd./Belleville Ave./Coggeshall St./Dutton St.: Flooding
 - Irving Court/Howard Ave./Church St.: flooding
 - Ashley Boulevard: bus shelter is needed (precipitation/heat)
 - North End: house fires (electrical)
- Ward 3: Keith Middle School, October 16, 2023
 - Identified Issues/Concerns:
 - None



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Community Outreach & Engagement

Ward-Specific Meetings

- Ward 4: McCoy Recreation Center, November 2, 2023
 - Identified Issues/Concerns:
 - None
- Ward 5: Hathaway Elementary School, October 4, 2023
 - Identified Issues/Concerns:
 - Dartmouth Street: flooding
 - Buttonwood Park Dam: flooding
- Ward 6: Hazelwood Park Community Center, October 30, 2023
 - Identified Issues/Concerns:
 - Cove Rd./Hazelwood to Willard/Padanaram area/West Rodney French: flooding
 - Bellevue south to Ricketson: power grid issues
 - Scoot/Division Street area: trees on power lines
 - Brock Avenue: catch basins clogged/parked cars are a barrier to cleaning



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Community Outreach & Engagement Reboot

December 18, 2023 Listening Session (Equity Partners)

- Community conversation on alternative outreach measures for consideration.
- Five community organizations participated:
 - People Acting For Community Endeavors
 - Positive Action Against Chemical Addiction
 - Steppingstone
 - United Way of Greater New Bedford
 - Waterfront Historic Area League
- Core Team alternatives offered:
 - Listening Posts
 - Meeting-in-a-Box
 - Fact Sheet, Survey Link/QR Code distribution
 - Individual/Organizational Meetings
 - Boots-on-the-Ground



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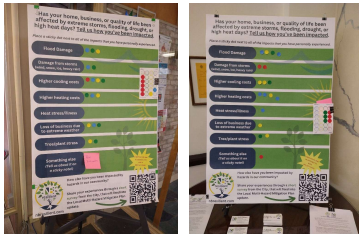
Community Outreach & Engagement Reboot

Listening Posts

- Libraries
 - Howland Green Branch Library
 - New Bedford Free Public Library
 - Lawler Branch Library
 - Wilkes Branch Library
- Denison Memorial Community Center
- Global Learning Charter Public School
- Whaling Museum (exhibition/screening)

Individual Meetings

- NB CEDS (Spanish listening session) TBD
- Old Bedford EDC (neighborhood meeting) (Re-scheduled for February 27, 2024)



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Community Outreach & Engagement Reboot

Fact Sheet/Survey Link/QR Code

- Online Community Survey
 - 130 responses to date (2/9/24)
 - Project business cards created for distribution
 - QR Code posted inside Southeastern Regional Transit Authority (SRTA) buses
- Fact Sheet/Survey distributed electronically to:
 - Coalition for Social Justice (December 2023)
 - Alma Del Mar Charter School (January 2024)
 - Global Learning Charter (December 2023 – English/Spanish/Portuguese)
- Boots-on-the-Ground
 - Staff canvassing SRTA bus routes/shelters



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Work in Progress

GIS Data Update

- Critical Facilities
 - HazMat Facility
 - Medical/Emergency Response
 - Utility
 - Wastewater Infrastructure
 - Federal/State/County Facility
 - Municipal Facility
 - Dam
 - Bridge
 - Pharmacy
 - Public Safety/Emergency Response
 - Health Center
 - Communications
 - Medical/Urgent Care
 - Hospital
 - Port Facility



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Work in Progress

GIS Data Update

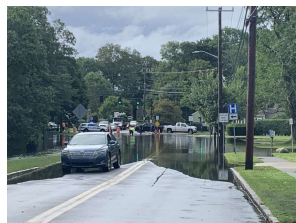
- Vulnerable Populations
 - Market/Food Supply
 - School
 - Apartment Complex
 - Congregate Care/Nursing Home
 - Congregate Care/Rehabilitation Center
 - College/University
 - Food Pantry/Soup Kitchen
 - Commercial Daycare
 - In-Home Daycare
 - Congregate Housing/Rooming House
 - Congregate Housing/Sober House
 - Congregate Housing/Group Home



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Next Steps

- Vulnerability Assessment
 - Overlay Analyses
 - FEMA Flood Zones
 - Sea, Lake, and Overland Surge from Hurricanes
 - MA Coastal Flood Risk Model
 - Development Trends
- Stakeholder Interviews
- Focus Groups
- Public Workshop #1



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Project Timeline MHMP



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Online Survey

- Visit nbresilient.com
- Take the online Community Survey:
<https://www.surveymonkey.com/r/6KTNVMJ>
- Share the link/QR Code with family, friends, coworkers
- **Participate and be entered to win a \$50 gift card!**

Scan me to
take the
survey!



Project Webpage

- Take Our Survey!
- What is Hazard Mitigation Planning?
- Prioritizing Equity
- Our Process
- Local Hazard Mitigation Committee
- Contact Us for More Information
- Additional Resources
- 2016 Plan Report Card



www.newbedford-ma.gov/emergency-management/new-bedford-multi-hazard-mitigation-plan/



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Questions?

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Table ____ *Technological and Human-Caused Hazard Index New Bedford, Massachusetts 2023 update*

Hazard	Probability (i.e. Unlikely, Potential, Likely, Highly Likely) 1 to 4	Location/Extent (i.e. Small, Medium, Large) 1 to 3	Cosequence Analysis 1 to 3					Consequence Analysis	2023 Hazard Index: High = 10 to 9 Moderate = 8 to 6 Low = 5 to 3	2009 Hazard Index: High = 10 to 9 Moderate = 8 to 6 Low = 5 to 3
			Populations	Government	Built Environment	Natural Resources/ Environment	Economy			
Technological Hazards										
Infrastructure Failure										
- Communications	4	2	1	3	2	1	1	1.6	7.6	N/A
- Emergency Services	1	1	1	1	1	1	1	1	3	N/A
- Energy	4	2	2	2	1	1	2	1.6	7.6	Moderate
- Information Technology	3	1	1	2	1	1	1	1.2	5.2	N/A
- Transportation Systems	2	1	1	1	1	1	1	1	4	Low/Moderate
- Water/Wastewater Systems	2	3	2	1	1	2	2	1.6	6.6	Moderate
Nuclear Power Plant Incident	1	1	1	1	1	1	1	1	3	Low
Hazardous Materials Accident/Spill	4	1	2	1	1	2	1	1.4	6.4	High
Major Aircraft Crash	2	1	1	1	1	1	1	1	4	Moderate
Hurricane Barrier Failure	2	1	1	1	3	1	3	1.8	4.8	Low
Human-Caused (Deliberate) Hazards										
Cyber Incident	3	2	1	3	2	1	2	1.8	6.8	Low
Terrorism										
- Improvised Explosive Devices										
- Vehicle-borne IEDs										
- Active Shooter										
- Vehicle into crowds										
- Drones										
Urban Fire	4	1	2	1	1	1	1	1.2	6.2	High
Civil Unrest/Disobedience	2	2	1	2	2	1	1	1.4	5.4	Low
Chemical, Biological, Radiological, Nuclear Agent (CBRN)	2	1	2	1	1	1	1	1.2	4.2	Low

Notes:

1: All Technological and Human-Caused hazards ranked by New Bedford Technical Commttee.

<i>Hazard</i>	<i>2023 Frequency (i.e. Unlikely, Possible, Likely, Highly Likely)</i>	<i>2023 Location (i.e. Small/Local, Medium/Regional, Large/Multiple communities)</i>	<i>2023 Severity (i.e. Negligible, Limited, Critical, Catastrophic)</i>	<i>2016 Hazard Index (i.e. ranked by combining frequency and severity; 10 - high, 1 - low)</i>	<i>2023 Hazard Index (i.e. ranked by combining frequency and severity; 10 - high, 1 - low)</i>
Flood-Related Hazards					
- Riverine/Flash Flooding	2	1	1	4	4
- Inland/Urban Flooding, Heavy Rain ¹	3	2	2	N/A	7
- Dam Failure ¹	1	1	1	3	3
- Coastal Flooding/Erosion ¹	3	2	1	4	6
Winter-Related Hazards					
- Blizzards/Snow/Nor' easter ¹	3	3	1	5	7
- Extreme Cold	3	3	0	6	6
Wind-Related Hazards					
- Hurricanes/Tropical Storms	2	2	2	5	6
- High Winds ¹	3	2	1	N/A	6
- Tornadoes/Waterspouts	1	1	1	3	3
- Lightning/Thunderstorms ¹	3	1	1	4	5
- Hail	1	1	0	N/A	2
Geologic-Related Hazards					
- Earthquakes ¹	1	1	0	2	2
- Landslides ¹	0	1	0	2	1
- Tsunami ¹	0	1	0	3	1
Extreme Heat-Related Hazards					
- Extreme Heat ¹	3	3	2	6	8
Drought-Related Hazards					
- Drought ¹	2	3	1	4	6
Wildfire/Brushfire-Related Hazards					
- Wildfire/Brushfire ¹	2	1	0	3	3
Communicable-Related Hazards					
- Infectious Disease/Public Health Em. ¹	3	3	3	N/A	9
Invasive Species-Related Hazards					
- Multiple (aquatic plant species) ¹	3	2	1	N/A	6
Vector-Borne-Related Hazards					
- Multiple ¹	3	1	1	N/A	5
Changes in Groundwater-Related					
- Changes in Groundwater ¹	2	1	1	N/A	4

Notes:

1: Ranked by New Bedford Technical Committee (all others utilized NOAA Severe Events Database).

Memorandum of Meeting

To: Brian Nobrega, Michele Paul, Shawn Syde and New Bedford Local Hazard Mitigation Committee
From: Craig Pereira
Date: February 14, 2024
Re: New Bedford Multi-Hazard Mitigation Plan (MHMP) Update—LHMC Meeting #2

In attendance:

Courtney Cohen – Project manager, Environmental Stewardship
Jim Costa – Superintendent of Wastewater
Ceasar Duarte – Director of Engineering and Operations
Brian Nobrega – Director of Emergency Management
Michele Paul – Director of Resilience and Environmental Stewardship
Chance Perks – Conservation Agent
Danny Romanowicz – Building Commissioner
Shawn Syde – City Engineer
James Sylvia – Superintendent, Dept. of Facilities & Fleet Management
Michael Thomas – Director of Emergency Medical Services
Jennifer Vieira – Commissioner, Dept. of Facilities and Fleet Management
Cynthia Spence – Director of Modernization/Planning/Development, NB Housing Authority

Craig Pereira – Horsley Witten Group (HW), Project Manager
Kellie King – HW, Environmental Planner

The second New Bedford Local Hazard Mitigation Committee (LHMC) meeting was held on February 14, 2024, at the Fort Taber Community Center to discuss the update of the Multi-Hazard Mitigation Plan (MHMP). The following items were discussed:

1. Federal/State Guidance

Craig Pereira reminded the LHMC that, in addition to following federal guidance (FEMA's *Local Hazard Mitigation Planning Policy Guide*) all local hazard mitigation plans must be aligned with their respective state hazard mitigation plans. Since the first LHMC meeting in September, Massachusetts (MA) released *ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan* (hereinafter, "*ResilientMass Plan*"). As such, HW had to review all work completed for the MHMP to ensure consistency with the new *ResilientMass Plan*, including reviewing whether the MHMP captures all hazards reviewed at the state level. Craig provided a summary of the *ResilientMass Plan* components and relevant updates for the MHMP:

- *ResilientMass Plan* includes a new hazard, called "Changes to Groundwater." This hazard will be incorporated into the MHMP, and the Technical Committee included it in its review of the hazard index (discussed later in this memo).
- Craig also noted that the findings of the MA Climate Change Assessment, which was completed in 2022 and is the analytical basis for the *ResilientMass Plan*, will also be referenced and incorporated throughout New Bedford's MHMP. There are three different volumes of the MA

Climate Change Assessment, consisting of an executive summary, statewide report, and regional report. Together, these three volumes:

- Establish the five sectors across which the Commonwealth will assess the exposure and vulnerability of various assets, populations, and resources. The five sectors are human, governance, infrastructure, natural environment, and economy.
- Review the most significant impacts that climate change poses to the Commonwealth based on the magnitude of consequences, disproportionality of exposure (i.e., are certain populations, including environmental justice communities or otherwise disadvantaged and/or underserved populations, more affected than others?), and need for effective adaptation.
- Identify top hazards and impacts across the Commonwealth's different climate regions. New Bedford is included within the Cape, Islands, and South Coast Region, which is most vulnerable to sea level rise, storm surge, increasing temperatures, and extreme precipitation.

2. Hazard Index

Craig noted that the hazard index will inform the subsequent update to the City's Comprehensive Emergency Management Plan.

Technical Committee

Craig noted that the Technical Committee is made up of members from the larger LHMC, mostly individuals who work for the City. The Technical Committee is tasked with development/review of technical items, especially those items that committee members may have institutional knowledge and/or professional experience with given their employment with the City.

Natural Hazards

The Technical Committee met in November 2023 to review the hazard index for natural hazards. Craig explained that HW developed an initial draft hazard index based on historical data from [NOAA's Severe Storm Events Database](#) following FEMA's criteria (frequency/likelihood, impact/land area affected, and magnitude/severity) for the hazard index. Craig highlighted the following:

- There are several hazards new to the 2024 MHMP update because the City is now doing a *multi-hazard* mitigation plan. These are noted on the hazard index.
- The hazard index ranking from the 2016 plan is included for reference.
- The Technical Committee reviewed and adjusted the rankings based on their professional expertise. Hazard rankings that were adjusted by the Technical Committee are noted on the hazard index.

All LHMC members should review and provide feedback as applicable to Craig on the draft hazard index (e.g., if an individual feels that a hazard's ranking is not appropriate). All feedback will be brought to the Technical Committee for review.

Human-Caused/Technological Hazards

The Technical Committee also scored human-caused/technological hazards to create a hazard index. There is no reference database of information for these hazards, so rankings were entirely determined by the Technical Committee. Craig explained that FEMA's criteria for the hazard index (frequency/likelihood,

impact/land area affected, and magnitude/severity) have slightly different timing and scope classifications than its criteria for natural hazards.

The criteria used to rank all hazards is included as a separate attachment.

All LHMC members should review and provide feedback as applicable to Craig on the draft hazard index (e.g., if an individual feels that a hazard's ranking is not appropriate). All feedback will be brought to the Technical Committee for review.

3. 2016 Plan Report Card

Craig reviewed the draft 2016 Plan Report Card, which documents which mitigation strategies from the 2016 plan were completed, in progress, and not started and which mitigation strategies should be carried forward (possibly with updates) into the MHMP update. Craig said the LHMC will help finetune the list and determine the final list of mitigation actions that will be in the MHMP update. Craig noted that there may be some actions that the City is currently working on that may be better captured in the Capability Assessment section of the MHMP (to document the City's current capacity and capability). Craig also reiterated that the final list of mitigation actions is like a wish list. There may be some larger projects that may not be completed in the MHMP's five-year planning cycle, but that is okay (justifying a longer-range for planning 25 years out).

LHMC discussed a few specific actions from the 2016 Plan Report Card:

- What is the "Special Needs Registry," and what are the challenges with maintaining the registry? Brian Nobrega discussed challenges with updating and maintaining the registry (i.e., who is responsible, who is on the registry, when is an update needed) as well as the City's public notification procedures during an emergency event.
- Should the status of "dredge New Bedford Harbor" be updated to "partially completed"? (See note on whether actions could be included in the Capability Assessment above).
- Several larger projects under the purview of the Department of Public Infrastructure are listed as "not completed" or "partially completed." City staff noted that these actions are also included in the Department's 25-year plan. (See note on larger projects above).

The 2016 Plan Report Card is also posted publicly on the [New Bedford Resilient](#) website.

4. Community Outreach & Engagement

Craig provided an overview of the MHMP community outreach and engagement strategies. Craig reiterated that engagement work kicked off in September 2023. There are 37 equity partners involved in the MHMP, with seven sitting on the LHMC.

Ward Meetings

Craig summarized issues and concerns heard at the ward meetings, which were staffed by City personnel. The City held six meetings between September and November 2023. Craig noted that the issues and concerns have not necessarily been "ground truthed." There was some media coverage of the ward meetings.

Outreach & Engagement Reboot

Craig noted that the City added additional outreach measures in response to concerns raised by LHMC members during the first LHMC meeting. On December 18, 2023, the City and its consultants held a virtual listening session with several of the equity partners participating (5) to determine how to increase community engagement and better reach community members. Five equity partners participated in the meeting: People Acting for Community Endeavors, Positive Action Against Chemical Addiction, Steppingstone, United Way of Greater New Bedford, and Waterfront Historic Area League. Based on the feedback from the virtual listening session, the City has focused on community engagement in January and February 2024. A summary of outreach is as follows:

- The City set up listening posts at Howland Green Branch Library, New Bedford Free Public Library, Lawler Branch Library, Wilkes Branch Library, Denison Memorial Community Center, Global Learning Charter Public School, and the Whaling Museum.
- The City will hold individual meetings with NB CEDS (Spanish language listening session, date TBD) and Old Bedford EDC (neighborhood meeting, scheduled for February 27).
- The City did another push for online community survey responses (130 responses as of February 9). The Consultant created business cards for distribution and posted QR code links to the survey on Southeastern Regional Transit Authority (SRTA) buses.
- The City electronically distributed a fact sheet and survey to the Coalition for Social Justice, Alma Del Mar Charter School, and Global Learning Charter. This includes English, Spanish, and Portuguese language versions.
- Consultant staff (KLA) have canvassed SRTA bus routes and shelters to discuss the MHMP and ask community members to take the community survey.

5. Work In Progress

Craig provided an update on HW's work to develop updated GIS data for the City. The GIS data maps critical facilities and vulnerable populations within the City and will be used in maps and for the Vulnerability Assessment section of the MHMP. Craig noted that some data will be removed from public-facing maps because it is sensitive information (i.e., water supply data and certain emergency management and public safety infrastructure will be generalized or removed).

- Critical facilities include but are not limited to assets such as utility infrastructure (communications, water, wastewater, etc.), dams, bridges, medical facilities, and port facilities.
- Vulnerable populations include but are not limited to schools, apartments, congregate care facilities, daycares, and grocery stores.

6. Next Steps

Craig provided an overview of next steps for the City and HW:

- Once the City and HW finalize all GIS data, HW will complete a vulnerability analysis. This identifies properties, critical facilities, and vulnerable populations that intersect with various hazard data layers (FEMA Flood Zones; Sea, Land, and Overland Surge from Hurricanes (SLOSH), and MA Coastal Flood Risk Model).
- HW will set up stakeholder interviews to discuss needs, challenges, and opportunities related to hazard mitigation, primarily with City staff.
- HW will set up focus groups to discuss needs, challenges, and opportunities related to hazard mitigation with various organizations and individuals.

- The City and HW will begin planning for the first Public Workshop.

Craig also asked that all LHMC take the online community survey and continue to push it out to their networks. The online community survey is available in [English](#), [Spanish](#), and [Portuguese](#) via the [New Bedford Resilient](#) website.

7. Discussion

LHMC discussed several additional ideas to aid community outreach, with the goal of wrapping up this larger community outreach and data collection within the next month or so to focus on plan development:

- Distribute information and business cards with information on the online community survey to the Senior Center and Port community (additional project business cards were distributed).
- Distribute information and business cards with information on the online community survey at the planned City storm after-action meeting on February 15. The City will coordinate whether a listening post should be set up.
- LHMC members discussed the cost of including information in a water bill insert. A LHMC member reported that a recent recycling insert cost \$1,200. The City will research costs for a future insert.
- LHMC members discussed attending neighborhood meetings. Michele Paul noted the City did not attend neighborhood meetings because it did not want to take up the entire agenda, but there may be different ways to engage with neighborhood meetings. A LHMC member suggested doing presentations to board members specifically. LHMC members will push out MHMP information within their network.
- The City has done several rounds of social media postings.

New Bedford Local Hazard Mitigation Committee Meeting #2**Fort Taber Community Center****1000A S. Rodney French Boulevard****New Bedford, MA 02740****February 14, 2024 10:00 AM - 12:00 PM**

LAST NAME	FIRST NAME	DEPARTMENT/AFFILIATION	Present Y or N
CITY OF NEW BEDFORD			
Amaral	Joshua	Director Housing & Community Development	
Arpke	Emily	Chief Financial Officer/Auditor	
Carlioni	Jennifer	City Planner	
Carr	Gordon	Ex. Director New Bedford Port Authority	
Cohen	Courtney	Project Manager, Environmental Stewardship	YES
Connelly	Christina	Chief Operations Officer	
Costa	Jim	Superintendent of Wastewater	YES
Duarte	Cesar	Director of Engineering and Operations	YES
Huntoon	Holly	Public Information Officer	
Kruger	Scott	Chief, Fire Department	
Mulroy	Rachel	Planning Department	
Nobrega	Brian	Director of Emergency Management	YES
O'Leary	Andrew	Superintendent of Schools	
Oliveira	Paul	Chief, Police Department	
Paul	Michele	Director of Resilience & Environmental Stewardship	YES
Perks	Chance	Conservation Agent	YES
Ponte	Jamie	Commissioner of Public Works	
Rebello	Travis	Hazardous Materials Coordinator	
Romanowicz	Danny	Building Commissioner	YES
Sloan	Stephanie	Director of Public Health	
Syde	Shawn	City Engineer	
Thomas	Michael	Director of Emergency Medical Services	YES
Vieira	Jennifer	Commissioner, Dept. of Facilities & Fleet Man.	YES
MASSACHUSETTS EMERGENCY MANAGEMENT			
Cochran	Nate	Local Coordinator, Region 2	
Zukowski	Jeff	Hazard Mitigation Planner	
EQUITY PARTNERS			
Andrade	John	Old Bedford Village Econ Development Corp.	
Dasilva-Hughes	Helena	Immigrants' Assistance Center	
Ledbetter	Renee	Director, New Bedford Shannon Program	
Pina-Christian	Marci	Ex. Director, NB Human Rights Commission	
Spence	Cynthia	Dir. Modernization/Planning/Dev., NB Housing Auth.	YES
Spencer	Darlene	President, NB Cape Verdean Association	
Williams	Corinn	Ex. Director, NB Community Econ. Dev. Center	
CONSULTANT TEAM			
Lundgren	Kim	KLA	
Kelly	Nate	HWG	
King	Kellie	HWG	YES
Patrone	Carley	KLA	
Pereira	Craig	HWG	YES

February 14, 2024 10:00 AM - 12:00 PM

[illegible]

LHMC Meeting #3: September 17, 2024



**New Bedford Multi-Hazard Mitigation Plan Update
Local Hazard Mitigation Committee Meeting #3**

Tuesday, September 17, 2024
Fort Taber Community Center
1000A S. Rodney French Boulevard
New Bedford, MA
12:00 PM – 2:00 PM

Agenda

1. Summary of Public Workshop #1
2. Community Survey – Summary of Findings
3. Interviews – Summary of Findings
4. Draft Mapping
5. Vulnerability Assessment/Overlay Analysis
6. Mission Statement
7. Goals
8. Next Steps

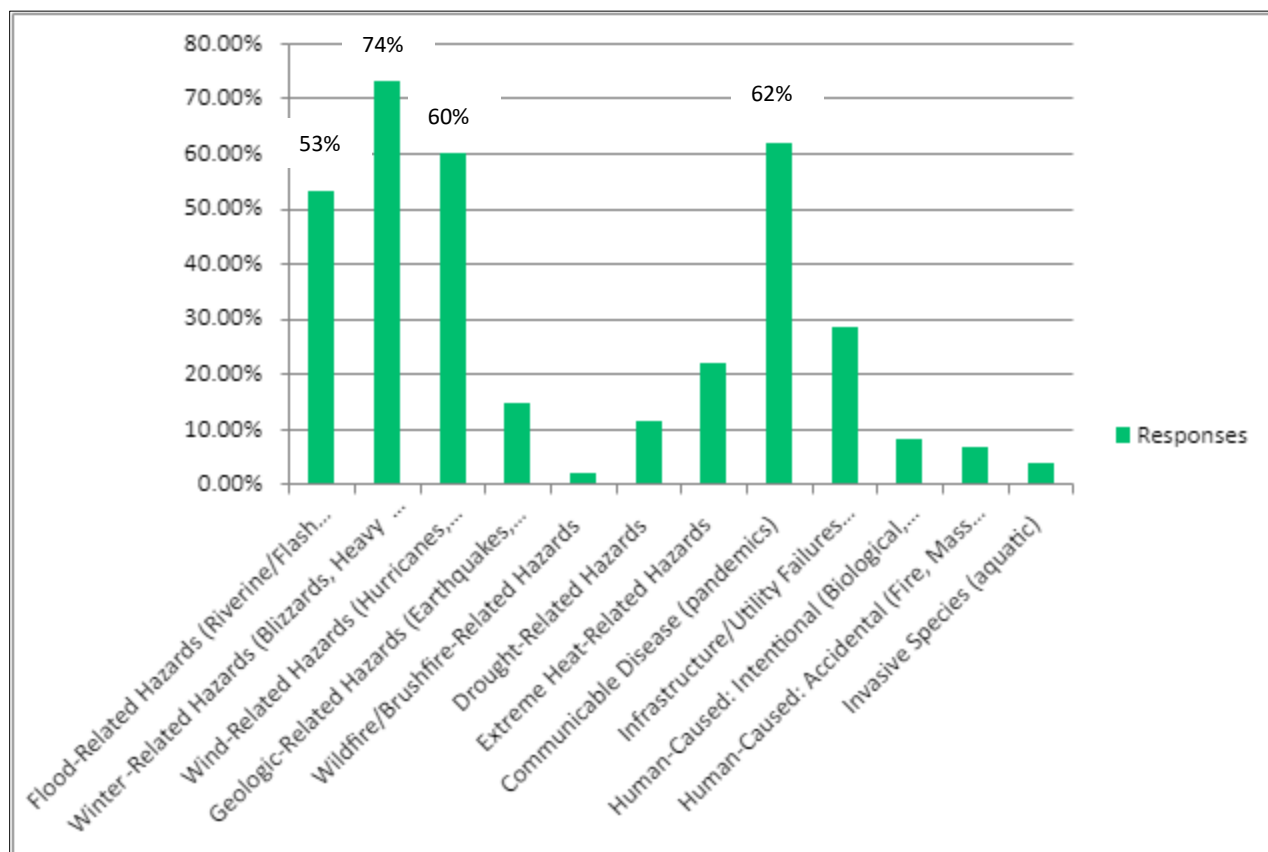
New Bedford Hazard Mitigation Plan Update – Online Community Survey Summary

As part of the City's Hazard Mitigation Plan Update, an online community survey was conducted to understand the community's perspective of hazard mitigation preparedness, familiarity with various types of hazards, how individuals receive information, and personal needs regarding hazard/disaster response and recovery. The survey was available online for approx. 9 months through June 2024 with a total of 213 responses.

The survey was promoted through a variety of approaches. The survey link and QR code were posted on the project website (<https://nbresilient.com/category/local-multi-hazard-mitigation-plan-update>) and distributed at various listening posts throughout the community. The LHMC distributed the survey link/QR code via their personal and professional networks and on Facebook. Project business cards were created/distributed with the survey link and QR code within the community and at the first Public Workshop in April of 2024. The survey received a total of 213 responses.

Q 1: Which of the following hazard events have you or has anyone in your household and/or business experienced in the past five years within New Bedford? (205 answered)

The majority of respondents have experienced Winter-Related (74%), Communicable Disease-Related (62%), and Wind-Related (60%) hazards.

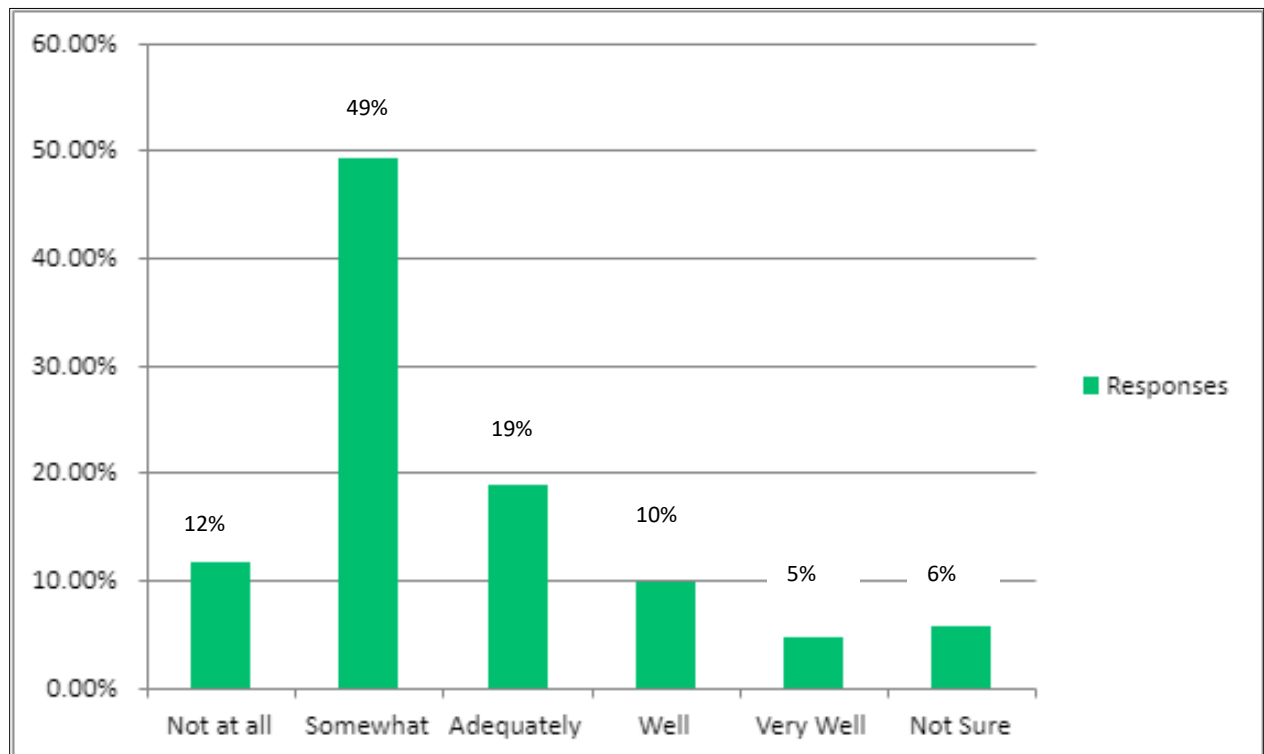


Q 2: How concerned are you about the following hazards? (213 answered)

	Not Concerned	Concerned	Very Concerned
Flood-Related Hazards	20%	48%	32%
Winter-Related Hazards	13%	56%	31%
Wind-Related Hazards	12%	58%	30%
Geologic-Related Hazards	23%	54%	24%
Wildfire/Brushfire-Related Hazards	61%	29%	10%
Drought-Related Hazards	43%	43%	14%
Extreme Heat-Related Hazards	26%	53%	21%
Communicable Disease-Related Hazards	13%	55%	32%
Intentional/Terrorism-Related Hazards	35%	47%	18%
Accidental-Related Hazards	31%	54%	15%
Invasive Species-Related Hazards	54%	38%	8%
Infrastructure/Utility Failure-Related Hazards	14%	49%	37%

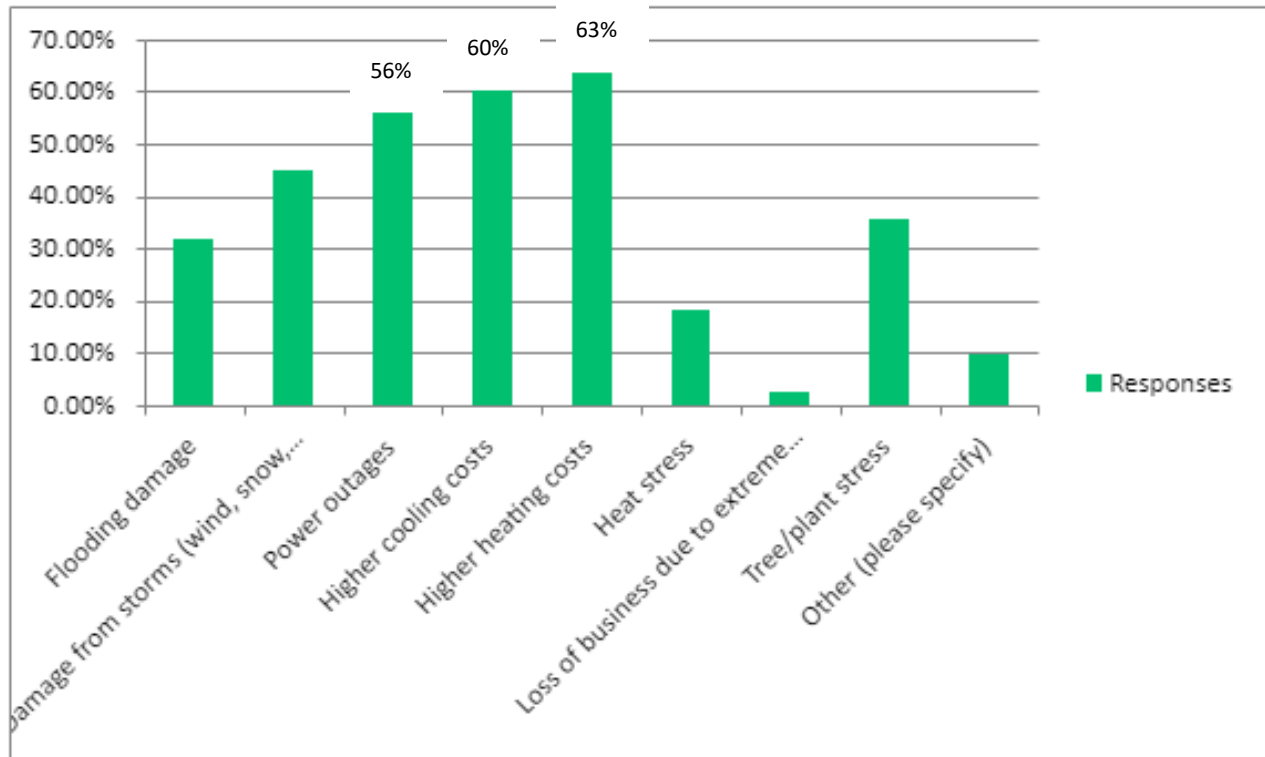
Q 3: In your opinion, how prepared is your household and/or business to deal with a natural, human-caused, or technological hazard event? (213 answered)

Approximately one-third of respondents (34%) feel their household and/or business is 'adequately to very well' prepared to deal with a natural, human-caused, or technological hazard.



Q 4: In what ways has your home, business, or quality of life been affected by climate-related hazards, such as extreme storms, flooding, drought, high heat days, etc.? (213 answered)

Over half of respondents have been impacted by high energy costs (heating and cooling) due to climate-related hazards.

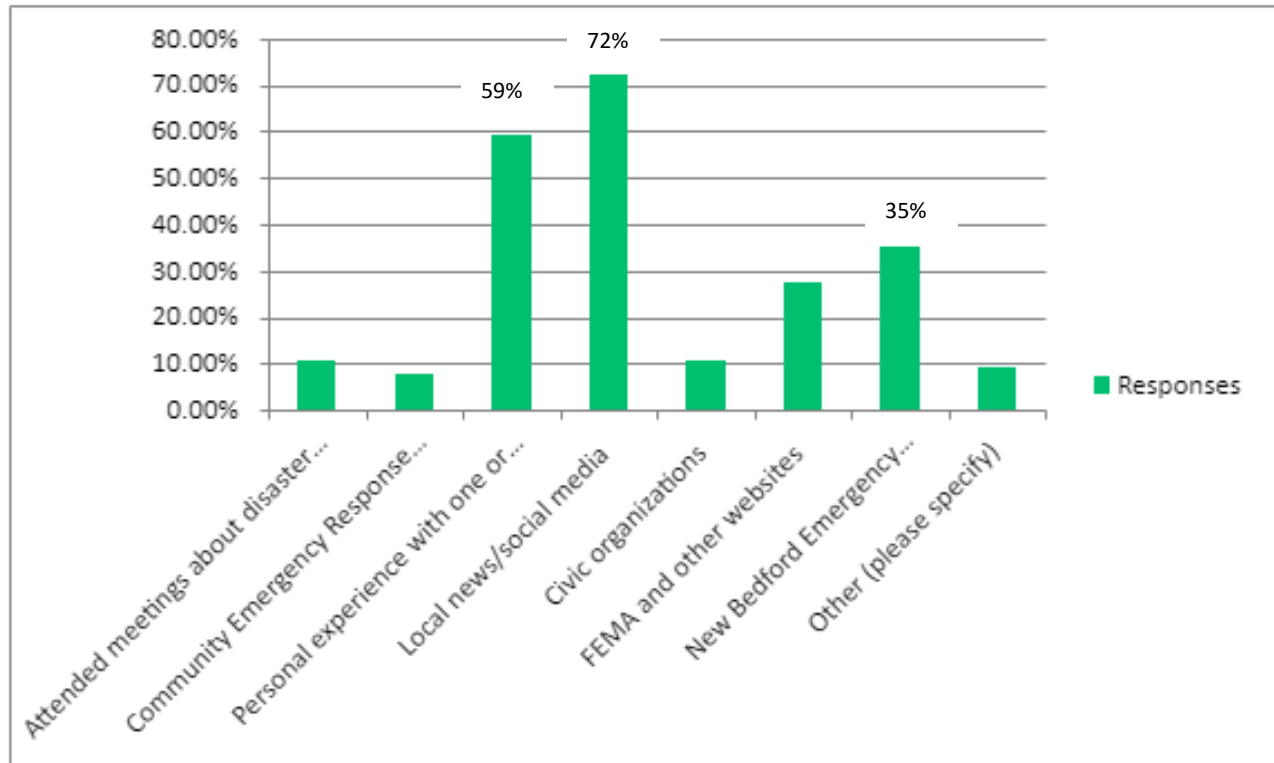


The following are common themes among the responses received for 'Other'.

- Getting ill/sick from heat
- Increased insurance rates
- Aging infrastructure
- Invasive species
- Vector-borne illnesses
- Damages from flooding

Q 5: Which of the following has provided you with useful information to help you prepare for a hazard event? (198 answered)

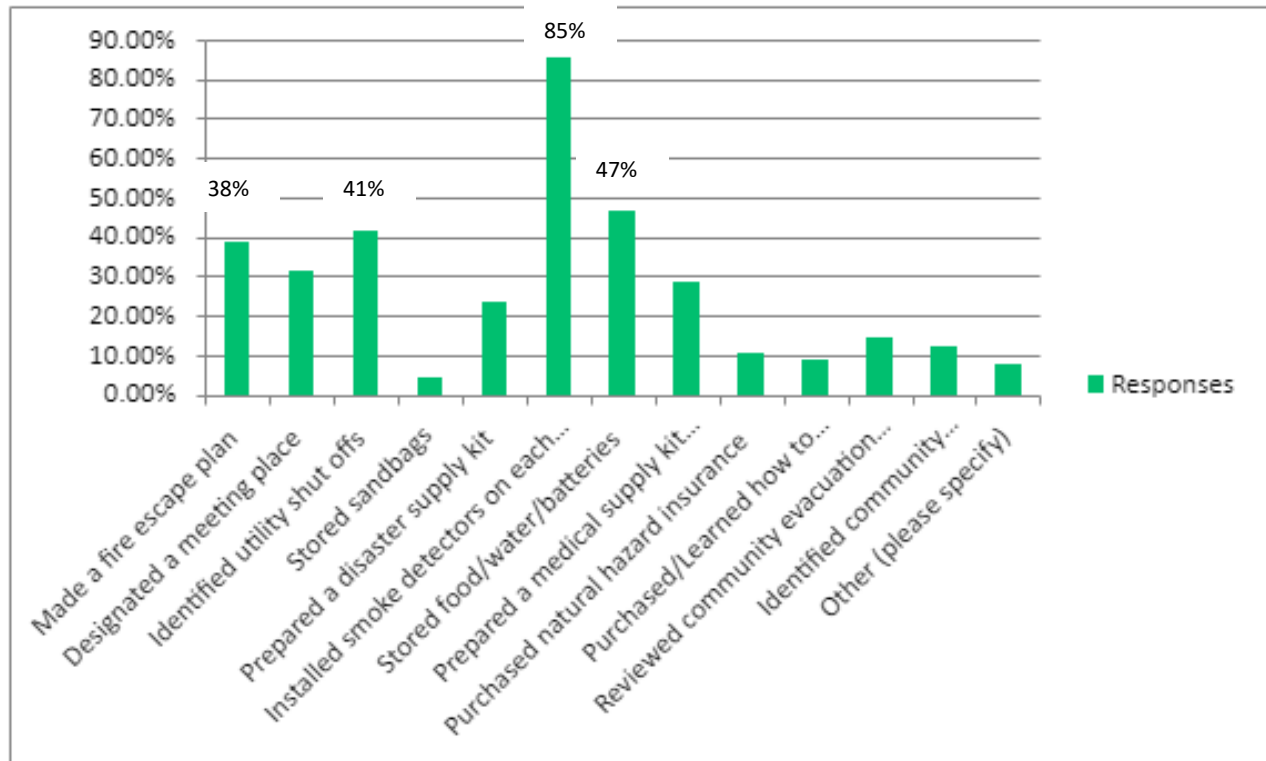
A majority of respondents receive useful information via local news and social media (72%), personal experiences with natural hazards (59%), followed by New Bedford Emergency Management Agency (35%)



The following are common themes among the responses received for 'Other'.

- Boating experience
- Auto-dial robo calls
- Eversource alerts
- Bristol County Mosquito Control
- Mayor's updates

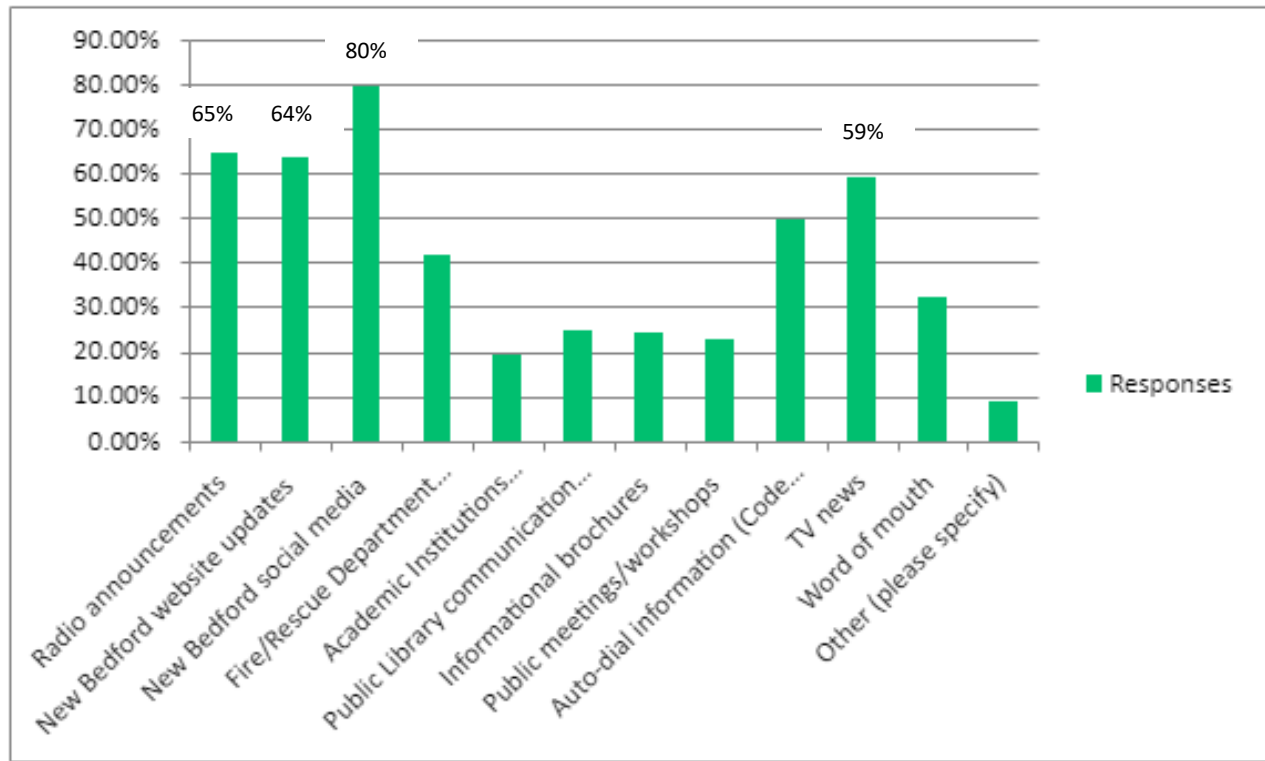
Q 6: Which of the following steps has your household and/or business taken to prepare for a hazard event? (198 answered)



The following are common themes among the responses received for 'Other'.

- Practiced mental conditioning
- Keep gas tank full
- Adapted to wasteful luxury (no air conditioning use)
- Cleaned leaves from drains
- Pet care plan
- Keep cell phone charged
- Purchased a generator

Q 7: In your opinion, which of the following methods do you think are most effective for providing hazard and disaster information? (198 answered)

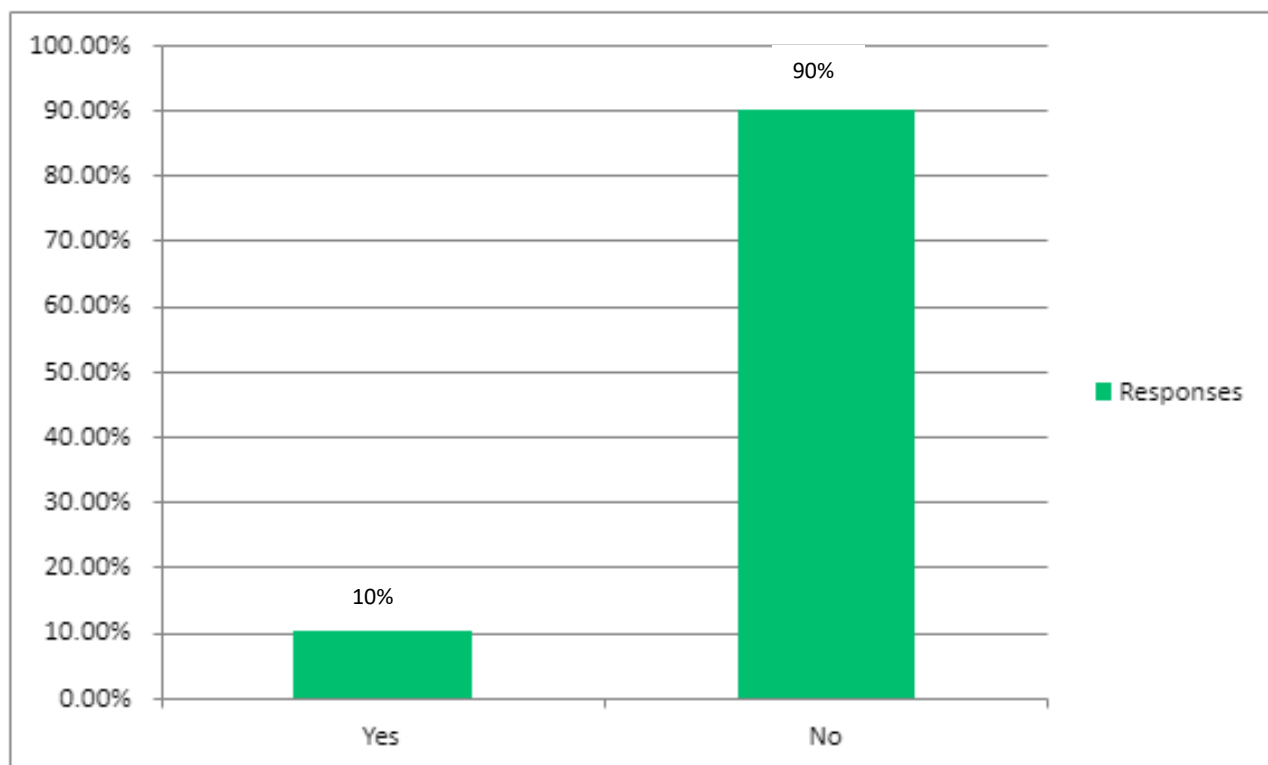


The following are common themes among the responses received for 'Other'.

- Mail
- NOAA
- Ham radio
- Provide information where people congregate (markets/pharmacy)
- Email blasts
- Forming/Training neighborhood groups/teams
- Automated texts/messages/cell phone alerts
- Information that is made multi-lingual

Q 8/9: Do you have any special access or functional needs within your household and/or business that would require early warning or specialized response during disasters? (198 answered) If 'yes', please explain? (21 answered)

The majority of respondents (90%) do not have any special access or functional needs that would require early warning/specialized response.



Please explain:.

- Mobility issues
- Disabled
- Pets to care for
- Power for medical devices
- Medications

Q.10: In your opinion, what types of projects do you believe local, county, state or federal government agencies could be doing to reduce the damage and destruction of natural, human-caused, or technological disasters on private and city-owned property? (195 answered)

• Retrofit/Strengthen essential public facilities such as police, fire/emergency, schools	47%
• Retrofit public infrastructure, such as elevating roadways and improving drainage systems	72%
• Work to improve utilities resilience (electric/communications/water/wastewater facilities)	80%
• Install/Improve protective structures (floodwalls)	29%
• Replace inadequate/vulnerable bridges	47%
• Strengthen codes/ordinances to require higher hazard risk management standards and/or provide greater control over development in high hazard areas	39%
• Buy out flood prone properties and maintain as open space	29%
• Inform property owners of ways they can reduce the damage caused by natural events	50%
• Provide better information about hazard risks and high hazard areas	47%
• Assist vulnerable property owners with securing funding to make their properties more resilient	51%
• Other:	8%
○ Resolve impacted wetlands that regularly flood into residential areas	
○ Less dependency on vehicles	

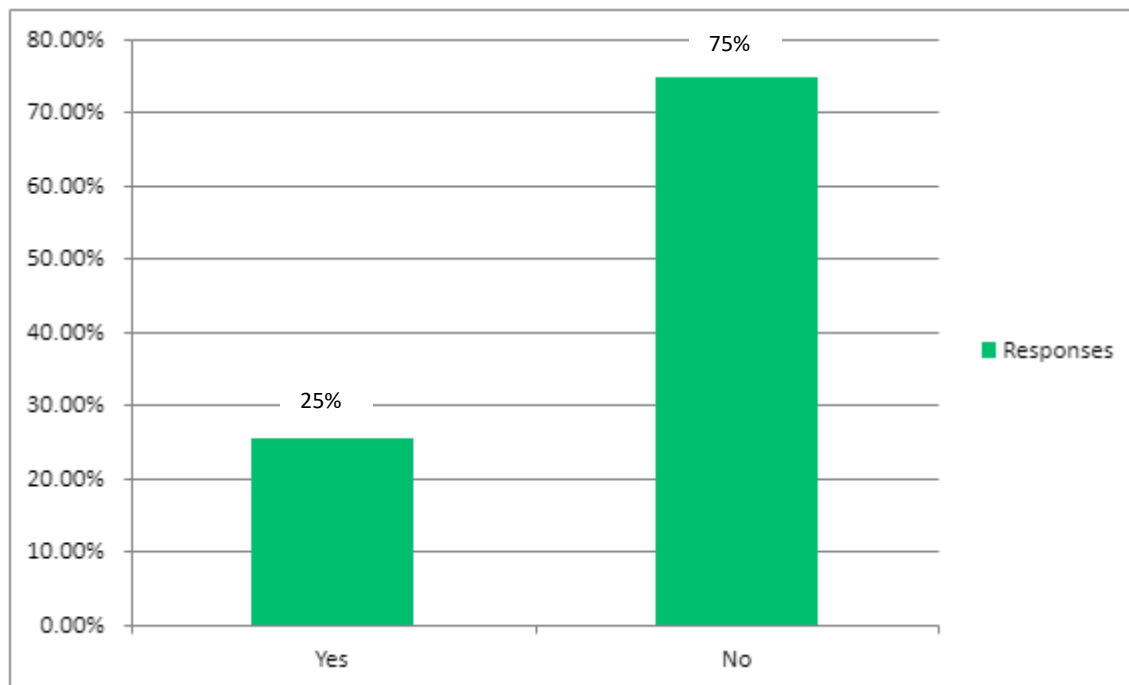
- Redundant clean water treatment
- Reassess what constitutes a flood zone
- Recycle to combat climate change
- Assist residents with cutting dead trees down
- Advocate for nature-based solutions
- Information to homeowners through auto-calls
- Plant/Maintain trees
- Maintain communications towers
- Encourage adoption of two-way home vehicle chargers so EVs can power buildings during power outages

Q 11: Do you know your neighbors well enough to rely on them during an emergency? (198 answered)

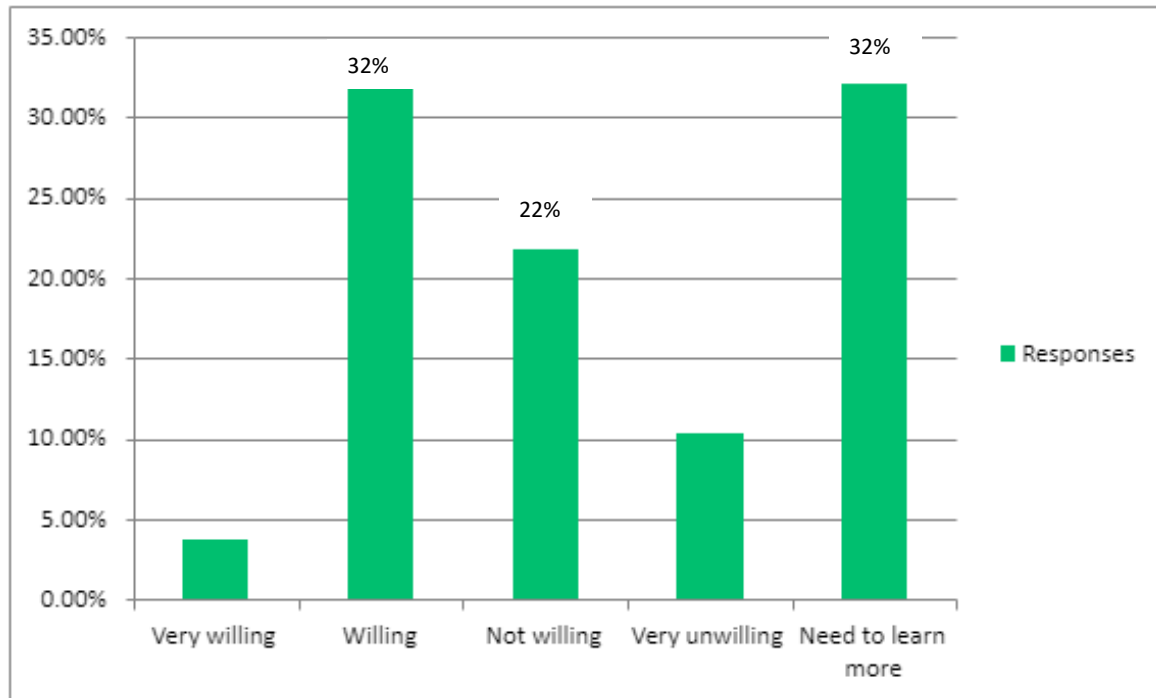
Just over half of respondents (54%) know their neighbors and feel comfortable relying on them for assistance during a hazard event.

• I've never spoken to my neighbors and would not rely on them during an emergency	11%
• I have spoken to my neighbors a few times, but don't know them well enough to go to them in an emergency	33%
• I have spoken to my neighbors a few times and would feel comfortable reaching out to them during an emergency	36%
• I am very close with my neighbors and have relied on them during past emergencies	18%
• Other	2%

Q 12: Do you know where your nearest emergency shelter is located? (197 answered)

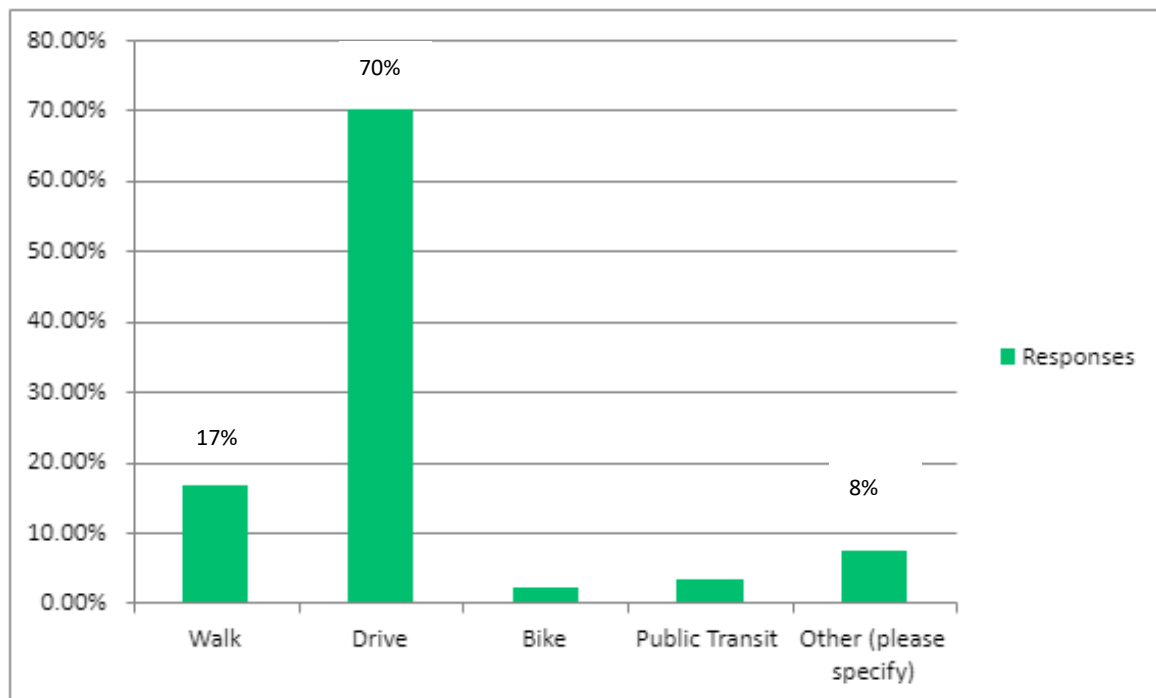


Q 13: If so, how willing would you be to go there during an emergency? (184 answered)



Q 14: If you are willing to go to an emergency shelter, how would you plan to get there? (173 answered)

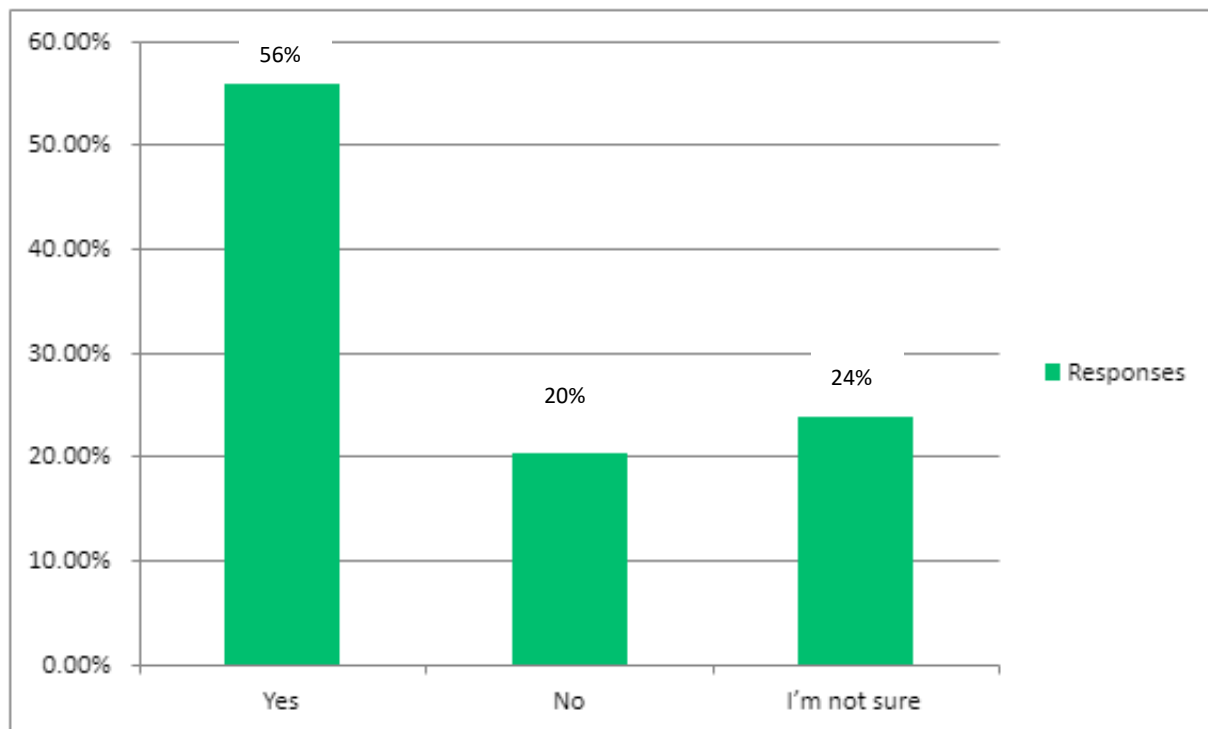
Most respondents indicated they would drive to get to an emergency shelter.



Q 15: If you are not willing to go to an emergency shelter, what are your reasons? (150 answered)

- | | |
|--|-----|
| • My household has other options for relocation | 33% |
| • I would not want to leave my pets | 57% |
| • I would rather stay home and deal with the emergency here | 53% |
| • I am undocumented and therefor, would not want to go | 1% |
| • I don't have an accessible method of getting there | 5% |
| • I was unaware there was an emergency shelter near me | 33% |
| • Other | 7% |
| ○ I need help with mobility | |
| ○ What would a shelter be able to do for me in an emergency? | |
| ○ Won't leave pets | |
| ○ I'm immunocompromised | |
| ○ More people = more danger | |
| ○ COVID | |

Q 16: FEMA recommends being prepared to survive 72 hours in your home without power in the case of an emergency. Do you feel prepared to go 72 hours without power in your home? (197 answered)
Over half (56%) of respondents feel they are prepared to go 72 hours without power in their home.

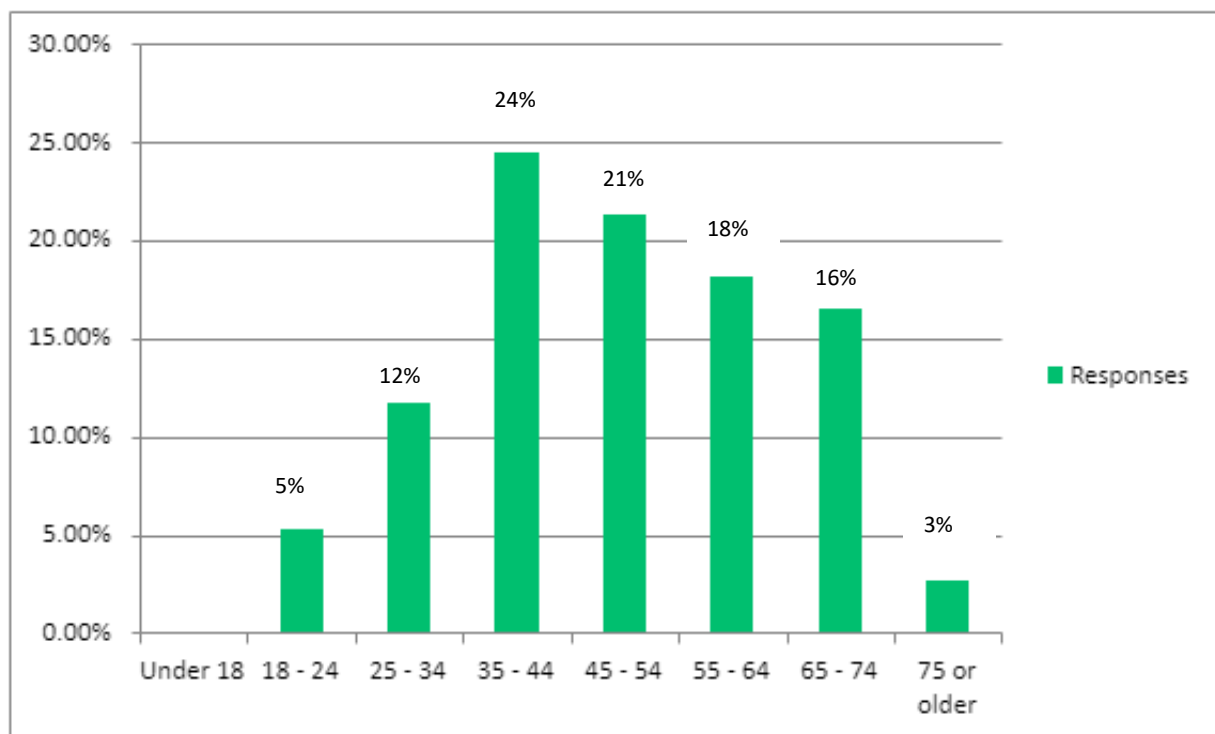


Q 17: If not, what resources would you need to feel prepared? (48 answered)

- Refrigeration for medication
- First aid kit
- Batteries
- Flashlights
- Heat and food
- Small generator
- City should practice more emergency responses
- Check off list of needed materials
- Solar power
- Portable charging ports
- Non-perishable food
- Financial resources
- Chocolate (more)
- Water

Q 18: What is your age? (188 answered)

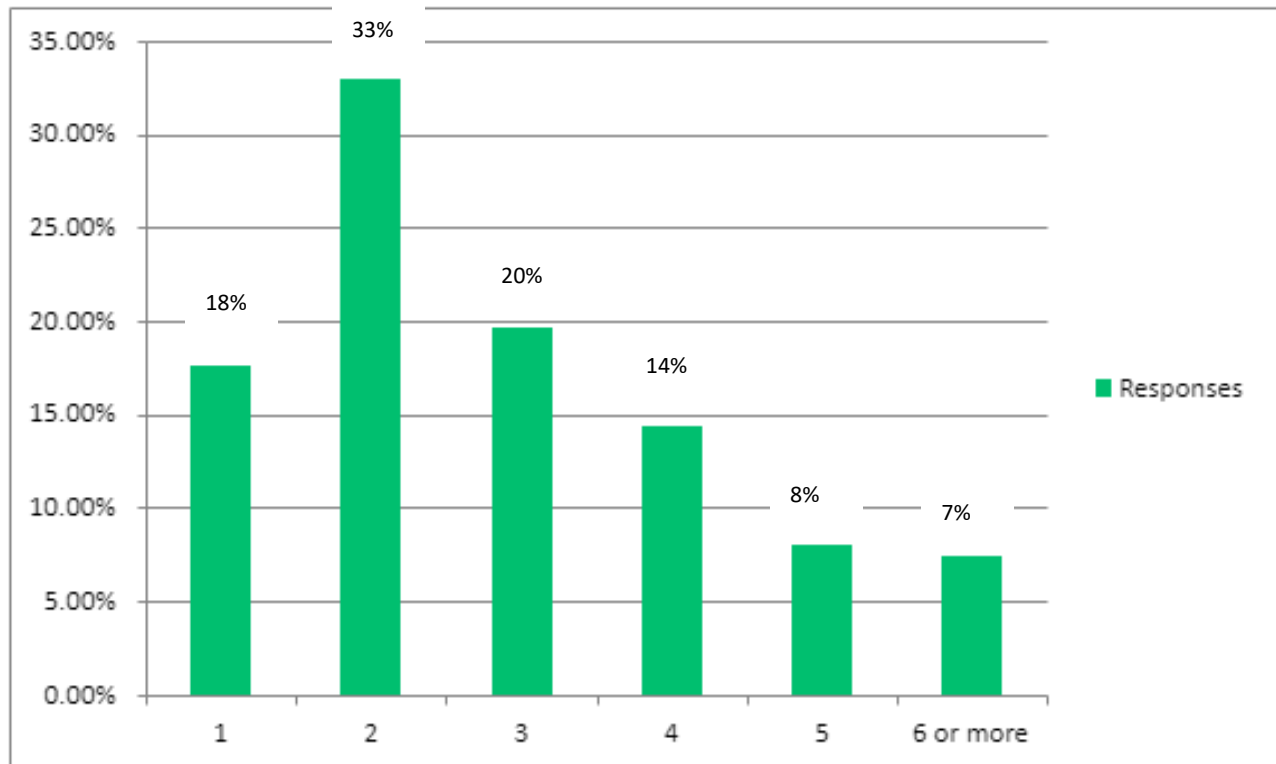
The majority of respondents are over the age of 35 (82%).



Q 19: Are you filling out this survey in a personal/household or business capacity? (188 answered)

- Personal/Household 98%
- Business 2%

Q 20: How many people are in your household or business? (188 answered)



Q 21: Which race/ethnicity do you most identify with? (188 answered)

The majority of respondents (81%) identify as White/Caucasian.

- American Indian 1%
- Cape Verdean 4%
- Asian/Pacific Islander 0%
- Black/African American 1%
- Hispanic/Latino/a 7%
- White/Caucasian 81%
- Other/Multiple Ethnicities 6%

Q 22: Is English the primary language spoken in your household/business? (188 answered)

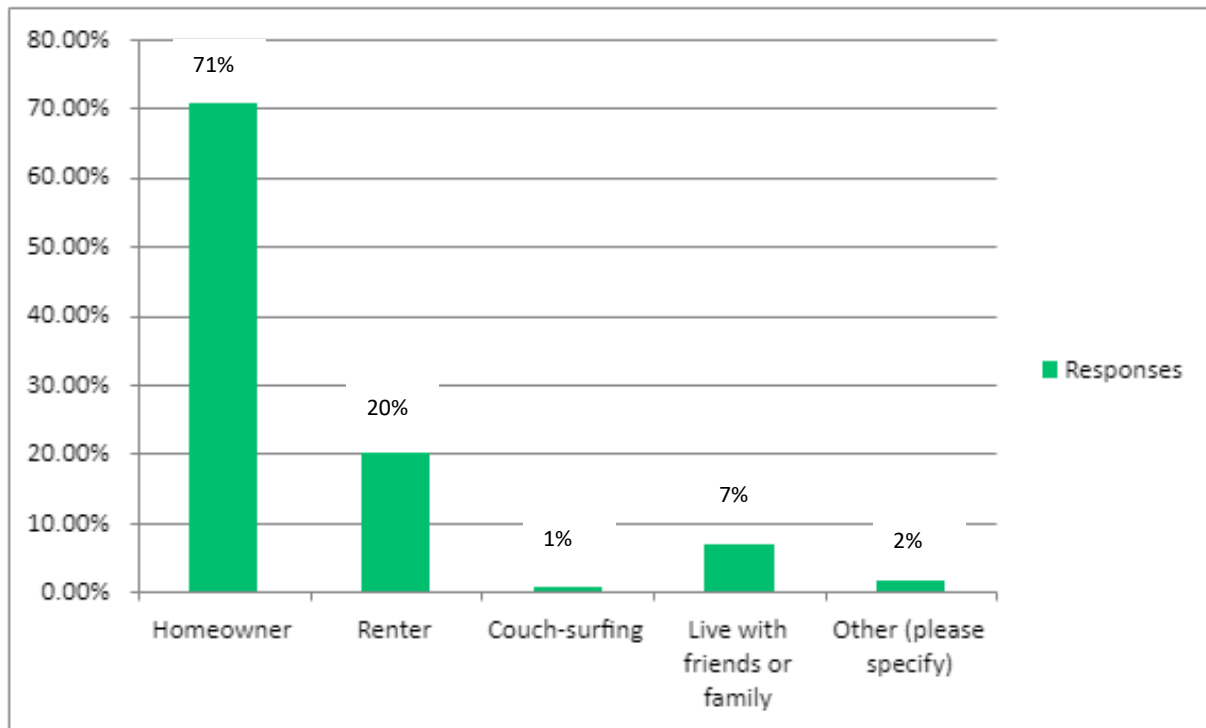
- Yes 98%
- No 2%

Q 23: If not, what language is primarily spoken in your household? (5 answered)

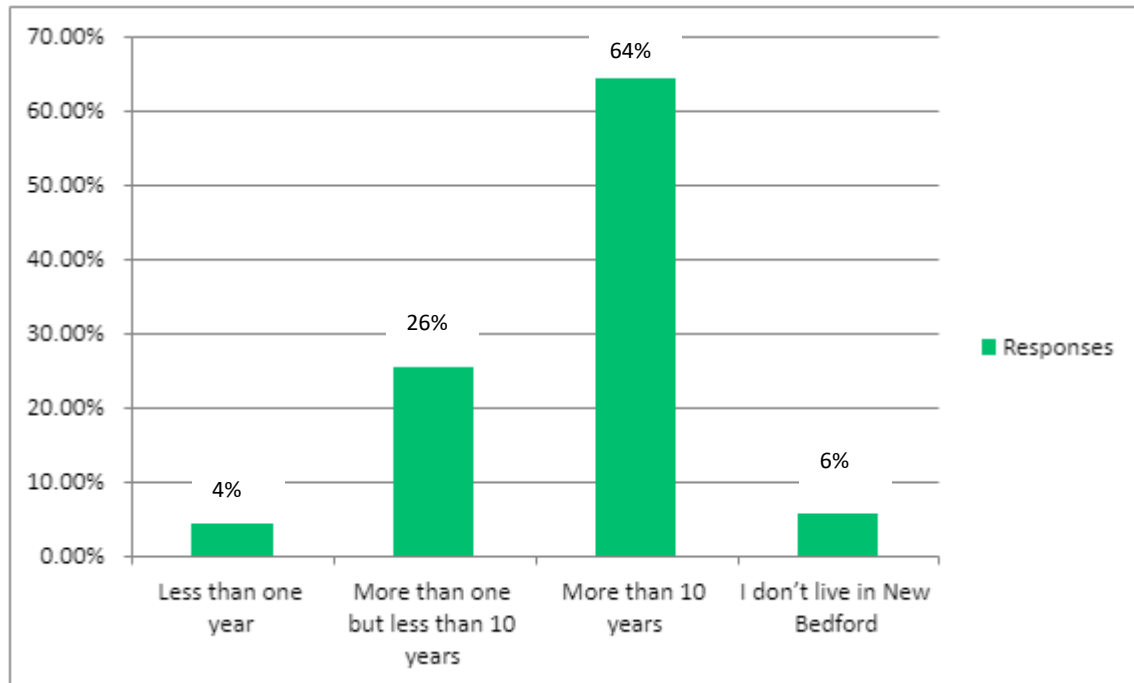
- Portuguese
- Cape Verdean Creole

Q 24: What is your housing status? (188 answered)

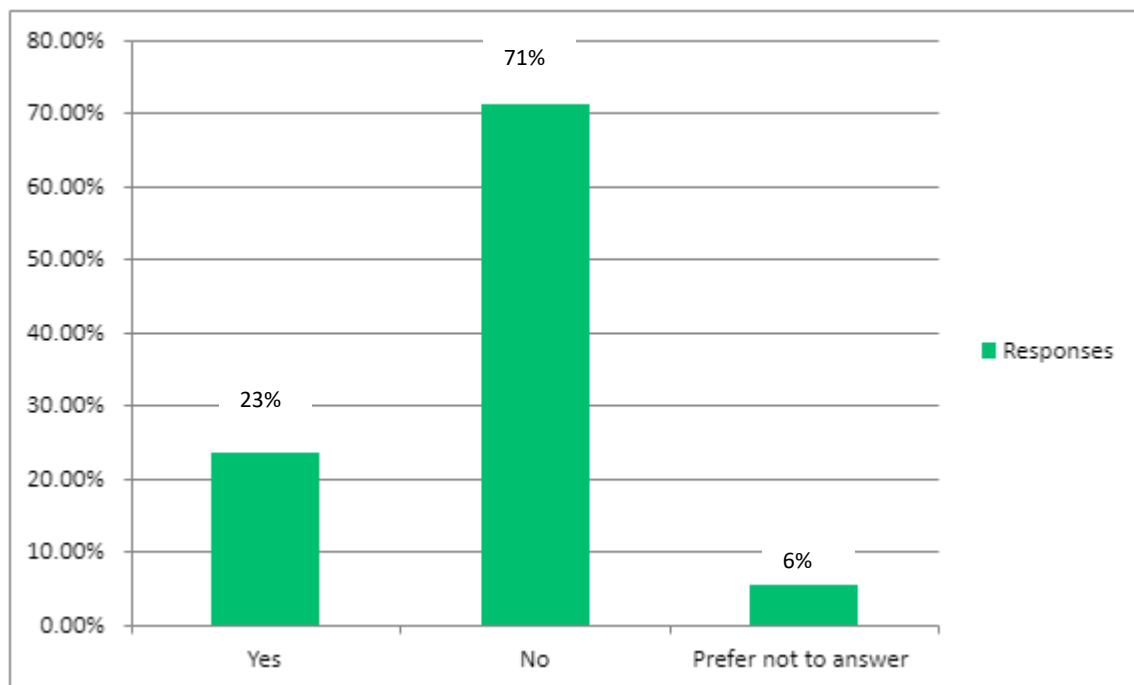
The majority of respondents (71%) own their own home, followed by renters (20%), while some (7%) live with family.



Q 25: What is your housing status? (188 answered)



Q 26: Do you identify as a person with a disability or other chronic illness? (188 answered)



Q 27: Which ward in new Bedford do you live in or have your place of business? (188 answered)

Ward 1 (26)	Ward 1A (1)	Ward 1B (3)	Ward 1C (3)
Ward 1D (6)	Ward 1E (2)	Ward 1F (1)	Ward 2 (8)
Ward 2C (4)	Ward 2D (3)	Ward 2E (1)	Ward 2F (3)
Ward 3 (13)	Ward 3A (1)	Ward 3B (1)	Ward 3C (1)
Ward 3E (1)	Ward 3F (1)	Ward 4 (15)	Ward 4A (2)
Ward 4B (1)	Ward 4C (2)	Ward 4D (2)	Ward 4F (2)
Ward 5 (34)	Ward 5A (2)	Ward 5B (3)	Ward 5C (2)
Ward 5D (3)	Ward 5E (5)	Ward 5F (2)	Ward 6 (8)
Ward 6A (4)	Ward 6B (1)	Ward 6E (3)	Ward 6F (2)
Unsure (14)			

New Bedford Hazard Mitigation Plan Update – Interviews Summary

As part of the City's Hazard Mitigation Plan Update, a number of interviews were conducted with community stakeholders. The following is a summary of the discussions.

Greater New Bedford Regional Refuse Management District

- Anthony Novelli: Executive Director
- March 8, 2024
- Craig Pereira

Summary of findings:

- Anthony indicated the **need for a comprehensive Debris Management Plan:**
 - o A public entity created by NB/Dartmouth
 - o Estimated to save NB approx.. \$3 million/yr in waste disposal fees
 - o Estimated 5 years capacity in current, built land fill cells (one disaster alone could consume up to one year of capacity)
 - o **Need to establish staging locations and a plan for separating materials and disposal locations.**
 - Brush/organic debris should be separated from construction/demolition debris, and from recyclables
 - If not properly separated, brush and recyclables get contaminated and must be treated as waste
 - Should be regionalized
- Existing HMP includes mitigation action (to be carried forward into 2024 update): Section 5.3.1.6 to develop Debris Management Plan/Monitoring Plan

NB Council of Aging

- Pamela Amaral-Lema: Director
- June 26, 2024
- Gabriella Spitzer

Summary of Findings:

- Pamela indicated the COA is responsible for:
 - o Buttonwood Senior Center
 - o Adult Social Day Care Program
 - o Hillman St. Senior Support Center
- The COA utilizes the following to communicate with constituents:
 - o 'My Senior Center' system
 - o Talk radio
 - o Television/Print ads
- **City is working on database of residents (to go live fall 2024)**
- **City should continue trainings on cognitive impairments for all City staff, especially first responders**

NB Community Services Department

- Cynthia Wallquist: Director
- June 6, 2024

- Gabriella Spitzer

Summary of findings:

- Cynthia indicated they are currently working with Fire Dept. to revamp/update special needs registry (medical and disability needs)
- AC not working well...utilize libraries as cooling centers now
- Prioritize needs of people with disabilities, seniors, people with physical/mental health challenges...need to create a culture of respect
 - o Working on a training with first responders on how to respond to hoarding situations.

Greater NB Community Health Center/Southcoast Health Hospital Network

- Cheryl Bartlett, CEO of New Bedford Community Health
- Christopher Leblanc, Director of Facilities and Engineering at Southcoast Health
- Craig Forcina, Director of Safety, Security, and Emergency Management at Southcoast Health
- Dennis Swift, Associate Safety and Emergency Management Officer at Southcoast Health
- Emily Quinn, Government Liaison at Southcoast Health
- July 17, 2024
- Gabriella Spitzer

Summary of findings:

- Concerns:
 - o Power loss = limited access to patient records, impacts services
 - o Mental health impacts (active suicidality during extreme heat events)
 - o Pandemic: Enforcement on appropriate PPE provided to essential workers by employers (Mayor's Executive Order)
 - Communication/Information a challenge (need for translation services)
 - Partner early with religious/faith-based orgs. Due to their reach
- Needs
 - o City-wide health meetings have not continued
 - o Grants are needed to replenish supplies/support ongoing emergency management
 - o Local public health system needs support (goes beyond NB, a stalled bill that would address these issues statewide)
 - o Stronger English immersion and resources for adult ESL learners are needed.

NB Housing Authority

- Cynthia Spence, Director
- June 10, 2024
- Gabriella Spitzer

Summary of findings:

- Funding for now-required high-impact windows and rain gardens for properties close to the coast is limited and impacts overall budgets.
- Costs of increasing electricity rates
- Consider Envision Resilience competition (college student-led improvements)

Greater NB Vocational Technical High School

- Zeb Arruda, Facilities Director

- June 27, 2024
- Gabriella Spitzer

Summary of Findings:

- 2,200 students (NB/Fairhaven/Dartmouth), 300 personnel, typically 2,500 people in the building at a time
- **Power Loss:**
 - o 6-8 times each year incidents, although brief, impacts electrical systems, including electric doors for accessibility.
- **Flooding/Drainage:**
 - o School located in a low spot with a lot of runoff draining to the west of the school.
 - o Drainage pipe (Church St. to Acushnet River) runs under football field/school...older infrastructure in need of cleaning/maintenance
 - o Drainage pipe (Chaffee St. to wooded area behind Glassman Automotive) that discharges there...standing water/wetlands now
- **Transportation/Access:**
 - o Severe weather events and balancing needs of students
 - Weather is different from one part of region to others
 - Communities don't have same level of snow removal/flood mitigation capacity
 - Transportation services impacts vary significantly
 - o Safe Streets/Pickup and dropoff
 - Inconsistent sidewalks/unsafe pedestrian environment
 - Pickup/dropoff times cause major congestion

One SouthCoast (Chamber)

- Mike O'Sullivan, CEO One SouthCoast
- Ian Trombley, VP of Public Policy
- July 2, 2024
- Gabriella Spitzer

Summary of findings:

- Serves NB/Fall River/Dartmouth/other surrounding towns
- Transportation infrastructure (heavily impacts business community)
 - o Washington Bridge (Providence)
 - o I-195/Route 28 overpass/Fairhaven Bridge
 - o Cape Cod tourists
- Water Quality/Wastewater Management
 - o Buzzards Bay Coalition...canceled annual swim due to risk of overflow event (also impacts NB's reputation overall)
- **Regionalized planning efforts are needed for hazards/economic threats**
 - o **Flood resilience/Hurricane barrier: at locations outside of the barrier**
 - o Public safety/crime a concern

Southeastern Regional Transit Authority (SRTA)

- Shayne Trimbelle, Director of Transit Planning
- June 11, 2024
- Gabriella Spitzer

Summary of findings:

- Network that serves NB, Fall River, and surrounding suburbs
- 2.5 million trips per year/100 vehicles
- Serves significant socially-vulnerable populations (equity)
- **Winter storms:**
 - o Streets get too narrow and are too steep to traverse
 - o Sidewalk clearing/cleaning
 - o Bus stop clearing (SRTA has 1,100 stops and can't always get to all)
- **Localized Flooding:**
 - o Less of a cultural expectation that flooding also causes impacts to quality of service
 - o Downed trees/other obstacles
 - o As electrification continues...impacts to bus batteries due to flooding
- **Bus Fleet could serve a role in evacuation planning/emergency preparedness**

NB Tourism/Marketing/Zoo

- Ashley Payne, Director of Tourism and Marketing
- Amy Desrosiers, Marketing Manager
- Gary Lunsford, Director of New Bedford Zoo
- Michele Paul, Director of Resilience and Environmental Stewardship
- June 7, 2024
- Gabriella Spitzer

Summary of findings:

- Resilience/Tourism need to consider equity/equitable impacts
- Zoo: zoonotic diseases a concern (bird flu), in addition to power outages
- Emergency management/response impacts 'optics/reputation' of tourist and the City. Improved information about what to expect from climate change could inform marketing efforts
- Lodging accommodations are limited...would become problematic if the City had to house large numbers of people
- Interested in continuing to be included in these discussions

New Bedford Hazard Mitigation Plan Update – Vulnerability Analyses Summary

As part of the City’s Hazard Mitigation Plan Update, a number of vulnerability/overlay analyses were conducted with various hazard scenario overlays/data sets. The following is a summary of those analyses.

FEMA Flood Zones

Description/Definition

- A/AE Flood Zone
 - o 100 yr flood zone...1% chance of occurring in any given year
- VE Flood Zone
 - o Velocity zone subject to breaking wave action where waves are > 2.9 feet
- X Flood Zone
 - o 500 yr flood zone...0.2% chance of occurring in any given year
- D Flood Zone
 - o Areas landward of levee systems
 - o Flood risk remains, probability not quantified (risk of flooding, risk is unknown)

FEMA A/AE 100-Year Flood Zone.....

Intersections

Parcels Impacted: 1,264

Critical facilities affected:

- Waterfront Cold Storage (Fish Island)
- Brittany Global Technologies Corp./ATI Allegheny Ludlum, Inc. (E. Rodney French Boulevard)
- Crystal Ice Company, Inc. (Front Street)
- Rite Aid Pharmacy (Cove Road)
- U.S. Army Corp of Engineers Hurricane Barrier System Harbor Segment (Harbor Side) (Gifford Street)
- Popes Island Wastewater Pump Station (Popes Island)
- Wamsutta Street Wastewater Pump Station
- Cove Road Wastewater Pump Station
- State Pier
- New Bedford-Fairhaven Bridge
- Wood Street Bridge
- Main Street Bridge
- Coggeshall Street Bridge
- Taber Park Pier
- Irish Monument Sea Wall (E. Rodney French Boulevard)
- Port Authority Facilities – Piers and Bulkheads (Pier)
- Port Authority Facilities – Piers and Bulkheads (Macarthur Drive)
- Port Authority Facilities – Piers and Bulkheads (Leonard’s Wharf)

- Port Authority Facilities – Piers and Bulkheads (Homer’s Wharf)
- North Terminal Pier Facilities
- South Terminal Pier Facilities
- Sea Fuels Marine Services, Inc. (Co-op Wharf)
- Northern Pelagic Group LLC (Fish Island)
- Colonial Air Inc. (Shawmut Avenue)
- NB Yard (Welby Road)
- North Coast Seafoods (Blackmer Street)
- Sea Watch International – NB Plant (Antonio Costa Boulevard)
- Ice Cube Maritime (Macarthur Drive)
- Eversource Station 607/611 (Pine Street)
- Brodeur Machine Co., Inc. (Wood Street)
- Northern Wind LLC (Macarthur Drive)
- Pier Fish Company Inc. (Conway Street)
- Eversource Station 681 (Bolton Street)
- Offshore Substation (Wright Street)

Vulnerable Populations/Environmental justice areas affected:

- UMASS Dartmouth School for Marine Science & Technology (S. Rodney French Boulevard)
- DeValles Daycare Program (Crapo Street)
- Lara-Bianco In-home Daycare (Cove Road)
- Blessed Angels Academy (Cove Road)
- Census Tract 6503/Block Group 2/EJ Criteria: Minority
- Census Tract 6518/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6518/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6519/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6504/Block Group 1/EJ Criteria: Minority
- Census Tract 6506/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6510.01/Block Group 1/EJ Criteria: Minority
- Census Tract 6501.02/Block Group 3/EJ Criteria: Minority
- Census Tract 6502.01/Block Group 2/EJ Criteria: Minority
- Census Tract 6502.01/Block Group 3/EJ Criteria: Minority
- Census Tract 6503/Block Group 3/EJ Criteria: Minority
- Census Tract 6507/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6524/Block Group 2/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6525/Block Group 1/EJ Criteria: Minority
- Census Tract 6512/Block Group 1/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6512/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6513/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6525/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6526/Block Group 1/EJ Criteria: Minority, Income

- Census Tract 6527/Block Group 3/EJ Criteria: Minority, Income
- Census Tract 6524/Block Group 1/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6526/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6527/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6527/Block Group 2/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6527/Block Group 4/EJ Criteria: Minority, Income

Economic Impacts

Total Vulnerability FEMA 100-Year Flood Zone Summary		
Land Use (Simplified)	No. of Parcels	Total Assessed Value
Chapter 61	2	\$343,800
Charitable	10	\$1,503,200
Commercial	46	\$41,821,000
Commercial - Office Building	5	\$3,949,300
Commercial - Recreation	1	\$531,700
Commercial - Retail Trade	37	\$11,202,400
Commercial - Storage/Warehouses/Distribution Facilities	11	\$8,831,400
Federal	2	\$3,255,200
Housing Authority	2	\$9,878,300
Improved - Municipal	18	\$182,573,892
Improved - Public Safety	1	\$437,100
Improved - Tax Title	2	\$1,112,700
Industrial	81	\$139,715,800
Multiple Use	2	\$822,400
Other	1	\$253,400
Religious	7	\$14,806,200
Residential	781	\$207,073,800
State	15	\$32,806,100
Utility	3	\$3,784,300
Vacant - Conservation	18	\$955,100
Vacant - Developable	44	\$10,190,500
Vacant - Housing Authority	1	\$1,440,600
Vacant - Municipal	104	\$53,067,100
Vacant - Potentially Developable	21	\$1,724,000
Vacant - Tax Title	17	\$1,694,300
Vacant - Undevelopable	31	\$515,000
Unknown	1	\$361,700
Total	1,264	\$734,650,292

FEMA X/500-Year Flood Zone.....

Intersections

Parcels Impacted: 69

Critical facilities affected:

- NB Marine Commerce Terminal (Wright Street)
- Eversource Station 682 (Bonney Street)
- T-Mobile NEH0011A DAS (Bonney Street)

- Finicky Pet Food Inc. (Blackmer Street)
- Eversource Station 694 (S. Second Street)
- Ice Cube Cold Storage State Pier
- Eastern Fisheries (Hervey Tichon Avenue)
- Eversource Station 685 Depot (Pearl Street)
- Ryder Transportation Services #1122A (Acushnet Avenue)
- Eversource Station 695 (River Road)

Economic Impacts

Total Vulnerability FEMA 500-Year Flood Zone Summary		
Land Use (Simplified)	No. of Parcels	Total Assessed Value
Charitable	1	\$217,800
Commercial	1	\$221,700
Commercial - Retail Trade	3	\$565,000
Residential	60	\$12,514,300
Vacant - Developable	4	\$372,000
Total	69	\$13,890,800

FEMA D/Area with Reduced Risk Due to Levee.....

Intersections

Critical facilities affected:

- Police Station 2 (Cove Street)
- MA Environmental Police/Seastreak Ferry Terminal (State Pier)
- U.S. Post Office South (Orchard Street)
- Environmental Protection Agency/U.S. Army Corp of Engineers Dewatering Facility (Sawyer Street)
- U.S. Army Corps of Engineers Hurricane Barrier System Harbor Segment (Clarks Cove)
- Acushnet Company – Ball Plant C (Belleville Avenue)
- Acushnet Rubber Company – Building B (Belleville Avenue)
- Store Capital (Herman Melville Boulevard)
- Coyne Textile Services (Howard Avenue)
- Foley Fish/M.F. Foley, Inc. (Wright Street)
- Maritime Terminal Inc. (Macarthur Drive)
- North East Silicon Technologies, Inc. (David Street)
- Northern Wind Inc. (Hassey Street)
- NSTAR New Bedford Service Center (Macarthur Drive)
- Sprague New Bedford Terminal (Pine Street)
- Southcoast Plating Inc. (Coffin Avenue)
- Maritime West (Macarthur Drive)
- Sprague Energy (Pine Street)
- PriceRite (South Street)
- Market Basket (Sawyer Street)

- Save-A-Lot Food Stores (Cove Road)
- East Rodney French Boulevard Wastewater Pump Station
- Front Street Wastewater Pump Station
- Coggeshall Street Wastewater Pump Station
- Bellville Avenue Wastewater Pump Station
- Howard Avenue Wastewater Pump Station
- Elm Street Bridge
- Howland Street Wastewater Pump Station
- MassCEC Pier Facility (Wright Street)
- North Terminal Pier Facilities (Hervey Tichon Avenue)
- SCR/MBTA Track Facilities and Stations (Whales Tooth)
- SCR/MBTA Layover Facility (Wamsutta Avenue)
- Eliot – New Bedford Emergency Residence (Acushnet Avenue)
- New Life Food Pantry (Cove Road)

Vulnerable Populations/Environmental justice areas affected:

- DeValles School (Katherine Street)
- Gomes School (S. Second Street)
- Tripp Towers Apartments (Ruth Street)
- Whaler's Cove Assisted Living Facility (Riverside Avenue)
- There is a Solution, Inc. – Tyler's Home (Jouvette Street)
- Fairfield Inn & Suites (Macarthur Drive)
- 162 Sawyer Street Lodging (Sawyer Street)
- There is a Solution, Inc. – Ashley's Home (Rivet Street)
- Crayon Campus - Howland (Orchard Street)
- Census Tract 6511/Block Group 1/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6519/Block Group 2/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6504/Block Group 3/EJ Criteria: Minority, Income
- Census Tract 6506/Block Group 3/EJ Criteria: Minority, Income

MA Coast Flood Risk Model (MC FRM)

Description/Definition

Dynamic model that includes winds/waves/wave-setup/storm surge/wave-runup/overtopping (water thrown over coastal structure during storms)

- Considers historical storm events impacted MA with observed high water data
- Projections of the probability and depth of flooding for future scenarios:
 - o (South – Relative Mean Sea Level/High scenario):
 - 2030: 1.2'
 - 2050: 2.5'
 - 2070: 4.3'
- Hurricane Barrier
 - o Max. elevation of 20'

- Extension Dike: max. el. 22'
- Clark's Cove Dike
 - North: max. el. 22'
 - East: max. el. 23'

MC-FRM 1% Annual Exceedance Probability 2030

Intersections

Parcels Impacted: 437

Critical facilities affected:

- U.S. Army Corps of Engineers Hurricane Barrier System Harbor Segment (Clarks Cove)
- Brittany Global Technologies Corp/ATI Allegheny Ludlum, Inc. (E. Rodney French Boulevard)
- Crystal Ice Co., Inc. (Front Street)
- Maritime Terminal Inc. (Macarthur Drive)
- Northern Wind Inc. (Hassey Street)
- U.S. Army Corp of Engineers Hurricane Barrier System Harbor Segment (Harbor Side)
- Popes Island Wastewater Pump Station (Popes Island)
- New Bedford – Fairhaven Bridge
- Wood Street Bridge
- Coggeshall Street Bridge
- Brooklawn Parking Garage
- Irish Monument Sea Wall (E. Rodney French Boulevard)
- Port Authority Facilities Pier and Bulkheads (Leonard's Wharf)
- Port Authority Facilities Pier and Bulkheads (Homer's Wharf)
- South Terminal Pier Facilities
- Eversource Station 695 (River Road)
- Ice Cube Maritime (Macarthur Drive)

Vulnerable Populations/Environmental justice areas affected:

- Census Tract 6503/Block Group 2/EJ Criteria: Minority
- Census Tract 6518/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6518/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6519/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6518/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6518/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6504/Block Group 1/EJ Criteria: Minority
- Census Tract 6518/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6518/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6506/Block Group 1/EJ Criteria: Minority, Income

- Census Tract 6518/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6518/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6503/Block Group 3/EJ Criteria: Minority, Income
- Census Tract 6507/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6524/Block Group 2/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6512/Block Group 1/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6512/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6513/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6525/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6526/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6527/Block Group 3/EJ Criteria: Minority, Income
- Census Tract 6526/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6527/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6527/Block Group 2/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6527/Block Group 4/EJ Criteria: Minority, Income

Economic Impacts

Total Vulnerability MC-FRM 2030 Summary		
Land Use (Simplified)	No. of Parcels	Total Assessed Value
Charitable	4	\$920,500
Commercial	16	\$16,178,000
Commercial - Office Building	2	\$2,326,400
Commercial - Recreation	1	\$531,700
Commercial - Retail Trade	15	\$3,701,300
Commercial - Storage/Warehouses/Distribution Facilities	2	\$6,195,500
Federal	2	\$3,255,200
Improved - Municipal	10	\$166,076,292
Improved - Tax Title	1	\$667,100
Industrial	55	\$86,634,800
Multiple Use	1	\$682,300
Residential	225	\$83,921,700
State	5	\$26,691,700
Utility	2	\$3,431,600
Vacant - Developable	18	\$2,724,700
Vacant - Municipal	62	\$23,873,700
Vacant - Potentially Developable	3	\$153,400
Vacant - Tax Title	4	\$1,311,000
Vacant - Undevelopable	9	\$145,700
Total	437	\$429,422,592

MC-FRM 1% Annual Exceedance Probability 2050.....

Intersections

Parcels Impacted: 77

Critical facilities affected:

- Waterfront Cold Storage (Fish Island)
- Port Authority Facilities Pier and Bulkheads (Pier)
- Port Authority Facilities Pier and Bulkheads (Macarthur Wharf)
- North Terminal Pier Facilities

Economic Impacts

Total Vulnerability MC-FRM 2050 Summary		
Land Use (Simplified)	No. of Parcels	Total Assessed Value
Commercial	2	\$403,000
Commercial - Office Building	1	\$528,700
Commercial - Retail Trade	1	\$543,000
Improved - Municipal	1	\$180,600
Improved - Tax Title	1	\$445,600
Industrial	10	\$15,486,400
Other	1	\$253,400
Residential	43	\$11,030,700
State	3	\$4,238,400
Utility	1	\$1,235,500
Vacant - Developable	4	\$613,700
Vacant - Housing Authority	1	\$1,440,600
Vacant - Municipal	6	\$929,500
Vacant - Tax Title	1	\$70,600
Vacant - Undevelopable	1	\$4,500
Total	77	\$37,404,200

MC-FRM 1% Annual Exceedance Probability 2070.....

Intersections

Parcels Impacted: 252

Critical facilities affected:

- Acushnet Rubber Co. – Building B (Belleville Avenue)
- NSTAR – New Bedford Service Center (Macarthur Drive)
- Sprague New Bedford Terminal (Pine Street)
- Sprague Energy (Pine Street)
- Wamsutta Street Wastewater Pump Station
- East Rodney French Boulevard Wastewater Pump Station
- Howard Avenue Wastewater Pump Station
- State Pier
- MassCEC Pier Facility (Wright Street)
- Sea Fuels Marine Services Inc. (Co-op Wharf)
- Northern Palegic Group LLC (Fish Island)
- Eversource Station 607/611 (Pine Street)

Vulnerable Populations/Environmental justice areas affected:

- Whaler's Cove Assisted Living Facility (Riverside Avenue)

- Census Tract 6504/Block Group 3/EJ Criteria: Minority, Income

Economic Impacts

Total Vulnerability MC-FRM 2070 Summary		
Land Use (Simplified)	No. of Parcels	Total Assessed Value
Commercial	8	\$5,188,900
Commercial - Office Building	3	\$2,508,000
Commercial - Retail Trade	24	\$7,216,100
Commercial - Storage/Warehouses/Distribution Facilities	5	\$1,663,600
Housing Authority	3	\$10,210,500
Improved - Municipal	2	\$469,300
Industrial	32	\$24,455,900
Residential	138	\$62,273,600
Utility	3	\$398,200
Vacant - Developable	9	\$963,100
Vacant - Municipal	21	\$2,152,500
Vacant - Potentially Developable	2	\$267,900
Vacant - Undevelopable	2	\$16,500
Total	252	\$117,784,100

Sea, Lake, and Overland Surge from Hurricanes (SLOSH) Zones

Description/Definition

- Used to estimate storm surge heights

Scale No. (Category)	Wind (mph)	Potential Damage
1	74 - 95	Minimal: Damage is primarily to shrubbery and trees, mobile homes, and some signs. No real damage is done to structures.
2	96 – 110	Moderate: Some trees topple, some roof coverings are damaged, and major damage is done to mobile homes.
3	111 – 130	Extensive: large trees topple, some structural damage is done to roofs, mobile homes are destroyed, and structural damage is done to small homes and utility buildings.
4	131 – 155	Extreme: Extensive damage is done to roofs, windows and doors; roof systems on small buildings completely fail; and some curtain walls fail.
5	> 155	Catastrophic: Roof damage is considerable and widespread, window and door damage are severe, there are extensive glass failures, and entire buildings could fail.
Additional Classifications: Tropical Storm 39 – 73, Tropical Depression < 38		

Category 1 Hurricanes.....

Intersections

Parcels Impacted: 118

Critical facilities affected:

- Irish Monument Sea Wall (E. Rodney French Boulevard)

Vulnerable Populations/Environmental justice areas affected:

- Census Tract 6525/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6526/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6527/Block Group 3/EJ Criteria: Minority, Income
- Census Tract 6526/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6527/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6527/Block Group 2/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6527/Block Group 4/EJ Criteria: Minority, Income

Economic Impacts

Total Vulnerability SLOSH Category 1 Summary		
Land Use (Simplified)	No. of Parcels	Total Assessed Value
Charitable	4	\$920,500
Commercial	5	\$1,617,200
Commercial - Retail Trade	4	\$736,300
Improved - Municipal	5	\$156,507,692
Residential	68	\$17,959,000
Vacant - Developable	3	\$312,100
Vacant - Municipal	21	\$11,708,300
Vacant - Potentially Developable	1	\$50,000
Vacant - Undevelopable	7	\$140,800
Total	118	\$189,951,892

Category 2 Hurricanes.....

Intersections

Parcels Impacted: 186

Critical facilities affected:

- Brittany Global Technologies Corp./ATI Allegheny Ludlum, Inc. (E. Rodney French Boulevard)

Economic Impacts

Total Vulnerability SLOSH Category 2 Summary		
Land Use (Simplified)	No. of Parcels	Total Assessed Value
Commercial	2	\$230,300
Commercial - Retail Trade	7	\$729,600
Improved - Municipal	2	\$3,130,900
Industrial	3	\$6,075,500
Multiple Use	1	\$682,300
Residential	158	\$43,217,000

Vacant - Developable	7	\$693,200
Vacant - Municipal	3	\$927,000
Vacant - Potentially Developable	2	\$103,400
Vacant - Undevelopable	1	\$4,800
Total	186	\$55,794,000

Category 3 Hurricanes.....

Intersections

Parcels Impacted: 164

Critical facilities affected:

- Eversource Station 681 (Bolton Street)

Vulnerable populations/Environmental justice areas affected:

- Census Tract 6519/Block Group 1/EJ Criteria: Minority, Income

Economic Impacts

Total Vulnerability SLOSH Category 3 Summary		
Land Use (Simplified)	No. of Parcels	Total Assessed Value
Charitable	1	\$134,300
Commercial	1	\$221,700
Commercial - Retail Trade	3	\$565,000
Improved - Municipal	1	\$43,387,300
Residential	148	\$35,297,300
State	1	\$3,580,700
Vacant - Developable	7	\$810,100
Vacant - Municipal	1	\$96,100
Vacant - Undevelopable	1	\$4,500
Total	164	\$84,097,000

Category 4 Hurricanes.....

Intersections

Parcels Impacted: 164

Critical facilities affected:

- Police Station No. 2 (Cove Street)
- MA Environmental Police/Seastreak Ferry Terminal (State Pier)
- Fire Station No. 6 (Purchase Street)
- New Bedford Waste Water Treatment Plant (S. Rodney French Boulevard)
- New Bedford Cable Access (S. Rodney French Boulevard)
- U.S. Coast Guard Marine Safety Office (S. Rodney French Boulevard)
- U.S. Post Office South (Orchard Street)
- Environmental Protection Agency/U.S. Army Corp of Engineers Dewatering Facility (Sawyer Street)
- U.S. Army Corp of Engineers Hurricane Barrier System- Harbor Segment (Clarks Cove)
- Acushnet Company – Ball Plant C (Belleville Avenue)
- Acushnet Rubber Company – Building B (Belleville Avenue)

- Store Capitol (Herman Melville Boulevard)
- Waterfront Cold Storage (Fish Island)
- Coyne Textile Services (Howard Avenue)
- Crystal Ice Company, Inc. (Front Street)
- Foley Fish/M. F. Foley, Inc. (Wright Street)
- Maritime Terminal Inc. (Macarthur Drive)
- North East Silicon Technologies, Inc. (David Street)
- Northern Wind, Inc. (Hasset Street)
- NSTAR – New Bedford Service Center (Macarthur Drive)
- Sprague New Bedford Terminal (Pine Street)
- Southcoast Plating Inc. (Coffin Avenue)
- Maritime West (Macarthur Drive)
- Standard Times (Elm Street)
- Sprague Energy (Pine Street)
- Pricerite (Elm Street)
- Market Basket (Sawyer Street)
- Save-A-Lot Food Stores (Cove Road)
- A & J Seabra Supermarket (Rockdale Avenue)
- CVS Pharmacy (Acushnet Avenue)
- PharmaHealth Pharmacy (Acushnet Avenue)
- Rite Aid Pharmacy (Cove Road)
- Rite Aid Pharmacy (Acushnet Avenue)
- U.S. Army Corp of Engineers Hurricane Barrier System Harbor Segment (Harbor Side)
- Popes Island Wastewater Pump Station (Popes Island)
- Wamsutta Street Wastewater Pump Station
- East Rodney French Boulevard Wastewater Pump Station
- Front Street Wastewater Pump Station
- Coggeshall Street Wastewater Pump Station
- Belleville Avenue Wastewater Pump Station
- Howard Avenue Pump Station
- Cove Road Wastewater Pump Station
- State Pier
- Elm Street Bridge (Macarthur Drive)
- Howland Street Wastewater Pump Station
- MassCEC Pier Facility (Wright Street)
- North Terminal Pier Facility (Hervey Tichon Avenue)
- Port Authority Facilities – Piers and Bulkheads (Pier)
- Port Authority Facilities – Piers and Bulkheads (Macarthur Drive)
- Port Authority Facilities – Piers and Bulkheads (Leonard's Wharf)
- Port Authority Facilities – Piers and Bulkheads (Homer's Wharf)
- Route 18 Pedestrian Bridge

- SCR/MBTA Track Facilities and Stations (Whale's Tooth)
- SCR/MBTA Layover Facility (Wamsutta Avenue)
- North Terminal Pier Facilities
- South Terminal Pier Facilities
- Eliot New Bedford Emergency Residence (Acushnet Avenue)
- New Bedford WWTP- Veolia Water NE LLC (S. Rodney French Boulevard)
- Sea Fuels Marine Services, Inc. (Co-op Wharf)
- NB Marine Commerce Terminal (Wright Street)
- Eversource Station 682 (Bonney Street)
- T-Mobile NEH0011A DAS (Bonnet Street)
- Finicky Pet Food, Inc. (Blackmer Street)
- Eversource Station 694 (Second Street)
- Ice Cube Cold Storage State Pier (State Pier)
- Northern Pelagic Group LLC (Fish Island)
- Eastern Fisheries (Hervey Tichon Avenue)
- Eversource Station 685 Depot (Pearl Street)
- Ryder Transportation Services #1122A (Acushnet Avenue)
- Eversource Station 695 (River Road)
- North Coast Seafoods (Blackmer Street)
- Sea Watch International-NB Plant (Antonio Costa Boulevard)
- Ice Cube Maritime (Macarthur Boulevard)
- Eversource Station 607/611 (Pine Street)
- Brodeur Machine Co., Inc. (Wood Street)
- Northern Wind LLC (Macarthur Boulevard)
- Pier Fish Company, Inc. (Conway Street)
- Offshore Substation (Wright Street)

Vulnerable Populations/Environmental justice areas affected:

- Alma del Mar Charter School (Medeira Avenue)
- DeValles School (Katherine Street)
- Gomes School (S. Second Street)
- Roosevelt Middle School (Frederick Street)
- UMASS Dartmouth School for Marine Science and Technology (S. Rodney French Boulevard)
- Boa Vista Towers (S. Second Street)
- Harborview Towers East (S. Second Street)
- Tripp Towers Apartment (Ruth Street)
- Whaler's Cove Assisted Living Facility (Riverside Avenue)
- There is a Solution, Inc. – Tyler's Home (Jouvette Street)
- WRAP House (County Street)
- There is a Solution, Inc. – Max & Caleb's Home (Rockland Street)
- Fairfield Inn & Suites (Macarthur Drive)

- 162 Sawyer Street Lodging
- Ellen's House (Belleville Avenue)
- Tarkiln Hill Lodging
- New Life Food Pantry (Cove Road)
- 21 Galleon Avenue (County Street)
- PECUSA Saint Martins Food Pantry (County Street)
- Pentecostal Assembly (Sawyer Street)
- There is a Solution, Inc. – Ashley's Home (Rivet Street)
- Castillo In-home Daycare (Orchard Street)
- DeValles Daycare Program (Crapo Street)
- Lara-Bianco In-home Daycare (Cove Road)
- Blessed Angels Academy (Cove Road)
- Crayon Campus – Howland (Orchard Street)
- North Star LC – Schooner Program (Rockdale Avenue)
- Sunshine's Place, Inc. (Acushnet Avenue)
- New Bedford YMCA Preschool & School Age (Water Street)
- Dennison Memorial School Age Daycare (S. First Street)
- Census Tract 6503/Block Group 2/EJ Criteria: Minority
- Census Tract 6511/Block Group 1/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6518/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6518/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6519/Block Group 2/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6520/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6520/Block Group 3/EJ Criteria: Minority, Income
- Census Tract 6504/Block Group 1/EJ Criteria: Minority
- Census Tract 6506/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6503/Block Group 3/EJ Criteria: Minority, Income
- Census Tract 6504/Block Group 3/EJ Criteria: Minority, Income
- Census Tract 6504/Block Group 4/EJ Criteria: Minority
- Census Tract 6506/Block Group 3/EJ Criteria: Minority, Income
- Census Tract 6507/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6507/Block Group 2/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6521/Block Group 3/EJ Criteria: Minority
- Census Tract 6512/Block Group 1/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6525/Block Group 1/EJ Criteria: Minority
- Census Tract 6512/Block Group 1/EJ Criteria: Minority, Income, English Isolation
- Census Tract 6512/Block Group 2/EJ Criteria: Minority, Income
- Census Tract 6513/Block Group 1/EJ Criteria: Minority, Income
- Census Tract 6524/Block Group 1/EJ Criteria: Minority, Income, English Isolation

Economic Impacts

Total Vulnerability SLOSH Category 4 Summary		
Land Use (Simplified)	No. of Parcels	Total Assessed Value
Commercial	4	\$1,155,500
Commercial - Retail Trade	1	\$424,000
Improved - Tax Title	3	\$198,300
Residential	153	\$37,399,800
State	1	\$1,954,900
Vacant - Municipal	1	\$447,200
Vacant - Undevelopable	1	\$16,400
Total	164	\$41,596,100

New Bedford Hazard Mitigation Plan Update – Mission Statement & Goals

As part of the City's Hazard Mitigation Plan Update, a mission statement was developed and goals from the 2016 Plan were confirmed.

Mission Statement

- 2016 Plan: No mission statement
- What are the outcomes that you want to achieve from the multi-hazard mitigation planning process?
 - o How does hazard mitigation relate to other community plans/goals?
 - o How is the community changing and how does that relate to risks?
 - o When you think about New Bedford into the future, what is most important?
 - o Resilience...
 - o Equity.....
 - o Climate change.....
- NB Resilient Plan:
New Bedford is a thriving, self-sustaining community that is culturally and historically secure and is ready to implement innovative approaches to prepare for tomorrow's possibilities.
- Input?

Goals

- 2016 Plan:
 1. Prevent and reduce the loss of life, property, infrastructure, and cultural resources resulting from natural hazards.
 2. Identify and seek funding mechanisms to address proposed mitigation actions.
 3. Integrate hazard mitigation planning into relevant municipal departments and boards planning efforts.
 4. Collaborate with surrounding communities, state, regional, and federal agencies to ensure cooperation for natural hazards that affect multiple communities.
 5. Ensure that future development is compliant with federal, state, and local regulations in order to reduce the impacts of natural hazards.
- Input?

Memorandum of Meeting

To: Brian Nobrega, Michele Paul, Shawn Syde and New Bedford Local Hazard Mitigation Committee
From: Craig Pereira
Date: September 19, 2024
Re: New Bedford Multi-Hazard Mitigation Plan (MHMP) Update—LHMC Meeting #3

In attendance:

Gordon Carr – Ex. Director New Bedford Port Authority
Jim Costa – Superintendent of Wastewater
Steffany Elmore – NB Emergency Management Agency
Brian Nobrega – Director of Emergency Management
Michele Paul – Director of Resilience and Environmental Stewardship
Chance Perks – Conservation Agent
Danny Romanowicz – Building Commissioner
Stephanie Sloan – Director of Public Health
James Sylvia – Superintendent, Dept. of Facilities & Fleet Management
Jennifer Vieira – Commissioner, Dept. of Facilities and Fleet Management
Corinn Williams – Ex. Director NB Community Economic Development Center

Craig Pereira – Horsley Witten Group (HW), Project Manager

The third New Bedford Local Hazard Mitigation Committee (LHMC) meeting was held on September 17, 2024, at the Fort Taber Community Center to discuss the update of the Multi-Hazard Mitigation Plan (MHMP). The following items were discussed:

1. Summary of Public Workshop #1

Craig Pereira provided a summary of Public Workshop #1 held April 11, 2024.

- Collaborated as part of the City's AHA Celebration (Sustainable SouthCoast).
- Hosted at The Vault before/during/after the parade through the downtown area.
- 12 participants in total...not a great turn-out.
- Ipads were available for participants to complete the online survey.
- Project Team/LHMC members were on hand to speak with participants one-on-one.
- Emergency Management personnel also on hand to meet participants and hand out swag.

2. Online Community Survey

Craig presented a summary of the online community survey (separate attachment). The survey was open/available for approximately 9 months with 213 responses. Craig commented that the summary report will be included into the plan update as an appendix.

All LHMC members to review and reach out to Craig with any questions.

3. Municipal/Stakeholder Interviews

Craig presented a summary of the interviews completed to date. Potential mitigation actions for consideration were highlighted. Several municipal/Stakeholder interviews remain outstanding and will be conducted over the coming weeks.

All LHMC members to review and reach out to Craig with any questions.

4. Draft Map Series

Craig provided an overview of the map series that has been developed (separate attachment). Craig mentioned that for clarity/ease of read purposes and given the new number of critical facilities/vulnerable populations included for this plan update (415 records), several of the hazard scenarios were broken out into quadrants (north/north central/south central/south). In addition, the South Central quadrant mapping includes a blow-up/enlargement of the downtown area due to the density of sites for clarity purposes. Craig also commented that the layout of the map series for this 2024 plan update will not include the numbering/facility name/facility type directly on the maps, there will be separate tables included in the map series appendix that will include this information for reference. Also, there will be specific, sensitive data (communications/water infrastructure) intentionally omitted from any public-facing documents for security purposes.

The updated map series includes the following:

- Environmental Justice Areas...1 Citywide map
- Flood Risks (FEMA Flood Zones)...4 quadrants
- MA Coast Flood Risk Model (MC FRM)...4 quadrants
- Critical Facilities...4 quadrants
- Vulnerable Populations...4 quadrants
- Average Annual Snowfall...1 Citywide map
- Sea, Lake, and Overland Surge from Hurricanes (SOSH)...4 quadrants
- Tornado Incidences...1 Citywide map
- Earthquake Incidences...1 Citywide map
- Wildland Urban Interface...4 quadrants

FEMA Flood Zones

Zone D is referenced/shown on the 2024 plan updated maps (Data reference: July 2023), although not on the 2016 Plan (data reference: July 2014)...Zone D: Area with reduced flood risk due to levee. No parcels impacted/economic vulnerability statistics developed for section below as risk is not quantified.

All LHMC members to review and reach out to Craig with any questions.

5. Vulnerability Assessment/Overlay Analyses

Craig provided an overview regarding the multiple Vulnerability/Overlay Analyses (separate attachment) that were completed. This process involved taking the various GIS data sets (parcels, critical facilities, and vulnerable populations) and overlaying the relevant hazard scenarios to identify the parcels (by land use type), critical facilities, and vulnerable populations that intersect/are impacted by the hazard scenarios. It

also included the development of economic vulnerability statistics from the Assessor's CAMA database based on the overlays. Hazard scenarios included:

- FEMA Flood Zones
- MA Coastal Flood Risk Model (MC FRM)
- Sea, Lake, and Overland Surge from Hurricanes (SLOSH)

All LHMC members to review and reach out to Craig with any questions.

6. Mission Statement

Craig stated that the 2016 Plan does not include a mission statement and generated discussion around the creation of one. Craig offered the following points for consideration:

- What are the outcomes that you want to achieve from the multi-hazard mitigation planning process?
- How does hazard mitigation relate to other community plans/goals?
- How is the community changing and how does that relate to risk?
- When you think about New Bedford into the future, what is most important?

Craig offered the NB Resilient Plan mission statement as an example:

"New Bedford is a thriving, self-sustaining community that is culturally and historically secure and is ready to implement innovative approaches to prepare for tomorrow's possibilities."

Craig offered to provide examples from other communities...however, Michele Paul provided one for consideration following the meeting:

"Our mission is to proactively identify, assess, and mitigate all risks, both natural and man-made, including those intensified by climate change and to safeguard the lives, property and natural resources in the City of New Bedford. We strive to enhance community safety and resilience equitably through collaborative planning, ensuring operational continuity, increasing public preparedness for disasters, managing resources effectively, protecting and restoring natural assets, and promoting a sustainable economy that addresses both current and future challenges."

All LHMC members to weigh in on Michele's suggested statement, and/or provide alternatives for consideration.

7. Goals

Craig presented the goals included in the 2016 Plan and asked the LHMC to confirm if still valid for 2024 or if revisions are needed. Craig suggested the inclusion of additional terms/phrases such as diversity/equity/inclusion, resilience, sustainability, and climate change.

1. Prevent and reduce the loss of life, property, infrastructure, and cultural resources resulting from natural hazards.
2. Identify and seek funding mechanisms to address proposed mitigation actions.

3. Integrate hazard mitigation planning into relevant municipal departments and boards planning efforts.
4. Collaborate with surrounding communities, state, regional, and federal agencies to ensure cooperation for natural hazards that affect multiple communities.
5. Ensure that future development is compliant with federal, state, and local regulations in order to reduce the impacts of natural hazards.

All LHMC members to provide terms, phrases or fully-developed actions/statements for consideration.

8. Next Steps

- Risk Assessment
 - o The HW Project Team will be reaching out to various municipal departments to collect outstanding data needs to complete the Risk Assessment.
- Municipal/Stakeholder Interviews
 - o The HW Project Team will be setting up remaining interviews for completion before the end of October.
- Mitigation Actions for Consideration
 - o Once the Risk Assessment and Interviews are closed , the HW Project Team will develop a preliminary list of mitigation actions for consideration and distribute to the LHMC in advance of the next meeting.
 - All LHMC members should provide mitigation actions for consideration to Craig for inclusion in the final list.
- LHMC Meeting #4
 - o November 21, 2024, 9 am – 1 pm
 - o Fort Taber Community Center (1000A S Rodney French Boulevard)

New Bedford Local Hazard Mitigation Committee Meeting #3**Fort Taber Community Center****1000A S. Rodney French Boulevard****New Bedford, MA 02740****September 17, 2024 12:00 PM - 2:00 PM**

LAST NAME	FIRST NAME	DEPARTMENT/AFFILIATION	Present Y or N
CITY OF NEW BEDFORD			
Amaral	Joshua	Director Housing & Community Development	
Arpke	Emily	Chief Financial Officer/Auditor	
Carlioni	Jennifer	City Planner	
Carr	Gordon	Ex. Director New Bedford Port Authority	Y
Cohen	Courtney	Project Manager, Environmental Stewardship	
Connelly	Christina	Chief Operations Officer	
Costa	Jim	Superintendent of Wastewater	Y
Duarte	Cesar	Director of Engineering and Operations	
Huntoon	Holly	Public Information Officer	
Kruger	Scott	Chief, Fire Department	
Mulroy	Rachel	Planning Department	
Nobrega	Brian	Director of Emergency Management	Y
O'Leary	Andrew	Superintendent of Schools	
Oliveira	Paul	Chief, Police Department	
Paul	Michele	Director of Resilience & Environmental Stewardship	Y
Perks	Chance	Conservation Agent	Y
Ponte	Jamie	Commissioner of Public Works	
Rebello	Travis	Hazardous Materials Coordinator	
Romanowicz	Danny	Building Commissioner	Y
Sloan	Stephanie	Director of Public Health	Y
Syde	Shawn	City Engineer	
Sylvia	James	Dept. of Facilities and Fleet Management	Y
Thomas	Michael	Director of Emergency Medical Services	
Vieira	Jennifer	Commissioner, Dept. of Facilities & Fleet Man.	Y
MASSACHUSETTS EMERGENCY MANAGEMENT			
Cochran	Nate	Local Coordinator, Region 2	
Zukowski	Jeff	Hazard Mitigation Planner	
EQUITY PARTNERS			
Andrade	John	Old Bedford Village Econ Development Corp.	
Dasilva-Hughes	Helena	Immigrants' Assistance Center	
Ledbetter	Renee	Director, New Bedford Shannon Program	
Pina-Christian	Marci	Ex. Director, NB Human Rights Commission	
Spence	Cynthia	Dir. Modernization/Planning/Dev., NB Housing Auth.	
Spencer	Darlene	President, NB Cape Verdean Association	
Williams	Corinn	Ex. Director, NB Community Econ. Dev. Center	Y
CONSULTANT TEAM			
Kelly	Nate	HWG	
King	Kellie	HWG	Y
Patrone	Carley	KLA	
Pereira	Craig	HWG	

September 17, 2024 12:00 PM - 2:00 PM

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LHMC Meeting #4 (Part 1): December 4, 2024



**New Bedford Multi-Hazard Mitigation Plan Update
Local Hazard Mitigation Committee Meeting #4 – Part 1**

December 4, 2024
Fort Taber Community Center
1000A S. Rodney French Boulevard
New Bedford, MA
9:00 AM – 12:00 PM

Agenda

1. Hazard Mitigation Actions for Consideration
 - a. STAPLEE Criteria Worksheet Overview
 - b. STAPLEE Ranking
2. Next Steps

New Bedford Local Hazard Mitigation Committee Meeting #4 (part 1)**Fort Taber Community Center****1000A S. Rodney French Boulevard****New Bedford, MA 02740****December 4, 2024 9:00 AM - 12:00 PM**

LAST NAME	FIRST NAME	DEPARTMENT/AFFILIATION	Present Y or N
CITY OF NEW BEDFORD			
Amaral	Joshua	Director Housing & Community Development	
Arpke	Emily	Chief Financial Officer/Auditor	
Carlioni	Jennifer	City Planner	
Carr	Gordon	Ex. Director New Bedford Port Authority	
Cohen	Courtney	Project Manager, Environmental Stewardship	
Connelly	Christina	Chief Operations Officer	
Costa	Jim	Superintendent of Wastewater	Y
Duarte	Cesar	Director of Engineering and Operations	Y
Huntoon	Holly	Public Information Officer	
Kruger	Scott	Chief, Fire Department	Y
Mulroy	Rachel	Planning Department	Y
Nobrega	Brian	Director of Emergency Management	Y
O'Leary	Andrew	Superintendent of Schools	
Oliveira	Paul	Chief, Police Department	
Paul	Michele	Director of Resilience & Environmental Stewardship	Y
Perks	Chance	Conservation Agent	Y
Ponte	Jamie	Commissioner of Public Works	
Rebello	Travis	Hazardous Materials Coordinator	
Romanowicz	Danny	Building Commissioner	Y
Sloan	Stephanie	Director of Public Health	Y
Syde	Shawn	City Engineer	Y
Sylvia	James	Dept. of Facilities and Fleet Management	Y
Thomas	Michael	Director of Emergency Medical Services	Y
Vieira	Jennifer	Commissioner, Dept. of Facilities & Fleet Man.	Y
MASSACHUSETTS EMERGENCY MANAGEMENT			
Cochran	Nate	Local Coordinator, Region 2	
Zukowski	Jeff	Hazard Mitigation Planner	
EQUITY PARTNERS			
Andrade	John	Old Bedford Village Econ Development Corp.	
Dasilva-Hughes	Helena	Immigrants' Assistance Center	Y
Ledbetter	Renee	Director, New Bedford Shannon Program	
Pina-Christian	Marci	Ex. Director, NB Human Rights Commission	Y
Spence	Cynthia	Dir. Modernization/Planning/Dev., NB Housing Auth.	Y
Spencer	Darlene	President, NB Cape Verdean Association	
Williams	Corinn	Ex. Director, NB Community Econ. Dev. Center	
CONSULTANT TEAM			
Kelly	Nate	HWG	
King	Kellie	HWG	
Patrone	Carley	KLA	
Pereira	Craig	HWG	Y

December 4, 2024 9:00 AM - 12:00 PM

[illegible]

LHMC Meeting #4 (Part 2): January 24, 2025



**New Bedford Multi-Hazard Mitigation Plan Update
Local Hazard Mitigation Committee Meeting #4 – Part 2**

January 24, 2025
Department of Public Infrastructure
1105 Shawmut Avenue
New Bedford, MA
9:30 AM – 12:30 PM

Agenda

1. Hazard Mitigation Actions for Consideration
 - a. STAPLEE Criteria Worksheet Overview
 - b. STAPLEE Ranking
2. Next Steps

Hazard Mitigation Actions for Consideration

Updated Post LHMC Meeting #4/December 6, 2024

Timeframe: Short Term: within 1 Year/Medium Term: 2 – 3 Years/Long Term: 4 – 5 Years

Cost Estimate: Staff/Personnel Time/Low: <\$25 K/Moderate: >\$25 K - <\$50K/Significant: >\$50 K

Prioritization: Low Priority: <0/Medium Priority: 0 – 11/High Priority: >11

Legend:

- Green: confirmed/updated/not prioritized yet
- Gray: confirmed/prioritized
- Yellow: to be updated/confirmed/prioritized
- No color: to be removed
- Teal colored numbering aligned with STAPLEE spreadsheet

[Mayor's Office](#)

[Planning Department](#)

[New Bedford Regional Airport](#)

[Eversource](#)

[Health Department](#)

[Emergency Management Department](#)

[Police Department](#)

[Fire Department](#)

[Port Authority](#)

[Department of Public Infrastructure](#)

[Resilience and Environmental Stewardship Department](#)

[Facilities and Fleet Management Department](#)

[Information Technology Department](#)

Mayor's Office

Action #__ Develop and implement a public communications/education campaign for all City projects in advance of project initiation, during implementation/construction, and following completion to facilitate transparency regarding all City projects and to keep residents/businesses informed

...2025 MHMP/Emergency Management Department

As a way to reduce and/or mitigate resident/business owner

- **Action Type: Planning, Pre-Disaster**

- Priority Score: __
- Lead: Mayor's Office/Public Information Officer
- Supporting: All City departments
- Time Frame: Short/within 1 Year
- Financing Options: City General Appropriations Budget (Mayor's/PIO's Budget)
- Cost Estimate: Staff/Personnel Time
- Benefit: Informed residents/businesses
- Vulnerable Area: Municipal Information
- Hazards Addressed: All Hazards

Planning Department

#1

Action #__ Develop guidelines to impervious surfaces and integration of green infrastructure incentives for homeowners and businesses

...City of New Bedford Open Space and Recreation Plan, 2021 - 2028

- Action Type: Planning, Pre-Disaster
- Priority Score: 15/High Priority
- Lead: Planning Department
- Supporting: Department of Public Infrastructure/Conservation Commission
- Time Frame: Medium Term/2 – 3 Years
- Financing Options: City General Appropriations Budget (Planning Department Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Protection of natural resources/Protection of public and private property
- Vulnerable Area: Natural Resources
- Hazards Addressed: Flood-related Hazards/Extreme Heat-related Hazards

#2 – REMOVE

Action #20 (5.3.4.2) Integrate Disaster Mitigation into Comprehensive Master Plan

- Not completed as of this writing...implementation in-progress on new Master Plan

...2016 HMP/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018

Integrate disaster mitigation into the next comprehensive master plan for the City. Disaster mitigation will be addressed during all phases of the City's next planning cycle. This will assist the City evaluating future development projects and zoning changes, and in developing new ordinances.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: Medium Priority/2024: __

- Lead: Planning Department
- Supporting: Emergency Management Department
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Fund, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Consistency across municipal documents/plans
- Vulnerable Area: Municipal Information
- Hazards Addressed: All Hazards

New Bedford Regional Airport

#3

Action #1 *Standard Operating Procedure Snow Removal Support*

...New Bedford Regional Airport Interview

Work with Purchasing Department and other available city departments (not already actively engaged in citywide snow removal) or contracts to develop a Standard Operating Procedure/Snow Removal Policy threshold for municipal assistance at the Regional Airport along Airport Road, Aviation Way, and various parking lots.

- Action Type: Planning, Pre-Disaster
- Priority Score: 10/Medium Priority
- Lead: New Bedford Regional Airport
- Supporting: Purchasing Department/Other available City Departments
- Time Frame: Short Term/1 Year
- Financing Options: City General Appropriations Budget (New Bedford Regional Airport Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Continuity of operations/Improved public health, safety, and welfare
- Vulnerable Area: Emergency Response
- Hazards Addressed: Major Airplane Crash-related Hazards/Winter-related Hazards

Eversource

#4

Action #2 *Develop publicly-available information/communications regarding power outages, work orders/repairs, and projects about power outages*

...Eversource Interview

Collaboration of City/Eversource to facilitate transparency of information/operations in advance of sustained power outages.

- Work with the City to develop electricity-provider content regarding the presence of two service areas intersecting New Bedford, and work order/repair limitations on equipment.
- Work with the City to develop improved communication protocols regarding ongoing/upcoming improvement projects, schedules, and locations.

- Action Type: Planning, Pre-Disaster
- Priority Score: 10/Medium Priority
- Lead: Eversource
- Supporting: Emergency Management Department
- Time Frame: Short Term/1 Year
- Financing Options: Eversource Budget
- Cost Estimate: Staff/Personnel Time
- Benefit: Increased awareness of service areas/services
- Vulnerable Area: Emergency Response
- Hazards Addressed: All Hazards

Health Department

#5

Action #3 *Advocate for public health initiatives/resources to protect the health, safety and welfare of all residents*

...New Bedford Community Health/Southcoast Health Interview/NB Resilient – New Bedford’s Plan for Community Climate Action + Resilience, 2018

In advance of a public health crisis, the City proposes to do the following:

- Have Public Health Nurse/Contact Tracer complete Field Epidemiology course.
- Develop/Launch health communications and outreach plan related to vaccine-preventable disease, communicable disease prevention, general health communication.
- Partner with local healthcare providers to support childhood vaccination efforts/increase focus on supporting families newly arriving to the U.S.
- Support efforts to promote tuberculosis testing among at-risk populations.
- Complete referrals to Tuberculosis clinics amongst residents.
- Facilitate/support procurement of adequate vaccine supply to meet community demands.
- Increase administration of standard and high-dose influenza vaccines targeting vulnerable populations.
- Procure/distribute health promotion items (insect repellent spray/wipes, Tick Keys).

- Secure staff to support public health planning and response (Contact Tracers, Community Health Workers, Public Health Nurses, Sanitarians, Administrative Support.
- Continue periodic health meetings in advance of the next public health crisis.
- Identify funding mechanisms to replenish public health supplies.
- Support/Advocate for accelerating improvements to the local and regional public health system to address disparities in the delivery of public health services.
- Support resources for non-English speakers.

- Action Type: Planning, Pre-Disaster
- Priority Score: 10/Medium Priority
- Lead: Health Department
- Supporting: Supporting Area Health Care Organizations
- Time Frame: Short Term/1 Year
- Financing Options: City Multi-Year Capital Improvement Plan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Moderate
- Benefit: Improved public health and medical response
- Vulnerable Area: Public Health, Safety, and Welfare
- Hazards Addressed: Infectious Disease-related Hazards/Public Health Emergency-related Hazards

5.3.1 Emergency Management Department

#6

Action #__ *Identify/Consolidate/Digitize vital records maintenance/storage*
...2024 Comprehensive Emergency Management Plan Update

Many City departments maintain various vital records. The City will develop initial/update annually the inventory of vital records and consolidate storage locations outside of all potential hazard areas.

- Action Type: Planning, Pre-Disaster
- Priority Score: 6/Medium Priority
- Lead: Emergency Management Department/Planning Department/Information Technology Department
- Supporting: All City Departments
- Time Frame: Short Term/1 Year
- Financing Options: City General Appropriations Budget (Emergency Management Department/Planning Department/Information Technology Department Budgets), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Improved Resilience/Continuity of Government

- Vulnerable Area: Vital Records
- Hazards Addressed: All Hazards

#7

Action #__ Expand the Comprehensive Emergency Management Plan with Hazard-Specific and Functional Annexes (Appendices)

...2024 Comprehensive Emergency Management Plan Update

Additional hazard-specific and functional annexes to be developed include:

Hazard-Specific Annexes:

- Severe Weather Annex (tornadoes, lightening, rain, extreme heat)
- Winter Weather Annex
- Flood Annex
- Cyber Security Annex
- Pandemic Response Annex
- Drought Response Annex

Functional Annexes:

- Communications Plans
 - o Templates
- Recovery Plan
- Continuity of Operations Plan (COOP)
- Transportation Annex
- Medical Services Annex
- Mass Care/Shelter
- Vulnerable Population Evacuation Transportation Operations Annex

- Action Type: Planning, Pre-Disaster
- Priority Score: 9/Medium Priority
- Lead: Emergency Management Department
- Supporting: All City Departments
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Budget (Emergency Management Department Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Improved Resilience/Continuity of Government/Accelerated Recovery
- Vulnerable Area: Vital Records
- Hazards Addressed: Emergency Services -related Hazards

#8

Action #5 Enhance the City's emergency response capacity/capability

... NB Resilient – New Bedford’s Plan for Community Climate Action + Resilience, 2018/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018

The City will work across municipal departments and community stakeholders to enhance emergency capacity/capability.

- Identify cooling stations throughout the City/Install air conditioning in schools (for health benefits and to use schools as cooling centers)
- Increase communications capabilities (expand/educate re-reverse 911, multi-lingual programs)
- Enhance the evacuation and sheltering plan (including the implementation of neighborhood resilience hubs throughout the City, evacuation routes, signage, and education around plans)

- Action Type: Planning, Pre-Disaster
- Priority Score: 6/Medium Priority
- Lead: Emergency Management Department
- Supporting: Community Services Department, American Red Cross, School District/St. Luke’s Hospital
- Time Frame: Medium Term/2-3 Years
- Financing Options: City General Appropriations Budget (Emergency Management Department Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Moderate
- Benefit: Improved public health and medical response
- Vulnerable Area: Emergency Response
- Hazards Addressed: All Hazards

#9

Action #8 (5.3.1.6) Debris Management Plan

- Not completed due to lack of funding and municipal personnel capacity
- Carry forward into 2024 Update

...2016 HMP/Anthony Novelli Interview

The City proposes to develop a *Debris Management and Monitoring Plan*. The plan will address the collection, monitoring and disposal of debris after a storm event.

Development of such a plan will enhance the City’s efforts to secure reimbursement under FEMA’s Public Assistance Program in a declared disaster for debris removal operations.

Considerations should include:

- Regionalization with Dartmouth.
- Establish staging locations and a plan for separating materials and disposal locations (in advance of an event/disaster).

- Brush and organic debris should be separated from construction and demolition waste and from recyclables for optimal material recovery. If not separated properly, brush and recyclables become contaminated and must be treated as waste which becomes more expensive.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2024: 4/Medium Priority
- Lead: Emergency Management Department
- Supporting: Greater NB Regional Refuse Management District/Department of Facilities and Fleet Management/Department of Public Infrastructure
- Time Frame: Medium/2-3 Years
- Financing Options: City General Appropriations Budget (Emergency Management Department Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Accelerated recovery/Continuity of services
- Vulnerable Area: Debris Management
- Hazards Addressed: All Hazards

#10

Action #9 Critical Facilities/Vulnerable Populations Data Updates

...Emergency Management Department

The City proposes to assemble a committee of applicable municipal departments to update all critical facility and vulnerable population GIS data on an annual basis.

- Action Type: Planning, Pre-Disaster
- Priority Score: 15/High Priority
- Lead: Emergency Management Department
- Supporting: All City Departments
- Time Frame: Short Term/1 Year
- Financing Options: City General Appropriations Budget (Emergency Management Department Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Property protection/Public health, safety, and welfare/Accelerated recovery
- Vulnerable Area: Critical Facilities/Vulnerable Populations Data
- Hazards Addressed: All Hazards

#11

Action #11 Upgrades to Andrea McCoy Recreation Center (Shelter)

...Emergency Management Department

The City proposes to address the needs of the Andrea McCoy Recreation Center to become a City shelter before/during/following a hazard events. Needs include:

- Emergency Generator Power
- HVAC upgrades
- Cell phone charging stations
- Restrooms with showering facilities
- Food service capabilities
- Pet-friendly accommodations

- Action Type: Planning, Pre-Disaster
- Priority Score: 6/Medium Priority
- Lead: Emergency Management Department
- Supporting: Department of Facilities and Fleet Management/Parks, Recreation and Beaches Department
- Time Frame: Medium/2-3 Years
- Financing Options: City General Appropriations Budget, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Improved public health, safety, and welfare
- Vulnerable Area: Emergency Response
- Hazards Addressed: All Hazards

5.3.3 Fire Department

Action #__ *Develop and implement a public education campaign regarding the New Bedford Community Connect that serves as the city's Special Needs Registry*

...2025 MHMP/Emergency Management Department

The City proposes to develop and implement a public education campaign for the recently updated Community Connect Special Needs Registry.

- Action Type: Planning, Pre-Disaster
- Priority Score: __
- Lead: Fire Department
- Supporting: Community Services Department/Information Technology Department/Emergency Medical Services Department/Police Department
- Time Frame: Short/within 1 Year
- Financing Options: City General Appropriations Budget (Fire Department Budget)
- Cost Estimate: Staff/Personnel Time
- Benefit: Informed residents/businesses/Improved public health, safety, and welfare
- Vulnerable Area: Municipal Information/Emergency Response/Public Health, Safety, and Welfare
- Hazards Addressed: All Hazards

#12 – REMOVE

Action #12 Utilize the ‘AskRail’ app through the Emergency Management Department to identify critical information about rail cars carrying hazardous materials in the event of an incident.

...Emergency Management Department

AskRail is a free mobile application that provides immediate access to accurate, near real-time information about railcars carrying hazardous materials on a train. The app serves emergency responders who arrive first at the scene of a rail incident and assists in making informed decisions about how to respond to a specific rail incident.

- Action Type: Planning, Pre-Disaster
- Priority Score: __
- Lead: Fire Department
- Supporting: MEMA
- Time Frame: Medium/2-3 Years
- Financing Options: City General Appropriations Budget, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Improved public health, safety, and welfare/Property protection
- Vulnerable Area: Property Protection
- Hazards Addressed: Hazardous Materials Accident/Spill, Infrastructure Failure – Transportation Systems

#13 – REMOVE

Action #6 (5.3.1.3) Special Needs Registry

- Not completed due to lack of funding and municipal personnel capacity. Difficult to manage internally and requires an outside consultant’s support to manage
- Carry forward into 2024 update

...2016 HMP/Community Services Dept. Interview/Council on Aging Interview/NB Resilient – New Bedford’s Plan for Community Climate Action + Resilience, 2018

The City proposes to revive its “Special Needs Registry” and promote voluntary registration (or participation) by residents who may require additional assistance, transportation, and/or sheltering in the event of a major emergency or disaster. The program will be implemented within the next calendar year and will be continually carried out via the following action items:

- Conduct community outreach efforts to encourage persons with access and functional needs to register.
- Provide specialized, pre-disaster emergency information to this population.
- Update and maintain registry database for use in emergency situations.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2024: __
- Lead: Fire Department
- Supporting: Community Services Department/Emergency Medical Services Department/Emergency Management Department/Commission for Citizens with Disabilities/Environmental Justice Groups
- Time Frame: Short Term/1 Year
- Financing Options: City General Appropriations Budget, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Minimal
- Benefit: Improved public health, safety and welfare
- Vulnerable Area: Emergency Response
- Hazards Addressed: All Hazards

5.3.5 Harbor Development Commission (d.b.a. New Bedford Port Authority)

#15

Action #21 (5.3.5.1) Installation of a Wave Attenuator at Pope's Island Marina

- Not completed due to lack of funding and municipal personnel capacity
- Carry forward into 2024 Update

...2016 HMP

The City is proposing to install a wave attenuator on the southwestern side of Pope's Island Marina. The wave attenuator will help to protect the structures and vessels in the marina during significant storm events.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2024: 8/Medium Priority
- Lead: Port Authority
- Supporting: _____
- Time Frame: Medium Term/2-3 Years
- Financing Options: MA Seaport Economic Council, Port Authority Funds, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Reduced storm impacts/Improved public health, safety, and welfare/Property protection
- Vulnerable Area: Port Operations
- Hazards Addressed: Flood-related Hazards/Wind-related Hazards

#16

Action #22 (5.3.5.2) Installation of a Storm Mooring System north of Pope's Island

- Not completed due to lack of funding and municipal personnel capacity
- Carry forward into 2024 Update

...2016 HMP

The Environmental Protection Agency is overseeing the dredging of contaminated soils in New Bedford Harbor. These removed soils are buried in a CAD cell field north of Pope's Island. The City is proposing to install a mooring system in the CAD cell field to protect this area during significant storm events.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2024: 6/Medium Priority
- Lead: Port Authority
- Supporting: _____
- Time Frame: Long Term/4-5 Years
- Financing Options: MA Seaport Economic Council, Port Authority Funds, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Reduced storm impacts/Improved public health, safety, and welfare/Property protection
- Vulnerable Area: Port Operations
- Hazards Addressed: Flood-related Hazards/Wind-related Hazards

#17**Action #23 (5.3.5.3) Repair, Bolster and Expand Commercial Fishing Piers**

- Not completed as of this writing...implementation in-progress. Pier fendering replacement on three of the five piers, with one pier to be rebuilt in 2025 and one in design and awaiting funding (One remaining that needs funding)
- Carry forward into 2024 update

...2016 HMP

The City is proposing to repair, bolster and expand the commercial fishing piers in the harbor. These improvements to the commercial fishing piers will allow the piers to secure larger fishing vessels during storm events. Protection of fishing vessels during storm events will reduce the impact to the fishing industry.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2024: 10/Medium Priority
- Lead: Port Authority
- Supporting: Department of Public Infrastructure
- Time Frame: Medium Term/2-3 Years
- Financing Options: MA Seaport Economic Council, Port Authority Funds, FEMA BRIC/FMA/HMGP grants

- Cost Estimate: Significant
- Benefit: Reduced storm impacts/Improved public health, safety, and welfare
- Vulnerable Area: Port Operations
- Hazards Addressed: Flood-related Hazards/Wind-related Hazards

#18

Action #24 (5.3.5.4) Dredge New Bedford Harbor

The City is proposing to dredge all required areas remaining after the completion of Phase V of the Harbor Development Commission's dredging project. These projects will permanently open up new berths within the hurricane barrier for commercial and recreational vessels, which will allow these vessels to be protected during storm events.

- As of this writing, Phase V dredging program has been completed, with 38 public and private sites dredged throughout the harbor.
- Future dredging activities will need funding

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2024: 11/Medium Priority
- Lead: Port Authority
- Supporting: Department of Public Infrastructure
- Time Frame: Medium Term/2-3 Years
- Financing Options: MA Seaport Economic Council, Port Authority Funds, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Reduced storm impacts/Improved public health, safety, and welfare
- Vulnerable Area: Port Operations
- Hazards Addressed: Flood-related Hazards/Wind-related Hazards

#19

Action #25 Ensure the implementation of resilience recommendations for municipally-owned/managed piers within the Port identified from the 2021 Harbor Port Assessment.

...New Bedford Harbor Port Assessment Summary

Coal Pocket Pier

- Current condition: Good
- Mid-term needs: Cross-bracing on seven bents below the boardwalk will need repair.
- Long-term needs: The remaining 283 LF of granite wall along the shoreline will need to be replaced.
- Resilience Upgrade: Recently reconstructed. Future repairs should focus on minimizing damage from frequent flooding and maintaining operations at the pier.

Homer's Wharf

- Current condition: Serious
- Short-term needs: Full structural replacement.
- Mid-term needs: Standard maintenance and repair requirements for new structure.
- Long-term needs: Depends on continuous maintenance and repair of new structure.
- Resilience upgrade: New design elevation set at 8 FT NAVD88, which places the finished deck – 1.5 FT above MHHW for 2070, with the goal of maintaining continuous operations on the pier as sea levels rise. Incorporate resilient design features into the replacement structure.

Leonard's Wharf

- Current condition: Serious
- Short-term needs: Full structural replacement.
- Mid-term needs: Standard maintenance and repair requirements for new structure.
- Long-term needs: Depends on continuous maintenance and repair of new structure.
- Resilience upgrade: New design elevation set at 8 FT NAVD88, which places the finished deck – 1.5 FT above MHHW for 2070, with the goal of maintaining continuous operations on the pier as sea levels rise. Incorporate resilient design features into the replacement structure.

Pier 3

- Current condition: Fair
- Long-term needs: Full structure replacement required, 1,312 LF of new bulkhead, plus cap, fendering, etc.
- Resilience upgrade: New design elevation TBD – should be re-assessed in 2050, pending rehabilitation plan selected.

Steamship Pier

- Current condition: Fair
- Long-term needs: Depends on continuous maintenance and repair of new structure.
- Resilience upgrade: Elevation should be re-assessed in 2050. This structure can be repaired and will not require a full replacement, so consideration should be given to methods for raising the elevation of the entire structure and incorporating resilience design upgrades.

South Terminal

- Current condition: Fair
- Long-term needs: Replacement will be required within 15-30 years.
- Resilience upgrade: New design elevation TBD – should be re-assessed in 2050, pending rehabilitation plan selected.

- Action Type: Planning, Pre-Disaster

- Priority Score: 10/Medium Priority
- Lead: Port Authority
- Supporting: Department of Public Infrastructure
- Time Frame: Long Term/4-5 Years
- Financing Options: MA Seaport Economic Council, Port Authority Funds, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Reduced storm impacts/Improved public health, safety, and welfare
- Vulnerable Area: Port Operations
- Hazards Addressed: Flood-related Hazards/Wind-related Hazards

#20

Action #26 (5.3.5.5) Expansion of Pope's Island Marina

- Not completed due to lack of funding and municipal personnel capacity
- Carry forward into 2024 Update

...2016 HMP

The City is proposing to expand Pope's Island Marina to create more berths for recreational vessels. Expansion of the marina will allow these vessels to be protected during storm events. Phase 1 of this project will occur during the effective period of the Local Multi-Hazard Mitigation Plan.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: Medium Priority/2024: 5/Medium Priority
- Lead: Port Authority
- Supporting: Department of Public Infrastructure
- Time Frame: Long Term/4-5 Years
- Financing Options: MA Seaport Economic Council, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Reduced storm impacts/Improved public health, safety, and welfare
- Vulnerable Area: Port Operations
- Hazards Addressed: Flood-related Hazards/Wind-related Hazards

#21

Action #27 (5.3.5.6) Replacement of Mooring Anchors and Gear

- Not completed as of this writing...implementation in-progress
- Carry forward into 2024 update...remaining anchors still to be funded.

...2016 HMP

The City is proposing to replace all the remaining mooring anchors to a helix-style and replace all the gear to hazelett-style. Replacing these fixtures will make them more resistant to storms.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2024: 11/Medium Priority
- Lead: Port Authority
- Supporting: New Bedford Harbor Master/Resilience and Environmental Stewardship Department
- Time Frame: Medium Term/2-3 Years
- Financing Options: MA Seaport Economic Council, Port Authority Funding, Federal Boating Infrastructure Grant Program, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Reduced storm impacts/Improved public health, safety, and welfare
- Vulnerable Area: Port Operations
- Hazards Addressed: Flood-related Hazards/Wind-related Hazards

5.3.6 Department of Public Infrastructure

#57 – Relocated from DFFM

Action #55 Improve vehicle/pedestrian circulation, drainage and provide maintenance guidelines at all parks and open space areas

...Circulation & Drainage Master Plan Brooklawn Park/City of New Bedford Open Space and Recreation Plan, 2021 - 2028

A former natural wetland, the Park is still an important hydrology system within the Acushnet River/Buzzards Bay watershed. A centrally located, manmade wet meadow in the Park was designed to provide some runoff relief, but more needs to be done to improve drainage. City maps indicate a system of gray infrastructure stormwater pipes in the Park, including the recent installation of underdrainage at the soccer field that require cleaning to remove debris, sediment, and tree roots to drain properly and improve runoff outcomes. The Duck Pond also needs upgrades to improve drainage capacity and deter overflows during major storms.

- New channels are proposed throughout Brooklawn Park to guide runoff to constructed wetlands.
- The stone paved floor of the existing stone channel that presently drains to Duck Pond should be replaced with a natural stone basin over gravel base.
- The Pond should be engineered to improve overflow and prevent erosion.
- Existing baseball fields infield mix should be replaced with turf to naturally slow overland flows.
- Create a stormwater management plan.

- Action Type: Planning, Pre-Disaster
- Priority Score: __
- Lead: Department of Public Infrastructure

- Supporting: Resilience and Environmental Stewardship Department/Parks, Recreation and Beaches Department/Conservation Commission/Planning Department
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Budget, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Reduced impacts from flooding/Improved flood storage capacity
- Vulnerable Area: Municipally-owned Infrastructure/Property Protection
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure – Wastewater/Stormwater Systems-related Hazards

#22

Action #__ Assess green infrastructure implementation in Fort Taber, Hazelwood, Marine and Victory Parks

...City of New Bedford Open Space and Recreation Plan, 2021 - 2028

- Action Type: Planning, Pre-Disaster
- Priority Score: __
- Lead: Department of Public Infrastructure
- Supporting: Parks, Recreation and Beaches Department/Conservation Commission
- Time Frame: Medium Term/2-3 Years
- Financing Options: City General Appropriations Fund, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Property protection/Improved public health, safety, and welfare/Reduced potential for contamination
- Vulnerable Area: Localized Areas Subject to Flooding
- Hazards Addressed: Flood-related Hazards

#23

Action #__ Resolve the flooding associated with the Padanaram Avenue/Rogers Street area resulting from inadequate stormwater drainage and ocean runup

...Emergency Management Department

- Action Type: Planning, Pre-Disaster
- Priority Score: __
- Lead: Department of Public Infrastructure
- Supporting: _____
- Time Frame: Medium Term/2-3 Years

- Financing Options: City General Highway Funds, DPI Wastewater Enterprise Fund, State SRF Loan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Property protection/Improved public health, safety, and welfare/Reduced potential for contamination
- Vulnerable Area: Localized Areas Subject to Flooding
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure- Wastewater/Stormwater Systems

#24

Action #28 (5.3.6.1) Install New SCADA System at Sewer Pump Stations

- Partially completed (10 pump stations remain) as of this writing
- Carry forward into 2024 Update

...2016 HMP/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018

City will continue to expand the installation program of new SCADA systems within pumping stations to ensure remote monitoring of all stations in the event of a disaster. This improved system will also eliminate the potential for prolonged system failures that result in flooding.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2024: __
- Lead: Department of Public Infrastructure
- Supporting: _____
- Time Frame: Medium Term/2-3 Years
- Financing Options: City General Highway Funds, DPI Wastewater Enterprise Fund, State SRF Loan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Continuity of services/Reduced potential for contamination/Improved public health, safety, and welfare
- Vulnerable Area: Municipally-owned Infrastructure
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure- Wastewater Systems

#25

Action #29 (5.3.6.2) Clarks Cove Pump Station and Hurricane Barrier Localized Flooding Improvements

- Partially completed (new generator purchased, electrical improvements completed, actuator maintenance completed, street gate repairs/maintenance inspections completed) as of this writing
- Carry forward into 2024 Update

...2016 HMP/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018

Inadequately sized sewer and stormwater drainage systems cause localized flooding near Clarks Cove Pump Station and near the hurricane barrier. Therefore, in conjunction with the Army Corps of Engineers, the City will undertake further improvements to the Clarks Cove Pump Station, to low-lying areas near the hurricane barrier, and to the sewer and stormwater drainage systems.

Added by Chance:

- Needed: portable seawall/jersey barrier installations in old seawall openings adjacent to O'Toole Monument/Monkey Island (Ricketson St. to Nina) (4 openings + Monkey Island)

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2024: __
- Lead: Department of Public Infrastructure
- Supporting: Army Corps of Engineers
- Time Frame: Medium Term/2-3 Years
- Financing Options: City General Highway Funds, DPI Wastewater Enterprise Fund, State SRF Loan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Continuity of services/Reduced potential for contamination/Improved public health, safety, and welfare
- Vulnerable Area: Municipally-owned Infrastructure
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-Wastewater/Stormwater Systems/Hurricane Barrier Failure

#26

Action #30 (5.3.6.5) Maple and Chancery Streets Stormwater Drainage Improvements

- Not completed due to lack of funding and municipal personnel capacity
- Carry forward into 2024 Update

...2016 HMP/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018

The City is proposing to undertake drainage infrastructure improvements to address localized street flooding in the vicinity of Maple and Chancery Streets. Some improvements have been already undertaken and future improvements would also address capacity problems in the stormwater drainage and sewer systems in this area.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: Medium Priority/2024: __
- Lead: Department of Public Infrastructure
- Supporting: _____
- Time Frame: Medium Term/2-3 Years

- Financing Options: City General Highway Funds, DPI Wastewater Enterprise Fund, State SRF Loan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Property protection/Improved public health, safety, and welfare/Reduced potential for contamination
- Vulnerable Area: Localized Areas Subject to Flooding
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-Wastewater/Stormwater Systems

#27

Action #31 (5.3.6.6) Page Street Stormwater Drainage Improvements at St. Luke's Hospital

- Not completed due to lack of funding and municipal personnel capacity
- Carry forward into 2024 Update

...2016 HMP/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018

The City is proposing to undertake stormwater drainage system improvements to address flooding issues at Page Street, near St. Luke's Hospital. Addressing flood problems in this area will help to ensure access to the hospital during natural disasters.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: Medium Priority/2024: __
- Lead: Department of Public Infrastructure
- Supporting: _____
- Time Frame: Medium Term/2-3 Years
- Financing Options: City General Highway Funds, DPI Wastewater Enterprise Fund, State SRF Loan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Property protection/Improved public health, safety, and welfare/Reduced potential for contamination
- Vulnerable Area: Localized Areas Subject to Flooding
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-Wastewater/Stormwater Systems

#28

Action #32 (5.3.6.7) Buttonwood Park Pond and Dam Improvements

- Not completed due to lack of funding and municipal personnel capacity
- Carry forward into 2024 Update

...2106 HMP/2024 MHMP Update

The City is proposing to undertake improvements to the Buttonwood Park Pond and Dam and conveyance structures downstream to address overtopping during storm events. Mitigation of overtopping will alleviate flooding in surrounding areas.

The City will complete the recommended improvements identified in the most recent Phase 1 Inspection Report (December 9, 2021), including an update to the most recent Emergency Action Plan (May 2009). (significant hazard/every five years)

Studies and Analysis

- Regularly monitor the embankment for animal burrows, localized depressions, bare spots, and any other type of unusual activity.
- Regularly mow (minimum of three times per year) the embankment, abutments, and within 20 feet of the dam to control tree and brush growth which inhibits visual observations of the dam.
- Update the Emergency Action Plan annually.
- Update the Tree Monitoring Plan annually.

Recurrent Maintenance Recommendations

- Remove trees and brush on the embankment, abutments, and within 20 feet of the dam in accordance with the Massachusetts Office of Dam Safety' Policy on Trees on Dams. It is recommended that stumps and roots be removed in their entirety, as roots can shrink as they decay, which could cause preferential seepage paths. Backfill all voids with appropriate material, which would vary based on the location of the dam.
- A certified arborist should be retained or the City's arborist should conduct yearly inspections of the large trees located on the crest of the dam and pruned of dead/damaged limbs, in accordance with the approved tree monitoring plan. Those trees determined to be compromised should be removed along with the root ball and backfilled with compacted soil. Once removed, it is not recommended that trees be replaced.
- Plant and maintain a healthy stand of grass on bare spots and areas that are cleared of trees and brush.
- Replace downstream discharge channel training walls.
- Repoint downstream masonry wall where needed.

Remedial Modification Recommendations

- Remove vegetation in and on the upstream stone masonry wall and buttress the upstream with large stone riprap placed at a 1.5H:1V slope or flatter. If a wall is desired for aesthetics or to reduce environmental impacts, remove the upstream stone masonry wall and replace with a stone-faced, cast-in-place concrete wall. Note this option will require cofferdams to construct and will likely be more expensive.

- Rehabilitate the existing brick culvert under Fuller Parkway and downstream concrete spillway. Structural rehabilitation methods for the culvert may include repointing/replacing bricks and mortar, lining, or slip lining.
- Repair/replace existing fence on upstream and downstream sides of the dam. Add railing to prevent access to spillway.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: Medium Priority/2024: ____
- Lead: Department of Public Infrastructure
- Supporting: MA DCS ODS
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Budget, State Dam Removal & Repair Grant Program, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Property protection/Improved public health, safety, and welfare/Reduced potential for contamination
- Vulnerable Area: Dams
- Hazards Addressed: Flood-related Hazards

#29

Action #33 (5.3.6.9) Brownell Avenue and Hawthorne Street Stormwater Drainage Improvements

- Not completed due to lack of funding and municipal personnel capacity
- Carry forward into 2024 Update

...2106 HMP/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018

The City will undertake stormwater drainage system improvements to address localized flooding in the area of Brownell Avenue and Hawthorne Street and conveyance structures downstream during major precipitation events. Addressing localized flooding in this area will help mitigate flooding impacts during natural disaster events.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: Medium Priority/2024: ____
- Lead: Department of Public Infrastructure
- Supporting: _____
- Time Frame: Medium Term/2-3 Years
- Financing Options: City General Highway Funds, State SRF Loan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Property protection/Improved public health, safety, and welfare/Reduced potential for contamination
- Vulnerable Area: Localized Areas Subject to Flooding

- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-Wastewater/Stormwater Systems

#30

Action #34 (5.3.6.10) *New Bedford Reservoir Dam and Turner's Pond Dam Improvements*

- Partially completed (Turner's Pond Dam improvements in-progress) as of this writing
- Carry forward into 2024 Update

...2106 HMP/2024 MHMP Update

New Bedford Reservoir Dam: The City will complete an updated Phase 1 Inspection Report (July 16, 2020), then complete recommended improvements including an update to the Emergency Action Plan (August 2007).

Turner's Pond Dam: The City will complete the recommended improvements identified in the most recent Phase 1 Inspection Report (December 9, 2021), including the development of an Emergency Action Plan and Operations & Maintenance Manual. (significant hazard/every five years)

Studies and Analyses

- Finalize the Emergency Action Plan currently under development for the Turner Pod Dam. Utilize existing information from the City of New Bedford's Comprehensive Emergency Management Plan where appropriate.
- Formalize an Operation and Maintenance Manual. Review and update the draft O & M Manual prepared by CDM Smith upon completion of currently planned dam improvements.
- Update 2016 H & H analysis to inform installation of low-level outlet.

Recurrent Maintenance Recommendations

- Regularly monitor the embankment for animal burrows, localized depressions, bare spots, and any other type of unusual activity.
- Regularly mow (minimum of three times per year) the embankment, abutments, and within 20 feet of the dam to control tree and brush growth which inhibits visual observations of the dam.
- Update the Emergency Action Plan annually.

Recommendations, Maintenance, and Minor Repairs

- Remove trees and brush on the embankment, abutments, and within 20 feet of the dam in accordance with the Massachusetts Office of Dam Safety' Policy on Trees on Dams. It is recommended that stumps and roots be removed in their entirety, as roots can shrink as they decay, which could cause preferential seepage paths. Backfill all voids with appropriate material, which would vary based on the location of the dam.

- Remove sediment buildup and vegetation upstream of spillway and stoplog structures.
- Remove concrete surfaces and cracks on spillway and stoplog structure.
- Repair sedimentation and erosion issues with stormwater drainage outlets.

Remedial Modification Recommendations

- Install riprap armor on upstream slope.
- Replace the existing stoplogs with new removable stoplogs and a low-level outlet gate/valve and operator.
- Replace concrete access platform.
- Install stairs, railing, safety fencing to spillway access platform.
- Install armored drainage path along embankments for flows exiting stormwater drainage outlets.
- Repair stone masonry wall along discharge channel.
- Rehabilitate stop log structure based on results of updated H & H analysis.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: Medium Priority/2024: __
- Lead: Department of Public Infrastructure
- Supporting: _____
- Time Frame: Medium Term/2-3 Years
- Financing Options: City General Highway Funds, State SRF Loan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Property protection/Improved public health, safety, and welfare/Reduced potential for contamination
- Vulnerable Area: Dams
- Hazards Addressed: Flood-related Hazards

#31

Action #35 (5.3.6.12) *Route 18 and Wamsutta Street Stormwater Drainage Improvements*

- Partially completed (MassDOT Southcoast Rail and City under Coggeshall Phase 3) as of this writing
- Carry forward into 2024 Update

...2016 HMP/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018

The City will undertake stormwater drainage system improvements to address flooding at the intersections of Route 18 and Wamsutta Street, Wamsutta Street and North Front Street, Wamsutta Street and Acushnet Avenue, and at the Wamsutta Street Pump Station. Improvement of the drainage capacity in these areas will alleviate flooding during

heavy precipitation and natural disaster events and help to ensure continued access to these roads during a disaster event.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: Low Priority/2024: __
- Lead: Department of Public Infrastructure
- Supporting: MA DOT
- Time Frame: Medium Term/2-3 Years
- Financing Options: City General Highway Funds, State SRF Loan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Property protection/Improved public health, safety, and welfare/Reduced potential for contamination
- Vulnerable Area: Localized Areas Subject to Flooding
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-Wastewater/Stormwater Systems

#32

Action #36 (5.3.6.13) *Sheffield Street/ Stratford Street Stormwater Drainage Improvements*

- Not completed due to lack of funding and municipal personnel capacity
- Carry forward into 2024 Update

Added in by Chance:

- See 2007 CDM Smith – Stratford Street and Barnum Street Drainage Design Report (DPI)

...2016 HMP/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018

The City is proposing to correct localized flooding problems associated with an unnamed stream to the east of Acushnet Avenue. Flooding generally occurs in the area of Sheffield Street, southerly to Stratford Street and in the downstream portion of the City's 027 drain system in the northern part of the City. Addressing flooding this area by improving the stormwater drainage system and acquiring property for restoring natural wetland floodplains will help to ensure continued access to these roads during a disaster.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: Low Priority/2024: __
- Lead: Department of Public Infrastructure
- Supporting: Resilience and Environmental Stewardship Department
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Highway Funds, State SRF Loan, FEMA BRIC/FMA/HMGP grants, DER grants
- Cost Estimate: Significant

- Benefit: Property protection/Improved public health, safety, and welfare/Reduced potential for contamination
- Vulnerable Area: Localized Areas Subject to Flooding
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-Wastewater/Stormwater Systems

#33

Action #37 (5.3.6.14) *Mitigation of Drainage Issues from Tarkiln Hill Road to Nash Road Pond*

- Not completed due to lack of funding and municipal personnel capacity
- Carry forward into 2024 Update

Added in by Chance:

- Studies and Analysis
 - o See DPI Plans NB 34 Pg. 8 – 12 Copper Brook
- Recurrent Maintenance Recommendations
 - o Vegetation management at outlet structures and downstream swales
 - o Utilize Bristol County Mosquito Control Project Services to maintain swales
 - o Underground pipe monitoring and maintenance
- Remedial Modification Recommendations
 - o Restore Floodplain banks utilizing shade trees to shade invasive species regrowth, and consider planting conifers that reduce leaf litter and stabilize banks

...2106 HMP/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018

The Copper Brook drain system was originally constructed as a water supply for Revere Copper located within New Bedford, conveying water from the Nash Road Pond to the Copper Brook Pond (a.k.a. Rodman Pond) at the mills. The drain is a patchwork of various pipe diameters, materials and ages; some of which consists of stone blocks and granite rubble. The drain traverses some of the busiest streets in the City, crosses under both Route 18 and Route 195 before discharging to the Copper Brook Pond. The pond overflows to a stream located adjacent to Wamsutta Street and eventually to the Acushnet River. The drain and pond systems have historically been susceptible to flooding during wet weather events due to inadequate capacity and the condition of the pipe. Under heavy rainfall events, the Nash Road Pond overtops and floods Nash Road, making it impassable. Most recently, a section of the Copper Brook pipe partially collapsed within Acushnet Avenue, one of the City's busiest streets. In addition, there are direct overflow points from the drain to the City's sewer system contributing to the City's combined sewer overflow (CSO) problem. The pond and stream at the downstream end of Copper Brook create a bottleneck for water to flow to the Acushnet River. Therefore, both the pond and stream need to be addressed as part of the overall solution to mitigate flooding resulting from the brook. This project will be coordinated with flooding that occurs at Wamsutta Street and Route 18, as both flooding areas result from issues with the Copper Brook system and Wamsutta Street stream.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: Low Priority/2024: __
- Lead: Department of Public Infrastructure
- Supporting: Resilience and Environmental Stewardship Department
- Time Frame: Medium Term/2-3 Years
- Financing Options: City General Highway Funds, State SRF Loan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Property protection/Improved public health, safety, and welfare/Reduced potential for contamination
- Vulnerable Area: Localized Areas Subject to Flooding
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-Wastewater/Stormwater Systems

#34

Action #38 (5.3.6.15) West End CSO Separation Contract Phase IV

- Not completed due to lack of funding and municipal personnel capacity
- Carry forward into 2024 Update

...2016 HMP/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018

Phase IV of the West End CSO Separation project consists of constructing the main intercepting drain (7,600-feet) for the separation of approximately 12,500-feet of combined sewer in the West End Sewer Separation – Phase V portion of the program. This portion is the fourth phase of sewer separation in the West End area of New Bedford. Construction of Phase I was completed in 2001 and the construction of Phase II and III was completed in the summer of 2006. In addition to reducing CSO discharges to Clarks Cove, the Phase IV Sewer Separation will discharge stormwater from the project area to the Inner Harbor. This is important because the removal of stormwater, in addition to the reduction in CSOs, is required to attain maximum use of the shellfish beds in Clarks Cove. The project also provides the main trunk drain to address critical flooding areas at the intersection of Maple Street and Chancery Street, as well as the western portion of St. Luke's Hospital.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: Low Priority/2024: __
- Lead: Department of Public Infrastructure
- Supporting: _____
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Highway Funds, State SRF Loan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant

- Benefit: Property protection/Improved public health, safety, and welfare/Reduced potential for contamination
- Vulnerable Area: Municipally-owned Infrastructure
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-Wastewater/Stormwater Systems

#35

Action #39 (5.3.6.16) West End CSO Separation Contract Phase V

- Not completed due to lack of funding and municipal personnel capacity
- Carry forward into 2024 Update

...2016 HMP/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018

Phase V of the West End CSO Separation project consists of separating approximately 12,500-feet of combined sewer in the West End area of New Bedford. The Phase V sewer separation is the fifth phase of sewer separation in the City's West End. The West End Sewer Separation – Phase IV portion of the project will provide the main intercepting drain for this portion of the program and has been described in Section 5.2.6.15. As is the case with the Phase IV Sewer Separation project, the Phase V portion of the program will also reduce CSO discharges to Clarks Cove by separating the combined sewer system. Stormwater from the project area will be discharged to the Inner Harbor, helping to attain maximum use of the shellfish beds in Clarks Cove. In addition to reducing CSO's, Phase V sewer separation will also provide the sideline drains required to mitigate sewer system flooding at the intersection of Maple and Chancery Streets and along the western portion of St. Luke's Hospital that occurs due to wet weather. This will address a public health issue and safety issue that occur.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: Low Priority/2024: __
- Lead: Department of Public Infrastructure
- Supporting: _____
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Highway Funds, State SRF Loan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Property protection/Improved public health, safety, and welfare/Reduced potential for contamination
- Vulnerable Area: Municipally-owned Infrastructure
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-Wastewater/Stormwater Systems

#36

Action #40 High Hill Reservoir Dam

...2024 HMP Update

The City will complete the recommended improvements identified in the most recent Phase 1 Inspection Report (April 21, 2023), including the development of an Emergency Action Plan and Operations & Maintenance Manual. (significant hazard/every five years)

Studies and Analyses

- Prepare a formal Operation and Maintenance Plan
- Finalize the Emergency Action Plan.

Recurrent Maintenance Recommendations

- Regularly monitor the embankment for animal burrows, localized depressions, bare spots, and any other type of unusual activity.
- Regularly mow (minimum of three times per year) the embankment, abutments, and within 20 feet of the dam to control tree and brush growth which inhibits visual observations of the dam.
- Exercise the inlet/outlet valves at least twice annually, quarterly is preferred.
- Repair concrete cracks and spalls as they develop.
- Clean out stormwater collection manholes on the embankment crest periodically and keep inlets free of vegetation and debris.

Recommended Minor Repairs

- Establish grass cover in localized bare spots due to erosion.
- Fill animal burrows with structural fill and cover with loam and seed.
- Remove vegetation at the stormwater manholes inlets along the embankment crest and clean out any debris within the manholes.

- Action Type: Planning, Pre-Disaster
- Priority Score: __
- Lead: Department of Public Infrastructure
- Supporting: MA DCS ODS
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Budget, State Dam Removal & Repair Grant Program, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Property protection/Improved public health, safety, and welfare/Reduced potential for contamination
- Vulnerable Area: Dams
- Hazards Addressed: Flood-related Hazards

#37

Action #41 *Ensure the resiliency of pump stations throughout the City...includes the status reported in up to three plans...need to identify the current status.*

Climate Change Vulnerability Assessment and Adaptation Planning Study for Water Quality Infrastructure in New Bedford, Fairhaven and Acushnet, June 30, 2014¹

The results of the vulnerability analysis showed that hurricane barriers around New Bedford Harbor began to be compromised by Category 2 hurricanes with 4-foot SLR and Category 3 hurricanes at current mean higher high water (MHHW). At a Category 3 storm with 4-foot SLR, maximum inundation depths in the area would reach 32 feet.

Recommendations include adding on-site generators, checking for buoyancy, and flood-proofing doors, electrical systems, and air intakes at vulnerable structures.

New Bedford Pump Station Floodproofing Project, 2016

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

This Integrated Plan identifies appropriate sequencing and scheduling of work to address the City's most pressing public health, critical infrastructure and environmental protection issues regarding the City's wastewater, stormwater, and flood protection.

Belleville Avenue

Climate Change Vulnerability Assessment and Adaptation Planning Study for Water Quality Infrastructure in New Bedford, Fairhaven and Acushnet, June 30, 2014

- Require floodproof doors for entries and loading dock as well as floodproofing electrical vault and air intakes. Also, incoming sewer manholes will need to have covers bolted and gasketed. Potential cost range is \$25,000 to \$200,000.

New Bedford Pump Station Floodproofing Project, 2016

- Non-critical priority
- All improvements pending

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Major Upgrade

Clarks Cover (Hurricane Barrier)

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Rehabilitation

Coggeshall Street

Climate Change Vulnerability Assessment and Adaptation Planning Study for Water Quality Infrastructure in New Bedford, Fairhaven and Acushnet, June 30, 2014

- Floodproofing of doors, windows and vaults will be required. Existing vents will need to be raised. Electrical infrastructure such as services, generators and transformers

¹ Climate Change Vulnerability Assessment and Adaptation Planning Study for Water Quality Infrastructure in New Bedford, Fairhaven and Acushnet, June 30, 2014.

will either need to be raised or protected with floodwall system with flashboards for access. Structure and vaults should be checked for buoyancy. Controlling water levels above roof line likely not feasible. Potential cost range is \$150,000 to \$350,000.

New Bedford Pump Station Floodproofing Project, 2016

- Non-critical priority
- Partial improvements completed; others remain pending

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Major Upgrade

Cove Road

Climate Change Vulnerability Assessment and Adaptation Planning Study for Water Quality Infrastructure in New Bedford, Fairhaven and Acushnet, June 30, 2014

- Floodproof existing doors. Electrical service should be raised and floodproofed with transformer protected as well. Generator vent should be protected with cut off wall. Gas service needs to be assessed. Controlling water levels above roof line likely not feasible. Potential cost range is \$50,000 to \$250,000.

New Bedford Pump Station Floodproofing Project, 2016

- Critical priority
- All Improvements pending

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Major Upgrade

Dottin Place

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Replacement

East Rodney French Boulevard

Climate Change Vulnerability Assessment and Adaptation Planning Study for Water Quality Infrastructure in New Bedford, Fairhaven and Acushnet, June 30, 2014

- Floodproof doors and windows. Vents will need to be protected with cutoff wall. Electrical service will need to be raised and gas service needs to be evaluated. Controlling water levels above roof line likely not feasible. Potential cost range is \$25,000 to \$150,000.

New Bedford Pump Station Floodproofing Project, 2016

- Critical priority
- Partial improvements completed, others pending

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Rehabilitation

Forbes Street

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Major Upgrade

Fort Taber Park

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Major Upgrade

Front Street

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Replacement

Hall Estates

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Replacement

Hanover Street

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Replacement

Hathaway Road

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Replacement

Howard Avenue

Climate Change Vulnerability Assessment and Adaptation Planning Study for Water Quality Infrastructure in New Bedford, Fairhaven and Acushnet, June 30, 2014

- Require floodproof doors and windows including accessways to below grade vaults. Above ground tank will have to be anchored and vaults checked for buoyancy. Generator should be provided for site. Controlling water levels above roof line likely not feasible. Potential cost range is \$150,000 to \$350,000.

New Bedford Pump Station Floodproofing Project, 2016

- Critical priority
- Partial improvements completed, others pending

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Replacement

Howland Street

New Bedford Pump Station Floodproofing Project, 2016

- Critical priority
- Partial improvements completed, others pending

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Replacement

Industrial Park

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Major Upgrade

Jones Street

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Replacement

Joyce Street

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Replacement

MacArthur Drive

Climate Change Vulnerability Assessment and Adaptation Planning Study for Water Quality Infrastructure in New Bedford, Fairhaven and Acushnet, June 30, 2014

- Potentially require floodproof door, generator and floodproofing of vaults that could be points of entry. Potential buoyancy of building should also be assessed. Controlling water levels above roof line likely not feasible. Potential cost range is \$100,000 to \$250,000.

New Bedford Pump Station Floodproofing Project, 2016

- Non-critical priority
- All improvements pending

Marlborough Street

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Rehabilitation

Merrimac Street

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Replace with Low Pressure Sewer

Peckham Road

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Replacement

Pequot Street

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Replacement

Popes Island

Climate Change Vulnerability Assessment and Adaptation Planning Study for Water Quality Infrastructure in New Bedford, Fairhaven and Acushnet, June 30, 2014

- Access hatch to pump station will need to be floodproofed. Electrical service and control panels will need to be raised and floodproofed. Ability to operate pump station remotely will need to be confirmed. Generator should also be provided that they will need to be protected as well. Potential cost range is \$100,000 to \$250,000.

New Bedford Pump Station Floodproofing Project, 2016

- Non-critical priority

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Rehabilitation

Potter Street

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Replacement

Rowe Street

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Rehabilitation

Sassaquin Avenue

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Replacement

South Water Street

Climate Change Vulnerability Assessment and Adaptation Planning Study for Water Quality Infrastructure in New Bedford, Fairhaven and Acushnet, June 30, 2014

- Potentially require floodproof door and floodproof windows. Generator and electrical service will likely need to be raised or protected. Little information available for this site to identify other needs. Potential cost range is \$100,000 to \$250,000.

Shawmut Avenue

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Replacement

Valley View Drive

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Replacement

Wamsutta Street

Climate Change Vulnerability Assessment and Adaptation Planning Study for Water Quality Infrastructure in New Bedford, Fairhaven and Acushnet, June 30, 2014

- Potentially require floodproof doors as well as floodproofing at-grade entryway and building penetrations. Generator will also need to be protected likely with wall system. Potential buoyancy of building should also be assessed. Controlling water levels above roof line likely not feasible Potential cost range is \$75,000 to \$250,000.

New Bedford Pump Station Floodproofing Project, 2016

- Non-critical priority
- Partial improvements completed, others pending

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Major Upgrade

Welby Road

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Major Upgrade

Zuckerman's Farm

Long Term CSO Control and Integrated Capital Improvements Plan, January 2017

- Rehabilitation

- Action Type: Planning, Pre-Disaster
- Priority Score: __
- Lead: Department of Public Infrastructure
- Supporting: _____
- Time Frame: Long Term/4-5 Years
- Financing Options: DPI Wastewater Enterprise Fund, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Property protection/Improved public health, safety, and welfare/Reduced potential for contamination
- Vulnerable Area: Municipally-owned Infrastructure
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-Wastewater/Stormwater Systems

#38

Action #42 *Implement the preferred alternative identified for each CSO Group*

...Long Term CSO and Integrated Capital Improvements Plan//Climate Change Vulnerability Assessment and Adaptation Planning Study for Water Quality Infrastructure in New Bedford, Fairhaven and Acushnet, June 30, 2014/City of New Bedford Green

Infrastructure Master Strategy and Implementation Roadmap Report, June 2022/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018

CSO Group 1

- Clean approximately 3,900 feet of the Cove Road Collector (15-inch to 36-inch diameter) and approximately 4,600 feet of the Hurricane Barrier Collector (24-inch to 84-inch diameter) to remove accumulated sediment and debris.
- Complete an IDDE evaluation of the area tributary to Regulator 003B including those locations within Dartmouth and New Bedford. Upon removal of illicit connections, remove weir in Regulator 003B and plug connection to sewer system.
- Construct an offline storage tank at Clarks Cove ponding area and consolidation conduits from all regulators to convey the overflow to the storage tank. Storage tank volume is approximately 6.0 million gallons in order to capture 6-month storm event. Combined flows which cannot be stored by the tank would overflow to Clarks Cove. Stored combined flow in tank would be pumped back to system (Main Intercepting Sewer at West Rodney French Boulevard) after the storm event.
- Implement West End Phases 4 and 5 Sewer Separation (158 acres) in the West End to abate flooding at Maple and Chancery Street as well as reduce flooding downstream. Sewer separation includes reconstruction of neighborhood streets, complete water system ADA improvements, and complete system reinforcement of the existing sanitary sewer system through I/I mitigation and CIPP lining.
- St. Luke's Sewer Separation (25 acres) in the West End to abate flooding near St Luke's Hospital as well as reduce flooding downstream. Sewer separation includes reconstruction of neighborhood streets, complete water system upgrades, ADA improvements, and complete system reinforcement of the existing sanitary sewer system through I/I mitigation and CIPP lining.
- Sewer separation (73 acres) in areas tributary to Regulator 018A. Sewer separation includes reconstruction of neighborhood streets, complete water system upgrades, ADA improvements, and complete system reinforcement of the existing sanitary sewer system through I/I mitigation and CIPP lining. Also, modify Regulator 018A to mitigate overflows up to 3-month storm event.
- Construction of green infrastructure and subsurface storage technologies for approximately 65 acres of impervious areas tributary to Regulator 003B.

CSO Group 2

- Alternative 005-010_1 Group-wide construction of street trees, bioretention and subsurface storage technologies for approximately 20 acres of impervious areas.
- Sewer separation (75 acres) of combined areas tributary to Outfalls 005 through 010. Sewer separation includes reconstruction of neighborhood streets, complete water system upgrades, ADA improvements, and complete system reinforcement of the existing sanitary sewer system through I/I mitigation and CIPP lining.
- Adjust regulators and weir elevations to meet the targeted level of control. It is important to evaluate the impact of regulator modifications so that raising weirs does not create surcharging, basement backups or flooding in larger events.

Regulator modifications can be incorporated into other alternatives as appropriate to optimize solutions as needed.

CSO Group 3

- Group-wide construction of street trees, bioretention and subsurface storage technologies for approximately 70 acres of impervious areas
- Sewer separation (approximately 150 acres) of combined areas tributary to Outfalls 012 to 017. Sewer separation includes reconstruction of neighborhood streets, complete water system upgrades, ADA improvements, and complete system reinforcement of the existing sanitary sewer system through I/I mitigation and CIPP lining. Also, weir modifications at Regulator 015A in order to meet CSO level of control.

CSO Group 4

- Reconstruct the weir at Regulators 030A, 030B, 031A, 031B, 031C and 032A. Remove the dry weather connection from the Main Intercepting Sewer and reroute to the under sewer. Flow would be conveyed to the Howland Street pumping station and Cove Road pumping station. Reconnect overflow to outfall pipes to convey flow to Outfalls 030, 031 and 032 during larger storm events.
- Increase pipe diameter for sewer pipe from under sewer in South Second Street to Howland Street pump station (across Route 18) from 15-inch to 18-inch diameter.
- Increase pipe diameter for sewer pipe from MacArthur Drive to Howland Street pump station from 15-inch to 24-inch diameter.
- Replace the Howland Street pump station and maintain current capacity (5,500 gpm).
- I/I removal, including CIPP lining of sewer mains, epoxy lining of manholes and testing and sealing of service connections for separated areas tributary to Regulators 030A, 030B, 031A, 031B, 031C and 032A.

CSO Group 5

- Block the high-level outlet at Regulator 034A to prevent overflows from reaching Outfall 034.

CSO Group 6

- Construct an offline storage tank (approximately 180,000 gallons) at the City-owned Whale's Tooth Parking Lot between Acushnet Avenue and Herman Melville Boulevard and consolidation conduits from all regulators to convey the overflow to a storage tank which is sized for a 3-month storm event. Following the rainfall event, the flow would be pumped back to the Main Intercepting Sewer in Acushnet Avenue.
- Sewer separation (95 acres) of combined areas tributary to Regulator 020B. Sewer separation includes reconstruction of neighborhood streets, complete water system upgrades, ADA improvements, and complete system reinforcement of the existing sanitary sewer system through I/I mitigation and CIPP lining. New separated

storm drains would convey flow to the proposed Copper Brook Drain. This would also allow for separation of Interstate 195 drainage from the City's system.

- Replace the Copper Brook Storm drain from Cedar Grove to the outfall (approximately one mile). The existing infrastructure is failing and has a number of known structural deficiencies. Includes Wamsutta Street swale improvements, which is comprised of piping flows and site clean-up to improve outflow capacity. Also, includes construction of larger siphons at Acushnet Avenue and Wamsutta Street/Route 18 which connect to new Copper Brook Storm drain.
- New Route 18 storm drain to remove highway stormwater flow from the combined system and convey it to the proposed Copper Brook drain.
- Hicks-Logan-Sawyers I/I removal, including CIPP lining of approximately 11,300 feet of sewer mains, epoxy lining of manholes and testing and sealing of service connections. Note that this work is located only in portions of the separated or partially separated areas of the sewer system.
- Enlarge approximately 400 feet of existing 16-inch diameter sewer pipe in North Front Street at Wamsutta Street to 21-inch diameter. This sewer pipe is located just upstream of the Wamsutta Street pumping station.

CSO Group 7

- Sewer separation (approximately 250 acres) of combined sewers includes reconstruction of neighborhood streets, complete water system upgrades, ADA improvements, and complete system reinforcement of the existing sanitary sewer system through I/I mitigation and CIPP lining. Sewer separation would allow for the removal of stormwater flow from Route 18 and the combined system in the Deane Street area tributary to the combined system causing operational issues at the Coggeshall Street pumping station. Removal of stormwater from the North End Relief Interceptor could help address flooding along the Main Intercepting Sewer. The work could also help support the necessary infrastructure improvements to support development of the International Marketplace along Acushnet Avenue.

CSO Group 8

- Construct an offline storage tank (approximately 0.4 million gallons) at the Manomet Mills site, between Belleville Avenue and Riverside Avenue and consolidation conduits from Regulators 023A, 024A, 041A and 041B to convey the overflow to a storage tank which is sized for a 3-month storm event.
- Sewer separation (60 acres) of combined areas in the Coffin Avenue area. Sewer separation includes reconstruction of neighborhood streets, complete water system upgrades, ADA improvements, and complete system reinforcement of the existing sanitary sewer system through I/I mitigation and CIPP lining.
- Complete an IDDE evaluation of the area tributary to Regulator 026A and Regulator 027C. Upon removal of illicit connections, remove weir at Regulator 026A and plug connection from storm drain line to sewer main in River Road.
- Increase diameter of River Road\Mill Road sewer to 24-inch diameter from River Road at Sylvia Street to Belleville Avenue and Mezeppa Street. Increase diameter of

River Road/Mill Road sewer to 36-inch from River Road at Sylvia Street to Howard Avenue pumping station.

- Modification at Regulator 027A to raise the weir height forcing additional flow to the Howard Avenue pumping station.
- Increase capacity of Howard Avenue pumping station from 3.75 mgd to 9.7 mgd. Construct new 18-inch diameter force main. This may allow for future expansion of Acushnet sewer system to the City and conveyance of peak wet weather flows.
- Sewer separation of combined areas in the Lucy Street area. Sewer separation includes construction of a new drain pipe from Stratford Street catch basin to Mezeppa Street and River Road. This would support future stormwater work upstream as well as allow for the removal of an existing over under system and discharge of stormwater at Regulator 027C. Work would also include reconstruction of neighborhood streets, complete water system upgrades, ADA improvements, and complete system reinforcement of the existing sanitary sewer system through I/I mitigation and CIPP lining.
- Eliminate the high-level outlet in Regulator 027G at Belleville Avenue and Humphry Street.
- Over-under manhole inspection and removal program. Identify those locations where they exist and construct new access for sewer and plug drain connection.
- Increase diameter of Belleville Avenue collector sewer (3,500 feet) between Brewster Street and the inlet to the Belleville Avenue pumping station to 48-inch diameter.
- CIPP lining of approximately all of sewer mains, epoxy lining of all manholes and testing and sealing of all service connections in separated areas tributary to Outfalls 026 and 027.
- Install a flow regulating device at Regulator 027D and Regulator 027B to regulate 3-month flow to new 24-in overflow conduit that would convey flow to the new River Road sewer for conveyance downstream via the Howard Avenue pumping station.
- Increase diameter of sections of the overflow pipes at Belleville Avenue pumping station (Outfall 041) from 36-inch to 48-inch diameter (300 lf).
- Construct 30-inch diameter relief sewer and overflow weir in Belleville Avenue from discharge of Howard Avenue pumping station force main to downstream of Regulator 041B (2,600 feet). Relief sewer is for more intense storm events and would convey flow directly to Outfall 041.

CSO Group 9

- Group-wide I/I removal, including CIPP lining of approximately 245,000 feet of sewer mains, epoxy lining of manholes and testing and sealing of service connections. Private inflow removal should also be addressed in this area including disconnection of roof leaders in the Pine Grove area.
- Action Type: Planning, Pre-Disaster
 - Priority Score: __

- Lead: Department of Public Infrastructure
- Supporting:
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Budget, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: CSO abatement, Mitigation of flooding, Opportunities for infrastructure renewal
- Vulnerable Area: Municipally-owned Infrastructure
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-Wastewater/Stormwater Systems

#39

Action #43 *Implement the preferred alternative identified for each Stormwater Collection System*

...Long Term CSO and Integrated Capital Improvements Plan/State of the Coast: Future Climate-Driven Risks and Their Solutions on Massachusetts' South Coast/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018/City of New Bedford Open Space and Recreation Plan, 2021 - 2028

Copper Brook Drain System (SW1)

Tarkiln Hill Road and Kings Highway

- Replacement of the drainage at the intersection of Tarkiln Hill Road and Kings Highway is required to mitigate flooding for a 10-year storm event. MassDOT is currently in the process of designing improvements along Kings Highway and it is expected that drainage improvements at this location included. In addition to increased drainage in the roadway, the new drainage system would need to extend into the railroad right-of-way to the existing ditch that carries flow to Nash Pond. It was observed during field inspections that this ditch was overgrown and full of debris; it is recommended that the ditch be cleaned prior to upstream drainage improvements. This work should be performed in coordination with railroad design efforts for the proposed South Coast Rail.

Nash Pond and Nash Road

- To facilitate free flow through the outlet structure, it is recommended that the existing bar rack and accumulated debris and sediment are removed. The existing catch basins and drainage systems that currently discharge into the culvert under Nash Road should be diverted to Nash Pond. Diverting these systems should alleviate the high tailwater conditions that are contributing to flooding on Nash Road. In addition, the open channel located on the south side of Nash Road in private property should be cleaned out, along with its inlet and outlet pipes. Trash and sediment should be removed from open channel. Enclosing the open channel into a pipe should be considered to reduce maintenance and debris accumulation.

Copper Brook system flows under two railroad tracks between Nash Road and Nauset Street. These culverts should be inspected and repaired as necessary.

Purchase Street (Nauset Street to Coggeshall Street)

- The 24-inch culvert on Purchase Street is in poor condition and undersized for peak flows during a 10-year storm. A portion of the culvert was recently replaced with a 3-foot by 3-foot box culvert during improvements to the nearby railroad tracks. Due to site constrictions, replacement of the culvert downstream of the 3-foot by 3-foot box culvert was not feasible (the culvert runs adjacent to and under existing buildings). This pipe that was not replaced could continue to serve as a bottleneck for the system because the alternative of diverting the drain into City streets would require cost prohibitive utility relocations. It is recommended that the remaining 24-inch culvert upstream of the new box culvert be replaced with a 3-foot by 3-foot box culvert. The new box culvert should provide storage for excess flow and have the required capacity if future conditions allow replacement of the downstream system becomes feasible.

Purchase Street (Coggeshall Street to Cedar Grove Street)

- South of Coggeshall Street, the existing Copper Brook conduit meanders through the Route 18 interchange and very little information is known about size, materials, or condition. A new drain on Purchase Street from the intersection with Sawyer Street would provide conveyance for existing drainage flows. The proposed drain would run south on Purchase Street and connect to the proposed drainage improvements included in CSO6A – Copper Brook Drain System – Phase 1. The existing culvert would remain in operation in order to serve as relief during large storm events and for any unknown drainage connections. The improvements include a new 3-foot by 3-foot box culvert on Purchase Street from Sawyer Street to Cedar Grove Street (approximately 575 linear feet).

Buttonwood Brook (SW2)

Brownell Avenue and Hawthorn Street

- To mitigate flooding issues at the intersection of Brownell Avenue and Hawthorne Street a combination of increased pipe capacity and improvements to the Buttonwood Park Pond are recommended. The existing culvert in the intersection is a 5-foot by 3-foot box culvert that runs through private property (460 Hawthorn Street) and acts as a bottleneck for the system. The existing culvert would need to be replaced with twin 3-foot by 4-foot box culverts to provide conveyance for the peak flow of a 2-year, 24-hour storm. To accommodate the new culvert, a new junction manhole would be required at the upstream end. A new headwall would be required at the downstream end. In addition to flooding abatement, this project would also address infrastructure issues associated with the culvert adjacent to 460 Hawthorn Street which has known structural issues. Additional flood protection could be gained by using Buttonwood Park Pond for storage, particularly during larger, storm events. Utilizing the Pond for storage would help mitigate flooding at

the intersection of Brownell Avenue and Hawthorne Street, as well as at the Fuller Parkway.

Buttonwood Park Pond and Brook Water Quality

- Addressing water quality issues in Buttonwood Park Pond and Buttonwood Brook could require the coordination of several structural and non-structural best management practices (BMPs). The intent of these improvements is to address the immediate issues of pollutants, eutrophication, and sediment buildup, but to also prevent future issues from arising. Three recommendations are provided below for addressing these needs.
- *Constructed Wetlands (Upstream of the Pond)*
The City is required by permitting agencies to recreate wetlands in order to compensate for the loss of wetlands due to improvements at the dam. The current design calls for this re-creation to take place at the mouth of Buttonwood Brook into the dam in the form of constructed wetlands. These wetlands are intended to meet the requirements of the permitting agency but should also be designed to act as a filter for pollutants and suspended sediments. Dredging is also being considered as part of this project and should remove many of the existing pollutants that are attached to the settled solids. Replacement of the drainage at the intersection of Tarkiln Hill Road and Kings Highway is required to mitigate flooding for a 10-year storm event. MassDOT is currently in the process of designing improvements.
- *Green Infrastructure*
Structural BMPs are recommended throughout the watersheds to the Brook and Pond. The watersheds are comprised of a variety of land uses, including MassDOT roadways, commercial businesses, and residential areas. In the residential areas in particular, there is an opportunity to implement wide-spread, small BMPs such as rain gardens, vegetative filter strips, infiltration areas, and tree box filters. The cumulative impact of these BMPs mitigates pollutants and also provide a small measure of flood control. Additionally, this program represents an excellent public education opportunity, and it is recommended that community groups, neighborhood organizations, and local schools are invited to participate in the BMP evaluation process, construction, and on-going maintenance.
- *Constructed Wetlands (Downstream of the Zoo)*
A second constructed wetland is proposed in the Zoo area (e.g., downstream of the Pond). The wetland would treat the base flow and “first flush” flows from the Brook after it has been in contact with animal enclosures. The focus of treatment would be on pathogens, with additional treatment for nutrients, metals, and suspended solids. When complete, the project could be incorporated into a future exhibit at the Zoo to highlight the importance of wetland habitats. The wetlands would be designed to treat the maximum pollutant loading expected under full zoo build-out and also to mitigate peak flows for a 25-year storm event. Since a portion of the existing zoo parking lot would need to be removed to make room for the wetland, a new pervious pavement parking lot could also be built. Additionally, the Brook

would need to be diverted from its current location to convey flow to the constructed wetland.

Rockdale Avenue (Dartmouth and Allen Streets) (SW3)

- Street flooding has been reported at two intersections on Rockdale Avenue. New catch basins are needed at both intersections to mitigate stormwater street flooding. The new catch basins should be placed in the flatter areas of the roadways where runoff tends to slow down or accumulate. Additional catch basins upstream of the intersection are also recommended to help mitigate flooding during larger storm events.
- The options for connecting the new catch basins to the existing stormwater system are limited. Much of the infrastructure in the area is combined sewers or separated drains that are already being utilized. New catch basins at the Allen Street intersection would be connected to the existing combined sewer. Additionally, the existing catch basins in the Allen Street intersection should be inspected and cleaned. The new catch basins near the intersection with Dartmouth Street can be connected to the existing separated drainage system. Additional infrastructure, including manholes and pipes, would also be required to connect the new catch basins into the existing systems. It is anticipated that four additional catch basins will be required per intersection.

Acushnet Avenue at Pearl Street (SW4)

- Ponding at the end of Pearl Street is caused by insufficient capture of upstream runoff, an abandoned pipe, and grading on the street. The resolution to this issue is additional infrastructure, which should be coordinated with the CSO improvements in the area; particularly the construction of the proposed CSO storage facility.
- Additional catch basins are recommended upstream of the ponding area on Pearl Street and Acushnet Avenue. The final number and location of the new structures should be verified with a gutter analysis prior to construction, but it is estimated that eight to ten additional catch basins are required; as such, no site-specific figure is included for this resolution concept. Additionally, minor grading may be required in some areas to facilitate effective stormwater capture.
- A new outlet is required to replace the abandoned pipe that runs easterly across the City's railyard. This outlet should either run south to connect into existing infrastructure or connect into the new CSO abatement improvements. The final determination of the direction of flow should be made during final modeling of the CSO improvements to determine if the additional stormwater flow has a negative impact on the system's CSO mitigation capabilities.

Barnum Street, Lucy Street, and Stratford Street Systems (SW5)

Un-named Brook (Middle Road) Improvements

Added in by Chance:

- See the 2007 CDM Smith – Stratford Street and Barnum Street Drainage Design Report (DPI)

- The recommended un-named Brook improvements include a number of different drainage problem solutions including pipe construction, channel improvements and brook cleaning. The recommended plan focuses on increasing the capacity of culverts and the brook channel to mitigate flooding. Improvements include the following:
- Formerly name the brook: Consider indigenous recognition (e.g., Ousamequin, Pokenoket, Etc.) name will help in planning and community education/buy in.
- 120 feet of new 4.5-foot by 3-foot box culvert parallel to the existing 27-inch culvert across Acushnet Avenue.
- 225 feet of new 5-foot by 3-foot box culvert constructed parallel to the existing 24-inch/18-inch drain line that discharges to the Winston Street wetland north of Lucy Street.
- 290 feet of 6-foot by 3-foot box culvert that would run through the Winston Street wetland area and discharge behind 936 Lucy Street.
- Reconstruct the brook channel behind 936 Lucy Street and cleaning of the Phillips Road brook channel and culverts to increase conveyance capacity.
- Replace the existing culverts at Terry Lane and Chaffee Street with 4-foot by 6-foot and 5-foot by 7-foot box culverts, respectively, and construct new inlet and outlet structures with riprap aprons.
- Clean and improve bank condition of 75 feet of brook channel downstream of Terry Lane.
- Clean and removal of vegetation/debris of 125 feet of brook upstream of Chaffee Street.

Outfall 027 Area Improvements

- The recommended plan includes improvements to the Outfall 027 Branch upstream of Stratford Street. Improvements include the following:
- Replace the existing 15-inch and 12-inch culverts with 305 feet of 24-inch and 155 feet of 2-foot by 4-foot box culvert between Osgood Street and Maplewood Street.
- Construct new catch basins on Barnum Street and Osgood Street, as well as new inlet and outlet structures and riprap aprons.
- Clean approximately 200 feet of brook channel south of Maplewood Street and 90 feet south of Elliott Street. Shore the existing banks to protect private property. Remove vegetation, debris and accumulated sediment from remaining brook channel in project area.
- Replace the existing culverts at Bristol Street, Elliott Street, and the Stratford Street connection to the City's drainage system with new 2-foot by 3-foot box culvert, 3-foot by 4-foot box culvert, and 42-inch culvert, respectively. Lowering of the existing channel at Elliot Street and Stratford Street allows for the installation of larger diameter pipes at Elliot Street and Stratford Street.
- Construct weirs at all inlet structures to maintain the existing water surface elevation in adjacent wetlands.

Belleville Avenue (Sawyer Street to Coffin Avenue) (SW6)

- Additional flood protection for a 2-year, 24-hour storm event may be warranted on Belleville Avenue. The City recently installed new catch basins along Belleville Avenue and a 36-inch outlet pipe through Riverside Park that are anticipated to improved conditions. Additionally, pipe capacity should be increased somewhat by improvements planned as part of the Deane Street Sewer Separation Project (CSO7A), including replacing an existing 30-inch combined sewer between Sawyer Street and Holly Street. However, the results of these improvements are not yet known since there have been no major storm events since the installation of the catch basins and the Deane Street Sewer Separation project has yet to be constructed.
- Additional improvements to address the flooding, should the above references improvements not be as successful as planned, might be found by utilizing open space in Riverside Park. The park could be used either as primary relief for flooding on Belleville Avenue and/or for installation of a BMP for water quality treatment. If used for flooding relief and detention, a dry detention basin or underground infiltration chambers could be built. If there is also a focus on water quality, a bioswale or rain garden could be implemented. Ultimately, a bioretention basin would be recommended because it provides for both flood relief and water quality treatment

Belleville Avenue at Earle Street (SW7)

- Additional inlet capacity is required in the area of Belleville Avenue and Earle Street in order to mitigate street flooding. The malfunctioning catch basin located adjacent to Global gas should be inspected, and the structure should either be cleaned or replaced. An additional two to four catch basins should be located in upstream areas to capture flow before it can accumulate on the flat road surface. The new catch basins should be connected to the existing separated drain that flows to Outfall 024.

Dottin Place Brook (SW8)

- Replacement of the existing drainage system would require construction in the backyards of a residential area. Construction activities in this residential area would result in dust, noise, and potential hazards to pedestrian and automobile traffic. Construction impacts can be mitigated by limiting work hours, effective traffic management plans, and other construction management techniques. Given the close vicinity of residential houses, special considerations may be required to mitigate impacts to residents to the largest extent possible.
- By increasing the conveyance capacity of the system, the peak flow is anticipated to be increased to downstream systems. Increasing the peak flow to downstream systems not designed to convey the added stormwater can add to flooding conditions. As such, the impact on downstream systems needs to be considered before improvements are implemented. Coordination with MassDOT may be required as Dottin Brook connects to infrastructure owned by this agency.

- Determining the type of improvements that are recommended (i.e., closed pipe versus open channel) should include further coordination between individual City departments. The City's Housing Authority owns the property on which the proposed improvements are proposed. The City's DPI maintains and understands the implications of the sewer and drainage infrastructure. The two agencies should work together to determine which alternative is preferred and to discuss the maintenance responsibilities of the constructed facilities.

Sassaquin Pond Area (SW9)

- The Sassaquin Pond Watershed Restoration Study (Nitsch Engineering, March 2014) established primary goals of improving the water quality in Sassaquin Pond by 1) implementing green stormwater infrastructure and source control measures to reduce pollutant loading, and 2) establishing an ongoing educational program to increase public awareness of beneficial and detrimental activities. Future considerations for secondary goals included reducing the amount of impervious area in the watershed, providing a regulatory framework for sustainable growth, implementing an operations and management (O&M) plan for future green infrastructure, and establishing a funding mechanism for improvements.
- To meet the first primary goal of implementing green infrastructure, the study divided the watershed into six subsections and evaluated each for the feasibility of installing BMPs. Due to the availability of space, the primary BMPs considered were proprietary sub-surface treatment devices and a combination of tree box filters and leaching pits. Due to superior treatment and infiltration capabilities, as well as cost considerations, the tree box filters and leaching pits were the primary recommended BMP.
- The framework program and materials were developed to meet the other primary goal of an ongoing educational program. Materials included a brochure and presentations. It was recommended that presentations be made to the public yearly and permanent informational signs be placed around the Pond.
- The City has also been investigating the use of improvements that would directly treat excess nutrients in Sassaquin Pond, including possibilities such as aeration and pollutant settling. A draft report entitled Sassaquin Pond Water Quality Management Plan (Coastal Systems Program School for Marine Science and Technology University of Massachusetts Dartmouth, May 2016) recommended a one-time application of alum to settle out the excess nutrients that have settled into pond sediment and continuously contributed to eutrophication. While the alum application is recommended, it should be implemented in tandem with the above BMP improvements to prevent accumulation of nutrients in the future.

St. Luke's Hospital (SW10)

- St. Luke's Hospital experiences flooding due to insufficient inlet and pipe capacity. To address pipe capacity, improvements to the combined sewer system should be implemented (Project CSO1B). CSO1B is an integrated solution that is anticipated to increase pipe capacity in the vicinity of St. Luke's Hospital and decrease CSOs in

CSO Group 1 through sewer separation. Improvements to St. Luke's Hospital that address stormwater capture include the following recommended improvements.

- Several options are available to stem the volume of stormwater entering the Emergency Entrance driveway at St. Luke's Hospital. These options include:
 - Installing additional inlet capacity along Page Street, including trench drains in the driveway.
 - Installing a speed hump at the entrance and exit on the driveway.
 - Installing site-specific improvements in the hospital property (e.g., temporary walls during storm events).
 - Incorporating BMPs into existing landscaping features.

The Hospital is in the limits of the future St. Luke's Hospital Sewer Separation project, which is part of the improvements. New catch basins and other site drainage improvements should be connected to the new separated drainage system instead of the existing combined sewer. The exact location and number of catch basins should be determined based on a detailed drainage study, including a gutter analysis, and coordination with the hospital. It is not recommended that the new catch basins be connected to the existing combined sewer (which has limited capacity) unless scheduling of the St. Luke's Sewer Separation project becomes prohibitive or other obstacles occur. If this does need to happen, then provisions should be made in the project to facilitate future connection to the drainage systems once they are constructed.

Adding a speed hump at the entrance and exit to the Emergency Entrance prevents entry of stormwater runoff in the gutter on Page Street. The humps would need to be several inches high in order to be above the upstream gutter elevation. Additionally, the humps would need to serve as a pedestrian crossing, and therefore meet Americans with Disabilities Act (ADA) requirements.

Site-specific improvements can be costly but should be capable of providing a higher level of flood control than the City infrastructure can on its own. These improvements could include changes to site grading, installation of temporary flood control gates, new flood-proof doors and window and/or moving critical infrastructure out of flooding areas.

There are several landscaped areas in the hospital grounds that are immediately adjacent to Page Street. These green areas present an opportunity to implement best management practices to control flooding. The recommended BMPs for the hospital are rain gardens. These BMPs provide limited flood control and water quality treatment, while maintaining an aesthetic atmosphere. Stormwater runoff on Page Street would be diverted from the gutter into the rain gardens via curb cuts in the existing sidewalk. Pedestrian access would be maintained on the sidewalks through plating over the curb cut. Runoff would be detained and treated in the rain gardens and discharged back into the existing combined sewer system or proposed

separated drainage system. Additional coordination with the hospital and a more detailed siting analysis for the rain gardens would be needed in order to proceed to construction.

Wilkes Public Library (SW 11)

- Street flooding is experienced in Acushnet Avenue in front of the Wilks Public Library near Brooklawn Park. To relieve pressure in the drainage system, which is causing backflow through catch basins, additional pipe capacity is required. The most efficient way to address pipe capacity is to replace the 12-inch pipes that currently bottleneck the drainage system immediately in front of the library. Approximately 515 linear feet of existing 12-inch drain should be replaced with new 15-inch reinforced concrete drain.
- It is recommended that the remaining drains on Acushnet Avenue be inspected and cleaned of any blockages that may exist. In addition, at locations where the pipe is being replaced and a pipe-to-pipe connection currently exists, it is recommended that a manhole is added for maintenance purposes. Based on geographic information system (GIS) mapping, three manholes are anticipated.
- Flooding in Brooklawn Park poses a threat to the park's infrastructure and use as a recreational facility, but does not threaten human health and safety, private property, or environmental health. It is therefore recommended that the park be allowed to continue to act as flood storage. To mitigate impacts to the park, site improvements could be made, possibly including flood protection for the Brooklawn Community Center, regrading of land immediately surrounding the duck pond, and/or protecting electric work. Additionally, the outlet structure for the duck pond should be cleaned of debris to allow free discharge to the drainage system on Acushnet Avenue

East Rodney French Boulevard and Hudson Street (SW12)

- Additional pipe capacity is required to mitigate flooding at the intersection of East Rodney French Boulevard and Hudson Street. Insufficient inlet capacity and undersized pipes fail to capture flow and it is bypassed to the low spot in the intersection. Once ponding begins, the undersized pipes and outfall cannot discharge at a sufficient rate to allow the catch basins in the intersection to discharge.
- To convey the peak flow from a 2-year, 24-hour storm, the existing 12-inch and 15-inch drain that runs from the intersection of East Rodney French Boulevard and Hudson Street to the outfall location should be replaced with 2-foot by 4-foot box culvert (approximately 775 feet).

Liberty Street (Parker Street to Durfee Street) (SW13)

- Liberty Street experiences flooding due to its flat topography, insufficient drainage structures, and possibly accumulation of sediment in existing drainage structures. To address the flooding, additional drainage infrastructure is required along Liberty Street. The new drainage should include additional inlet capacity and discharge to

existing drainage located on Durfee Street, Hathaway Boulevard, and Potter Street. An additional ten catch basins are anticipated on Liberty Street.

- The proposed drainage infrastructure should connect to an existing drainage system. The existing system discharges to an unnamed brook which ultimately flows to the Whaling City Golf Course. A drainage analysis of the existing drainage and brook system should be conducted prior to construction to determine availability of capacity and if any additional downstream improvements are required. It is anticipated that 15-inch and 18-inch drains on Durfee Street from Liberty Street to Hathaway Boulevard is anticipated to need to be replaced with larger capacity pipes in order to accommodate the additional flow.
- Additional measures are recommended to mitigate sediment transport originating from the City-owned property on the east side of Liberty Street. Best practices should be implemented to contain materials in designated storage areas to prevent clogging of catch basins on Liberty Street. The existing catch basin on Liberty Street should be inspected and cleaned if necessary.

MassDOT Stormwater Connections

- MassDOT-owned land is intertwined with the City; as such, a solid, mutual partnership is required to address shared combined sewer and stormwater issues. This means developing shared goals and metrics for achievement, as well as a shared commitment to communicating on projects being performed by either party. As the City is entering a critical period for infrastructure planning, it is recommended that MassDOT be consulted in the planning and design phases of any project that would impact connections from state roads. Additionally, MassDOT should consult with the City on any planned stormwater improvements in their property regardless if it impacts the City's stormwater or sewer systems. Conformance to the City's adopted Stormwater Ordinance and pending Stormwater Regulations should occur.

Open Channel Swales and Retention Ponds

- It is recommended that a maintenance policy be developed and implemented universally across the City to address existing open-channel and retention pond systems. Drainage swales in accepted roadway rights-of-way should be cleaned and maintained by the City. However, there are a number of brooks, drainage swales and detention basins – installed as part of various private developments – that are located in private property with no provisions for their maintenance. Maintenance of these facilities is integral to ensuring that they continue to operate as intended. The lack of appropriate maintenance can lead to sedimentation, clogging with debris, flooding, road closures, and property damage. Under recent changes to the City's stormwater regulations, developers are required to submit a bond and an O&M plan for maintenance of these types of systems.
- The recommended policy should address both access requirements for existing and future infrastructure. Provisions for existing infrastructure should establish responsibility and protocols for long-term maintenance. Provisions for future

infrastructure could be addressed through the recently adopted Stormwater Management Ordinance (Section 16-131), which established the authority to require long-term responsibility and maintenance of privately structural stormwater control facilities. The City is currently drafting stormwater rules and regulations that would require a developer to prepare an O&M Plan, including an enforceable maintenance agreement with the property owner. If the City assumes maintenance of future infrastructure, financial compensation for performing the required maintenance, wherever possible, should be required.

- Much of the proposed improvements above fall under the requirements of the MS4 permit, effective on July 1, 2017. Particularly, the City's ordinance and stormwater rules and regulations are anticipated to cover procedures for formalizing maintenance responsibilities for open channels, retention ponds, and other stormwater BMPs.

- Action Type: Planning, Pre-Disaster
- Priority Score:
- Lead: Department of Public Infrastructure
- Supporting: MassDOT (for MassDOT Stormwater Connections)
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Budget, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Improved water quality, Reduced flooding
- Vulnerable Area: Municipally-owned Infrastructure
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-Wastewater/Stormwater Systems

#40

Action #44 Implement the identified improvements from the 2011 Hurricane Dike and Barrier System NFIP Levee System Evaluation Investigation Report
...Long Term CSO and Integrated Capital Improvements Plan

Operations and Maintenance Plan and Maintenance Activities

The Levee System Evaluation Investigation Report identified a lack of formal operations and maintenance for the New Bedford – Fairhaven - ACOE Hurricane Barrier System. It is recommended that the City of New Bedford (City) and the Town of Fairhaven develop this plan together to address both short- and long- term operations and maintenance (O&M) practices. There is an existing O&M manual from 1966 that provides detailed regulation and requirements detailing the inspection, maintenance, and operation of the hurricane barrier and dike, Clarks Cove Dike, and Fairhaven Dike per FEMA requirements Section 65.10 of the National Flood Insurance Program (NFIP) regulations. The manual also includes a hurricane flood warning system that operates in coordination with the U.S. Weather Bureau to identify a hurricane or coastal storm threatening the North Atlantic

States. The existing manual should be reviewed and updated to meet current standards and to reflect current equipment, operating practices, and organizational hierarchy.

Adam Hart: As per June 6, 2023, Site Visit Summary...O&M Manual is process/to be finalized by January 2025 by consultant. City to supplement O&M with barrier maintenance schedules.

Major Repair Recommendations

Beneath the barrier lies six conduits that were only visually inspected from the surface in the Levee System Evaluation Inspection Report. They were noted as being in fair to good condition in the report due to their ability to open and close properly and only minor defects reported. The Report did recommend that the water conveyances and conduits have a visual inspection every 5 years. Therefore, recently, the City attempted a video inspection of the 48-inch drain conduit to pursue proper inspection guidelines necessary for submittal to the ACOE. This video inspection was unsuccessful due to pipe debris and the potential need to dewater for the inspection to be successful. The City is currently looking into options to remove this debris and complete the video inspection and to eventually abandon five out of the six pipes (one pipe is required to serve as an outfall for drainage improvements behind Furniture City. Given the complexities of this project, the following suggested implementation sequence has been developed in support of accomplishing this inspection:

- Conduit Nos. 1, 2, 3, 5, 6 Cleaning, Inspection & Abandonment:
 - o Access to the gate operator structure.
 - o Remove debris and clean of sufficient ocean side conduit pipeline to ensure a clean pipe to at least ten feet beyond the toe of slope of the hurricane barrier armor stone covering.
 - o Dewater the ocean side pipeline as needed by inserting an air inflated plug into the ocean side conduit pushed to the end of the cleaned section of pipeline ensuring that there is at least five feet of cleaned and dewatered pipeline available beyond the toe of slope of hurricane barrier armor stone.
 - o Clean the land side pipeline to the manhole structure near the bottom of the landside ramp.
 - o Dewater the land side pipeline as needed by sandbagging at the landside structure as needed to minimize infiltration.
 - o Obtain a video of the cleaned pipe sections in each direction from the gate operator structure ensuring that the entire length of conduit lying beneath the hurricane barrier dike is included in the video. Confirm approval by ACOE.
 - o Furnish and install a bulkhead at the ocean side pipe inlet into the gate operator structure braced and otherwise secured so that sand/cement grout can be pump through the bulkhead via a 6-inch diameter port in the bulkhead located at the crown of the pipe with a sealed extension pipe rising from the port to at least ten feet above the mean high water while inside the gate operator structure. The bulkhead should have a means for removing the

interior riser for cleaning and reuse while not affecting the conduit pipeline fill.

- Remove sufficient overburden cover at the ocean side of the conduit to gain access to the top of the conduit pipe at the location of the five feet of cleaned pipeline between the plug and the top of slope of armor stones.
- Drill and tap a four-inch tapping sleeve or equivalent process at the top of the conduit pipe to provide a means for attaching a four-inch vent pipe extended vertically to at least one foot above high tide level and provide a removal cap on top end of the vent pipe.
- Pump a sand-cement grout (1000 pounds per square inch [PSI] compression strength) into the ocean side section until grout is observed discharging out of the vent pipe and allow for settlement and curing before removing the bulkhead at the interior of the gate operator structure. (NOTE: The bulkhead may be designed for reuse for each size pipe to be abandoned.).
- Furnish and install a bulkhead at the land side pipe inlet into the gate operator structure braced and otherwise secured so that sand/cement grout can be pump through the bulkhead via a 6-inch diameter port in the bulkhead located at the crown of the pipe with a sealed extension pipe rising from the port to at least ten feet above the top height of the land side structure connected to the conduit pipe being filled. The bulkhead should have a means for removing the interior riser for cleaning and reuse while not affecting the conduit pipeline fill.

- Conduit No. 4 Cleaning & Inspection work to include the following:

- Access to the gate operator structure.
- Obtain the diameter measurements and specific configuration details of the exposed pipe at the ocean side as needed to determine the dimensions of a bulkhead unit to be fabricated and used to cap the end of the conduit at the ocean side.
- Obtain measurements of the section of access ladder at the bottom of the gate operator structure to be replaced due to deterioration.
- Fabricate the bulkhead and ensure that it is designed for reuse.
- Fabricate the section of access ladder in stainless steel and stainless-steel hardware ready for installation.
- Install the bulkhead at the ocean end of the conduit during a low tide event with no precipitation forecast and ensure watertight seal.
- Dewater and clean the pipeline in both directions from the gate operator structure.
- Perform inspection including video record of the pipeline conditions suitable for loading onto digital versatile disc (DVD).
- Install the replacement section of access ladder.
- Remove the ocean side bulkhead and convey to the City for storage.

- Action Type: Planning, Pre-Disaster
- Priority Score: __

- Lead: Department of Public Infrastructure
- Supporting:
- Time Frame: Short Term/1 Year
- Financing Options: City General Appropriations Budget, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Flood protection, Compliance with ACOE regulations, Improved public health, safety, and welfare
- Vulnerable Area: Municipally-owned Infrastructure
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure-Wastewater/Stormwater Systems/Hurricane Barrier Failure

#41

Action #45 Enhance the quality and appeal of New Bedford's Streetscapes

...City of New Bedford Open Space and Recreation Plan, 2021 - 2028 – 2021/A City Master Plan, New Bedford 2020

The City is proposing to develop, fund, and implement street tree plantings on city streets through the following actions:

- Fund, on a yearly basis, an Urban Arborist to oversee three planting master plan and maintenance...isn't there already an Arborist position funded?
- Prepare a citywide tree planting master plan, tree inventory, identifying locations and appropriate tree species for planting to restore the City's tree-lined boulevards and side streets.
- Prepare a street tree care and management plan for the City
- Aim to acquire 200-400 new trees each year through public and private entities.
- Investigate the feasibility of developing a tree farm on city-owned land to provide a supply of trees at a reduced cost for city parks and streets.
- Establish a Street Tree Endowment (based on Providence, RI model) to provide sustainable source of public/private funding for street trees.
- Develop an urban forestry program coordinated by existing support groups.
- Create a tree ordinance to preserve historically significant trees.
- Add more street trees especially in Environmental Justice neighborhoods and other locations lacking canopy.
- Add trees to existing groves in parks and cemeteries to diversify ages of trees.

- Action Type: Planning, Pre-Disaster
- Priority Score: ____
- Lead: Department of Public Infrastructure – Park Maintenance Division
- Supporting: Parks, Recreation and Beaches Department/Department of Facilities & Fleet Management/Planning Department
- Time Frame: Long Term/4-5 Years

- Financing Options: City General Appropriations Budget, New Bedford Preservation Society Re-Leaf Program, Tree City USA Program, Greening Gateway Cities, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Moderate
- Benefit: Reduced heat-island effect, Improve public health, safety, and welfare
- Vulnerable Area: Public Health, Safety, and Welfare
- Hazards Addressed: Extreme Heat-related Hazards

#42

Action #46 *Incorporate green space and environmental concerns in commercial and utility development*

...City of New Bedford Open Space and Recreation Plan, 2014 - 2021

Require underground utilities whenever possible on existing streets and new developments when roads are completely reconstructed. Work with local utilities to develop yearly goals.

- Action Type: Planning, Pre-Disaster
- Priority Score: __
- Lead: Department of Public Infrastructure
- Supporting: Eversource
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Budget, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Continuity of Services/Improved resilience
- Vulnerable Area: Infrastructure Failure - Energy
- Hazards Addressed: All Hazards

#43

Action #47 *Enhance vehicular mobility in the City while striking a balance between roadway safety improvements, gateway treatments, pedestrian comfort, and roadway character.*

...A City Master Plan, New Bedford 2020

Establish design guidelines for new streets and roadways that encourage stormwater management and drought-resistant plantings.

- Action Type: Planning, Pre-Disaster
- Priority Score:
- Lead: Department of Public Infrastructure – Highway Division
- Supporting: Conservation Commission
- Time Frame: Long Term/4-5 Years

- Financing Options: City General Appropriations Budget, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Property protection/Reduced impacts from flooding
- Vulnerable Area: Transportation Network
- Hazards Addressed: Flood-related Hazards/Drought-related Hazards

#44

Action #48 *Safeguard public drinking water supplies*

... Assawompset Ponds Complex (APC) and Nemasket Watershed Management and Climate Action Plan, August 2022/NB Resilient – New Bedford’s Plan for Community Climate Action + Resilience, 2018/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018

The City of New Bedford will collaborate with the Towns of Freetown, Lakeville, Middleboro, and Rochester on efforts to safeguard its public drinking water supplies.

Actions include:

- Anticipate and guard against drought, especially as climate change causes more frequent and extended drought periods in summer and fall.
 - Adopt uniform Water Resource Protection Overlay Districts and Regulations that protect groundwater recharge areas to the ponds, as well as local water supply wells elsewhere in the watershed.
 - Update and increase transparency about thresholds and implementation measures for enforcing water use restrictions during drought.
 - Use a multi-platform approach to notify the public of restricted water use periods and conservation measures, including webpage, social media, and roadway signage boards.
 - Regularly evaluate and update drought protocols and back-up supply plans.
- Take steps to improve knowledge and management capabilities to enhance water supply management.
- Keep contaminants out of the water supply.
- Increase watershed ranger presence.
- Maintain fire roads and fire breaks in watershed.

- Action Type: Planning, Pre-Disaster
- Priority Score: __
- Lead: Department of Public Infrastructure/Resilience and Environmental Stewardship Department/Conservation Commission
- Supporting: Freetown/Lakeville/Middleboro/Rochester
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Budget, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Moderate

- Benefit: Protection of natural resources
- Vulnerable Area: Natural Resources/Municipally-owned Infrastructure
- Hazards Addressed: Flood-related Hazards/Drought-related Hazards/Changes in Groundwater-related Hazards/Brushfire/Wildfire-related Hazards

#45

Action #49 Ensure redundancy of critical infrastructure (EMS/Police/Fire), community facilities and utilities

... NB Resilient – New Bedford’s Plan for Community Climate Action + Resilience, 2018/City of New Bedford Community Resilience Building Workshop: Summary of Findings, June 2018

- Collaborate with utility providers to increase the type and number of community installations of renewable energy resources.
- Localize power and increase redundancy to minimize power loss.

- Action Type: Planning, Pre-Disaster
- Priority Score: __
- Lead: Department of Public Infrastructure
- Supporting: Eversource
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Budget, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Improved public health, safety, and welfare/Continuity of Services/Improved resilience
- Vulnerable Area: Resilience/Natural Resources
- Hazards Addressed: All Hazards

#__ scored similarly to #47

#50 Create a City-wide water conservation campaign and tracking system

... NB Resilient – New Bedford’s Plan for Community Climate Action + Resilience, 2018

- Action Type: Planning, Pre-Disaster
- Priority Score: 10/Medium Priority
- Lead: Department of Public Infrastructure
- Supporting: Planning Department, Resilience and Environmental Stewardship Department
- Time Frame: Medium Term/2-3 Years
- Financing Options: City General Appropriations Budget (Department of Public Infrastructure Budget), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Protection of natural resources/Continuity of Services

- Vulnerable Area: Resilience/Natural Resources
- Hazards Addressed: Drought-related Hazards/Infrastructure Failure-related Hazards

Resilience and Environmental Stewardship

Department

#46

#50 Create a City-wide energy efficiency campaign and tracking system

... NB Resilient – New Bedford’s Plan for Community Climate Action + Resilience, 2018

- Action Type: Planning, Pre-Disaster
- Priority Score: 10/Medium Priority
- Lead: Resilience and Environmental Stewardship Department
- Supporting: Eversource
- Time Frame: Medium Term/2-3 Years
- Financing Options: City General Appropriations Budget (Resilience and Environmental Stewardship Department Budget), Energy Efficiency and Conservation Block Grant (EECBG), EPA Climate Pollution Reduction (CPR) grants, Mass Save Program grants, MA Executive Office of Energy and Environmental Affairs grants, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Municipal and constituent energy savings/Greenhouse Gas emissions reduction/Protection of natural resources
- Vulnerable Area: Resilience/Natural Resources
- Hazards Addressed: Infrastructure Failure – Energy related Hazards/Changes in Groundwater-related Hazards

#47

Action #51 Develop/Adopt a comprehensive invasive species management plan to address the invasives identified/impacting the City, with an emphasis on waterway resource maintenance/flood mitigation

...Resilience and Environmental Stewardship Department/NB Resilient – New Bedford’s Plan for Community Climate Action + Resilience 2018

New Bedford is in need of a comprehensive Invasives Species Management Plan to combat the spread of invasives Citywide, but also at:

- New Bedford Regional Airport
- Copper Brook/Little Quittacas Pond/Sassaquin Pond/Buttonwood Park Pond
- Beaches
-
- Various rights-of-way, drainage swales, and best management practices

- New Bedford Reservoir

- Action Type: Planning, Pre-Disaster
- Priority Score: 12/Medium Priority
- Lead: Resilience and Environmental Stewardship Department
- Supporting: Department of Public Infrastructure/New Bedford Regional Airport/Conservation Commission/Planning Department/ Parks, Recreation and Beaches Department
- Time Frame: Short Term/1 Year
- Financing Options: Financing Options: City General Appropriations Budget (Resilience and Environmental Stewardship Department), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Reduced impacts on water quality/Protection of natural resources
- Vulnerable Area: Natural Resources
- Hazards Addressed: Invasive Species-related Hazards

#48

Action #52 *Protect natural resources and create new greenways through urban New Bedford*

...City of New Bedford Open Space and Recreation Plan, 2014 – 2021/A City Master Plan, New Bedford 2020/NB Resilient – New Bedford’s Plan for Community Climate Action + Resilience, 2018

Restore threatened and degraded natural resources in New Bedford through the following actions:

- Improve ability of the Conservation Commission to protect wetlands (land acquisition, easements, restrictions).
 - Cooperate with MA DCR, DER, and MA Fish & Wildlife to protect the Acushnet Cedar Swamp.
 - Investigate opportunities for restoration of degraded wetland resources.
 - Develop and implement a watershed management study and plan for the Atlantic Cedar Swamp.
 - Remediate and restore Buttonwood Brook Corridor and Park Pond plus other historic streams and hydrological connections (e.g., Industrial Park outlet stream at John Vertente Boulevard extension south, Welby Road Brook, Pokenocket Brook (unnamed brook), and Copper Brook.
-
- Action Type: Planning, Pre-Disaster
 - Priority Score: 14/High Priority
 - Lead: Resilience and Environmental Stewardship Department

- Supporting: Conservation Commission/Department of Public Infrastructure/Department of Parks, Recreation and Beaches/Planning Department
- Time Frame: Long Term/4-5 Years
- Financing Options: MA Wildlife Natural Heritage & Endangered Species Program, EPA Wetlands Development Program grants (CFDA 66.641), DEP. DER 604(b) Water Quality Management Planning Grant, 319 Non-Point Source funding, City General Appropriations Budget, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Moderate
- Benefit: Property protection/Protection of natural resources
- Vulnerable Area: Natural Resources
- Hazards Addressed: Flood-related Hazards

#49

Action #53 Water Quality Improvements at Sassaquin Pond

...Sassaquin Pond Watershed Management Plan

Continue to implement and maintain the Sassaquin Pond Watershed Management Plan.

Short-Term Recommendations

- Green infrastructure implementation
 - Downspout disconnection and redirection
 - Removal of impervious area
 - Preliminary evaluation/design of stormwater rerouting or green infrastructure implementation
 - Phragmites Removal

Long-Term Recommendations

- Green infrastructure implementation
 - Sassaquin Avenue outfall vegetated conveyance swale
 - Rain garden adjacent to Sassaquin Avenue pump station
- Re-routing stormwater to bypass Sassaquin Pond
- Assessment of sewer/water system infrastructure
- Invasive snail control
- Stormwater Ordinance updates

Ongoing Measures

- Ongoing monitoring program
- Catch basin cleaning
- Public education
- Protection/expansion of 25-foot buffer zone (bank)
- Alternative snow and ice removal

- Action Type: Planning, Pre-Disaster

- Priority Score: 14/High Priority
- Lead: Resilience and Environmental Stewardship Department
- Supporting: Conservation Commission/Planning Department
- Time Frame: Long Term/4-5 Years
- Financing Options: DEP 604(b) Water Quality Management Planning Grant, 319 Non-Point Source funding, City General Appropriations Budget, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Moderate
- Benefit: Property protection/Protection of natural resources
- Vulnerable Area: Natural Resources/Property Protection/Municipally-owned Infrastructure
- Hazards Addressed: Flood-related Hazards/Infrastructure Failure – Water Systems related Hazards

#50

(Action #7 (5.3.1.5) Community Rating System Participation

- Not completed due to lack of funding and municipal personnel capacity
- Carry forward into 2024 Update

...2016 HMP Assawompset Ponds Complex (APC) and Nemasket Watershed Management and Climate Action Plan, August 2022

Over the next several years the City will be exploring participation in the federal Community Rating System (CRS) program. Staff will evaluate program requirements, review existing activities eligible for program “credits” and explore potential activities that could be initiated and/or implemented to secure additionally needed “credits” to secure a CRS rating classification. Participation in this program will allow a discount in flood insurance premium rates, which reflect the reduced flood risk as a result of meeting the goals of the CRS program.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2024: 9/Medium Priority
- Lead: Resilience and Environmental Stewardship Department
- Supporting: Inspectional Services Department/Emergency Management Department/Information Technology Department
- Time Frame: Medium Term/2-3 Years
- Financing Options: City General Appropriations Budget (Resilience and Environmental Stewardship Department), FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Financial support (discount) to flood insurance policy holders
- Vulnerable Area: Property Protection
- Hazards Addressed: Flood-related Hazards

Facilities and Fleet Management Department

#14 – relocated from Fire Department

Action #18 (5.3.3.3) Replace/Renovate Existing Fire Stations

- Partially completed (South End Public Safety Complex)...as of this writing, looking to site North End Public Safety Complex in addition to renovations/improvements to all stations
- Carry forward into 2024 Update

...2016 HMP

The fire stations in the City have an average age of 102 years of age with the newest having been constructed in the early 1950's. None of these buildings were constructed to seismic standards and are of unreinforced masonry. These types of buildings are the most prone to catastrophic failure in the event of a seismic event. This would result in the possible complete loss of fire protection during a moderate event. In addition, these structures located throughout the City would be logical locations for mass care facilities in the event of a catastrophic event. At present none of our buildings have this capability in their design and this should be a future consideration.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2024: 8/Medium Priority
- Lead: Facilities and Fleet Management Department
- Supporting: Fire Department, Emergency Management Department
- Time Frame: Long Term/4-5 Years
- Financing Options: City Capital Improvement Plan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Improved public health, safety, and welfare
- Vulnerable Area: Emergency Response
- Hazards Addressed: Geologic-related Hazards, Brushfire/Wildfire-related Hazards, Urban Fire-related Hazards

#51

Action #__ Conduct a site feasibility study for an official Emergency Operations Center within a City building and outfit the space for meetings and trainings

...Emergency Management Department

- Action Type: Planning, Pre-Disaster
- Priority Score: 10/Medium Priority
- Lead: Emergency Management Department
- Supporting: Facilities and Fleet Management Department
- Time Frame: Medium Term/2-3 Years

- Financing Options: City Capital Improvement Plan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Continuity of emergency services
- Vulnerable Area: Emergency Response
- Hazards Addressed: All Hazards

#52 – REMOVE

Action #17 (5.3.3.2) Upgrade of Fire Alarm System

- Not completed as of this writing...implementation in-progress, remains ongoing.
- Carry forward into 2024 update

...2016 HMP

The present fire alarm system uses wire-based technology, which is subject to damage every time there is moderately severe weather. Upgrading of the system to a wireless-based system would address this problem. It will require the upgrading of all municipal buildings to this new technology. With 80 buildings and an average cost of \$10,000 per unit, the cost will be \$800,000 for the full program.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2024: __
- Lead: Facilities and Fleet Management Department
- Supporting: Fire Department
- Time Frame: Medium Term/2-3 Years
- Financing Options: Fire Act grant, City Capital Improvement Plan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Moderate
- Benefit: Improved public health, safety, and welfare
- Vulnerable Area: Emergency Response
- Hazards Addressed: Brushfire/Wildfire-related Hazards/ Urban Fire

#53

Action #13 (5.3.2.1) New Roof for former Police Station #1

- Not completed due to lack of funding and municipal personnel capacity. Station is closed and anticipated to be converted to office space. No longer a police station – is now a city office (still needs new roof)
- Carry forward into 2024 Update

...2016 HMP

The roof for former Police Station #1 is aging and in need of repairs. Accordingly, the City proposes to install a new roof at former Police Station #1 over the next two years. Having a new roof will mitigate potential structural damage during a natural disaster.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2024: 7/Medium Priority
- Lead: Facilities and Fleet Management Department
- Supporting: Inspectional Services Department
- Time Frame: Medium Term/2-3 Years
- Financing Options: City Capital Improvement Plan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Continuity of services/Property protection
- Vulnerable Area: Municipally-owned Infrastructure
- Hazards Addressed: All Hazards

#54

Action #10/Action 5.3.1.1) Purchase and Install Emergency Generator Power

...2016 HMP/2025 MHMP/Emergency Management Department

The City proposes to secure/install emergency generator power (and fuel containment facilities) for all City critical department operations, and critical infrastructure (including schools and communications).

1. Health Department – 1213 Purchase Street.
 - Completed for vaccines only
2. Emergency Medical Services Department – 181 Hillman Street
 - Not completed due to lack of funding and municipal personnel capacity
 - Carry forward into 2024 Update
3. City Central Garage – Liberty Street
4. Andrea McCoy Gym – Hillman Street

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2024: 11/Medium Priority
- Lead: Department of Facilities and Fleet Management
- Supporting: Emergency Management Department/School District/Department of Public Infrastructure/Emergency Medical Services Department
- Time Frame: Medium/2-3 Years
- Financing Options: City Multi-Year Capital Improvement Plan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Continuity of services
- Vulnerable Area: Municipally-owned Infrastructure/Emergency Response
- Hazards Addressed: All Hazards

#55 – REMOVE (combined with above, similar action)

Action #4 (5.3.1.1) Purchase and Install Auxiliary Generators

...2106 HMP/2025 MHMP

The City proposes to purchase and install auxiliary generators for critical local government department operations centers at the following locations:

- Health Department – 1213 Purchase Street.
 - o Completed for vaccines only
- Emergency Medical Services Department – 181 Hillman Street
 - o Not completed due to lack of funding and municipal personnel capacity
 - o Carry forward into 2024 Update
- City Central Garage – Liberty Street
- Andrea McCoy Gym – Hillman Street

Engineering and planning services will determine each facility's individual power needs. Appropriate generators and fuel containment facilities will be installed at each location thereafter.

- Action Type: Planning, Pre-Disaster
- Priority Score: 2016: High Priority/2024: __
- Lead: Department of Facilities and Fleet Management
- Supporting: Emergency Management Department/Department of Public Infrastructure/Emergency Medical Services Department
- Time Frame: Long Term/4-5 Years
- Financing Options: City Multi-Year Capital Improvement Plan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Moderate
- Benefit: Improved public health and medical response
- Vulnerable Area: Emergency Response
- Hazards Addressed: All Hazards

#56 – REMOVE

Action #54 Measurable methods for delivery of City services and resources.

...A City Master Plan, New Bedford 2020

Establish measurable methods for delivery of public services that improve efficiency, cost-effectiveness, and sustainability:

- Conduct an audit of all services provided that create measurable standards for effectiveness and recommends methods to improve public services and facility care based on industry best practices.
- Create a comprehensive capital improvements plan that focuses on improving energy efficiency and sustainable building operations.
- Reduce energy consumption per square foot in municipal buildings with corresponding emissions reduction, such as the installation of roof top solar panels where appropriate.

- Reduce the annual total gallons of gasoline and diesel fuel used by the municipal fleet and incorporate hybrid-electric vehicles.
 - Replace all oil heat within municipal buildings with either natural gas or clean technologies; utilize clean technologies for other energy requirements (i.e., electricity).
- Action Type: Planning, Pre-Disaster
 - Priority Score:
 - Lead: Facilities and Fleet Management Department
 - Supporting: _____
 - Time Frame: Long Term/4-5 Years
 - Financing Options: City General Appropriations Budget
 - Cost Estimate: Significant
 - Benefit: Improved resilience/Continuity of services
 - Vulnerable Area: Resilience
 - Hazards Addressed: Infrastructure Failure - Energy

#58

Action #56 *Develop Standard Operating Procedures (SOPs) for the active management of brush surrounding the recycling center (particularly near/adjacent to the methane vents) and safe storage of used batteries*

...Department of Facilities and Fleet Management Interview

- Action Type: Planning, Pre-Disaster
- Priority Score: 8/Medium Priority__
- Lead: Facilities and Fleet Management Department
- Supporting: Resilience and Environmental Stewardship Department
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Budget, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Reduced risk of fire
- Vulnerable Area: Municipally-owned Infrastructure
- Hazards Addressed: Brushfire/Wildfire-related Hazards/Invasive Species-related Hazards

#59

Action #57 *Conduct feasibility studies regarding the potential separation and ultimate relocation of the following:*

- *Fire Garage: serves as storage and power to the City's 13 all-electric vehicles/many hybrid vehicles (increased risk of fire), along with gas-powered vehicles*

- *Regarding electric vehicles and where they are placed in city yard / how they are stored (i.e. concrete barriers to prevent a fire from spreading)*

...Department of Facilities and Fleet Management Interview

- Action Type: Planning, Pre-Disaster
- Priority Score: 6/Medium Priority
- Lead: Facilities and Fleet Management Department
- Supporting: Resilience and Environmental Stewardship Department
- Time Frame: Long Term/4-5 Years
- Financing Options: City General Appropriations Budget, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Staff/Personnel Time
- Benefit: Reduced risk of fire
- Vulnerable Area: Municipally-owned Infrastructure
- Hazards Addressed: Urban Fire-related Hazards/Hazardous Materials Accident/Spill-related Hazards

Information Technology

#60

Action #__ *Effectuate communications upgrades across municipal departments*

...Emergency Management Department

Build out the City's MotoTrbo radio system to a multi-site system.

- This radio system provides communications for non-public safety departments including Department of Public Infrastructure, Facilities and Feet Management Department, Port Authority, New Bedford regional Airport, Health Department, Inspectional Services Department, Emergency Management Department, and the Council on Aging. This system is heavily used during storm events and day-to-day operations from multiple departments.

Build out the City's Interop radio channel to a multi-site repeater system to facilitate improved coverage areas.

- This channel allows public safety departments/other departments to communicate on one channel.

Build out an EMS dispatch and events channel for the EMS department.

- Action Type: Planning, Pre-Disaster
- Priority Score: 5/Medium Priority
- Lead: Information Technology Department
- Supporting: Emergency Management Department
- Time Frame: Medium Term/2-3 Years

- Financing Options: City Capital Improvement Plan, FEMA BRIC/FMA/HMGP grants
- Cost Estimate: Significant
- Benefit: Continuity of emergency services
- Vulnerable Area: Emergency Response
- Hazards Addressed: All Hazards

Criteria:

+: Favorable

-: Less Favorable

N: Not Applicable

Department:

[illegible]

Table 5-1 STAPLEE Analysis

	STAPLEE Criteria																							TOTAL			PRIORITY SCORE
	SOCIAL		TECHNICAL			ADMINISTRATIVE		POLITICAL		LEGAL			ECONOMIC				ENVIRONMENTAL										
ACTION	Community Acceptance: Is action socially acceptable?	Effect on Segment of Population: Equity issues?	Technical Feasibility: Will action work?	Long-Term Solution: Does action solve problem and/or symptom?	Secondary Impacts: Will action create more problems than it solves?	Staffing: Someone to coordinate action?	Funding Allocated: Is there enough funding available?	Maintenance/Operations: Are there ongoing requirements?	Political Support: Is action politically acceptable?	Local Champion: Is there a local champion?	Public Support: Is there public support to implement action?	State Authority: Is the state authorized to implement the action?	Existing Local Authority: Does the City have the authority to implement the action?	Political Legal Challenge: Will the action be challenged?	Benefit of Action: Do benefits exceed costs?	Cost of Action: Do costs exceed benefits?	Contributes to Economic Goals: Does action contribute to economic development goals?	Outside Funding Required: Does action require outside funding to implement?	Effect on Land/Water: Does action affect the environment?	Effect on Endangered Species: Are endangered/threatened species affected?	Effect on HAZMAT Waste Sites: Will action impact HAZMAT sites?	Consistent with Environmental Goals: Is action consistent with local environmental goals?	Consistent with Federal Laws: Will action require regulatory approvals?	Plus	Minus		
5.3.1 MAYOR'S OFFICE																											
HIGH PRIORITY ACTION (S)																											
5.3.1.1	+	+	+	+	+	+	-	-	+	+	+	N	+	+	+	+	+	-	+	+	+	N	N	17	3	14	
MEDIUM PRIORITY ACTION (S)																											
5.3.1.2/1	+	+	+	+	-	+	+	-	+	+	+	N	+	+	+	-	+	+	N	N	N	N	N	14	3	11	
5.3.2 PLANNING DEPARTMENT																											
HIGH PRIORITY ACTION (S)																											
5.3.2.1	+	+	+	+	-	+	-	-	+	+	+	N	+	+	+	+	+	+	+	N	N	+	+	17	3	14	
5.3.2.2/2	+	+	+	+	+	+	-	-	+	+	+	+	+	-	+	+	+	N	+	N	+	+	+	18	3	15	
5.3.2.3/3	+	+	+	+	-	+	+	+	+	+	+	+	+	-	+	-	+	+	+	+	+	+	-	19	4	15	
5.3.2.4/4	+	+	+	+	-	+	+	-	+	+	+	+	+	-	+	-	+	+	+	+	+	+	N	18	4	14	
5.3.3 NEW BEDFORD REGIONAL AIRPORT																											
MEDUM PRIORITY ACTION (S)																											
5.3.3.1/5	+	N	+	+	-	+	-	-	+	+	+	N	+	N	+	-	+	N	+	+	N	+	+	14	4	10	
5.3.3.2/6	+	-	+	+	+	+	-	-	+	+	N	+	+	-	+	-	+	-	-	-	+	N	-	12	9	3	
5.3.4 EVERSOURCE																											
MEDUM PRIORITY ACTION (S)																											
5.3.4.1/7	+	N	+	+	-	+	N	N	+	+	+	N	+	N	+	N	+	+	N	N	N	N	N	11	1	10	
5.3.5 HEALTH DEPARTMENT																											
MEDUM PRIORITY ACTION (S)																											
5.3.5.1/8	+	+	+	+	+	+	-	+	+	+	+	N	+	N	+	-	+	-	N	N	N	N	N	13	3	10	

Table 5-1 STAPLEE Analysis

	STAPLEE Criteria																							TOTAL			PRIORITY SCORE
	SOCIAL		TECHNICAL			ADMINISTRATIVE			POLITICAL			LEGAL			ECONOMIC				ENVIRONMENTAL								
ACTION	Community Acceptance: Is action socially acceptable?	Effect on Segment of Population: Equity issues?	Technical Feasibility: Will action work?	Long-Term Solution: Does action solve problem and/or symptom?	Secondary Impacts: Will action create more problems than it solves?	Staffing: Someone to coordinate action?	Funding Allocated: Is there enough funding available?	Maintenance/Operations: Are there ongoing requirements?	Political Support: Is action politically acceptable?	Local Champion: Is there a local champion?	Public Support: Is there public support to implement action?	State Authority: Is the state authorized to implement the action?	Existing Local Authority: Does the City have the authority to implement the action?	Political Legal Challenge: Will the action be challenged?	Benefit of Action: Do benefits exceed costs?	Cost of Action: Do costs exceed benefits?	Contributes to Economic Goals: Does action contribute to economic development goals?	Outside Funding Required: Does action require outside funding to implement?	Effect on Land/Water: Does action affect the environment?	Effect on Endangered Species: Are endangered/threatened species affected?	Effect on HAZMAT Waste Sites: Will action impact HAZMAT sites?	Consistent with Environmental Goals: Is action consistent with local environmental goals?	Consistent with Federal Laws: Will action require regulatory approvals?	Plus	Minus		
5.3.6 EMERGENCY MANAGEMENT DEPARTMENT																											
HIGH PRIORITY ACTION (S)																											
5.3.6.1/9	+	+	+	+	-	+	+	N	+	+	+	N	+	N	+	N	+	N	+	+	+	+	N	16	1	15	
MEDIUM PRIORITY ACTION (S)																											
5.3.6.2/10	+	N	+	+	N	+	-	N	+	+	+	N	+	+	+	N	+	N	N	N	N	N	N	11	1	10	
5.3.6.3/11	+	+	+	+	-	+	-	-	+	+	+	-	+	-	+	-	+	-	+	+	+	+	+	16	7	9	
5.3.6.4/12	+	-	+	+	-	+	-	+	+	+	N	+	+	N	+	-	+	-	N	N	N	N	N	11	5	6	
5.3.6.5/13	+	+	+	+	-	+	-	-	+	+	+	N	+	N	+	-	+	-	N	N	N	N	N	11	5	6	
5.3.6.6/14	+	+	+	+	N	+	-	-	+	+	+	-	+	N	+	-	+	-	N	N	N	N	N	11	5	6	
5.3.6.7/15	+	-	+	+	-	+	-	-	+	+	+	N	+	-	N	-	+	-	+	N	N	+	N	11	7	4	
5.3.7 POLICE DEPARTMENT																											
MEDIUM PRIORITY ACTION (S)																											
5.3.7.1 16	+	+	+	+	-	-	-	+	+	+	+	+	+	-	+	-	+	-	N	N	N	N	N	12	6	6	
5.3.8 FIRE DEPARTMENT																											
MEDIUM PRIORITY ACTION (S)																											
5.3.8.1/17	+	+	+	+	-	+	+	-	+	+	+	-	-	+	+	-	N	+	+	N	N	N	N	13	5	8	
5.3.9 NEW BEDFORD PORT AUTHORITY																											
MEDIUM PRIORITY ACTION (S)																											
5.3.9.1/18	+	+	+	+	+	+	-	-	+	+	+	+	+	N	+	-	+	-	+	N	+	+	-	16	5	11	
5.3.9.2/19	+	N	+	+	N	+	-	+	+	+	+	+	+	N	+	-	+	-	+	N	N	+	N	14	3	11	

Table 5-1 STAPLEE Analysis

	STAPLEE Criteria																										
	SOCIAL		TECHNICAL			ADMINISTRATIVE			POLITICAL			LEGAL			ECONOMIC				ENVIRONMENTAL						TOTAL		PRIORITY SCORE
ACTION	Community Acceptance: Is action socially acceptable?	Effect on Segment of Population: Equity issues?	Technical Feasibility: Will action work?	Long-Term Solution: Does action solve problem and/or symptom?	Secondary Impacts: Will action create more problems than it solves?	Staffing: Someone to coordinate action?	Funding Allocated: Is there enough funding available?	Maintenance/Operations: Are there ongoing requirements?	Political Support: Is action politically acceptable?	Local Champion: Is there a local champion?	Public Support: Is there public support to implement action?	State Authority: Is the state authorized to implement the action?	Existing Local Authority: Does the City have the authority to implement the action?	Political Legal Challenge: Will the action be challenged?	Benefit of Action: Do benefits exceed costs?	Cost of Action: Do costs exceed benefits?	Contributes to Economic Goals: Does action contribute to economic development goals?	Outside Funding Required: Does action require outside funding to implement?	Effect on Land/Water: Does action affect the environment?	Effect on Endangered Species: Are endangered/threatened species affected?	Effect on HAZMAT Waste Sites: Will action impact HAZMAT sites?	Consistent with Environmental Goals: Is action consistent with local environmental goals?	Consistent with Federal Laws: Will action require regulatory approvals?	Plus	Minus		
5.3.9 NEW BEDFORD PORT AUTHORITY																											
MEDIUM PRIORITY ACTION (S)																											
5.3.9.2/20	+	N	+	+	N	+	-	-	+	+	+	+	+	N	+	-	+	-	+	+	+	+	-	15	5	10	
5.3.9.4/21	+	+	+	+	N	+	-	-	+	+	+	+	+	N	+	-	+	-	+	N	+	+	-	15	5	10	
5.3.9.5/22	+	N	+	+	N	+	-	-	+	+	+	-	+	N	+	-	+	-	+	N	+	+	N	13	5	8	
5.3.9.6/23	+	N	+	+	-	+	-	-	+	+	+	+	+	-	+	-	+	-	-	+	N	+	N	13	7	6	
5.3.9.7/24	+	N	+	+	N	+	-	-	+	+	+	+	+	-	+	-	+	-	-	N	N	+	-	12	7	5	
5.3.10 DEPARTMENT OF PUBLIC INFRASTRUCTURE																											
HIGH PRIORITY ACTION (S)																											
5.3.10.1/25	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	-	+	-	+	+	+	+	-	18	5	13	
5.3.10.2/26	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	-	+	-	+	+	+	+	-	18	5	13	
5.3.10.3/27	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	-	+	-	+	+	+	+	-	18	5	13	
5.3.10.4/28	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	-	+	-	+	+	+	+	-	18	5	13	
5.3.10.5/45	+	+	+	+	+	+	-	-	+	+	+	N	+	+	+	-	+	-	+	+	+	+	-	17	5	12	
5.3.10.6/29	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	-	+	-	+	N	+	+	-	17	5	12	
5.3.10.7/30	+	+	+	+	-	+	-	+	+	+	+	+	+	-	+	-	+	-	+	+	N	+	+	17	5	12	
5.3.10.8/31	+	+	+	+	-	+	-	+	+	+	+	+	+	-	+	-	+	-	+	+	+	+	N	17	5	12	

Table 5-1 STAPLEE Analysis

	STAPLEE Criteria																							TOTAL			PRIORITY SCORE
	SOCIAL		TECHNICAL			ADMINISTRATIVE		POLITICAL		LEGAL			ECONOMIC				ENVIRONMENTAL										
ACTION	Community Acceptance: Is action socially acceptable?	Effect on Segment of Population: Equity issues?	Technical Feasibility: Will action work?	Long-Term Solution: Does action solve problem and/or symptom?	Secondary Impacts: Will action create more problems than it solves?	Staffing: Someone to coordinate action?	Funding Allocated: Is there enough funding available?	Maintenance/Operations: Are there ongoing requirements?	Political Support: Is action politically acceptable?	Local Champion: Is there a local champion?	Public Support: Is there public support to implement action?	State Authority: Is the state authorized to implement the action?	Existing Local Authority: Does the City have the authority to implement the action?	Political Legal Challenge: Will the action be challenged?	Benefit of Action: Do benefits exceed costs?	Cost of Action: Do costs exceed benefits?	Contributes to Economic Goals: Does action contribute to economic development goals?	Outside Funding Required: Does action require outside funding to implement?	Effect on Land/Water: Does action affect the environment?	Effect on Endangered Species: Are endangered/threatened species affected?	Effect on HAZMAT Waste Sites: Will action impact HAZMAT sites?	Consistent with Environmental Goals: Is action consistent with local environmental goals?	Consistent with Federal Laws: Will action require regulatory approvals?	Plus	Minus		
5.3.10 DEPARTMENT OF PUBLIC INFRASTRUCTURE																											
MEDIUM PRIORITY ACTION (S)																											
5.3.10.9/32	+	+	+	+	-	+	-	-	+	+	+	-	+	+	+	-	+	-	+	+	+	+	+	+	17	6	11
5.3.10.10/33	+	+	+	+	-	+	-	+	+	+	+	+	+	-	+	-	+	-	+	+	+	+	+	-	17	6	11
5.3.10.11/34	+	+	+	+	-	+	-	+	+	+	+	+	+	-	+	-	+	-	+	+	+	+	+	-	17	6	11
5.3.10.12/35	+	+	+	+	-	+	-	+	+	+	+	+	+	-	+	-	+	-	+	+	+	+	+	-	17	6	11
5.3.10.13/36	+	+	+	+	-	+	-	+	+	+	+	+	+	-	+	-	+	-	+	+	+	+	+	-	17	6	11
5.3.10.14/37	+	+	+	+	-	+	-	-	+	+	+	+	+	-	+	-	+	-	+	+	N	+	+	+	16	6	10
5.3.10.15/38	+	N	+	+	-	+	-	-	+	+	+	+	+	+	+	-	+	-	+	+	N	N	+	+	15	5	10
5.3.10.16/39	+	+	+	+	+	-	+	+	+	+	+	+	+	-	+	-	+	-	N	N	N	N	N	N	14	4	10
5.3.10.17/41	+	+	+	+	-	+	-	-	+	+	+	+	+	-	+	-	+	-	+	+	N	+	N	N	15	6	9
5.3.10.18/42	+	+	+	+	-	+	-	-	+	+	+	+	+	+	+	-	+	-	+	N	N	+	-	15	6	9	
5.3.10.19/43	+	+	+	+	-	+	-	-	+	+	+	+	+	-	+	-	+	-	+	N	+	+	-	15	7	8	
5.3.10.20/44	+	+	+	+	-	+	-	-	+	+	+	+	+	-	+	-	+	-	+	N	+	+	-	15	7	8	
5.3.11 RESILIENCE AND ENVIRONMENTAL STEWARDSHIP DEPARTMENT																											
HIGH PRIORITY ACTION (S)																											
5.3.11.1/46	+	+	+	+	-	+	-	-	+	+	+	+	+	+	+	-	+	+	+	+	+	+	N	18	4	14	
5.3.11.2/47	+	+	+	+	+	+	-	-	+	+	+	+	+	N	+	-	+	-	+	+	+	+	+	18	4	14	

Table 5-1 STAPLEE Analysis

	STAPLEE Criteria																										
	SOCIAL		TECHNICAL			ADMINISTRATIVE			POLITICAL			LEGAL			ECONOMIC				ENVIRONMENTAL						TOTAL		PRIORITY SCORE
ACTION	Community Acceptance: Is action socially acceptable?	Effect on Segment of Population: Equity issues?	Technical Feasibility: Will action work?	Long-Term Solution: Does action solve problem and/or symptom?	Secondary Impacts: Will action create more problems than it solves?	Staffing: Someone to coordinate action?	Funding Allocated: Is there enough funding available?	Maintenance/Operations: Are there ongoing requirements?	Political Support: Is action politically acceptable?	Local Champion: Is there a local champion?	Public Support: Is there public support to implement action?	State Authority: Is the state authorized to implement the action?	Existing Local Authority: Does the City have the authority to implement the action?	Political Legal Challenge: Will the action be challenged?	Benefit of Action: Do benefits exceed costs?	Cost of Action: Do costs exceed benefits?	Contributes to Economic Goals: Does action contribute to economic development goals?	Outside Funding Required: Does action require outside funding to implement?	Effect on Land/Water: Does action affect the environment?	Effect on Endangered Species: Are endangered/threatened species affected?	Effect on HAZMAT Waste Sites: Will action impact HAZMAT sites?	Consistent with Environmental Goals: Is action consistent with local environmental goals?	Consistent with Federal Laws: Will action require regulatory approvals?	Plus	Minus		
5.3.11 RESILIENCE AND ENVIRONMENTAL STEWARDSHIP DEPARTMENT																											
MEDIUM PRIORITY ACTION (S)																											
5.3.11.3/48	+	+	+	+	+	+	-	-	+	+	+	N	+	N	+	-	+	-	+	+	+	+	+	N	16	4	12
5.3.11.4/49	+	+	+	+	-	+	-	-	+	+	+	-	+	N	+	+	+	-	+	+	N	+	N	15	5	10	
5.3.11.5/50	+	+	+	+	+	+	-	-	+	+	+	N	+	N	+	+	+	-	N	N	N	N	-	13	4	9	
5.3.12 DEPARTMENT OF FACILITIES AND FLEET MANAGEMENT																											
MEDIUM PRIORITY ACTION (S)																											
5.3.12.1/51	+	N	+	+	N	+	-	-	+	+	+	N	+	N	+	N	+	-	+	+	N	+	+	14	3	11	
5.3.12.2/52	+	+	+	+	-	+	-	+	+	+	+	+	+	-	+	-	+	+	N	N	N	N	N	14	4	10	
5.3.12.3/53	+	+	+	+	+	+	-	-	+	+	+	N	+	+	+	-	N	-	N	N	N	N	N	12	4	8	
5.3.12.4/54	+	N	+	+	N	+	-	-	+	+	+	N	+	N	+	-	N	-	+	N	+	+	N	12	4	8	
5.3.12.5/55	+	N	+	+	N	+	-	-	+	+	+	N	+	N	+	-	+	N	N	N	N	N	N	10	3	7	
5.3.12.6/56	+	-	+	+	-	+	-	-	+	+	+	N	+	N	+	+	N	-	N	N	N	+	N	11	5	6	
5.3.13 INFORMATION TECHNOLOGY DEPARTMENT																											
MEDIUM PRIORITY ACTION (S)																											
5.3.13.1/57	+	N	+	+	-	+	-	-	+	+	N	N	+	N	+	N	+	-	N	N	N	N	N	9	4	5	

New Bedford Local Hazard Mitigation Committee Meeting #4 - Part 2**Department of Public Infrastructure****1105 Shawmut Avenue****New Bedford, MA 02740****January 24, 2025 9:30 AM - 12:30 PM**

LAST NAME	FIRST NAME	DEPARTMENT/AFFILIATION	Present Y or N
CITY OF NEW BEDFORD			
Amaral	Joshua	Director Housing & Community Development	
Arpke	Emily	Chief Financial Officer/Auditor	
Carlioni	Jennifer	City Planner	
Carr	Gordon	Ex. Director New Bedford Port Authority	
Cohen	Courtney	Project Manager, Environmental Stewardship	Y
Connelly	Christina	Chief Operations Officer	Y
Costa	Jim	Superintendent of Wastewater	Y
Duarte	Cesar	Director of Engineering and Operations	
Huntoon	Holly	Public Information Officer	
Kruger	Scott	Chief, Fire Department	
Mulroy	Rachel	Planning Department	Y
Nobrega	Brian	Director of Emergency Management	Y
O'Leary	Andrew	Superintendent of Schools	
Oliveira	Paul	Chief, Police Department	
Paul	Michele	Director of Resilience & Environmental Stewardship	Y
Perks	Chance	Conservation Agent	Y
Ponte	Jamie	Commissioner of Public Works	
Rebello	Travis	Hazardous Materials Coordinator	
Romanowicz	Danny	Building Commissioner	
Sloan	Stephanie	Director of Public Health	
Syde	Shawn	City Engineer	Y
Sylvia	James	Dept. of Facilities and Fleet Management	Y
Thomas	Michael	Director of Emergency Medical Services	Y
Vieira	Jennifer	Commissioner, Dept. of Facilities & Fleet Man.	Y
MASSACHUSETTS EMERGENCY MANAGEMENT			
Cochran	Nate	Local Coordinator, Region 2	
Zukowski	Jeff	Hazard Mitigation Planner	
EQUITY PARTNERS			
Andrade	John	Old Bedford Village Econ Development Corp.	
Dasilva-Hughes	Helena	Immigrants' Assistance Center	
Ledbetter	Renee	Director, New Bedford Shannon Program	
Pina-Christian	Marci	Ex. Director, NB Human Rights Commission	
Spence	Cynthia	Dir. Modernization/Planning/Dev., NB Housing Auth.	
Spencer	Darlene	President, NB Cape Verdean Association	
Williams	Corinn	Ex. Director, NB Community Econ. Dev. Center	
CONSULTANT TEAM			
Kelly	Nate	HWG	
King	Kellie	HWG	
Patrone	Carley	KLA	
Pereira	Craig	HWG	Y

January 24, 2025 9:30 AM - 12:30 PM

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Technical Committee Meeting



New Bedford Multi-Hazard Mitigation Plan Update Technical Committee Meeting #1

November 6, 2023
New Bedford Wastewater Treatment Plant – Conference Room
1000 S. Rodney French Blvd.
New Bedford, MA 02740
1:00 PM – 4:00 PM

Agenda

1. Overview
 - a. FEMA Criteria Guidance – Natural Hazards
 - b. FEMA Criteria Guidance – Human-Caused/Technological Hazards
2. Natural Hazard Index
 - a. Scoring
3. Human-Caused/Technological Hazard Index
 - a. Scoring
4. Next Steps

Natural Hazards

Criteria for Frequency/Likelihood Categorization:

<i>Unlikely (0):</i>	events that occur at least once in the next 100 years. Less than 1% probability in the next 100 years.
<i>Possible (1):</i>	Between 1-10% probability in the next year, or at least one chance in the next 100 years.
<i>Likely (2):</i>	Between 10-100% probability in the next year, or at least one chance in 10 years.
<i>Highly Likely (3):</i>	Near 100% probability in the next year.

The criteria used for severity categorization, based on past hazard events includes:

Criteria for Magnitude/Severity Categorization (based on past hazard events):

<i>Negligible (0):</i>	Injuries and/or illnesses are treatable with first aid Minor quality of life lost Shutdown of critical facilities and services for 24 hours or less Property severely damaged <10%
<i>Limited (1):</i>	Injuries and/or illness do not result in permanent disability Complete shutdown of critical facilities for more than one week Property severely damaged < 25%, > 10%
<i>Critical (2):</i>	Injuries and/or illness result in permanent disability Complete shutdown of critical facilities for at least two weeks Property severely damaged < 50%, > 25%
<i>Catastrophic (3):</i>	Multiple deaths Complete shutdown of facilities for 30 days or more Property severely damaged/destroyed > 50%

Criteria for Impact/Land Area Affected:

<i>Small (1):</i>	Less than 10% of the city affected
<i>Medium (2):</i>	10 to 50% of the city affected
<i>Large (3):</i>	More than 50% of the city affected

<i>Hazard</i>	<i>2016 Frequency (i.e. Unlikely, Possible, Likely, Highly Likely)</i>	<i>2023 Frequency (i.e. Unlikely, Possible, Likely, Highly Likely)</i>	<i>2016 Location (i.e. Small/Local, Medium/Regional, Large/Multiple communities)</i>	<i>2023 Location (i.e. Small/Local, Medium/Regional, Large/Multiple communities)</i>	<i>2016 Severity (i.e. Negligible, Limited, Critical, Catastrophic)</i>	<i>2023 Severity (i.e. Negligible, Limited, Critical, Catastrophic)</i>	<i>2016 Hazard Index (i.e. ranked by combining frequency and severity; 10 - high, 1 - low)</i>	<i>2023 Hazard Index (i.e. ranked by combining frequency and severity; 10 - high, 1 - low)</i>
Flood-Related Hazards								
- Riverine/Flash Flooding	2	2	1	1	1	1	4	4
- Inland/Urban Flooding, Heavy Rain	N/A	3	N/A	2	N/A	2	N/A	7
- Dam Failure	1	1	1	1	1	1	3	3
- Coastal Flooding/Erosion	2	3	1	2	1	1	4	6
Winter-Related Hazards								
- Blizzards/Snow/Nor' easter	3	3	1	3	1	1	5	7
- Extreme Cold	3	3	3	3	0	0	6	6
Wind-Related Hazards								
- Hurricanes/Tropical Storms	2	2	2	2	1	2	5	6
- High Winds	N/A	3	N/A	2	N/A	1	N/A	6
- Tornadoes/Waterspouts	1	1	1	1	1	1	3	3
- Lightning/Thunderstorms	3	3	1	1	0	1	4	5
- Hail	N/A	1	N/A	1	N/A	0	N/A	2
Geologic-Related Hazards								
- Earthquakes	1	1	1	1	0	0	2	2
- Landslides	1	0	1	1	0	0	2	1
- Tsunami	0	0	1	1	2	0	3	1
Extreme Heat-Related Hazards								
- Extreme Heat	3	3	3	3	0	2	6	8
Drought-Related Hazards								
- Drought	1	2	3	3	0	1	4	6
Wildfire/Brushfire-Related Hazards								
- Wildfire/Brushfire	1	2	1	1	1	0	3	3
Communicable-Related Hazards								
- Infectious Disease/Public Health Em.	N/A	3	N/A	3	N/A	3	N/A	9
Invasive Species-Related Hazards								
- Multiple (aquatic plant species)	N/A	3	N/A	2	N/A	1	N/A	6
Vector-Borne-Related Hazards								
- Multiple	N/A	3	N/A	1	N/A	1	N/A	5
Changes in Groundwater-Related Hazards								
- Changes in Groundwater	N/A	2	N/A	1	N/A	1	N/A	4

Human-Caused and Technological Hazards

Criteria for Probability and Likelihood of Hazard Occurrence Categorization:

<i>Unlikely (1):</i>	Less than 1% probability in the next 12-60 months, or less than one chance in the next 100 years.
<i>Potential (2):</i>	Between 1-10% probability in the next 12-60 months, or one incident during the next 100 years.
<i>Likely (3):</i>	Between 10-100% probability in the next 12-60 months, and one incident during the next ten years.
<i>Highly Likely (4):</i>	Near 100% probability within the next 12-60 months.

The criteria used for severity categorization, based on past hazard events includes:

Criteria for Magnitude/Severity Categorization:

<i>Negligible (1):</i>	Populations: Minor or no injuries including first responders. Government: Minor/No impacts to municipal operations for very short amount of time (minutes to several hours). Built Environment: No shutdown of critical infrastructure/facilities, only scattered incidental residential and commercial structure damage. Natural Resources/Environment: Impacts less than 5% of natural resources. Economy: Minor or no impacts to business sectors, low damage/replacement costs, very little recovery needed.
<i>Limited (2):</i>	Populations: Some injuries, some injury to first responders. Government: Small impacts to municipal operations for short amount of time (multiple hours to several days). Built Environment: Short shutdown of some critical infrastructure And facilities, less than 10% of residential/commercial structures damaged. Natural Resources/Environment: Impacts 5% - 20% of natural resources. Economy: Some impacts to business sectors, moderate damage/replacement costs, recovery lasts weeks.
<i>Significant (3):</i>	Populations: Multiple deaths and severe injuries including to first responders Government: Large impacts to municipal operations for long amount of time (multiple days to weeks), substantial COOP and loss of services. Built Environment: Medium/significant shutdown of some critical infrastructure , complete shutdown/facilities, 20% – 50% of residential and 10% - 25% of commercial structures severely damaged. Natural Resources/Environment: Impacts more than 20% of natural resources. Economy: Serious impacts to business sectors, high damage/replacement costs, recovery lasts months.

Criteria for Likely Locations and Extent:

<i>Small (1):</i>	Less than 10% of the city affected
<i>Medium (2):</i>	10 to 40% of the city affected
<i>Large (3):</i>	More than 40% of the city affected

Table ____ *Technological and Human-Caused Hazard Index New Bedford, Massachusetts 2023 update*

Hazard	Probability (i.e. Unlikely, Potential, Likely, Highly Likely) 1 to 4	Location/Extent (i.e. Small, Medium, Large) 1 to 3	Cosequence Analysis 1 to 3					Consequence Analysis	2023 Hazard Index: High = 10 to 9 Moderate = 8 to 6 Low = 5 to 3	2009 Hazard Index: High = 10 to 9 Moderate = 8 to 6 Low = 5 to 3
			Populations	Government	Built Environment	Natural Resources/ Environment	Economy			
Technological Hazards										
Infrastructure Failure										
- Communications	4	2	1	3	2	1	1	1.6	7.6	N/A
- Emergency Services	1	1	1	1	1	1	1	1	3	N/A
- Energy	4	2	2	2	1	1	2	1.6	7.6	Moderate
- Information Technology	3	1	1	2	1	1	1	1.2	5.2	N/A
- Transportation Systems	2	1	1	1	1	1	1	1	4	Low/Moderate
- Water/Wastewater Systems	2	3	2	1	1	2	2	1.6	6.6	Moderate
Nuclear Power Plant Incident	1	1	1	1	1	1	1	1	3	Low
Hazardous Materials Accident/Spill	4	1	2	1	1	2	1	1.4	6.4	High
Major Aircraft Crash	2	1	1	1	1	1	1	1	4	Moderate
Hurricane Barrier Failure	2	1	1	1	3	1	3	1.8	4.8	Low
Human-Caused (Deliberate) Hazards										
Cyber Incident	3	2	1	3	2	1	2	1.8	6.8	Low
Terrorism										
- Improvised Explosive Devices										
- Vehicle-borne IEDs										
- Active Shooter										
- Vehicle into crowds										
- Drones										
Urban Fire	4	1	2	1	1	1	1	1.2	6.2	High
Civil Unrest/Disobedience	2	2	1	2	2	1	1	1.4	5.4	Low
Chemical, Biological, Radiological, Nuclear Agent (CBRN)	2	1	2	1	1	1	1	1.2	4.2	Low

November 6, 2023 1:00 PM - 4:00 PM

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Public Workshops

Public Workshop #1: April 11, 2024

Public Workshop #2: April 5, 2025

Public Workshop #1: April 11, 2024

Help New Bedford plan for a sustainable South Coast!
Join us inside The Vault to discuss what you've been experiencing with our changing weather patterns and what your personal and community priorities are.



New Bedford, MA Multi-Hazard Mitigation Plan

Public Workshop #1

Thursday, April 11, 2024
6:00 PM — 8:00 PM

The Vault
791 Purchase Street
New Bedford, MA

About the New Bedford Multi-Hazard Mitigation Plan ...

The City of New Bedford is currently updating the 2016 Hazard Mitigation Plan. This plan is important because it helps the City plan and receive funding for projects that reduce the risk of injury or damage to property from natural, human-caused, and technological hazards. The Disaster Mitigation Act of 2000 (DMA) places high priority on the continuation of the planning process after the initial submittal, requiring communities to seek and receive re-approval from FEMA in order to remain eligible for financial assistance.

For more information, please visit the project webpage at:
<https://nbresilient.com/category/local-multi-hazard-mitigation-plan-update>

Contacts

Michele Paul
City of New Bedford
Director of Resilience and Environmental Stewardship
michele.paul@newbedford-ma.gov

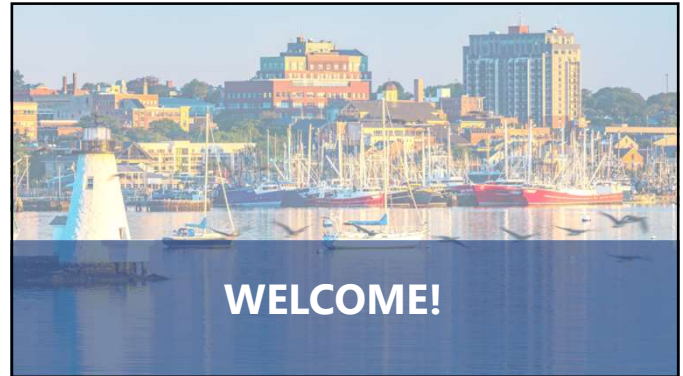
Craig Pereira
Horsley Witten Group, Inc.
Project Manager
cpereira@horsleywitten.com

New Bedford, MA Multi-Hazard Mitigation Plan Update

Public Workshop #1
April 11, 2024 6:00 PM – 8:00 PM
The Vault – 791 Purchase Street



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Today's Agenda

- Hazard Mitigation Plan Overview
- Federal/State Guidance
- Mitigation Process
- Hazard Index
 - Technical Committee
 - Natural Hazards
 - Human-Caused/Technological Hazards
- 2016 Plan Report Card
- Community Outreach & Engagement
- Project Timeline



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New Bedford Multi-Hazard Mitigation Planning Teams

- Core Team
 - Municipal Officials/Day-to-Day Working Group
- Local Hazard Mitigation Committee
 - Municipal Officials/MEMA Representatives/Equity Partnership Representatives
 - Oversight on MHMP process/findings/plan development
- Technical Committee
 - Municipal Officials/Topic Experts
- Equity Partnership
 - Representatives participating on the LHMC/Outreach and Engagement support
- Consultant Team
 - Kim Lundgren Associates (KLA)
 - Horsley Witten Group, Inc. (HWG)
 - Institute for Diversity and Inclusion in Emergency Management (I-DIEM)



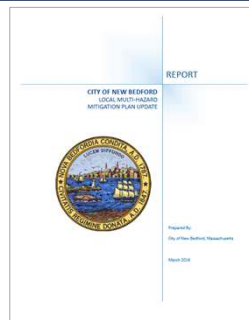
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Project Components

- **Multi-Hazard Mitigation Plan Update**
- Comprehensive Emergency Management Plan Update
- Evacuation Planning Support

What's new for this MHMP Update?

- Climate change impacts on...
- Equity Focus
- Human-Caused Hazards
- Technological Hazards



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Why Should New Bedford Plan for Hazards?

Disaster Mitigation Act of 2000, Interim Final Rule, 44 CFR Parts 201 and 206 states, "All communities must have an approved Multiple Hazards Mitigation Plan in order to qualify for future federal disaster mitigation grants."

Hazard Mitigation:

"Reduction or elimination of long-term risk to life, property, and the environment"

Natural Hazard:

"Any event or physical condition that has the potential to cause fatalities, injuries, property damage, infrastructure damage, and agricultural loss, damage to the environment, interruption of business, or other types of harm and/or loss"

Human-Caused Hazard:

"Any disastrous event caused directly and principally by one or more identifiably deliberate or negligent human action"

Technological Hazard:

"Any hazard event originating from technological or industrial conditions, including accidents, dangerous procedures, or failures"

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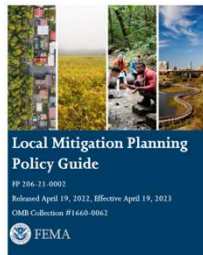
Federal and State Guidance

Federal

- FEMA's *Local Mitigation Planning Policy Guide* (April 19, 2023)

State

- 2022 MA Climate Change Assessment, Volume I Executive Summary
- 2022 MA Climate Change Assessment, Volume II Statewide Report
- 2022 MA Climate Change Assessment, Volume III Regional Report
- ResilientMass Plan: 2023 MA State Hazard Mitigation and Climate Adaptation Plan**



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State Guidance

ResilientMass Plan: 2023 MA State Hazard Mitigation Plan and Climate Adaptation Plan

Considers the exposure and vulnerability of state assets, human populations, lifelines, critical facilities, economic activity, natural resources, and other infrastructure/resources across five sectors:

- Human Sector
- Governance Sector
- Infrastructure Sector
- Natural Environment Sector
- Economy Sector



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State Guidance

2022 MA Climate Change Assessment, Volume II Statewide Report

Includes an analysis of the most significant impacts that climate change poses to the Commonwealth across the five sectors and based on three factors:

- Magnitude of consequence: How large of a climate effect is expected?
- Disproportionality of exposure: Will populations in environmental justice areas be disproportionately affected?
- Need for effective adaptation: is enough currently being done to adapt to this impact?

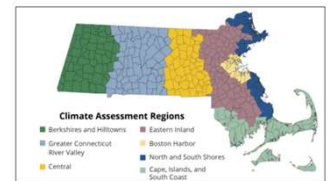
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State Guidance

2022 MA Climate Change Assessment, Volume III Regional Report

Subdivides the state into seven climate regions and summarizes the highest urgency climate impacts across the five sectors.

- New Bedford falls within the Cape, Islands, and South Coast Region
- Particularly vulnerable to climate stressor including:
 - Sea Level Rise
 - Storm Surge
 - Increasing Temperatures
 - Extreme Precipitation



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State Guidance

2022 MA Climate Change Assessment, Volume III Regional Report

Human Sector

- Increase in Vector-Borne Diseases Incidence and Bacterial Infections
- Health and Cognitive Effects from Extreme Heat, Health Effects of Extreme Storms and Power Outages, Emergency Service Response Delays and Evacuation Disruptions, Reduction of Food Safety and Security, and Damage to Cultural Resources

Infrastructure Sector

- Damage to Electric Transmission and Distribution Infrastructure
- Reduction in Clean Water Supply

Natural Environment Sector

- Marine Water Ecosystem Degradation
- Coastal Wetland Degradation
- Coastal Erosion

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State Guidance

2022 MA Climate Change Assessment, Volume III Regional Report

Governance Sector

- Increase in Demand for State and Municipal Government Services
- Reduction in State and Municipal Revenues

Economy Sector

- Reduction in the Availability of Affordably Priced Housing
- Decrease in Marine Fisheries and Aquaculture Productivity

2030	2050	2070	2090
NEAR TERM The summer mean temperature could increase by 3.6°F from the historical period (1950-2013), increasing tick activity and the risks of Lyme disease.	MID-CENTURY Sea surface temperatures increase by 3.1°F, reducing marine fish catch and increasing risks from harmful bacterial infections.	MID-LATE CENTURY The historical 10 percent annual chance daily rainfall event (2.4 to 4 inches) could occur five times more frequently.	END OF CENTURY Tropical cyclone frequency could increase by nearly 50 percent, leading to damage from storm surge, heavy rainfall, and high winds.

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Mitigation Process

- **Assess Risks**
- Establish Goals
- Identify Projects/Actions
- Update/Maintain Plan

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Natural Hazards Profiled

Flood-Related Hazards

- Riverine/Flash Flooding: **Moderate/4**
- Inland/Urban Flooding, Heavy Rain: **High/7**
- Dam Failure: **Low/3**
- Coastal Flooding/Erosion: **Moderate/6**

Geologic-Related Hazards

- Earthquakes: **Low/2**
- Landslides: **Low/1**
- Tsunamis: **Low/1**

Winter-Related Hazards:

- Blizzards/Snow/Nor'easters: **Moderate/6**
- Extreme Cold: **Moderate/6**

Extreme Heat-Related Hazards:

- Extreme Heat: **High/8**

Wind-Related Hazards:

- Hurricanes/Tropical Storms: **Moderate/6**
- High Winds: **Moderate/6**
- Tornadoes/Waterspouts: **Low/3**
- Lightning/Thunderstorms: **Moderate/5**
- Hail: **Low/2**

Drought-Related Hazards:

- Drought: **Moderate/6**

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Natural Hazards Profiled

Wildfire/Brushfire-Related Hazards

- Wildfire/Brushfire: **Low/3**

Communicable (Infectious) Disease-Related Hazards:

- Epidemic/Pandemic: **High/9**

Invasive Species-Related Hazards:

- Aquatic Plant Species: **Moderate/6**

Vector-Borne-Related Hazards

- Multiple: **Moderate/5**

Changes to Groundwater-Related Hazards

- Changes to Groundwater: **Moderate/4**

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Natural Hazard Index

Hazard	2023 Frequency (i.e. Unlikely, Possible, Likely, Highly Likely)	2023 Location (i.e. Small/Local, Medium/Regional, Large/Multiple)	2023 Severity (i.e. Negligible, Limited, Critical, Catastrophic)	2016 Hazard Index (i.e. ranked by combining frequency and severity; 10 = high, 1 = low)	2023 Hazard Index (i.e. ranked by combining frequency and severity; 10 = high, 1 = low)
Flood-Related Hazards					
• Riverine/Flash Flooding	2	1	1	4	4
• Inland/Urban Flooding, Heavy Rain	3	2	2	N/A	7
• Dam Failure	1	1	1	3	3
• Coastal Flooding/Erosion	3	2	1	4	6
Winter-Related Hazards					
• Blizzards/Snow/Nor'easter	3	2	1	3	7
• Extreme Cold	3	2	2	6	6
Geologic-Related Hazards					
• Earthquakes	2	2	2	8	8
• Landslides	1	1	1	3	3
• Tsunamis	1	1	1	3	3
Extreme Heat-Related Hazards					
• Extreme Heat	3	3	2	6	8
Drought-Related Hazards					
• Drought	2	2	1	4	6
Wildfire/Brushfire-Related Hazards					
• Wildfire/Brushfire	2	1	0	3	3
Communicable Disease-Related Hazards					
• Infectious Diseases/Pandemic/Ep.	3	3	3	N/A	9
Invasive Species-Related Hazards					
• Multiple Invasive (land species)	3	2	1	N/A	6
Vector-Borne-Related Hazards					
• Multiple	3	1	1	N/A	5
Changes to Groundwater-Related Hazards					
• Changes in Groundwater	2	1	1	N/A	4

Notes: 0 = Ranked as Negligible Technical Committee (all others utilized NOAA Severity Events Database)

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Human-Caused Hazards Profiled

Terrorism (Intentional) Hazards:

- Cybersecurity Incident: **Moderate/6.8**
- Terrorism/Explosive Incident: **Moderate/6**
- Urban Fire: **Moderate/6.2**
- Civil Disobedience/Unrest: **Low/5.4**
- Chemical/Biological/Radiological/Nuclear Incident: **Low/4.2**

Other (Accidental) Hazards:

- Hazardous Materials Accident/Spill: **Moderate/6.4**
- Nuclear Power Plant Incident: **Low/3**
- Major Airplane Crash: **Low/4**

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Technological Hazards Profiled

Technological Hazards:

- Infrastructure Failure
- Communications: **Moderate/7.6**
- Emergency Services: **Low/3**
- Energy: **Moderate/7.6**
- Information Technology: **Low/5.2**
- Transportation Systems (includes the Port): **Low/4**
- Water/Wastewater/Storm water Systems: **Moderate/6.6**
- ACOE Hurricane Barrier System Failure: **Low/4.8**

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Human-Caused/Technological Hazard Index

Table 1. Technological and Human-Caused Hazard Index New Bedford, Massachusetts 2024 update

Hazard	Probability (i.e., Potential, Likely, Highly Likely) 1 to 4	Location/Extent (i.e., Small, Medium, Large) 1 to 3	Consequence Analysis 1 to 3					Consequence Analysis	2023 Hazard Index: High = 10 to 9 Moderate = 8 to 6 Low = 5 to 2	2009 Hazard Index: High = 10 to 9 Moderate = 8 to 6 Low = 5 to 2	
			Populations	Government	Built Environment	Natural Resource/ Environment	Economy				
Technological Hazards											
ACOE Hurricane Emission Failure	2	1	1	1	1	3	1	3	1.6	4.6	Low
Infrastructure Failure											
- Communications	4	2	1	3	2	1	1	1.6	7.6	High	
- Emergency Services	4	1	1	3	1	1	1	3	3	High	
- Energy	4	2	2	2	1	1	1	1.6	7.6	Moderate	
- Information Technology	3	1	1	2	1	1	1	1	1.2	5.2	Low
- Transportation Systems	2	1	1	1	1	1	1	1	1	4	Low/Moderate
- Wastewater/Sewerage/Stormwater Systems	2	3	2	2	1	1	2	2	1.6	6.6	Moderate
Human-Caused (Other/Accidental) Hazards											
Cyber Incident	3	2	1	3	3	2	1	2	1.6	6.6	Low
Improvised Explosive Devices											
- Vehicle-borne IEDs	2	2	3	2	2	1	2	2	6	6	Low
- Active Shooter											
- Vehicle into crowds											
- Drones											
Urban Fire	4	1	2	1	1	1	1	1	4.2	6.2	High
Oil/Gas/Chemical Release	2	2	1	2	2	1	1	1	1.4	5.4	Low
Chemical, Biological, Radiological, Nuclear Agent (CBRNE)	2	1	2	1	1	1	1	1	1.2	4.2	Low
Human-Caused (Other/Accidental) Hazards											
Aviation Safety/Materials/Airport/Skip	4	1	2	1	1	2	1	1	1.4	6.4	High
Nuclear Power Plant Incident	3	1	1	1	1	1	1	1	1	3	Low
Major Airport Crash	2	1	1	1	1	1	1	1	1	4	Moderate

† All Technological and Human-Caused hazards ranked by New Bedford Technical Committee.

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Assess Risks: Risk/Vulnerability Assessment - Assets

Economic Assets

- Businesses/Large Employers
- Historic Assets

Social Assets

- Vulnerable Populations
- Environmental Justice Areas
- Cultural Locations

Natural Resources

- Lifeline and Utility Systems
- Wetlands
- Conservation/Recreation Sites

Essential Buildings/Critical Facilities

- Municipal Buildings
- Hazardous Facilities
- Roadways/Bridges
- GIS Mapping/Overlay Analyses

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Mitigation Process

- Assess Risks
- **Establish Goals**
- Identify Projects/Actions
- Update/Maintain Plan

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Goals and Mission Statement

New Bedford LHMC will revisit goal statements from the 2016 Plan...

- Prevent and reduce the loss of life, property, infrastructure, and cultural resources resulting from natural hazards.
- Identify and seek funding mechanisms to address proposed mitigation actions.
- Integrate hazard mitigation planning into relevant municipal departments and boards planning efforts.
- Collaborate with surrounding communities, state, regional, and federal agencies to ensure cooperation for natural hazards that affect multiple communities.
- Ensure that future development is compliant with federal, state, and local regulations in order to reduce the impacts of natural hazards.

New Bedford LHMC will also develop a mission statement for the 2024 Update.

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Mitigation Process

- Assess Risks
- Establish Goals
- **Identify Projects/Actions**
- Update/Maintain Plan

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Identify Projects/Actions Mitigation Measures (Categories)

New Bedford LHMC will consider categorizing actions by topic:

- Planning and Prevention
- Property Protection
- Natural Resource Protection
- Structural Projects
- Emergency Services
- Public Education and Awareness

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Identify Projects/Actions Mitigation Actions

Mitigation actions will be developed based on:

- Review of existing plans, studies, and reports
- The City's identified risks and vulnerabilities
- Public input
- Municipal coordination

Mitigation actions will include:

- Brief description of the intended action
- Responsible party
- Proposed time frame for completion
- Potential funding mechanism

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Prioritization Actions – STAPLEE Method

Each mitigation action will be prioritized by:

- **Social:** is the action socially acceptable?
- **Technical:** is the action technically feasible and provide appropriate level of protection?
- **Administrative:** does the City have the capability to complete the action?
- **Political:** will the community support or oppose the action?
- **Legal:** does the City have the legal authority to complete the action?
- **Economic:** is the action cost-effective?
- **Environmental:** will the action affect the natural environment?

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Mitigation Process

- Assess Risks
- Establish Goals
- Identify Projects/Actions
- **Update/Maintain Plan**

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Implement/Update/Maintain the Plan

Implementation/Updating/Maintenance of the 2024 Update will include:

- City's capability
- Plan adoption
- Incorporation into other municipal documents
- Annual review/meeting
- Update after disaster event/5-year planning horizon

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2016 Plan Report Card

5.3.1 Emergency Management Department

- 5.3.1.1 Purchase and Install Auxiliary Generators...**partially completed**
- 5.3.1.2 Improve Warning Capabilities...**completed, remains ongoing**
- 5.3.1.3 Special Needs Registry...**completed**
- 5.3.1.4 Community Preparedness Outreach/Messaging Efforts...**completed, remains ongoing**
- 5.3.1.5 Community Rating System Participation...**not completed, carry forward**
- 5.3.1.6 Debris Management Plan...**in progress**
- 5.3.1.7 Update Local Hazard Mitigation Plan...**in progress**

5.3.2 Police Department

- 5.3.2.1 New roof for Police Station #1...**not completed, station is closed**
- 5.3.2.2 New parking lot drainage system at Police Headquarters...**not completed, design in progress**
- 5.3.2.3 New Communications Systems...**in progress**

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2016 Plan Report Card

5.3.3 Fire Department

- 5.3.3.1 Emergency generators for radio transmitters...**in progress**
- 5.3.3.2 Upgrade of Fire Alarm System...**in progress**
- 5.3.3.3 Replace/Renovate Existing Fire Stations...**in progress**
- 5.3.3.4 EMT Training for Fire Department members...**completed, remains ongoing**
- 5.3.3.5 Stockpile Supplies for Operations Crew and local population...**completed, remains ongoing**

5.3.4 Planning Department

- 5.3.4.1 Adopt Stormwater Ordinance...**completed**
- 5.3.4.2 Integrate Disaster Mitigation into Comprehensive Master Plan...**in progress**

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2016 Plan Report Card

5.3.5 Harbor Development Commission

- 5.3.5.1 Installation of a wave attenuator at Pope's Island Marina...**not completed, carry forward**
- 5.3.5.2 Installation of a storm mooring system at Pope's Island...**not completed, carry forward**
- 5.3.5.3 Repair/Bolster/Expand commercial fishing piers...**in progress**
- 5.3.5.4 Dredge New Bedford Harbor...**not completed, carry forward**
- 5.3.5.5 Expansion of Pope's Island Marina...**not completed, carry forward**
- 5.3.5.6 Replacement of mooring anchors and gear...**partially completed**
- 5.3.5.7 Fund Unified Command Center for local/state/federal emergency response agencies...**completed**
- 5.3.5.8 Assess/Mitigate utility and infrastructure weaknesses on the waterfront...**completed**

5.3.6 Department of Public Infrastructure

- 5.3.6.1 Install new SCADA System at Sewer Pump Stations...**in progress**
- 5.3.6.2 Clarks Cove Pump Station/Hurricane Barrier flooding improvements...**in progress**
- 5.3.6.3 Flood-proof sewer pump stations within flood-prone areas...**completed**
- 5.3.6.4 Coggeshall St. area stormwater drainage improvements...**completed**
- 5.3.6.5 Maple/Chancery Streets stormwater drainage improvements...**not completed, carry forward**
- 5.3.6.6 Page St. stormwater drainage improvements at St. Luke's Hospital...**not completed, carry forward**

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2016 Plan Report Card

5.3.6 Department of Public Infrastructure

- 5.3.6.7 Buttonwood Park Pond and Dam Improvements...**not completed, carry forward**
- 5.3.6.8 Pearl St. stormwater drainage improvements...**completed**
- 5.3.6.9 Brownell Ave./Hawthorn St. stormwater drainage improvements...**not completed, carry forward**
- 5.3.6.10 New Bedford Reservoir Dam/Turner's Pond Dam improvements...**partially completed**
- 5.3.6.11 Establish 'Micro-Grid' within City for auxiliary power...**not completed, remove/no longer relevant**
- 5.3.6.12 Route 18/Wamsutta St. stormwater drainage improvements...**not completed, carry forward**
- 5.3.6.13 Sheffield St./Stratford St. stormwater drainage improvements...**not completed, carry forward**
- 5.3.6.14 Mitigation of drainage issues Tarklin Hill Rd. to Nash Rd. Pond...**not completed, carry forward**
- 5.3.6.15 West End CSO separation contract phase IV...**not completed, carry forward**
- 5.3.6.16 West End CSO separation contract phase V...**not completed, carry forward**
- 5.3.6.17 Assawompsett Dam improvements...**not completed, remove/no longer relevant**
- 5.3.6.18 Improve the inter-municipal agreement with Taunton for Assawompsett Dam...**not completed, remove/no longer relevant**
- 5.3.6.19 Improve communications/data gathering for infrastructure systems...**completed**
- 5.3.6.20 Implement snow-plowing tracking system...**completed**
- 5.3.6.21 Incorporate disaster mitigation plan projects into City projects...**completed, remains ongoing**

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Community Outreach & Engagement

Ward-Specific Public Meetings

- Ward 1: Pulaski School, November 6, 2023
- Ward 2: Wilks Library, September 25, 2023
- Ward 3: Keith Middle School, October 16, 2023
- Ward 4: McCoy Recreation Center, November 2, 2023
- Ward 5: Hathaway Elementary School, October 4, 2023
- Ward 6: Hazelwood Park Community Center, October 30, 2023

Outreach/Engagement Reboot

- Listening Posts
 - Howland Green Branch Library
 - New Bedford Free Public Library
 - Lawler Branch Library
 - Wilks Branch Library
 - Denison Memorial Community Center
 - Global Learning Charter Public School
 - Whaling Museum



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Community Outreach & Engagement

Fact Sheet/Survey Link/QR Code

- Online Community Survey
 - 170 responses to date
 - Project business cards created for distribution
 - QR Code posted inside Southeastern Regional Transit Authority (SRTA) buses
- Fact Sheet/Survey distributed electronically to:
 - Coalition for Social Justice (December 2023)
 - Alma Del Mar Charter School (January 2024)
 - Global Learning Charter (December 2023 – English/Spanish/Portuguese)
- Boots-on-the-Ground
 - Staff canvassing SRTA bus routes/shelters



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Project Timeline MHMP



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Online Survey

- Visit nbresilient.com
 - Take the online Community Survey:
<https://www.surveymonkey.com/r/6KTNVMJ>
 - Share the link/QR Code with family, friends, coworkers
- **Participate and be entered to win a \$50 gift card!**



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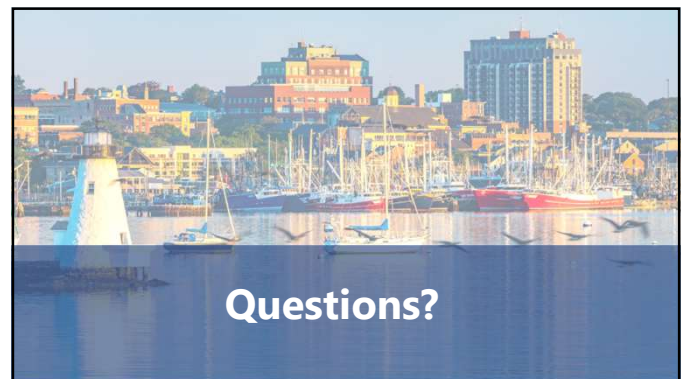
Project Webpage

- Take Our Survey!
- What is Hazard Mitigation Planning?
- Prioritizing Equity
- Our Process
- Local Hazard Mitigation Committee
- Contact Us for More Information
- Additional Resources
- 2016 Plan Report Card



www.newbedford-ma.gov/emergency-management/new-bedford-multi-hazard-mitigation-plan/

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**New Bedford Multi-Hazard Mitigation Plan Update
Public Workshop #1: April 11, 2024
Comment Card**

Has your home, business, or quality of life been affected by natural, human-caused, and/or technological hazards over the past five years? Tell us how you've been impacted.

Are there specific hazards/hazard areas you are aware of that aren't necessarily part of any standardized mapping (local knowledge)? Some examples could include:

- Roadway flooding due to undersized culvert and/or pipe (s).
- Barriers to pedestrian networks due to flooding or limited snow removal.

In your opinion, is the City of New Bedford doing enough by way or preparing for future climate change projections/scenarios?

New Bedford Multi-Hazard Mitigation Plan Update

New Bedford Public Workshop #1

The Vault - 791 Purchase Street

April 11, 2024 6:00 PM - 8:00 PM

<u>Name</u>	<u>Email Address</u>
Shawn Syde	
H. Riley	
Kellie King	
Craig Pereira	
Michele Paul	
Kevin Lyonnais	
Wendy DeBlois	
Kamile Khazan	
Courtney Cohen	
Jim Costa	
James R. Jones	
James A. Jones	



Public Workshop #2: April 5, 2025

Ward-Specific Meetings

The **City of New Bedford** wants **YOUR** input!

New Bedford wants to ensure all residents are **safe, healthy, and prepared** for all hazards and climate events, like flooding or extreme heat. Come to your local Ward Meeting share your thoughts to help shape how our community plans for a **resilient future**.



September

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WARD 2

🕒 6 - 7:30pm

📍 Wilks Library, Meeting Room

October

4

WARD 5

🕒 6 - 7:30pm

📍 Hathaway Elementary School, Auditorium

October

16

WARD 3

🕒 6 - 7:30pm

📍 Keith Middle School, Community Room

October

30

WARD 6

🕒 6 - 7:30pm

📍 Hazelwood Park Community Center, Community Room

November

2

WARD 4

🕒 6 - 7:30pm

📍 McCoy Rec Center, Multi-Use Room

November

6

WARD 1

🕒 6 - 7:30pm

📍 Pulaski School Auditorium



City of New Bedford
Office of the Mayor
Contact: Holly Huntoon
(508) 989-4407

Holly.Huntoon@newbedford-ma.gov

CITY OF NEW BEDFORD
Jonathan F. Mitchell, Mayor

Date: Tuesday, September 19, 2023
For Immediate Release

PRESS RELEASE

City Seeking Feedback on “All Hazard Mitigation Plan” Meetings Being Held in Each Ward

New Bedford, MA – As part of the City’s update of its All Hazard Mitigation Plan (AHMP), meetings are being held in each ward to brief residents on the Plan and to collect feedback specific to each area of the City. Hazard Mitigation Planning enables municipalities to identify risks and vulnerabilities associated with natural hazards and to develop long-term strategies for protecting people and property from future hazard events. This is an important opportunity to best plan for immediate storm and hazard response and to collect information to make recommendations for long-term infrastructure and other improvements specific to each neighborhood.

New Bedford’s Departments of Emergency Management, Public Infrastructure, Planning, and Resilience and Environmental Stewardship are leading the effort in collaboration with various City departments, boards, and community-based organizations. Residents are invited to attend one of the following Ward meetings:

Ward 2 – Monday, September 25, from 6 p.m. until 7:30 p.m. at Wilks Library, located at 1911 Acushnet Avenue.

Ward 5 – Wednesday, October 4, from 6 p.m. until 7:30 p.m. at Hathaway Elementary School, located at 256 Court Street.

Ward 3 – Monday, October 16, from 6 p.m. until 7:30 p.m. at Keith Middle School, located at 225 Hathaway Boulevard.

Ward 6 – Monday, October 30, from 6 p.m. until 7:30 p.m. at Hazelwood Park Community Center, located at 553 Brock Avenue.

Ward 4 – Thursday, November 2 from 6 p.m. until 7:30 p.m. at McCoy Rec Center, located at 181 Hillman Street.

Ward 1 – Monday, November 6, from 6 p.m. until 7:30 p.m. at TBD.

To learn more about the AHMP planning process and to take the online survey (in English, Spanish, or Portuguese), visit the New Bedford Resilient Dashboard at <https://nbresilient.com/category/local-multi-hazard-mitigation-plan-update>.

Mtg	Location	Location 2	Issue	Asset	Stressors
W2					L.I./L.E.P
W2	Riverside		Trees and greenspace (asset)	√	
W2	Acushnet Ave.	entire length	Trees and greenspace (asset)	√	
W2	Riverside Park		Flooding at Riverside Park		
W2	Riverside Ave.		Flooding at Whaler's Place/Cove		elderly/mobility
W2	River Road		Flooding		
W2	Belleville Ave		Flooding		
W2	Coggeshall St.		Flooding		
W2	Ward 3	Fairhaven Bridge	Structural incident		
W2	Ward 3	Route 18	Flooding		
W2	110 Dutton St.	@ Acushnet	Flooding		
W2			vacant/burnt-out buldings		
W2			above-ground power lines		
W2	Ward 3	Bottonwood Park	Flooding		
W2	Ward 1	100 Duchaine Blvd	Parallel Products (general)		
W2	Irvington Court @	Irvington St	Flooding		
W2	Howard Avenue		Flooding		
W2	Church Street	Kings Hwy	Flooding		
W2	Brooklawn Park		Flooding		
W2	Brooklawn Park		Trees and greenspace (asset)	√	
W2			People who do ot pick up after their dogs (Sp)		
W2	Ashley Blvd	Tallman St. area	Need a public bus stop shelter		
W2			Need small public shelters from		
W2			Very hot - no shade		
W2	Acushnet Avenue	Coffin-Tallman	Flooding		
W2			Old housing not maintained/old electrical systems		
W2			Hurricane flooding potential		
W2	Payne/Elco Field		unspecified		
W2	Acushnet Ave	CEDC	Community center and information	√	
W2	Acushnet Ave	St. Anthony's	Big Community Center	√	
W2	Acushnet Ave	Whitman Street	Flooding		
W2	Acushnet Ave	Brooklawn Street	Flooding		
W2	North End		House fires drom bad electricity, cigarettes, and people under the influence of alchohol		
W1	Kelton Street		no street lights		
W1	Route 140	under Nash	low spot floods		
W1	Route 18		Flooding		
W1	Belleville Ave		Flooding		
W1	Sasaquin Pond		Phragmites		
W1	Sasaquin Pond		Bird problems		
W1	Samuel Barnet Blvd @rail		access blocked for emergencies		

W1	Welbey Rd		Flooding		
W1	residential south of Phillips		sewer capacity issues		
W1	Airport Rd/Shawmut Ave		invasive plants		
W1	residential area east Theodore Rice		water pressure for fire flows		
W1	Upper Acushnet River		CB left in place - lifespan?		
W1	Hurricane Barrier		with larger ships are parts for repair on hand?		
W1	Brittany Dye		Vulnerable to storm surge?		
W6	Brittany Dye		odors		
W6	Cove Road		Flooding		
W6	Cornel Dublier		Consolidated all oprations to New Bedford Plant		
W6	Hazelwood to Willard		Flooding		
W6	Padanaram area		Flooding		
W6	Bellview south to Ricketson		Power grid issues		
W6	Scott /Division Street area		Trees on power lines		
W6	Brock Avenue		Catch basins clogged and can't be swept with parked cars		
W6	W. Rodney Fr: Hazelwood-Willard		Flooding		
W5	111 Dartmouth St.	Perry's Funeral H.	Flooding		
W5	Buttonwood Park Dam	Perry's Funeral H.	Flooding		

Listening Posts

Listening Post Instructions:

Thank you for supporting New Bedford's Local Multi-Hazard Mitigation Plan. The purpose of the Listening Post is to create a space where community members can share their experiences with local hazards, contributing valuable insights for our local multi-hazard mitigation planning process.

To set up the Listening Post station, please place it in a prominent and accessible location within your facility. Encourage passersby to share their thoughts on the designated sections of the poster, fostering a sense of community involvement. If possible, please periodically check the station and notify us if additional materials are needed. The materials and submissions will be collected at the end of February by the City.

Please ensure the following materials are set up at the Listening Post:

- [Listening Post Activity Board](#)
- Fact sheets
 - [English](#)
 - [Spanish](#)
 - [Portuguese](#)
- Printouts of the survey
 - [English](#)
 - [Spanish](#)
 - [Portuguese](#)
- Sticky dots
- Post-it notes
- Pens/Pencils

If you have any questions, feel free to contact:

Michele Paul

michele.paul@newbedford-ma.gov

Direct: 508-979-1487 | Cell: 508-816-5777

Has your home, business, or quality of life been affected by extreme storms, flooding, drought, or high heat days? Tell us how you've been impacted.

Place a sticky dot next to all of the impacts that you have personally experienced.

Flood Damage

Damage from storms
(wind, snow, ice, heavy rain)

Higher cooling costs

Higher heating costs

Heat stress/illness

Loss of business due
to extreme weather

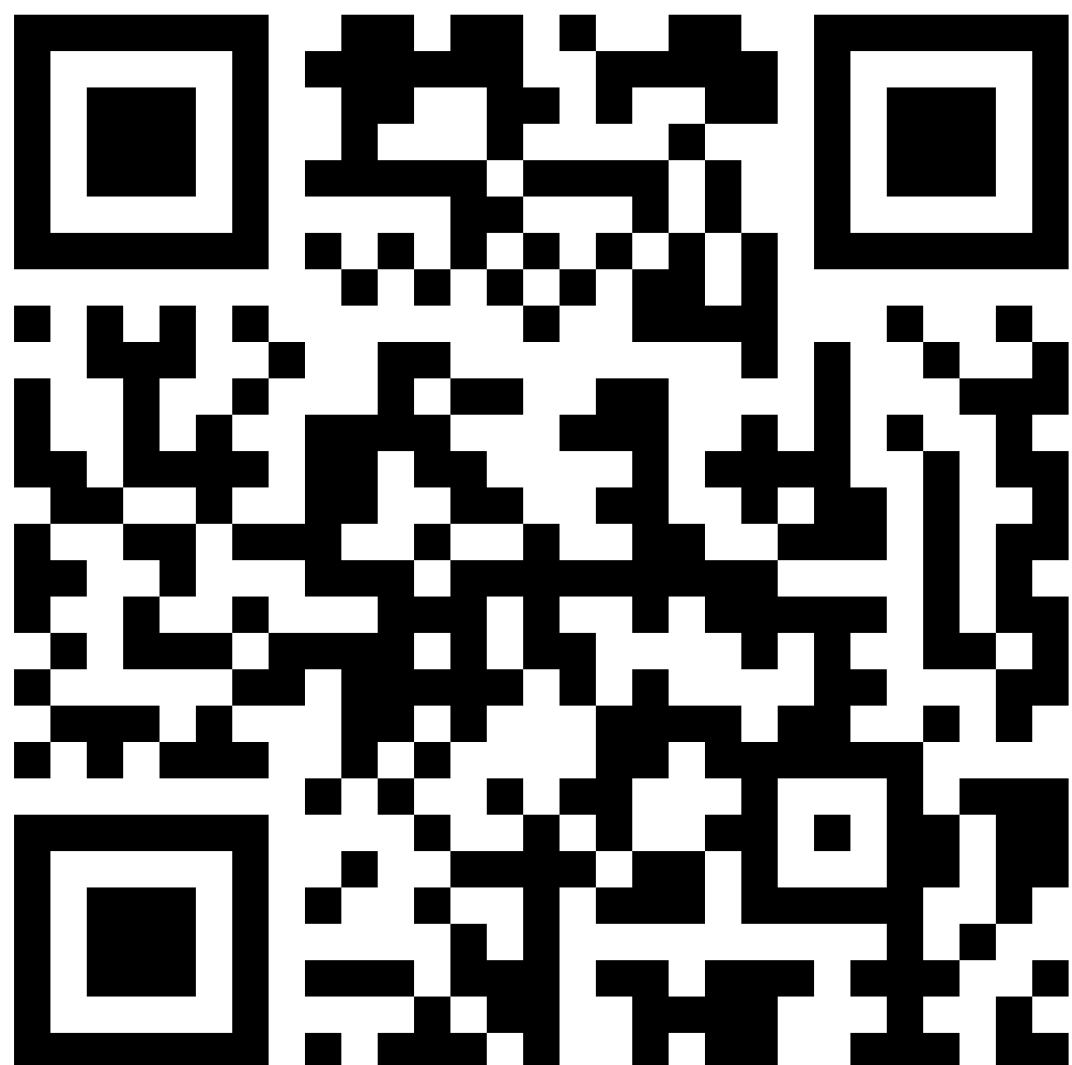
Tree/plant stress

Something else
*(Tell us about it on
a sticky note!)*



nbresilient.com

How else have you been impacted by hazards in our community? Share your experiences through a **short survey** from the City.



Completed Listening Posts Summaries

Has your home, business, or quality of life been affected by extreme storms, flooding, drought, or high heat days?

Main Library

Mid-January to January 29, 2024

Flood Damage: 4

Damage from Storms (wind/snow/ice/heavy rain): 2

Higher cooling costs: 3

Higher heating costs: 4

Heat stress/illness: 1

Loss of business due to extreme weather: 1

Tree/Plant stress: 2

Something else (tell us about it): 1

Whaling Museum

January 30, 2024 (special exhibit, 1 day only)

Flood Damage: 4

Damage from Storms (wind/snow/ice/heavy rain): 4

Higher cooling costs: 2

Higher heating costs: 2

Heat stress/illness: 1

Loss of business due to extreme weather:

Tree/Plant stress: 3

Something else (tell us about it): 2 (flooded roads/roads and potholes)

Lawler Library

Mid-January to February 12, 2024

Flood Damage: 4

Damage from Storms (wind/snow/ice/heavy rain): 2

Higher cooling costs: 5

Higher heating costs: 3

Heat stress/illness: 1

Loss of business due to extreme weather: 3

Tree/Plant stress: 2

Something else (tell us about it): 1 (pests infestation)

Howland Green Library

Mid-January to February 9, 2024

Flood Damage:

Damage from Storms (wind/snow/ice/heavy rain):

Higher cooling costs: 1

Higher heating costs: 3

Heat stress/illness:

Loss of business due to extreme weather:

Tree/Plant stress:

Something else (tell us about it):

Wilks Library

Mid-January to February 12, 2024

Flood Damage: 1

Damage from Storms (wind/snow/ice/heavy rain): 3

Higher cooling costs: 5

Higher heating costs: 6

Heat stress/illness: 3

Loss of business due to extreme weather:

Tree/Plant stress:

Something else (tell us about it):

Whaling Museum

February 23, 2024 (special exhibit, February School Break)

Flood Damage:

Damage from Storms (wind/snow/ice/heavy rain): 3

Higher cooling costs: 3

Higher heating costs: 4

Heat stress/illness: 1

Loss of business due to extreme weather: 2

Tree/Plant stress: 4

Something else (tell us about it):

Denison Memorial Community Center

Not deployed.....

Global Learning Center

Mid-January to March 1, 2024 (no participation)

New Bedford Science Cafe

February 6, 2024 (Rachel Mulroy)

Flood Damage: 1

Damage from Storms (wind/snow/ice/heavy rain): 5

Higher cooling costs: 7

Higher heating costs: 9

Heat stress/illness:

Loss of business due to extreme weather:

Tree/Plant stress: 9

Something else (tell us about it):

Interviews

Memorandum of Meeting

To: New Bedford Multi-Hazard Mitigation Plan Core Team
From: Gabriella Spitzer
Date: June 26, 2024
Re: Stakeholder Interview on June 26: New Bedford Council on Aging

In attendance

Pamela Amaral-Lema, Director, Council on Aging
Gabriella Spitzer, Horsley Witten Group (HW)

Background

Gabriella Spitzer and Pamela Amaral-Lema connected about the City's Hazard Mitigation Plan (HMP) update process. Gabriella explained that the HMP is part of broader NB Resilient efforts. It is a 5-year plan that is certified by FEMA and makes the City eligible for certain kinds of funding. It deals with natural, technological, and human-caused hazards.

Pamela explained that the Council on Aging (COA) provides services to older adults in New Bedford. They run the Buttonwood Senior Center as well as the Adult Social Day Care Program and the Hillman St. Senior Support Center. They also provide medical transportation and administrative support for various needs. There are 20,000 older adults living in New Bedford, and the COA reaches about 1,000 of them on a regular basis.

Discussion

Past experiences with hazards

The pandemic was really scary for many of the City's seniors. The COA provided between 4,000 – 5,000 vaccines. They worked hard to reach seniors who are part of underserved populations. Many of them do use technology, and the My Senior Center system has been effective in reaching them.

In addition to the My Senior Center system, the COA has found that talk radio, TV, and print newspapers are effective ways to reach older adults in the community.

Current concerns and planning

The biggest concern for the COA is winter hazards. Loss of power can be dangerous for many older adults. Even small snowstorms or freeze/thaw cycles that leave the roads and sidewalks icy can be extremely dangerous. They can leave seniors stranded in their homes, lest they run the risk of falling.

Other hazards include extreme heat and hurricanes. During the recent heat wave, the senior center became a cooling center, which worked well.

Future vision and wishlist

The City is working on developing a database with information on every older adult, which will make the COA's job much easier to reach more people (especially those who live alone or are not receiving services in other ways). That should go live this fall.

It would be helpful to continue trainings on cognitive impairments for all city staff, especially first responders.

Memorandum of Meeting

To: New Bedford Multi-Hazard Mitigation Plan Core Team
From: Gabriella Spitzer
Date: July 17, 2024
Re: Stakeholder Interview on July 17: Health and Medicine (Greater New Bedford Community Health Center and Southcoast Health Hospital Network)

In attendance

Cheryl Bartlett, CEO of New Bedford Community Health
Christopher Leblanc, Director of Facilities and Engineering at Southcoast Health
Craig Forcina, Director of Safety, Security, and Emergency Management at Southcoast Health
Dennis Swift, Associate Safety and Emergency Management Officer at Southcoast Health
Emily Quinn, Government Liaison at Southcoast Health
Gabriella Spitzer, Horsley Witten Group (HW)

Background

Gabriella Spitzer and the meeting participants connected about the City's Hazard Mitigation Plan (HMP) update process. Gabriella explained that the HMP is part of broader NB Resilient efforts. It is a 5-year plan that is certified by FEMA and makes the City eligible for certain kinds of funding. It deals with natural, technological, and human-caused hazards.

Each of the participants explained their roles and organizations. Southcoast Health runs three hospitals in the region, including St. Luke's in New Bedford and various urgent care and other clinics. New Bedford Community Health provides mental health, medical, and dental services for people in the region, regardless of their ability to pay.

Discussion

Hazard impacts

The meeting participants are concerned about a wide variety of hazards and impacts. When there is flooding or stormwater issues, the hospitals and community health center cannot function, and their patients cannot access medicine. If needed, the health center will close due to weather conditions, but it is a hard decision, and it has financial implications in addition to the human impacts. When the community health center loses internet access, which has happened a couple times recently, patient care suffers because the providers cannot access medical records. The emergency managers from Southcoast Health are concerned about potential spills and water pollution from the highways and rail, which could cause major harm and would be hard to respond to, especially if the cause was initially unknown. Additionally, the New Bedford Community Health Center has seen mental health impacts of hazard events, specifically an increase in active suicidality during extreme heat.

We discussed lessons from the COVID-19 pandemic. The hospitals and health center staff had to resources in a hurry and make do with limited capacity. There were daily meetings with the city department of public health, Southcoast health, the community health center, the schools, and other

important partners. The meetings have not continued, but the relationships remain. There were also challenges with the business community employing essential workers, especially in the local fish houses. The employees were not receiving adequate protective equipment, but the city was hesitant to conduct inspections. Once the mayor issued an executive order about it, the situation improved, but it took a long time for that to happen, and enforcement remained an issue.

COVID-19 also highlighted the importance of communication and education of the public. It can be challenging to reach everyone. They have used social media and fliers, as well as going on public television. They have also worked with partners like the immigrant assistance center to ensure residents who do not speak English understand the issues. One lesson was to partner earlier with religious and faith leaders, because they have a wide reach and significant access, but with COVID, they didn't always have accurate messages.

Future vision and wishlist

"We have all the pieces of the puzzle, but it can be challenging to put it all together." The meeting participants pointed to ways to make their jobs easier so they can serve the public. The resources (both time and money) dried up as the pandemic waned, but there are needs and investments that could help prepare for the next pandemic or other hazards. The city health meetings have not continued, even on an infrequent basis. There are no grants to replenish supplies or support ongoing emergency management. The local public health system in particular needs support. This is an issue beyond New Bedford, and there is a stalled bill that would address the issues statewide. Other changes that would improve the health and resilience of the City include stronger English immersion and resources for adult ESL learners and more resources for emergency responders.

Memorandum of Meeting

To: New Bedford Multi-Hazard Mitigation Plan Core Team
From: Gabriella Spitzer
Date: June 6, 2024
Re: Stakeholder Interview on June 6: New Bedford Community Services

In attendance

Cynthia Wallquist – New Bedford Department of Community Services, Director
Gabriella Spitzer – Horsley Witten Group (HW)

Background

Gabriella Spitzer and Cynthia Wallquist connected about the City's Hazard Mitigation Plan (HMP) update process. Gabriella explained that the HMP is part of broader NB Resilient efforts. It is a 5-year plan that is certified by FEMA and makes the City eligible for certain kinds of funding. It deals with natural, technological, and human-caused hazards.

Cynthia shared that the Department of Community Services is the “do gooder” agency in the city. They run programs that support older adults, children, people with disabilities, people who need support with housing or mental health, and many other related issues. They also serve on the City's Emergency Management Working Group.

Discussion

Past experiences with hazards

- Several years ago, there was a hurricane risk, and the Department of Community Services spent the night in the middle school with people who had been evacuated from the hospital. They learned lots about the logistics of evacuations, especially for people with various medical needs.
- There was also a chemical incident with one of the larger apartment buildings, and people needed to be evacuated.

Current concerns and planning

- The Department of Community Services is currently working with the Fire Department to revamp and update their special needs registry so there is a record of who has which kinds of medical and disability needs.
 - This can be used in preparedness planning, immediate disaster response, and recovery efforts.
 - Without this record, the Fire Department does not necessarily know what the issues are or how to support residents in a crisis. Property managers may know, but those records aren't public.
 - The Department of Community Services will update the information for residents outside the hurricane barrier first.

- They are concerned about the risks to vulnerable populations, especially people with disabilities and older adults. The senior center used to be used as a cooling center, but the air conditioning doesn't work well enough for that to really be viable, so they now use the libraries.
- There have been issues with power outages downtown and in the south end of the City. There have also been fires, especially in some of the older housing stock in the south end and the north end.

Future vision and wishlist

- The special needs registry is important and will be helpful, and it's part of a larger need to recognize and prioritize the needs of people with disabilities, seniors, and people with physical and mental health challenges. For example, the department is leading a training for first responders (police, fire, and EMTs) on how to respond to hoarding situations. This is needed because hoarding can be a hazard and sometimes people with hoarding challenges are not treated with respect by first responders. The department really wants to see a culture of respect, compassion, and support for all residents, regardless of their mental health, physical health, disability, citizenship and documentation status, etc. Sometimes the urgency of hazards gets in the way of recognizing the importance of meeting these needs.

Memorandum of Meeting

To: New Bedford Multi-Hazard Mitigation Plan Core Team
From: Gabriella Spitzer
Date: September 30, 2024
Re: Stakeholder Interview on September 30: Economic Development

In attendance

Derek Santos, Executive Director, New Bedford Economic Development Council
Marianella Perry, Business Support and Communications, New Bedford Economic Development Council
Gabriella Spitzer, Horsley Witten Group (HW)

Background

Gabriella Spitzer and the meeting participants connected about the City's Hazard Mitigation Plan (HMP) update process. Gabriella explained that the HMP is part of broader NB Resilient efforts. It is a 5-year plan that is certified by FEMA and makes the City eligible for certain kinds of funding. It deals with natural, technological, and human-caused hazards.

Derek Santos explained the role of the New Bedford Economic Development Council. They work with businesses (mostly small businesses, but many larger businesses as well) to strengthen economic development in the city. They have lots of flexibility in what they do and how they go about it, but they only work within the city boundaries.

Discussion

Current experiences

Derek and Marianella talked about their role in working with businesses to make sure they are prepared for hazards, have complied with regulations, and are reducing their risks. They have a strong network and want to support local businesses both in compliance with any regulations and in going above and beyond to reduce risks. This is especially relevant for developers as building codes evolve.

They provide technical assistance and loans for business operations but haven't been asked for support on business continuity planning or related resilience measures. Maybe the silence on the issue is because it is already being done and integrated within normal operations, but probably there are gaps that are not currently being filled.

While there haven't been major hazards that have impacted their work, there are ongoing stressors that are getting worse or harder. The pandemic exposed supply chain weaknesses. More recently, there have been challenges with higher costs due to inflation. More frequent hazard events raise costs for businesses—power outages have been more frequent, utility costs have skyrocketed, extreme heat events have gotten more frequent and more severe. These increase costs in different ways for different sectors. Frequent and extreme swings in temperatures, for example, pose significant challenges for developers.

Future vision and wishlist

More could be done to communicate and prioritize resilience work. The Resilient New Bedford plan is good, but the implementation has not been consistent.

It would be helpful to have more tools and resources to provide to the business community, so they know what should be expected as a baseline and what is best practice. It is helpful to learn from other communities.

When businesses choose locations to move, they are looking for a solid workforce and good transportation. They are also looking for good governance, sound financial management, and strong and equitable city planning. Strong resilience planning is part of that. It could be seen as a competitive advantage when marketing the city as a place to set up shop. Let's tell our story and show the good work we are doing that will make New Bedford a stronger and safer place for businesses.

Memorandum of Meeting

To: New Bedford Multi-Hazard Mitigation Plan Core Team
From: Craig Pereira
Date: October 8, 2024
Re: Stakeholder Interview: Eversource/Anthony Veilleux

In attendance

Anthony Veilleux – Eversource: Community Liaison (Storm Preparation/Emergency Response)
Craig Pereira – Horsley Witten Group (HW)

Background

Craig Pereira and Anthony Veilleux connected (virtually) about the City's Multi-Hazard Mitigation Plan (MHMP) update process. Craig explained that the MHMP is part of broader NB Resilient efforts. It is a 5-year plan that is approved by FEMA, adopted by the City, and makes the City eligible for funding opportunities. This update is being expanded to address natural, technological, and human-caused hazards. The interview was requested to better understand how the public utility fits into the City's operations, and to identify any potential partnerships/collaborations (mitigation actions) for consideration as the MHMP is being updated.

Craig brought up specific topics for discussion purposes including:

- Vegetation management
- Strategies to address hardening/physical security (design standards)
- Structural reinforcement of poles/towers
- Distribution system resilience
- Utility scale battery storage
- Distributed energy resources

Anthony was appreciative of the opportunity to discuss, commenting that Eversource works well with the City's municipal departments and considers the relationship with the City a positive one. One area Anthony identified as having potential for a mitigation action is an improved equitable and timely exchange of information between Eversource and residents (customer base) of New Bedford.

Discussion:

Electricity

- Utility infrastructure in New Bedford is very old
- Working on resiliency/redundancy of system
- Currently upgrading all transmission lines within the region...all transmission lines run out of New Bedford
- No backup battery storage in New Bedford currently
- Company is mostly reactionary in their efforts
- Works with NB Dept. of Public Infrastructure (permitting) quite a bit regarding design standards
 - City often requests additional considerations on aesthetics of sub-stations...can be done, however, costs get pushed onto customers' rate structure.

- City is divided into 2 service areas: customers do not understand this.
 - North (north of Route 6): Verizon-owned
 - South: Eversource
 - This makes situations challenging: when power is out/poles down/trees on wires...they get calls to repair...not always their equipment, and the general public doesn't understand the nuances that they can only service their equipment.
 - Where ever trees are 40' in height, they trim, whenever overhanging wires, they trim...Eversource industry standard (vegetation management)
 - Southern service area is at capacity currently
 - **Potential Action: Work with the City to better communicate about 2 service areas/utility providers, what each can/can't do regarding other utility's equipment.**
- Undergrounding services:
 - Cost-prohibitive (\$1 million per mile)
 - There is not much room to move underground (other utilities already in place)
 - All transmission lines daylight above-ground at some point (thus are vulnerable)

Natural Gas

- Gas System Enhancement Plan (GSEP) program: currently working on replacing cast iron/steel pipes underground (from 1920's old and leaking)...intense projects to complete
- Does best to communicate with customers about ongoing/upcoming projects...could do more by way of communication regarding pilot projects
 - **Potential Action: Work with the City to better communicate about ongoing/upcoming improvement projects/schedule/locations.**
- Currently have \$20 million project that incorporates Environmental Justice framework which requires a higher level of outreach/communication...opportunity to expand on Environmental Justice component of this multi-hazard mitigation plan update/Eversource efforts (action above)
- In general, regionalization of services is not considered realistic.

Memorandum of Meeting

To: New Bedford Multi-Hazard Mitigation Plan Core Team
From: Gabriella Spitzer
Date: November 4, 2024
Re: Stakeholder Interview on November 4: Facilities and Fleet

In attendance

Jennifer Viera, Director, New Bedford Department of Facilities and Fleet Management
James Sylvia, Assistant Director, New Bedford Department of Facilities and Fleet Management
Gabriella Spitzer, Horsley Witten Group (HW)

Background

Gabriella Spitzer and the meeting participants connected about the City's Hazard Mitigation Plan (HMP) update process. Gabriella explained that the HMP is part of broader NB Resilient efforts. It is a 5-year plan that is certified by FEMA and makes the City eligible for certain kinds of funding. It deals with natural, technological, and human-caused hazards.

The New Bedford Department of Facilities and Fleet is responsible for municipal buildings, the recycling center, and the city's fleet and maintenance garage.

Discussion

Hazard impacts

The meeting participants are concerned about a wide range of hazards and impacts. Many of their facilities and activities are critical to keeping city government running, including making sure the response to a disaster or hazard event goes as smoothly as possible. The maintenance garage is of particular concern, because it services the city's fleet (including emergency vehicles) and contains hazardous materials. Another vulnerable asset is the recycling center. Fire is a particular concern, because it has a lot of brush surrounding it, and it abuts a capped landfill that vents methane. There are also used batteries at the recycling center.

The highest concern hazards are flood, high winds (from hurricanes or otherwise), structure fire, and hazardous materials spill.

Many of the city's buildings are historic. This makes updates challenging, including updates to strengthen resilience or reduce emissions (such as updates to heating and cooling). Depending on the proposed update, the department may need to go in front of the historic commission. Generally, this has been smooth, and the historic commission has understood the needs of the department of facilities and fleet management.

One emerging concern is fire risks and electric vehicles. The city has 13 all-electric vehicles and many hybrid vehicles as well. There is not currently space to separate them in the garage to reduce fire risks, and the fire risks to electric vehicles are higher than to gas vehicles.

Future vision

Funding is always a challenge. If there were funding, priorities for the department include:

- Updating buildings for more efficient heating and cooling to reduce emissions and make systems more efficient and more reliable.
- Replacing key locks with fobs for additional security.
- Addressing the electric vehicle fire risk concerns.
- Improving the resilience of the garage facility.

Additionally, the department would like to improve safety and first responder training, especially for the electricians and workers in other trades. It may be helpful to develop more policies and protocols for emergencies, but there are also lots of potential scenarios that could occur and haven't been planned for.

Memorandum of Meeting

To: New Bedford Multi-Hazard Mitigation Plan Core Team
From: Craig Pereira
Date: March 8, 2024
Re: Stakeholder Interview: Greater New Bedford Regional Refuse Management District Coordination

In attendance:

Anthony Novelli – Executive Director
Craig Pereira – Horsley Witten Group (HW), Project Manager

Craig Pereira and Anthony Novelli coordinated regarding the need for the development of a comprehensive debris management plan. Anthony had reached out to various City officials last year and was informed regarding the update of the City's Hazard Mitigation Plan (2016) and Comprehensive Emergency Management Plan (2009), and the timeliness of Anthony's outreach.

Craig provided an overview of the two projects currently ongoing with the City:

- Scope of Work (HMP and CEMP)
- Various Committees/Subcommittees
- Timelines
- Process
- Status Update
- Emphasized that the purpose of the HMP is to serve as a roadmap for future planning/funding towards implementation, while the CEMP is intended to identify/convey the personnel/protocols/processes related to emergency management.

Anthony provided some background information regarding the Management District's concerns/needs:

- The District is a public entity created by NB/Dartmouth to manage solid waste, but is not a municipal department.
- Crapo Hill is a fully lined and compliant landfill that has been operating since 1995.
- Estimates efforts currently saving NB approx. \$3 million/year in waste disposal fees for the City
- Estimates 5 years of capacity in current built landfill cells
- One disaster alone could consume up to one year of capacity
- There is a need to plan accordingly, in advance of an event/disaster... establish staging locations and a plan for separating materials and disposal locations. Brush and organic debris should be separated from Construction & Demolition (C&D) waste and from recyclables for optimal material recovery.
- If materials are not properly separated, brush and recyclables become contaminated and must be treated as waste, which is much more expensive.
- Regionalization with Dartmouth would be best (Dartmouth also a client)

Craig provided some insight regarding how/where the Management District could be factored into both plan's development.

- The City's existing HMP includes a mitigation action: Section 5.3.1.6 City's goal is to develop a Debris Management and Monitoring Plan and support efforts to secure reimbursement under

FEMA's Public Assistance Program. This action was not accomplished over the 5-year planning horizon and has been noted to be carried over into the 2024 update.

- The MA Debris Management Plan (2022) has been developed as an 'Annex' to the state's CEMP. Craig stated that this is likely the most appropriate consideration for this discussion, although bringing this conversation into the HMP is also important and can set the stage for further expansion in the CEMP.
- Craig commented that the HMP's Vulnerability Assessment section is currently underway. This includes the development/confirmation of GIS data (critical facilities/vulnerable populations) which, together with the City's parcel data will be overlaid with various hazard scenarios (FEMA Flood Zones/Sea, Lake and Overland Surge from Hurricanes (SLOSH)/MA Coastal Flood Risk Model (MC FRM)) to identify what is vulnerable and when. From this analysis, mitigation actions for consideration will be developed to remedy these vulnerabilities. HW can include the Crapo Hill landfill as a critical facility in this analysis and begin the inclusion of this discussion into the HMP.
- Building off of the Vulnerability Assessment in the HMP, Craig commented that the discussion can then be picked up in the development of the CEMP update, with the desire/needs of the Management District to work with New Bedford and Dartmouth to develop a comprehensive debris management plan, outside of the current CEMP update.
- Craig suggested that perhaps the City could include Anthony on the CEMP Update Review Subcommittee as a stakeholder to foster this relationship and ensure the needs of the Management District have been considered appropriately in the CEMP update.
- Craig also commented that it would be helpful for Anthony to develop a draft outline for a debris management plan based on existing, available resources and come to the discussion informed/prepared. Craig did some searching and downloaded several resources that will be provided to Anthony:
 - o MA Debris Management Plan (August 2022)
 - o MA DEP's Local Disaster Debris Management Plan Checklist (July 2014)
 - o MA DEP's Disaster Debris Management Planning: An Introduction for Local Government Officials (Updated July 2014)
 - o FEMA Debris Management Job Aid (January 2016)
- Craig also commented that once the Vulnerability Assessment section of the HMP was drafted, a copy could be made available to Anthony to ensure the Management District has been represented accurately.

Memorandum of Meeting

To: New Bedford Multi-Hazard Mitigation Plan Core Team
From: Gabriella Spitzer
Date: June 10, 2024
Re: Stakeholder Interview on June 10: New Bedford Housing Authority

In attendance

Cynthia Spence, Director of Modernization, Planning, and Development at the New Bedford Housing Authority
Gabriella Spitzer, Horsley Witten Group (HW)

Background

Gabriella Spitzer and the meeting participants connected about the City's Hazard Mitigation Plan (HMP) update process. Gabriella explained that the HMP is part of broader NB Resilient efforts. It is a 5-year plan that is certified by FEMA and makes the City eligible for certain kinds of funding. It deals with natural, technological, and human-caused hazards.

Cynthia explained that the New Bedford Housing Authority is a quasi-governmental authority that manages state and federally funded public housing. It manages 759 state units and 1,749 federal units.

Discussion

Past experiences with hazards

There haven't been major impacts from disasters. There are some developments with some flooding in the basements, but they have worked to reduce the impacts, and it has gotten better.

There are new requirements to put in high-impact windows for properties close to the coast and to include rain gardens in new landscaping. The requirements have been costly and there wasn't a phase-in period, so the budget was not there for it. Moving forward, they will budget for these changes, but it can reduce funds for other projects.

Current concerns and planning

One concern that has been raised is grid capacity, especially with increasing electrification. The tenants in the public housing don't pay for their utilities, so when the electricity rates increase (as Eversource has said they will, to pay for upgrades to the infrastructure), that is another increasing cost.

In general, the public housing is well cared for and in good shape.

Future vision and wishlist

The public housing authority just needs more money to support its operations and ensure they remain strong. The Resilient New Bedford efforts have been good, and the City is moving in positive directions.

There was an effort from college students in the [Envision Resilience](#) competition to consider improvements to the city. Their ideas might be worth considering.

Additional public engagement efforts should consider youth and students—kids bring ideas home to their parents, especially parents who don't speak English themselves.

Memorandum of Meeting

To: New Bedford Multi-Hazard Mitigation Plan Core Team
From: Gabriella Spitzer
Date: July 2, 2024
Re: Stakeholder Interview on July 2: One SouthCoast

In attendance

Mike O'Sullivan, CEO, One SouthCoast
Ian Trombly, VP of Public Policy
Gabriella Spitzer, Horsley Witten Group (HW)

Background

Gabriella, Mike, and Ian connected about the City's Hazard Mitigation Plan (HMP) update process. Gabriella explained that the HMP is part of broader NB Resilient efforts. It is a 5-year plan that is certified by FEMA and makes the City eligible for certain kinds of funding. It deals with natural, technological, and human-caused hazards.

Ian and Mike explained the One SouthCoast is the chamber of commerce serving the business community in the region, including New Bedford, Fall River, Dartmouth, and surrounding towns.

Discussion

Hazard impacts and concerns

Ian and Mike talked about the impacts of hazards across the broader region and how they can impact businesses in New Bedford. Transportation infrastructure across the region is critical to New Bedford's businesses. For example, the Washington Bridge closure in Providence had a major impact on New Bedford. When the bridge first closed, commuting between the cities took hours, and the situation did not get better for weeks. There are other vulnerable transportation chokepoints in New Bedford: the I-195/Rt 18 overpass and Fairhaven bridge. Additionally, New Bedford's economy is tied to Cape Cod. Tourists who visit Cape Cod stop in New Bedford as well, and there are many businesses, especially contractors and tradespeople, who work in both locations year-round. If anything happened to Cape Cod or the bridges and roads to the cape, businesses in New Bedford would suffer.

Another important issue is water quality and wastewater management. This year, the Buzzards Bay Coalition had to cancel the annual Buzzards Bay Swim due to the risk of a sewer overflow event. The event itself draws over 300 swimmers and many more tourists, so canceling it has an economic impact. And if New Bedford gains a reputation of having dirty water, the impacts could be even larger.

The hospital network is very strong, and it is one of the area's largest employers. If one of the hospitals were impacted by a disaster, or a nearby hospital from a different system was, that could be a major issue from a public health perspective and from an economic perspective.

Future vision and wishlist

Ian and Mike want to see more regional planning on hazards and associated economic threats. In addition, they discussed a few threats to the New Bedford they would like to see addressed:

- Flood resilience: The hurricane barrier is critical to the city's economy. There are also issues with sea level rise/coastal flooding outside the barrier as well as stormwater flooding throughout the city.
- Water quality and wastewater: As mentioned above, much of the city's economy depends on clean water.
- Public safety: Crime is too prevalent.

Memorandum of Meeting

To: New Bedford Multi-Hazard Mitigation Plan Core Team
From: Gabriella Spitzer
Date: June 11, 2024
Re: Stakeholder Interview on June 11: Southeastern Regional Transit Authority (SRTA)

In attendance

Shayne Trimbell, Director of Transit Planning, SRTA
Gabriella Spitzer, Horsley Witten Group (HW)

Background

Gabriella Spitzer and Shayne connected about the City's Hazard Mitigation Plan (HMP) update process. Gabriella explained that the HMP is part of broader NB Resilient efforts. It is a 5-year plan that is certified by FEMA and makes the City eligible for certain kinds of funding. It deals with natural, technological, and human-caused hazards.

Shayne explained that SRTA operates a bus network in New Bedford, Fall River, and surrounding suburbs. They serve around 2.5 million trips a year, and manage more than 100 vehicles (buses, demand response vans, and various maintenance and other support vehicles). They are very aware of how they serve the community, especially the riders who rely on them, and how disasters can impact that.

Discussion

Hazard impacts

The biggest impact is from winter snowstorms. The streets can get too narrow for the buses to pass, or too steep for them to operate safely. Sidewalks are the responsibility of the individual property owners, and the quality of snow removal can vary widely. Similarly, SRTA is not able to clear its 1,100 bus stops, so those are not always cleared.

Road flooding is becoming a more significant issue as severe rain events are increasing. Flooding can be more challenging than snow because it is less predictable. Deep puddles can be a real barrier for buses, leading to detours and delays. Additionally, there is less of a cultural expectation that rain will impact the quality of service in comparison to snow. There can also be issues with downed trees and other obstacles. As SRTA begins to electrify the fleet, there are also concerns about how flooding could impact battery buses.

The New Bedford Maintenance Garage is protected by the hurricane barrier, but should the barrier fail, it is within the floodplain and there could be significant damage. The fuel tanks are located below ground.

SRTA serves some of New Bedford's most socially vulnerable residents, who would be adversely impacted by disasters. Many of their riders are at or below the federal poverty line, non-English speakers, first generation residents, and/or older adults. They typically have one or fewer vehicles, and live in the

denser, poorer neighborhoods. SRTA allows them to get around to work and to meet their needs. It is an essential part of the City and critical to advancing equity.

Future vision and wishlist

Transit is critical to the functioning of the City. It is essential to advancing equity and to achieving climate goals. Even diesel buses are better for the environment than every rider taking their own electric vehicle on the road. Transit advances resilience in the city and makes it possible for more residents to meet their everyday needs during hazards and sunny skies alike.

It would be great to see a shift in priorities away from personal vehicles and toward active transportation and transit, including better maintenance of sidewalks, curbs, and bus stops.

Transit also has a role to play in emergency preparedness and response planning. The bus fleet could be part of evacuation planning. These connections are not always as robust as they could be.

Memorandum of Meeting

To: New Bedford Multi-Hazard Mitigation Plan Core Team
From: Gabriella Spitzer
Date: June 7, 2024
Re: Stakeholder Interview on June 7: New Bedford Tourism, Marketing, and Zoo

In attendance

Ashley Payne, Director of Tourism and Marketing
Amy Desrosiers, Marketing Manager
Gary Lunsford, Director of New Bedford Zoo
Michele Paul, Director of Resilience and Environmental Stewardship
Gabriella Spitzer, Horsley Witten Group (HW)

Background

Gabriella Spitzer and the meeting participants connected about the City's Hazard Mitigation Plan (HMP) update process. Gabriella explained that the HMP is part of broader NB Resilient efforts. It is a 5-year plan that is certified by FEMA and makes the City eligible for certain kinds of funding. It deals with natural, technological, and human-caused hazards.

Ashley and Amy explained that they are trying to raise New Bedford's profile as a tourist destination, and those efforts require long-term thinking about emergency management and resilience.

Discussion

Past experiences with hazards

Ashley, Amy, and Gary are all relatively new in their roles in New Bedford and don't have long memories of hazards. However, there have been some issues with damage to the pier, which impacts both the fishing industry and tourism (as tourists go to visit the working waterfront). There have also been increasing issues with flooding and rain, especially on Route 18, in the south end by the hurricane barrier, and near Colburn Mill.

Both resilience and tourism (and their intersection) need to consider equity and equitable impacts. When we make neighborhoods and communities more attractive to tourists, or more resilient, we need to make sure everyone is benefiting.

One hazard that is increasing in concern, from the zoo's perspective, is animal and zoonotic diseases. The zoo is currently considering options for bird flu, should it become relevant.

Current concerns and planning

Disasters impact tourism, and tourism can impact the way the city can respond to disasters. Even minor incidents can be frustrating for tourists if they are unable to travel around the city because everything is flooded out. Those incidents could shape New Bedford's reputation as tourists go home and talk about

their experiences. Better information about what to expect as the climate changes could help inform marketing efforts.

On a regional level, there's not a lot of hotels (and they sell out in the summer). There is not a lot of space if we needed to make space for temporary shelter for people. Snow hasn't been a big issue lately, but even small snowstorms can have an impact on local businesses. In addition, the downtown sidewalks and streets are inaccessible to start out with. There are also very few public restrooms downtown. Big events require portapotties.

At the zoo, there are concerns about zoonotic diseases and flooding. The stormwater infrastructure has been adequate, but there are still concerns. Power outages could also be a real problem.

The zoo has emergency action plans and official procedures for hazards. The tourism office is more case by case when there are big events, but they do collaborate with the emergency managers and feel comfortable with those relationships.

Future vision and wishlist

Thinking about possible dreams and visions for the future for the city, it would be great to have more walkability and public transportation around the city. Relying on personal vehicles isn't resilient or environmentally sound, and it also isn't competitive, especially for foreign visitors. There isn't sufficient parking at the zoo, nor is there a bus route that goes there.

In a more immediate and practical sense, the tourism and marketing department is thrilled to be part of these discussions and would like to continue to be part of city planning discussions. Tourism and marketing works directly with business owners and have relationships with them. They know what the concerns are, and would be happy to pass them along. They are actively involved in thinking about how the city should look in 5, 10, 20 years—how it can continue to meet its current residents' needs, maintain its uniqueness, and grow equitably.

Memorandum of Meeting

To: New Bedford Multi-Hazard Mitigation Plan Core Team
From: Craig Pereira
Date: November 8, 2024
Re: Stakeholder Interview: USACE/Hurricane Barrier

In attendance

Heather Shields – USACE
Flynt Tuller – USACE
Craig Pereira – Horsley Witten Group

Background

Craig Pereira and the meeting participants connected about the City's Multi-Hazard Mitigation Plan (MHMP) update process. It is a 5-year plan that is certified by FEMA and makes the City eligible for certain kinds of funding. It deals with natural, technological, and human-caused hazards.

Discussion

- Craig provided an overview of the draft content extracted/assembled from existing plans that provide adequate background information on the hurricane barrier. Some of the data sources obtained are dated, and some more be superseded.
- Craig also referenced several existing plans and asked if there are others out there to know about?
 - o Heather responded 'No' not that they were aware of.
 - o Craig requested Heather Shields and Flynt Tuller review and update where necessary.
 - o Heather recommended Craig review the National Levee Database for additional information.
 - o Heather/Flynt mentioned recent site visit/inspection report summaries that are available. Flynt forward two most recent reports to Craig, for review/discussion with Adam Hart at the City.
- Craig asked if there have been any incidents/issues associated with the hurricane barrier/system?
 - o Heather responded 'no' and that the City does a good job of maintaining the barrier, testing the street gates annually and handling vegetation management.
 - o Heather did mention there is a minor issue with one of the sluice gates functioning.
 - Heather stated that a specialty consultant was recently hired to evaluate the condition of several gates experiencing corrosion. Remediation actions are being implemented now.
 - o Heather mentioned the Vineyard Wind project and large vessels coming into/out of the Port intermittently that is ongoing. Should the evaluation identify any infrastructure components that may be altered as a result, that USACE would need to review/comment on this.
- Craig asked whether the USACE develops any mapping associated with the hurricane barrier. The mapping associated with the 2016 HMP was not as comprehensive as what the 2024 project Team has developed.
 - o FEMA Flood Zones:

- 2016 mapping only references the 100-year flood zone.
- 2024 mapping identified Zone 'D' – Area with reduced risk due to levee, impacts not quantified...and should this be included in the 2024 update?
- SLOSH zones:
 - 2016/2024 mapping was fairly consistent and recognizes the presence of the hurricane barrier, with only Category ¾ hurricanes impacted the City behind the barrier.
- MC FRM Data 2030-2050-2070 projections:
 - 2016 plan did not include any mapping for SLR
 - 2024 plan does show impacts for all three planning horizons behind the barrier
- Heather replied that FEMA completes all of their mapping, and coordinated a follow up with Kevin DiRocco for additional assistance.

Memorandum of Meeting

To: New Bedford Multi-Hazard Mitigation Plan Core Team
From: Gabriella Spitzer
Date: June 27, 2024
Re: Stakeholder Interview on June 27: Greater New Bedford Vocational Technical High School

In attendance

Zeb Arruda, Facilities Director, Greater New Bedford Vocational Technical High School
Gabriella Spitzer, Horsley Witten Group (HW)

Background

Gabriella Spitzer and Zeb Arruda connected about the City's Hazard Mitigation Plan (HMP) update process. Gabriella explained that the HMP is part of broader NB Resilient efforts. It is a 5-year plan that is certified by FEMA and makes the City eligible for certain kinds of funding. It deals with natural, technological, and human-caused hazards.

Zeb explained that the Greater New Bedford Vocational Technical High School (GNBVT) is located in New Bedford and serves 2,200 students from New Bedford, Fairhaven, and Dartmouth. In addition to the students, there are 300 staff members, for a total of 2,500 people typically in the building.

Discussion

Zeb shared several concerns about risks to the GNBVT building and the surrounding area.

Loss of Power:

Every couple of months (6-8x a year), there's a hiccup in the electricity at the school. It might only last a few seconds, but it causes major problems as various electrical systems need to be reset. This includes electric doors for accessibility.

Flooding and drainage:

The school is at a local low spot. A lot of runoff drains to Church St. to the west of the school. To the east, Ashley St. is at much lower elevation. There is a pipe from Church St. to the Acushnet River that runs under the football field and the school (very rough location in blue on map to the right). It is old infrastructure and has not been cleaned or maintained in at least 27 years. There is also a pipe that runs from Chaffee St. to the woods behind Glassman Automotive and just discharges there. As a result, that forested area is very wet and parts have become a wetland (in red on map).



Commented [GS1]: Zeb, is this location remotely reasonable? Does the pipe go under the school as well as the football field? I wasn't sure from my notes.

Water quality:

They test for lead on a regular basis, and there has never been an issue.

Adverse weather:

One challenge that the school faces during snow or other severe weather events is balancing the needs of the students coming from around the region. Weather can be different from one side of Dartmouth to the other, and the three communities do not always have the same level of snow removal or flood mitigation capacity. School buses may not be able to get through when there is adverse weather, and that can look different across the region.

Pick up/drop off traffic and safe streets:

The sidewalks on the streets leading to the high school are inconsistent, and the pedestrian environment is unsafe. Pickup and dropoff times cause major congestion on the streets. Zeb would like to see attention given to the area.

Online Survey

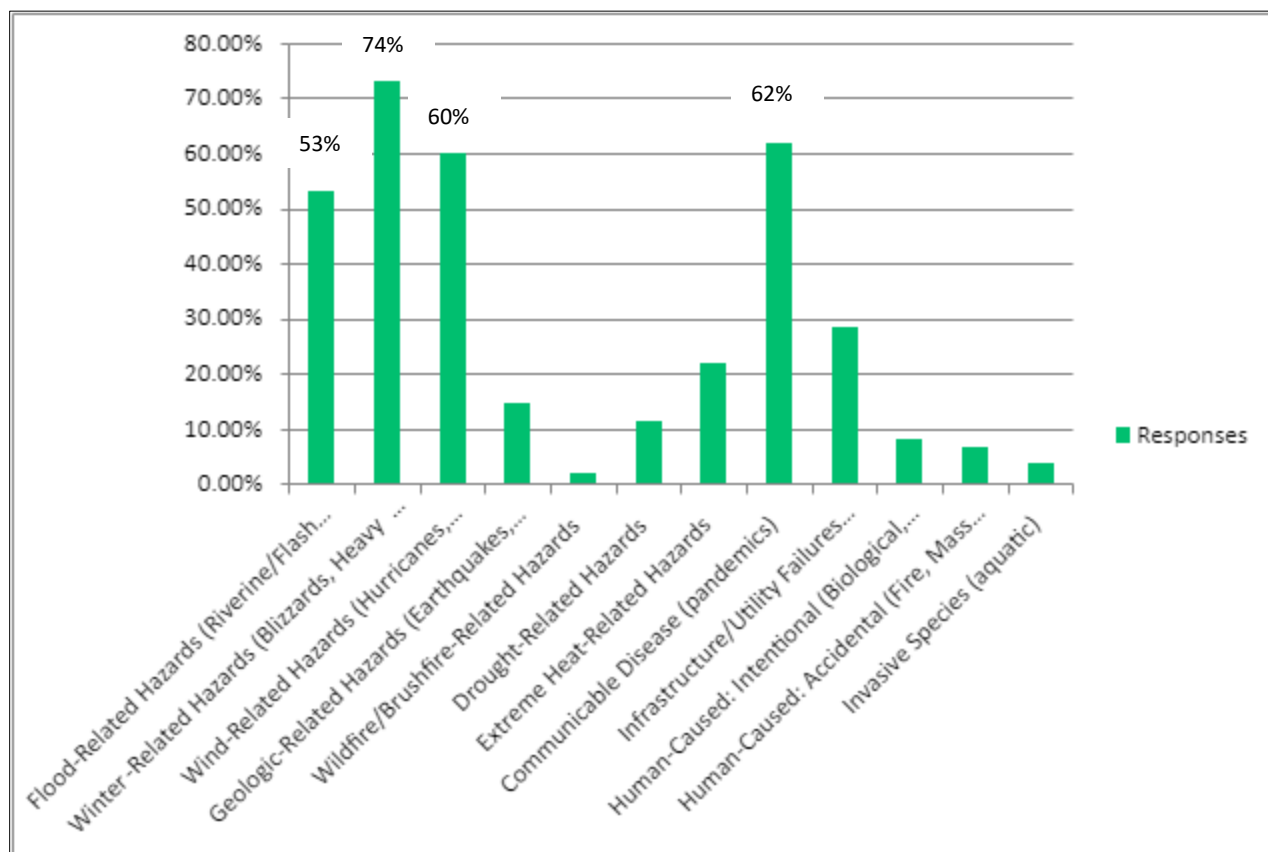
New Bedford Hazard Mitigation Plan Update – Online Community Survey Summary

As part of the City's Hazard Mitigation Plan Update, an online community survey was conducted to understand the community's perspective of hazard mitigation preparedness, familiarity with various types of hazards, how individuals receive information, and personal needs regarding hazard/disaster response and recovery. The survey was available online from July 2023 to May 2024 with a total of 213 responses.

The survey was promoted through a variety of approaches. The survey link and QR code were posted on the project website (<https://nbresilient.com/category/local-multi-hazard-mitigation-plan-update>) and distributed at various listening posts throughout the community. The LHMC distributed the survey link/QR code via their personal and professional networks and on Facebook. Project business cards were created/distributed with the survey link and QR code within the community and at the first Public Workshop in April of 2024. The survey received a total of 213 responses.

Q 1: Which of the following hazard events have you or has anyone in your household and/or business experienced in the past five years within New Bedford? (205 answered)

The majority of respondents have experienced Winter-Related (74%), Communicable Disease-Related (62%), and Wind-Related (60%) hazards.

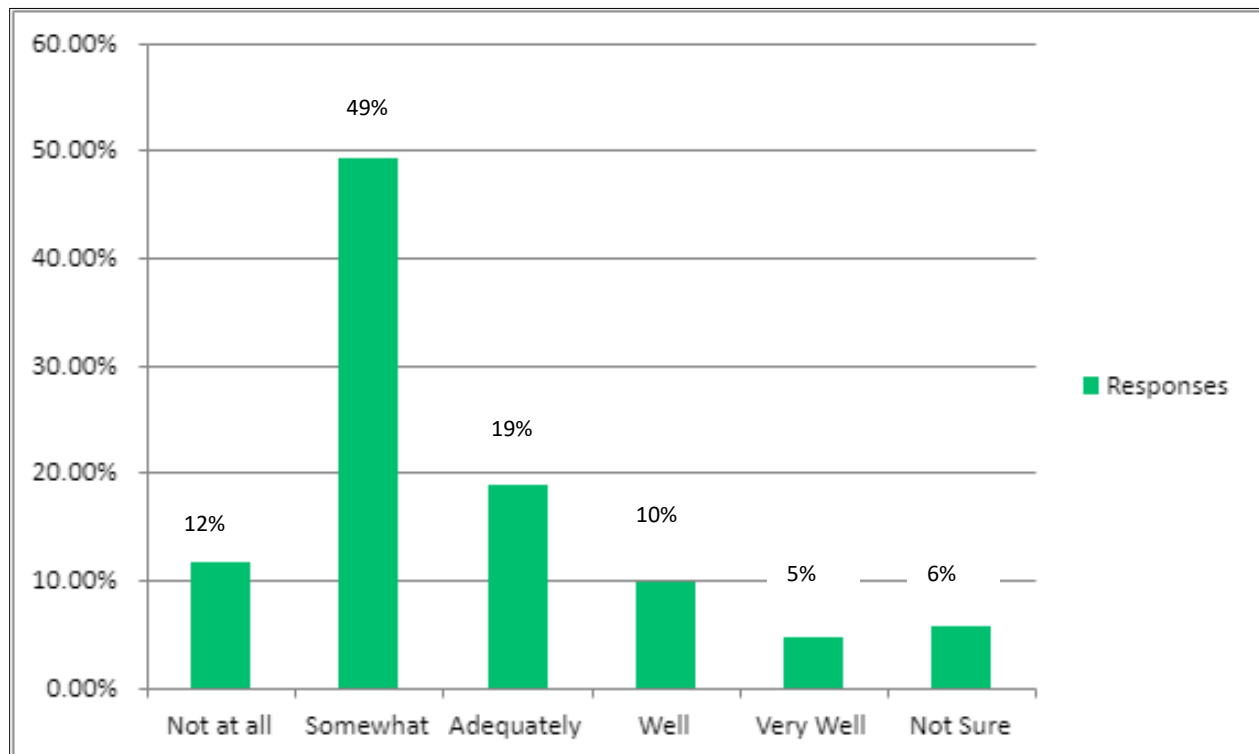


Q 2: How concerned are you about the following hazards? (213 answered)

	Not Concerned	Concerned	Very Concerned
Flood-Related Hazards	20%	48%	32%
Winter-Related Hazards	13%	56%	31%
Wind-Related Hazards	12%	58%	30%
Geologic-Related Hazards	23%	54%	24%
Wildfire/Brushfire-Related Hazards	61%	29%	10%
Drought-Related Hazards	43%	43%	14%
Extreme Heat-Related Hazards	26%	53%	21%
Communicable Disease-Related Hazards	13%	55%	32%
Intentional/Terrorism-Related Hazards	35%	47%	18%
Accidental-Related Hazards	31%	54%	15%
Invasive Species-Related Hazards	54%	38%	8%
Infrastructure/Utility Failure-Related Hazards	14%	49%	37%

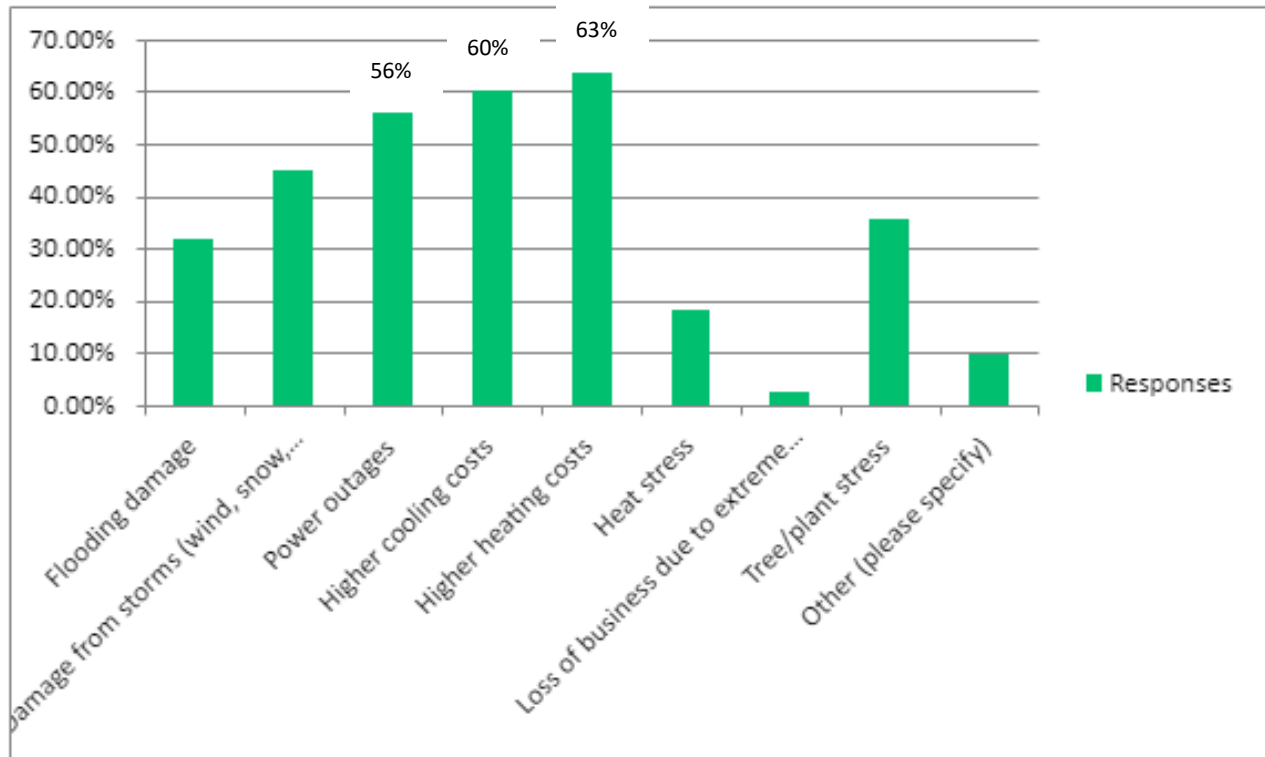
Q 3: In your opinion, how prepared is your household and/or business to deal with a natural, human-caused, or technological hazard event? (213 answered)

Approximately one-third of respondents (34%) feel their household and/or business is 'adequately to very well' prepared to deal with a natural, human-caused, or technological hazard.



Q 4: In what ways has your home, business, or quality of life been affected by climate-related hazards, such as extreme storms, flooding, drought, high heat days, etc.? (213 answered)

Over half of respondents have been impacted by high energy costs (heating and cooling) due to climate-related hazards.

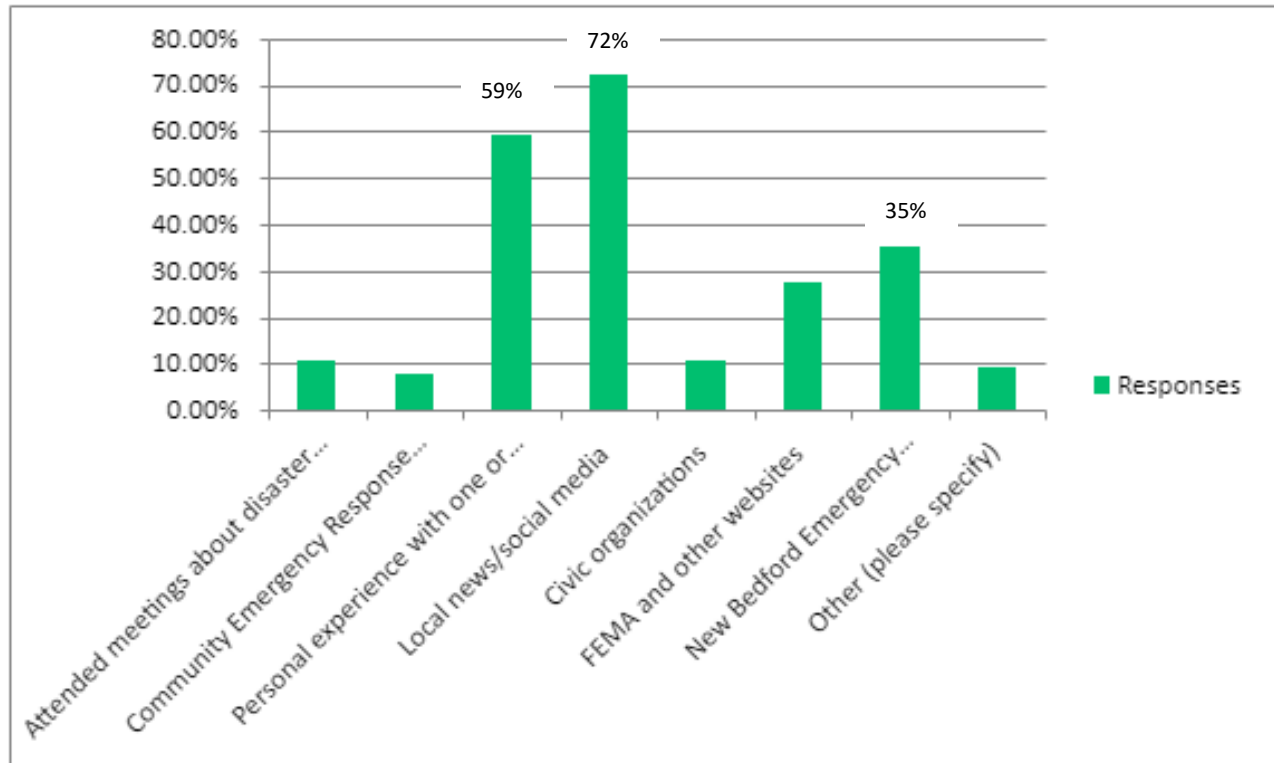


The following are common themes among the responses received for 'Other'.

- Getting ill/sick from heat
- Increased insurance rates
- Aging infrastructure
- Invasive species
- Vector-borne illnesses
- Damages from flooding

Q 5: Which of the following has provided you with useful information to help you prepare for a hazard event? (198 answered)

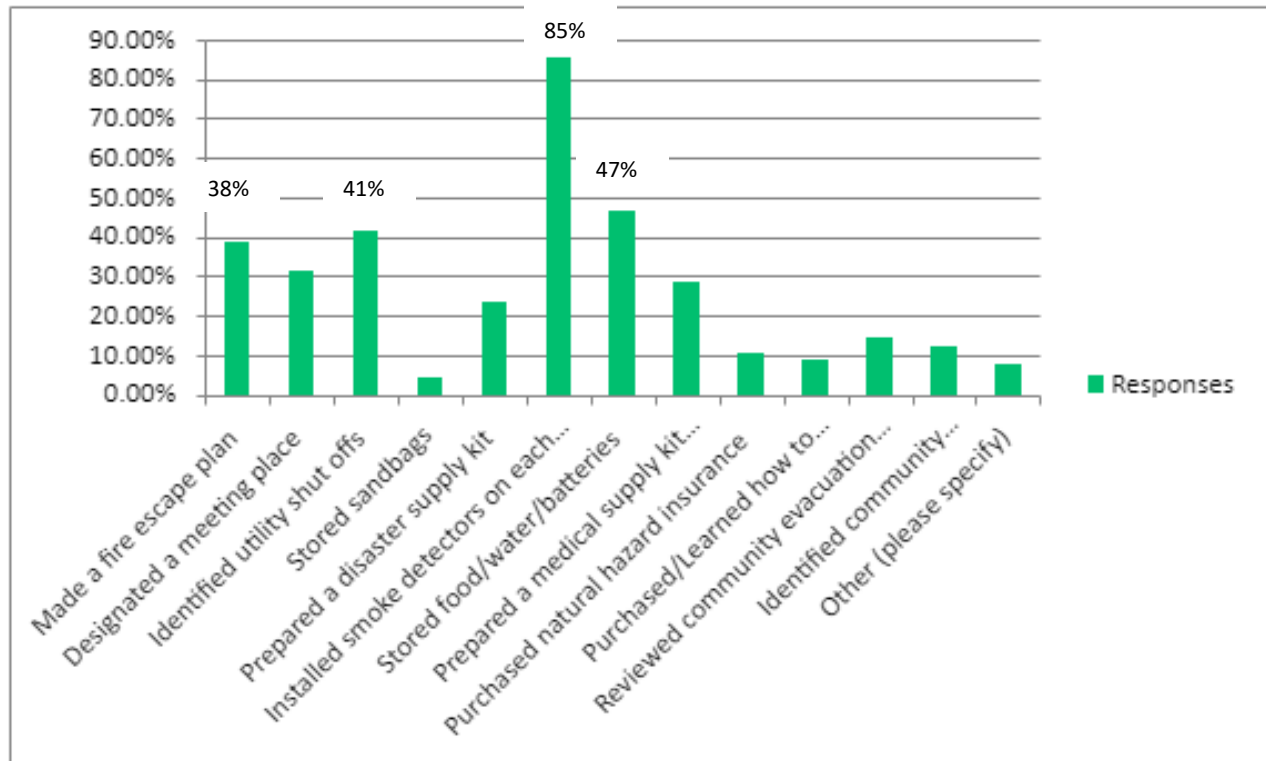
A majority of respondents receive useful information via local news and social media (72%), personal experiences with natural hazards (59%), followed by New Bedford Emergency Management Agency (35%)



The following are common themes among the responses received for 'Other'.

- Boating experience
- Auto-dial robo calls
- Eversource alerts
- Bristol County Mosquito Control
- Mayor's updates

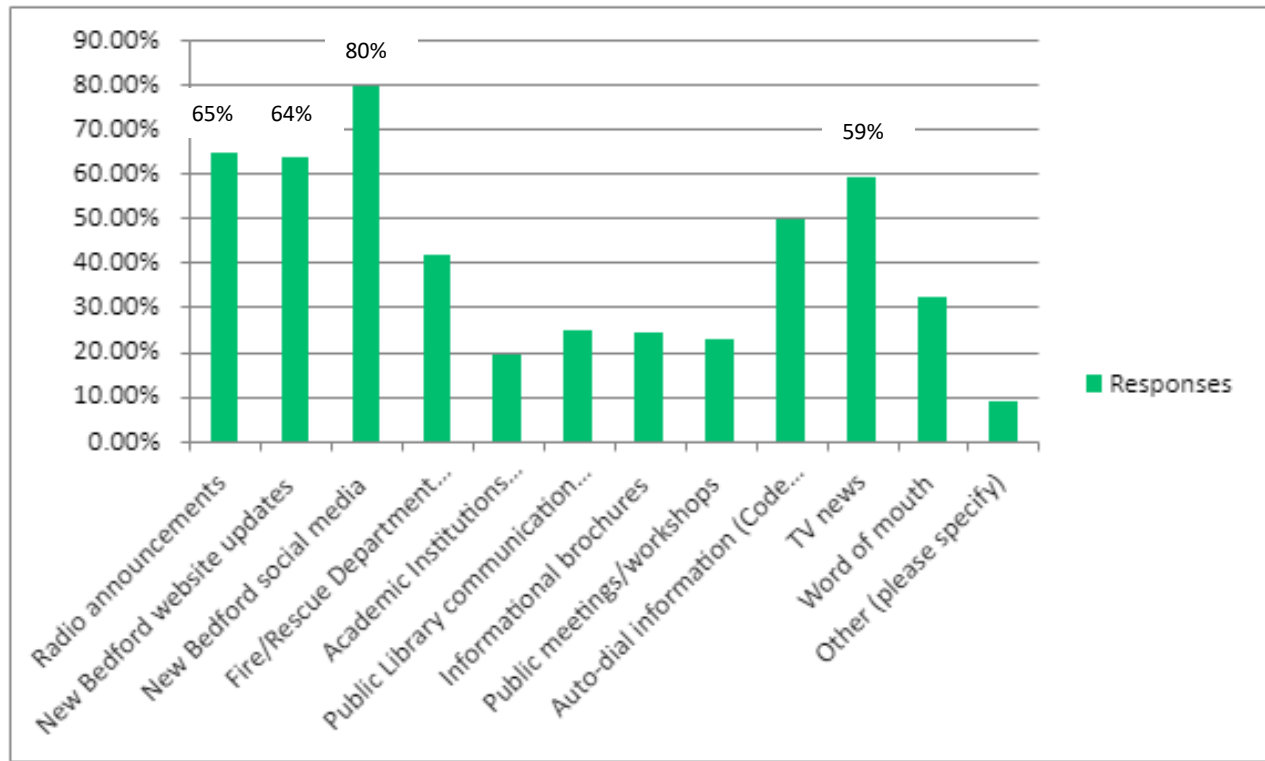
Q 6: Which of the following steps has your household and/or business taken to prepare for a hazard event? (198 answered)



The following are common themes among the responses received for 'Other'.

- Practiced mental conditioning
- Keep gas tank full
- Adapted to wasteful luxury (no air conditioning use)
- Cleaned leaves from drains
- Pet care plan
- Keep cell phone charged
- Purchased a generator

Q 7: In your opinion, which of the following methods do you think are most effective for providing hazard and disaster information? (198 answered)

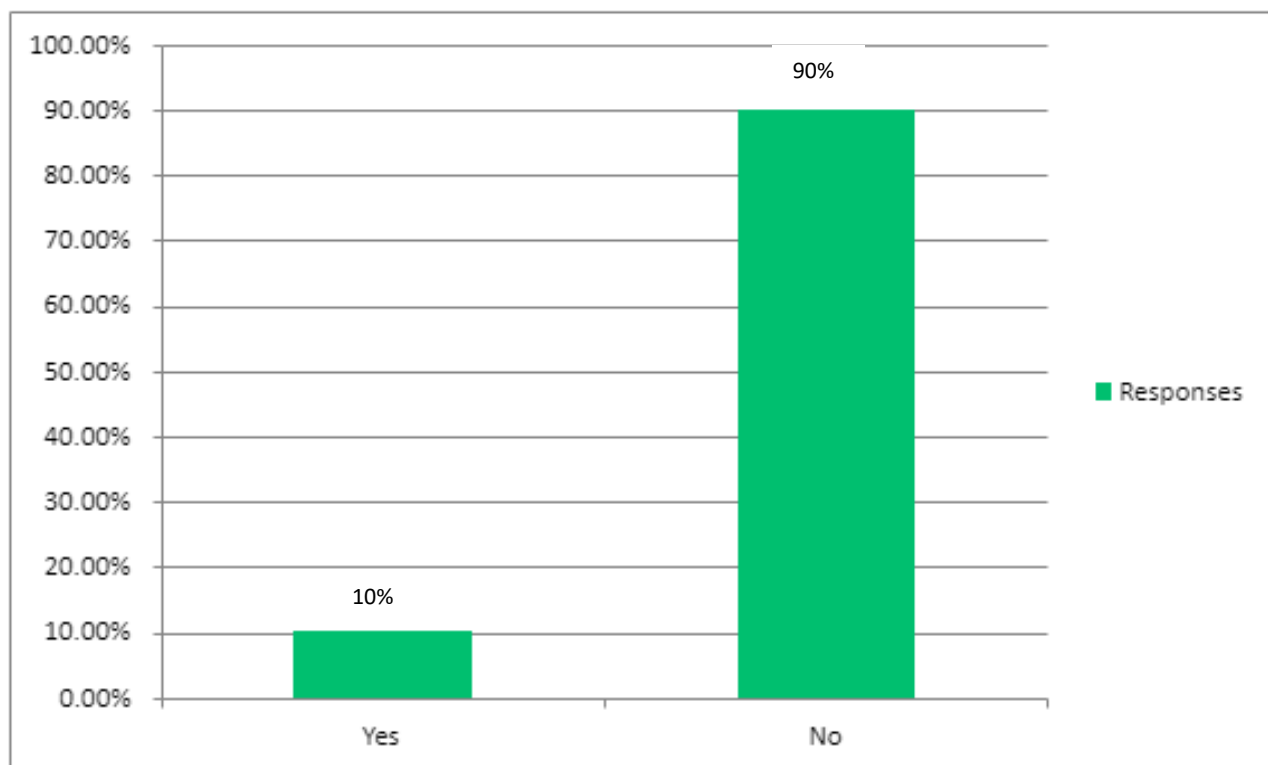


The following are common themes among the responses received for 'Other'.

- Mail
- NOAA
- Ham radio
- Provide information where people congregate (markets/pharmacy)
- Email blasts
- Forming/Training neighborhood groups/teams
- Automated texts/messages/cell phone alerts
- Information that is made multi-lingual

Q 8/9: Do you have any special access or functional needs within your household and/or business that would require early warning or specialized response during disasters? (198 answered) If 'yes', please explain? (21 answered)

The majority of respondents (90%) do not have any special access or functional needs that would require early warning/specialized response.



Please explain:.

- Mobility issues
- Disabled
- Pets to care for
- Power for medical devices
- Medications

Q.10: In your opinion, what types of projects do you believe local, county, state or federal government agencies could be doing to reduce the damage and destruction of natural, human-caused, or technological disasters on private and city-owned property? (195 answered)

• Retrofit/Strengthen essential public facilities such as police, fire/emergency, schools	47%
• Retrofit public infrastructure, such as elevating roadways and improving drainage systems	72%
• Work to improve utilities resilience (electric/communications/water/wastewater facilities)	80%
• Install/Improve protective structures (floodwalls)	29%
• Replace inadequate/vulnerable bridges	47%
• Strengthen codes/ordinances to require higher hazard risk management standards and/or provide greater control over development in high hazard areas	39%
• Buy out flood prone properties and maintain as open space	29%
• Inform property owners of ways they can reduce the damage caused by natural events	50%
• Provide better information about hazard risks and high hazard areas	47%
• Assist vulnerable property owners with securing funding to make their properties more resilient	51%
• Other:	8%
○ Resolve impacted wetlands that regularly flood into residential areas	
○ Less dependency on vehicles	

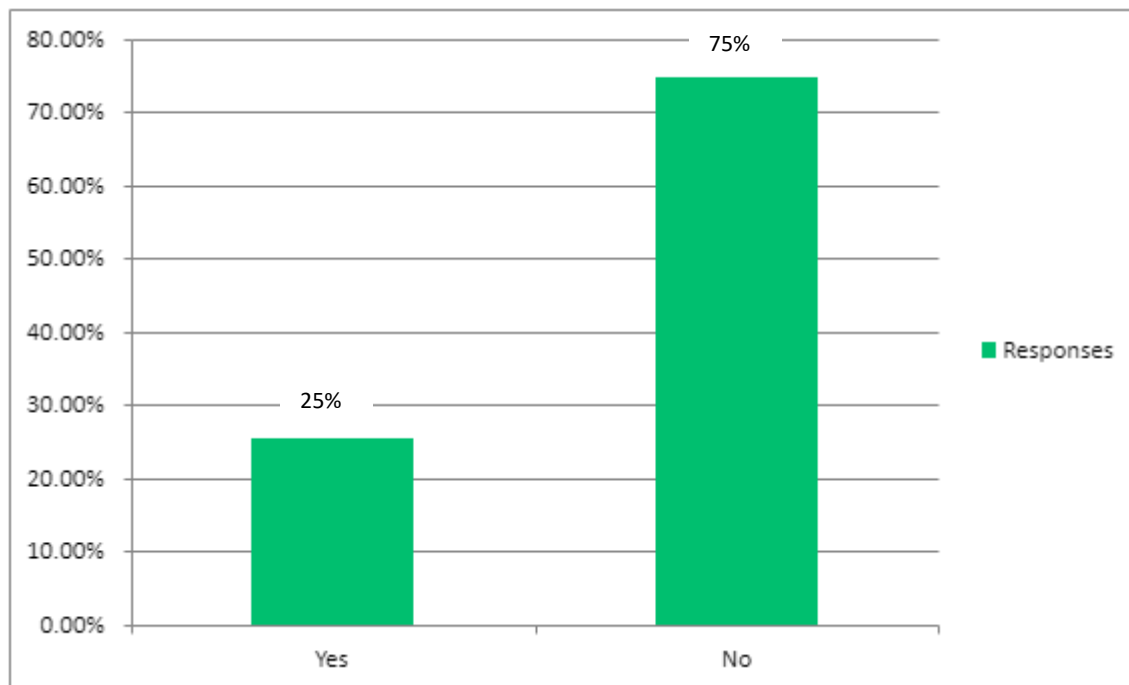
- Redundant clean water treatment
- Reassess what constitutes a flood zone
- Recycle to combat climate change
- Assist residents with cutting dead trees down
- Advocate for nature-based solutions
- Information to homeowners through auto-calls
- Plant/Maintain trees
- Maintain communications towers
- Encourage adoption of two-way home vehicle chargers so EVs can power buildings during power outages

Q 11: Do you know your neighbors well enough to rely on them during an emergency? (198 answered)

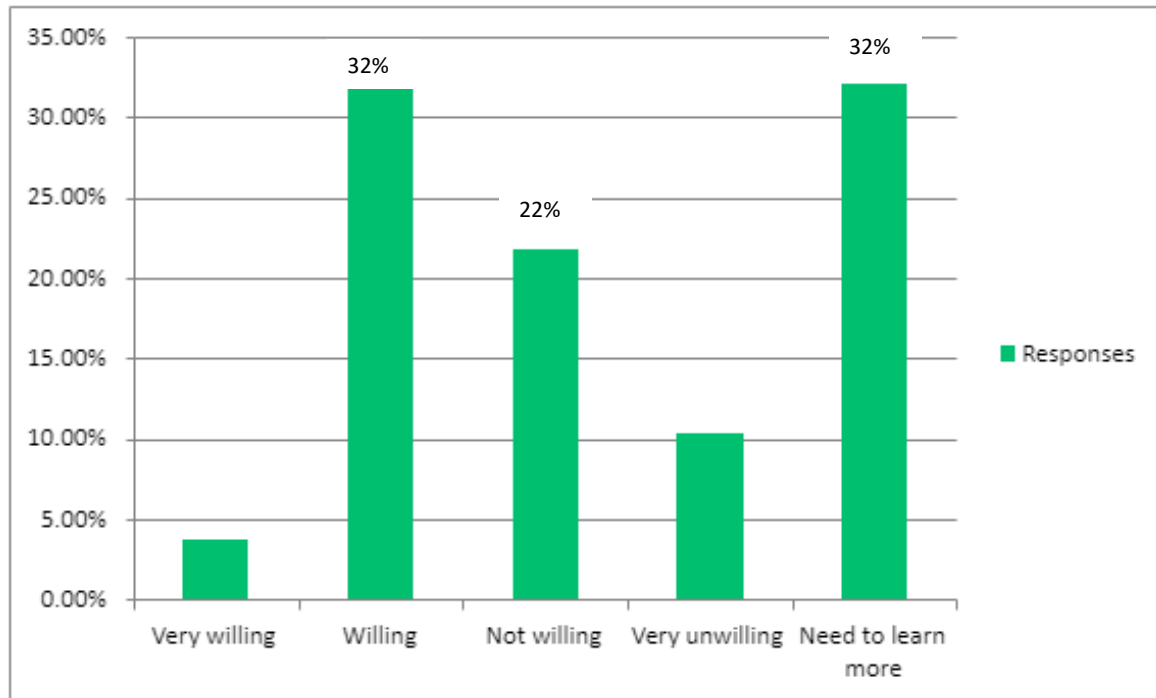
Just over half of respondents (54%) know their neighbors and feel comfortable relying on them for assistance during a hazard event.

• I've never spoken to my neighbors and would not rely on them during an emergency	11%
• I have spoken to my neighbors a few times, but don't know them well enough to go to them in an emergency	33%
• I have spoken to my neighbors a few times and would feel comfortable reaching out to them during an emergency	36%
• I am very close with my neighbors and have relied on them during past emergencies	18%
• Other	2%

Q 12: Do you know where your nearest emergency shelter is located? (197 answered)

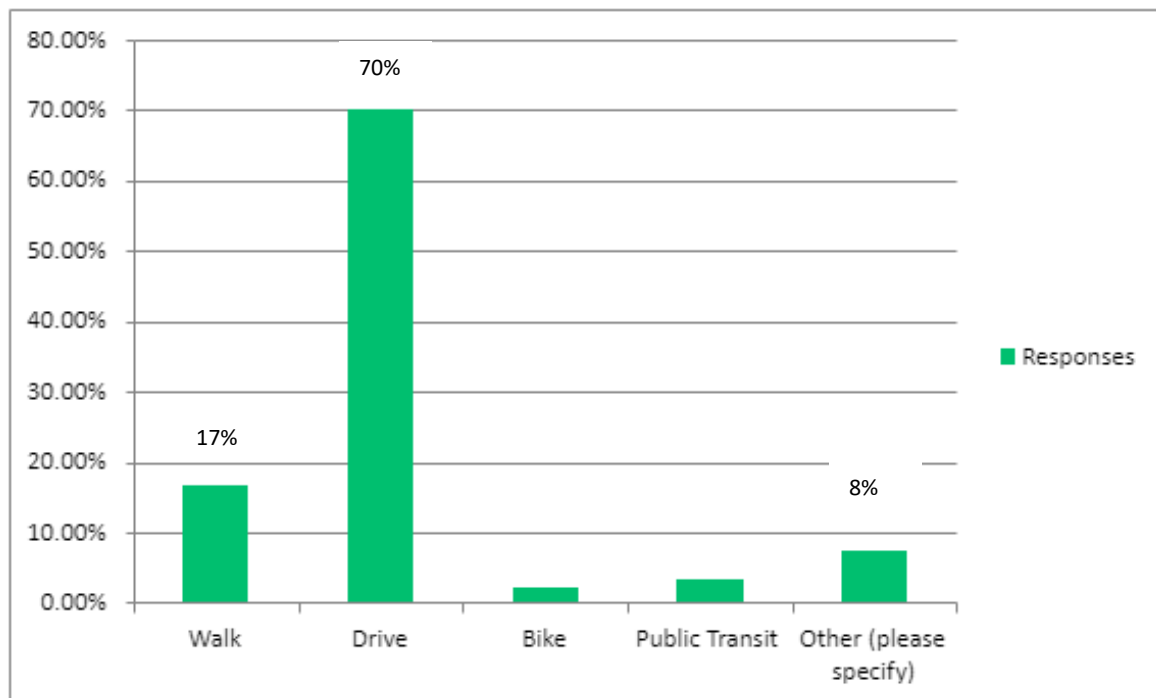


Q 13: If so, how willing would you be to go there during an emergency? (184 answered)



Q 14: If you are willing to go to an emergency shelter, how would you plan to get there? (173 answered)

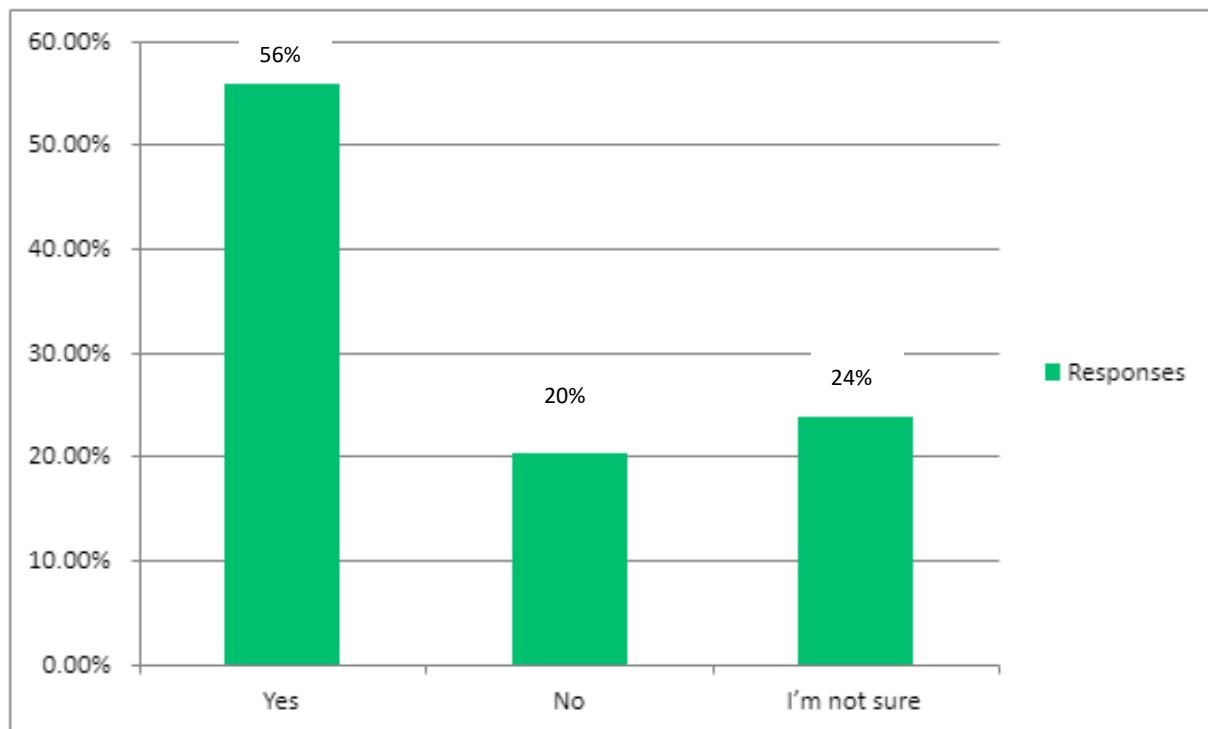
Most respondents indicated they would drive to get to an emergency shelter.



Q 15: If you are not willing to go to an emergency shelter, what are your reasons? (150 answered)

- My household has other options for relocation 33%
- I would not want to leave my pets 57%
- I would rather stay home and deal with the emergency here 53%
- I am undocumented and therefor, would not want to go 1%
- I don't have an accessible method of getting there 5%
- I was unaware there was an emergency shelter near me 33%
- Other 7%
 - I need help with mobility
 - What would a shelter be able to do for me in an emergency?
 - Won't leave pets
 - I'm immunocompromised
 - More people = more danger
 - COVID

Q 16: FEMA recommends being prepared to survive 72 hours in your home without power in the case of an emergency. Do you feel prepared to go 72 hours without power in your home? (197 answered)
Over half (56%) of respondents feel they are prepared to go 72 hours without power in their home.

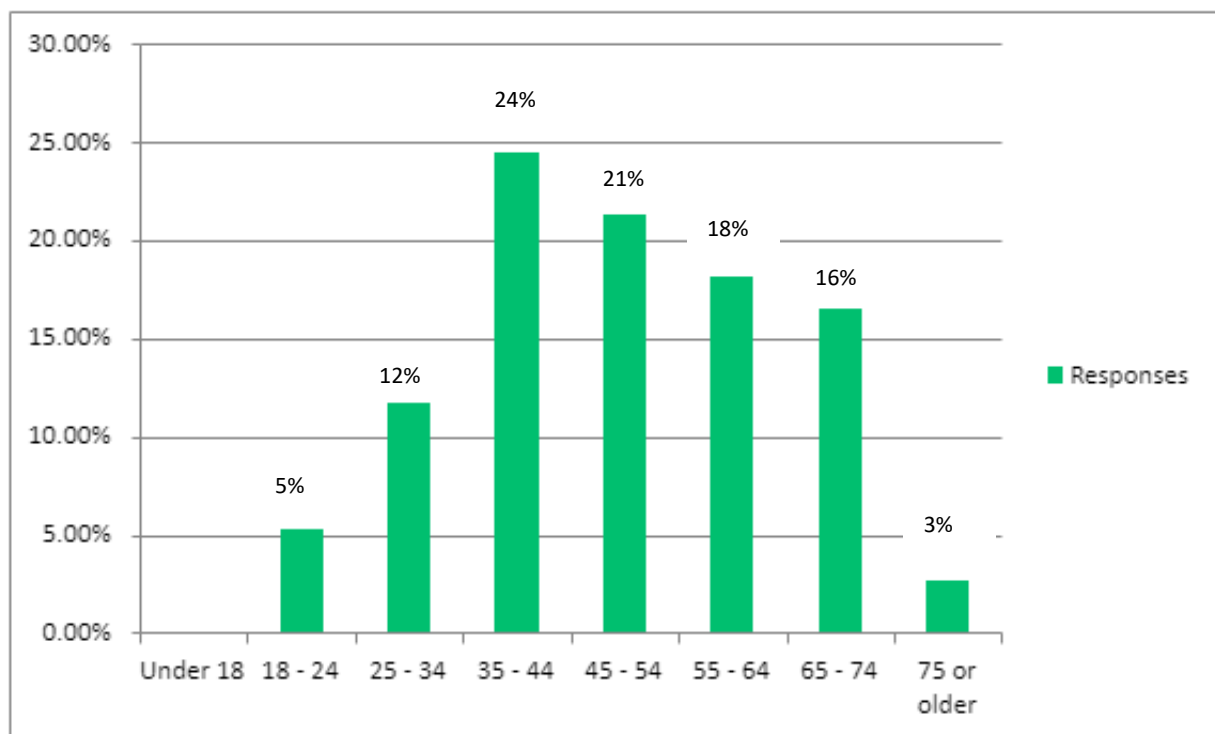


Q 17: If not, what resources would you need to feel prepared? (48 answered)

- Refrigeration for medication
- First aid kit
- Batteries
- Flashlights
- Heat and food
- Small generator
- City should practice more emergency responses
- Check off list of needed materials
- Solar power
- Portable charging ports
- Non-perishable food
- Financial resources
- Chocolate (more)
- Water

Q 18: What is your age? (188 answered)

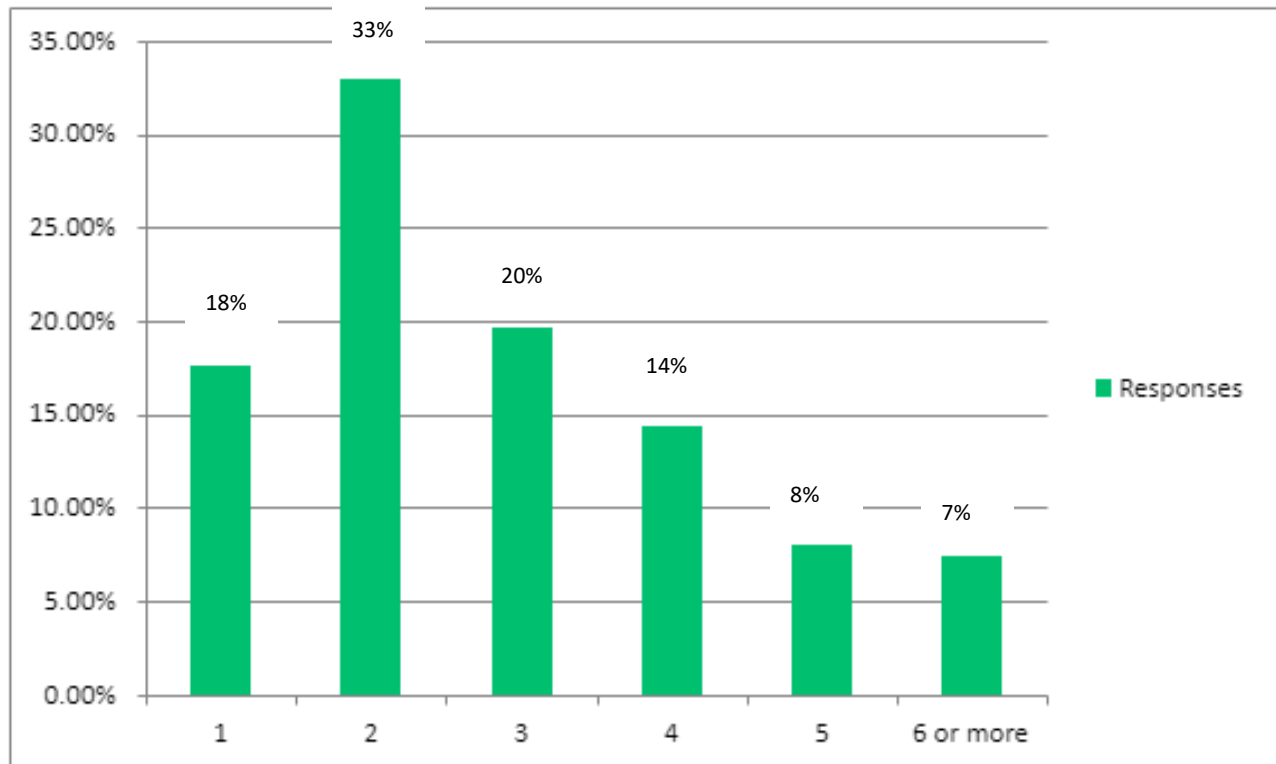
The majority of respondents are over the age of 35 (82%).



Q 19: Are you filling out this survey in a personal/household or business capacity? (188 answered)

- Personal/Household 98%
- Business 2%

Q 20: How many people are in your household or business? (188 answered)



Q 21: Which race/ethnicity do you most identify with? (188 answered)

The majority of respondents (81%) identify as White/Caucasian.

- American Indian 1%
- Cape Verdean 4%
- Asian/Pacific Islander 0%
- Black/African American 1%
- Hispanic/Latino/a 7%
- White/Caucasian 81%
- Other/Multiple Ethnicities 6%

Q 22: Is English the primary language spoken in your household/business? (188 answered)

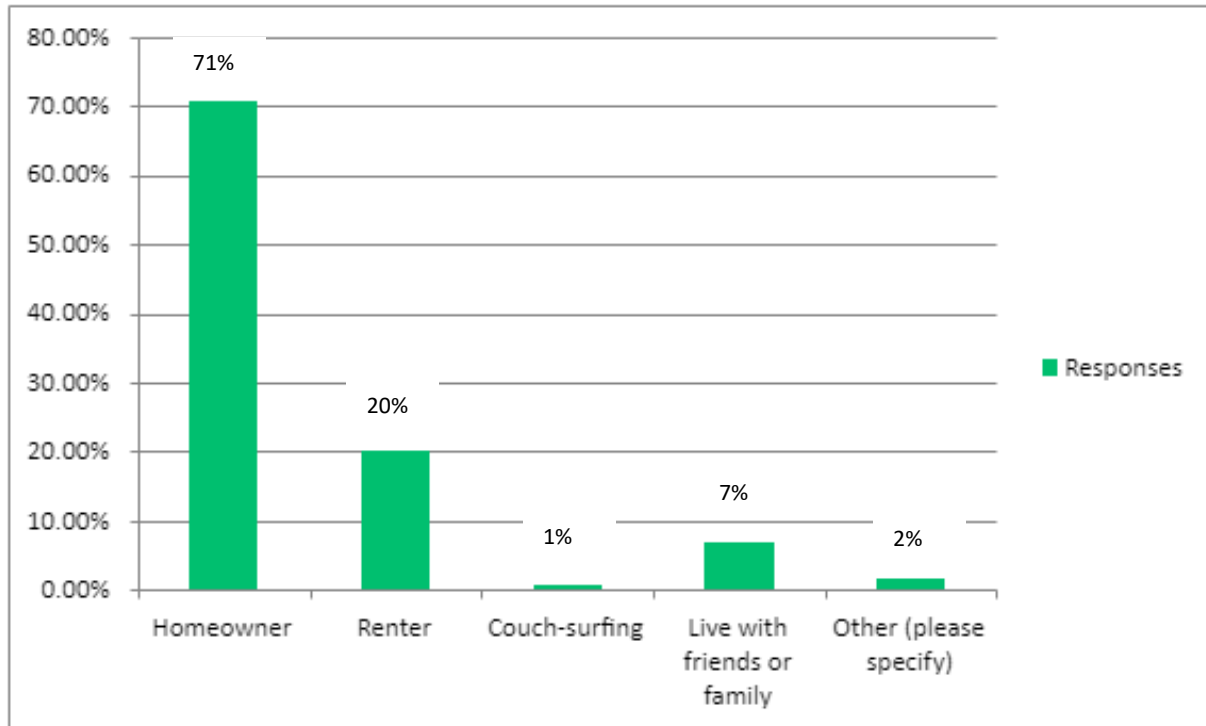
- Yes 98%
- No 2%

Q 23: If not, what language is primarily spoken in your household? (5 answered)

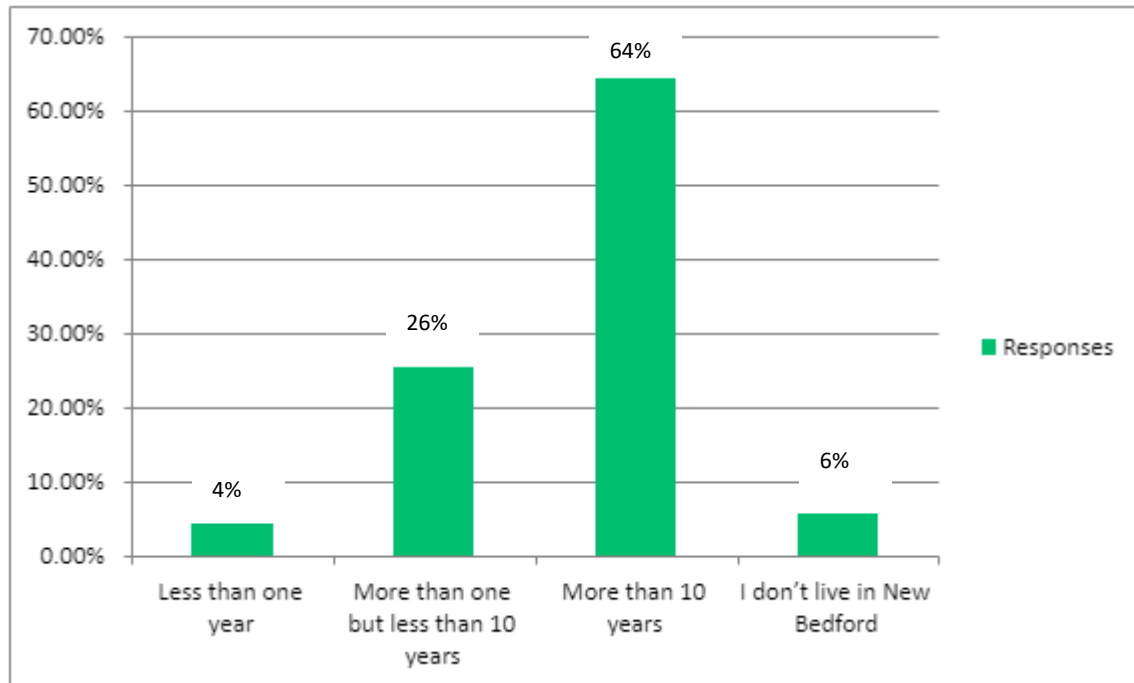
- Portuguese
- Cape Verdean Creole

Q 24: What is your housing status? (188 answered)

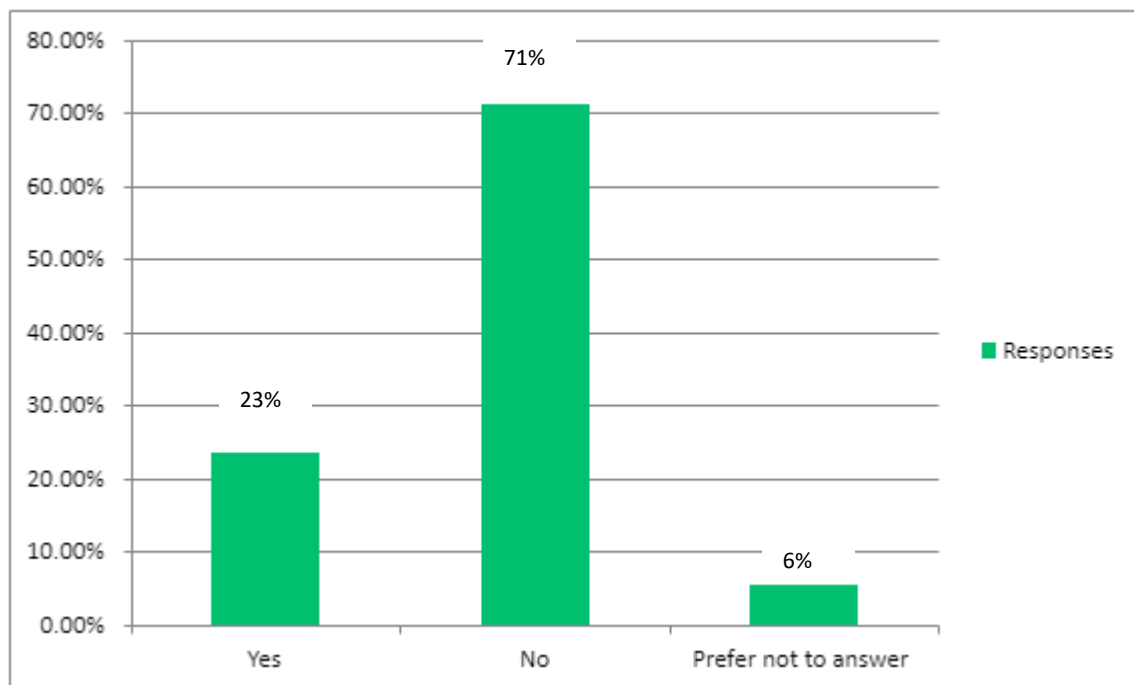
The majority of respondents (71%) own their own home, followed by renters (20%), while some (7%) live with family.



Q 25: How long have you lived or had your business in New Bedford? (188 answered)



Q 26: Do you identify as a person with a disability or other chronic illness? (188 answered)



Q 27: Which ward in new Bedford do you live in or have your place of business? (188 answered)

Ward 1 (26)	Ward 1A (1)	Ward 1B (3)	Ward 1C (3)
Ward 1D (6)	Ward 1E (2)	Ward 1F (1)	Ward 2 (8)
Ward 2C (4)	Ward 2D (3)	Ward 2E (1)	Ward 2F (3)
Ward 3 (13)	Ward 3A (1)	Ward 3B (1)	Ward 3C (1)
Ward 3E (1)	Ward 3F (1)	Ward 4 (15)	Ward 4A (2)
Ward 4B (1)	Ward 4C (2)	Ward 4D (2)	Ward 4F (2)
Ward 5 (34)	Ward 5A (2)	Ward 5B (3)	Ward 5C (2)
Ward 5D (3)	Ward 5E (5)	Ward 5F (2)	Ward 6 (8)
Ward 6A (4)	Ward 6B (1)	Ward 6E (3)	Ward 6F (2)
Unsure (14)			

Appendix C – Correspondences

Availability of Draft Plan – Adjacent Communities

Availability of Draft Plan – Municipal Departments/Boards/Commissions

Public Comments