Town of Seabrook, NH
Natural Hazard Mitigation Plan
Update 2025

Adopted by the

Seabrook Board of Selectmen

(date)

Prepared with the Assistance of the

ROCKINGHAM PLANNING COMMISSION
theRPC.org

This project was partially funded by

NH Homeland Security and Emergency Management

CERTIFICATE OF ADOPTION

WHEREAS, the Town of Seabrook received funding from the NH Office of Homeland Security and Emergency Management under a Pre-Disaster Mitigation Grant and assistance from Rockingham Planning Commission in the preparation of the Seabrook Hazard Mitigation Plan Update 2025; and

WHEREAS, several public planning meetings were held between May 2025 and _____ regarding the development and review of the Seabrook Hazard Mitigation Plan Update 2025; and

WHEREAS, the Seabrook Hazard Mitigation Plan Update 2025 contains several potential future projects to mitigate hazard damage in the Town of Seabrook; and

WHEREAS, a duly noticed public meeting was held by the Seabrook Board of Selectmen on _____ to formally approve and adopt the Seabrook Hazard Mitigation Plan Update 2025.

NOW, THEREFORE BE IT RESOLVED that the Seabrook Board of Selectmen:

- The Plan is hereby adopted as the official plan of the Town of Seabrook:
- The respective individuals identified in the mitigation strategy of the Plan are hereby directed to pursue implementation of the recommended actions assigned to them;
- Future revisions and Plan maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as part of this resolution for a period of five (5) years from the date of this resolution;
- An annual report of the progress of the implementation elements of the Plan shall be presented to the Board of Selectmen by the Town's Emergency Management Director.

NOW, THEREFORE BE IT RESOLVED that the Seabrook Board of Selectmen adopts the Seabrook Hazard Mitigation Plan Update 2025.

IN WITNESS THEREOF, the undersigned has affixed his/her signature and the corporate seal of the Town of Seabrook on this _____ day of _____.

_____ Selectman

_____ Selectman

_____ Selectman

ATTEST

_____
Public Notary

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Appendices:

ACKNOWLEDGEMENTS

The Seabrook Board of Selectmen extends special thanks to those that assisted in the development of this Plan Update by serving as member of Hazards Mitigation Committee:

William Manzi, Town Manager, Town of Seabrook, NH
Joseph Titone, Emergency Management Director, Town of Seabrook, NH
Brett Walker, Police Chief, Town of Seabrook, NH
William Edwards, Fire Chief, Town of Seabrook, NH
Kelly McDonald, Fire and Emergency Management Secretary, Town of Seabrook, NH
Lacey Fowler, Building Inspector/Health Officer, Town of Seabrook, NH
John Starkey, Public Works Director, Town of Seabrook, NH
Curtis Slayton, Water and Sewer Superintendent, Town of Seabrook, NH
Bonnie Armentrout, Welfare Agent, Town of Seabrook, NH
Tom Morgan, Town Planner, Town of Seabrook, NH
Don Hawkins, Commissioner, Beach Village District, Seabrook, NH

Appendix O lists additional people that participated in the Plan Update 2025 process.

The Seabrook Board of Selectmen offers thanks to the NH Homeland Security and Emergency Management and FEMA for providing funding and technical assistance with the development of this Plan Update.

In addition, thanks are extended to the staff of the Rockingham Planning Commission for professional services, process facilitation, and preparation of this document.

EXECUTIVE SUMMARY

The Seabrook Hazard Mitigation Plan Update 2025 (herein also referred to as the Plan) was compiled to assist the Town of Seabrook in reducing and mitigating future losses from natural hazard events. The Plan was developed by the Town of Seabrook Hazard Mitigation Committee, representatives from the business community, academia, and organizations assisting vulnerable populations, and the Rockingham Planning Commission. The Plan identifies specific natural hazards impacting Seabrook and outlines existing and future natural hazard mitigation efforts

The following natural hazards are addressed:

Flooding
Hurricane and High Wind Events
Severe Winter Weather
Wildfire
Earthquake
Drought
Extreme Temperatures
Climate Change
Infectious Disease

The list of critical facilities includes:

Municipal facilities
Communication facilities
Schools
Shelters
Evacuation routes
Vulnerable Populations

The Seabrook Hazard Mitigation Plan Update 2025 is considered a work in progress and should be revisited after every natural hazard event to assess whether the existing and suggested mitigation strategies are successful. Copies are available at the Town Hall and the Emergency Operations Center. A copy of the Plan is also on file at The Rockingham Planning Commission, New Hampshire Homeland Security and Emergency Management (NHHSEM) and the Federal Emergency Management Agency (FEMA). This Document was approved by both agencies prior to adoption at the local level.

CHAPTER I – INTRODUCTION

Background

The New Hampshire Homeland Security and Emergency Management (NHHSEM) has a goal for all communities within the State of New Hampshire to establish local hazard mitigation plans to reduce and mitigate future losses from natural hazard events. The NHHSEM outlines a process whereby communities throughout the State may be eligible for grants and other assistance upon completion of a local hazard mitigation plan. A handbook entitled *Hazard Mitigation Planning for New Hampshire Communities* was created by NHHSEM to assist communities in developing local plans. The State's Regional Planning Commissions are charged with providing assistance to selected communities to develop local plans.

The Seabrook Hazard Mitigation Plan Update 2025 was prepared by participants from the Town of Seabrook Hazard Mitigation Committee with the assistance and professional services of the Rockingham Planning Commission (RPC) under contract with the New Hampshire Homeland Security and Emergency Management operating under the guidance of Section 44 CFR 201.6. The Plan serves as a strategic planning tool for use by the Town of Seabrook in its efforts to identify and mitigate the future impacts of natural and/or man-made hazard events.

Methodology

The Rockingham Planning Commission (RPC) organized the first meeting with municipal staff with the Town of Seabrook on May 7, 2024, to begin the initial planning stages of the Plan Update. This meeting precipitated the development of the Natural Hazards Mitigation Committee (herein after, the Committee). RPC, Town officials, and other stakeholders developed the content of the Plan using the ten-step process set forth in the Hazard Mitigation Planning for New Hampshire Communities. The following is a summary of the ten-step process conducted to compile the Plan. The Town Administrator and RPC solicited information for the Plan Update from local officials, academia, organizations assisting vulnerable populations, and residents throughout the Plan development process. Notice of the Plan Update process was posted on Town and RPC websites. RPC staff kept communities in the region informed of the Plan Update process and requested feedback at monthly Commissioner meetings which involve members of Planning Boards, Boards of Selectmen, and Conservation Commissions in surrounding towns. Publicly noticed work session meetings were also held on August 19, 2024, November 26, 2024, _____. All work session meetings were open to the public, but members of the public did not attend any of the meetings. The Board of Selectmen held a duly noticed public meeting on the draft Plan Update on _____. Members of the public were in attendance at the meeting. The Selectmen initiated a 30-day public comment period at the _____.

The Town's 2018 Plan Update served as the starting point for discussion on hazards impacting the Town, as well as discussions on mitigation strategies. The 2018 Plan has served as a reference for local land use regulations and policies, development of the Town's Master Plan and Capital Improvement Plan, and department budgets.

Step 1- Form the Committee

The Town Administrator invited Department Heads from all the Town's departments to participate in the Plan Update process, as well as staff from SAU 21. As a result, the Plan Update Committee included the Town Manager, Emergency Management Director, Fire Chief, Police Chief, Fire and Emergency Management Secretary, Public Works Director, Water and Sewer Superintendent, Town Planner, Building Inspector/Health Officer, Welfare Agent, and Beach Village District Commissioner. Public notices about the Plan Update process were posted on the Town website and the Rockingham Planning Commission's website and monthly newsletter. All meetings were open to the public, and RPC staff kept municipalities in the region informed of the Plan Update. In addition, RPC staff working in abutting communities kept local officials in these communities informed of the update to Seabrook's Plan Update and the opportunity to comment on regional mitigation strategies.

Step 2 – Public Outreach and Stakeholder Involvement

RPC staff worked with the Town Manager on meaningful community engagement and public outreach about the Plan Update process to residents, local businesses, academia, organization supporting socially vulnerable populations, and Emergency Management Directors in the abutting municipalities of Hampton, NH, South Hampton, NH, Hampton Falls, NH, Kensington, NH, Amesbury, MA, and Salisbury, MA. All these stakeholders were provided with an opportunity to comment on the draft Plan and contribute updated information.

Public notices about the Plan Update meetings were posted on the Town's website and social media to inform viewers and followers about the plan update process and to solicit review and comment on the Plan. Notice about the Plan Update process was also posted on the Rockingham Planning Commission's website and published in the RPC's monthly newsletter. The newsletter is distributed to local officials in the 27-town RPC region. RPC and the Town Administrator sought input from the business community and a representative from the school district served on the Hazard Mitigation Committee.

RPC staff facilitated the Plan Update Committee meetings, guided the plan update process, and prepared the Plan Update in close consultation with the Plan Update Committee. Appendix O documents the individuals and organizations involved in the Plan Update as well as the public outreach materials distributed by the Town of Seabrook and the Rockingham Planning Commission.

Step 3 – Identify Natural Hazards Impacting Seabrook

The Committee reviewed the list of natural hazards impacting Seabrook that were included in the 2018 Plan Update and added Climate Change and Infectious Disease to the list of hazards impacting the community.

Step 4 – Identify Critical Facilities and Areas of Concern

The Committee identified facilities and areas considered to be important to the town for emergency management purposes, for provision of utilities and community services, evacuation routes, and for recreational, historical, cultural, and social value. Participants in the Committee identified areas where damage from past natural disasters have occurred and areas where critical man-made facilities and other features may be at risk

in the future for loss of life, property damage, environmental pollution, and other risk factors. RPC generated a set of base maps with GIS (Geographic Information Systems) that were used in the process of identifying past and future hazards.

Step 5 – Identify Existing Mitigation Strategies

After identifying critical facilities in Seabrook, the Committee and RPC staff reviewed the Town's existing mitigation strategies related to flooding, hurricane and wind events, severe winter weather, wildfire, earthquake, drought, extreme temperatures, climate change, and infectious disease. This process involved reviewing the Town's Hazard Mitigation Plan Update 2018 and resources listed under Step 7.

Step 6 – Identify the Gaps in Existing Mitigation Strategies

The existing strategies were then reviewed by the RPC and the Committee for coverage and effectiveness, degree of completion and the need for improvement.

Step 7 – Identify Potential Mitigation Strategies

A list was developed of additional hazard mitigation actions and strategies for the Town of Seabrook. Natural Hazard Mitigation Plans for other communities in the region were utilized to identify new mitigation strategies as well as the following relevant resources:

- 2011 – 2020 Town of Seabrook Master Plan
- 2013 FEMA Mitigation Ideas
- 2015 Rockingham Planning Commission Regional Master Plan
- 2015 Town of Seabrook Vulnerability Assessment
- 2016 Coastal Hazards and Adaptation Master Plan Chapter
- 2017 Town of Seabrook Groundwater Reclassification
- 2022 NOAA New Hampshire Climate Summary
- 2022 Seacoast Transportation Corridors Vulnerability Assessment
- 2022 Resilient Land Use Guide for New Hampshire
- 2023 State of New Hampshire Hazard Mitigation Plan Update
- 2023 Town of Seabrook Emergency Operations Plan
- 2023 Town of Seabrook Zoning Ordinance and Planning and Land Use Regulations
- 2023 Hampton-Seabrook Estuary Management Plan
- 2024 The Economy and Flood Vulnerability for Hampton, Hampton Falls, and Seabrook, New Hampshire
- 2024-2029 Town of Seabrook Capital Improvements Plan
- 2025 State of New Hampshire Priority Climate Action Plan
- National Flood Insurance Program data

Step 8 – Develop the Action Plan

The proposed hazard mitigation actions and strategies were reviewed, and each strategy was rated (good, average, or poor) for its effectiveness according to several factors (e.g., technical, and administrative applicability, political and social acceptability, legal authority, environmental impact, financial feasibility). Each factor was then scored, and all scores were totaled for each strategy. Strategies were ranked by overall score for preliminary prioritization then reviewed again under Step 9.

Step 9 – Determine Priorities

The preliminary prioritization list was reviewed to make changes and determine a final prioritization for new hazard mitigation actions and improvements to existing protection strategies. RPC staff also presented recommendations sourced from the resources listed in Step 7 for review and prioritization by the Plan Update Committee.

Step 10 – Develop Implementation Strategy

Using the chart provided under Step 9 in the handbook, an implementation strategy was created which included person(s) responsible for implementation (who), a timeline for completion (when), and a funding source and/or technical assistance source (how) for each identified hazard mitigation actions. Whenever the Master Plan or Capital Improvement Plan (CIP) are updated the Seabrook Hazard Mitigation Plan Update 2025 shall be consulted to determine if strategies or actions suggested in the Plan can be incorporated into future land use recommendations and capital expenditures.

Step 11 - Adopt and Monitor the Plan

RPC staff compiled the results of Steps 1 to 10 into a draft document for review by the Committee. The draft Plan Update 2025 was posted on the Town of Seabrook website and social media for review and comment. Stakeholders listed in Appendix O were emailed the draft Plan and invited to comment on the draft Plan and to meet with RPC staff and the Hazard Mitigation Committee. Stakeholders included Emergency Management Directors in neighboring communities, academia, local businesses, and agencies serving socially vulnerable and underrepresented communities. A duly noticed public meeting was held by the Seabrook Board of Selectmen on March 3, 2025. The meeting allowed anyone to provide comments and suggestions for the draft Plan Update in person, prior to the document being finalized. After the meeting the Board of Selectmen instituted a two-week comment period, ending on _____. The draft Plan was revised to incorporate comments received and submitted to the NHHSEM and FEMA Region I for their review and comments. Any changes required by NHHSEM and FEMA were made, and a revised draft document was then submitted to the Committee for review. A public meeting was then held by the Board of Selectmen on _____ to approve and adopt the Plan. The formal letter of approval from FEMA Region 1 can be found in the Appendix. The approved Plan Update will be posted on the Town website to facilitate continued public participation in hazard mitigation initiatives.

To track progress and update the Mitigation Strategies identified in the Action Plan, the Town's Hazard Mitigation Committee will remain active and will revisit the Plan annually and after each natural hazard event. These reviews will assess the Plan's effectiveness, accuracy, and completeness in achieving its stated purpose and goals. The Emergency Management Director and Town Administrator will coordinate Plan reviews, which will include robust public outreach and address the recommended improvements to the Plan as contained in the FEMA plan review checklist, as well as any weaknesses the Town has identified that the Plan did not adequately address. The Plan will also be thoroughly updated every five years.

HAZARD MITIGATION GOALS AND OBJECTIVES

The Town of Seabrook sets forth the following hazard mitigation goals and objectives:

- Reduce or avoid long-term vulnerabilities posed by natural hazards impacting Seabrook, including the impacts from flooding, hurricanes and high wind events, severe winter weather, wildfire, earthquakes, drought, extreme temperatures, climate change, and infectious disease.

- Improve upon the protection of the Town of Seabrook's general population, the citizens of the State and guests, from all natural and man-made hazards.

- Reduce the potential impact of natural and man-made disasters on Seabrook and the State's Critical Support Services.

- Reduce the potential impact of natural and man-made disasters on Seabrook's Critical Facilities in the State.

- Reduce the potential impact of natural and man-made disaster on Seabrook's and the State's infrastructure.
- Improve Seabrook's Emergency Preparedness.
- Improve Seabrook's Disaster Response and Recovery Capability.
- Reduce the potential impact of natural and man-made disasters on private property in Seabrook.
- Reduce the potential impact of natural and man-made disasters on Seabrook's and the State's economy.
- Reduce the potential impact of natural and man-made disasters on Seabrook's and the State's natural environment.
- Reduce Seabrook's and the State's liability with respect to natural and man-made hazards generally.
- Reduce the potential impact of natural and man-made disasters on Seabrook's and the State's specific historic treasures and interests as well as other tangible and intangible characteristics that add to the quality of life to the citizens and guests of the State and the Town.
- Identify, introduce and implement cost effective Hazard Mitigation measures so as to accomplish Seabrook's and the States' goals and objectives in order to raise the awareness and acceptance of hazard mitigation planning.

Through the adoption of this Plan the Town of Seabrook concurs and adopts these goals and objective

CHAPTER II – COMMUNITY PROFILE

Seabrook is in Rockingham County in the southeast corner of New Hampshire, along the Atlantic Ocean. The 2023 U.S. Census estimated the year-round population to be 8,413. The median age was 50 years, and the median household income was $85,935, slightly lower than the statewide median income of $88,235. The town encompasses approximately 5,978 acres, with 318 acres of open water, including the Hampton-Seabrook Estuary. Seabrook is relatively flat with 95% of the land area under 60 feet above sea level. The highest point is Grape Hill at 220 feet above sea level.

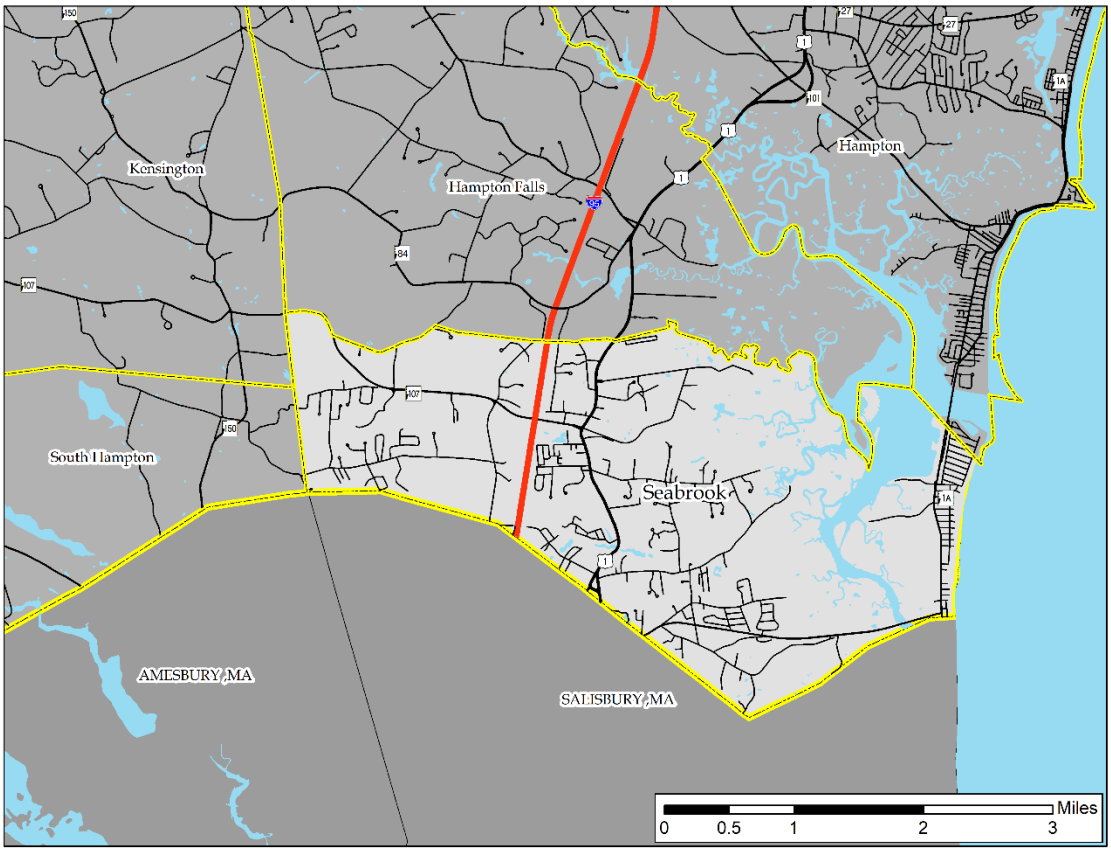


Figure 1: Location Map of Seabrook, NH

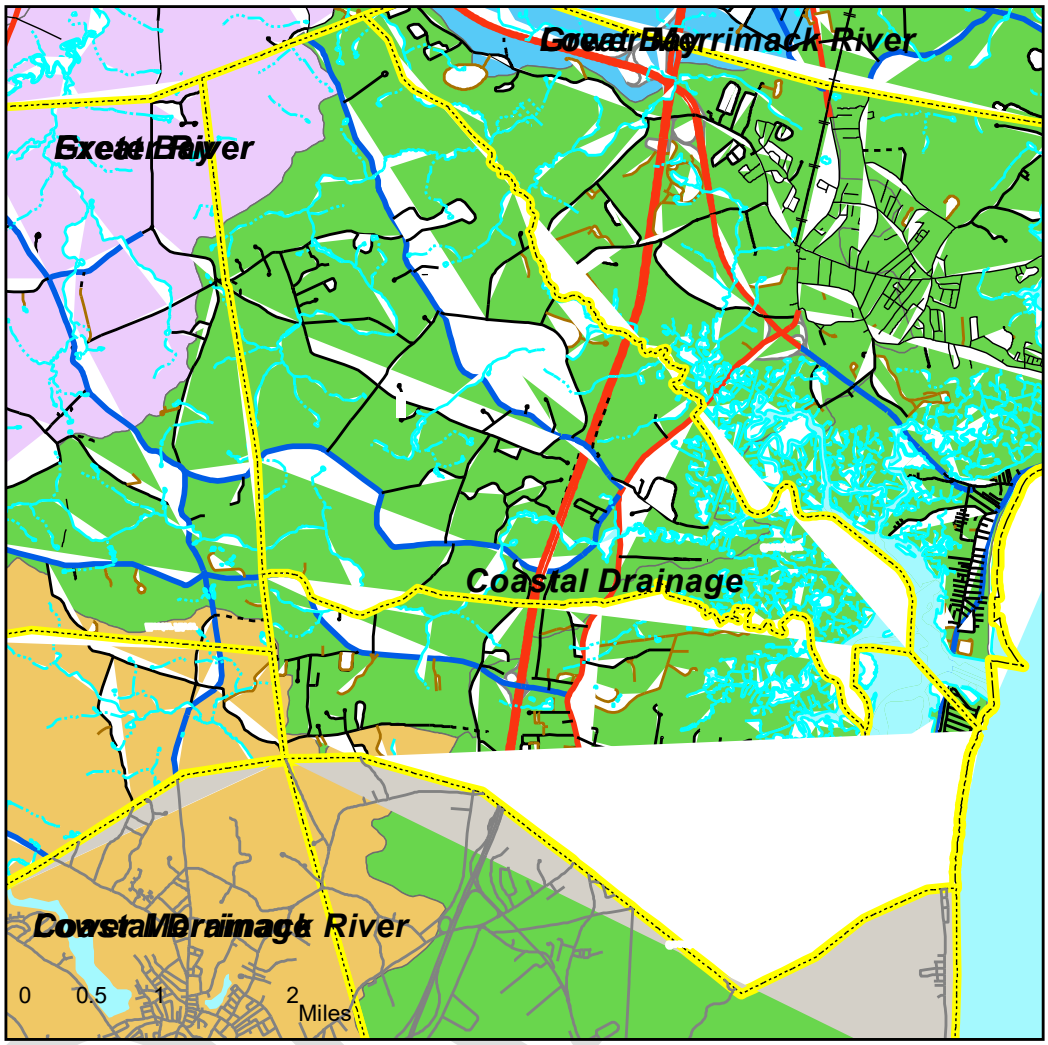


Figure 2: Watershed Map, Seabrook, NH

Seabrook is part of two major watersheds, the Coastal Drainage watershed and the Lower Merrimack River watershed, as can be seen in Figure 2. These two major drainage basins can be broken down into six sub-watersheds. The flow of surface waters within these watersheds is generally west to east. The Watersheds of Gove Brook – Hampton Falls River, Brown's River, Rocky Brook – Hunt's Island Creek, and Cain's Brook – Mill Creek all drain from the east to the west and into the Blackwater River – Hampton Harbor watershed which is part of the larger Coastal Drainage Basin. The only watershed within Seabrook that doesn't drain into the Blackwater River – Hampton Harbor is the Lucy Brook – Back River, which drains into the Lower Merrimack River Basin. The Lucy Brook – Back River only covers 179 acres, or 3% of town.

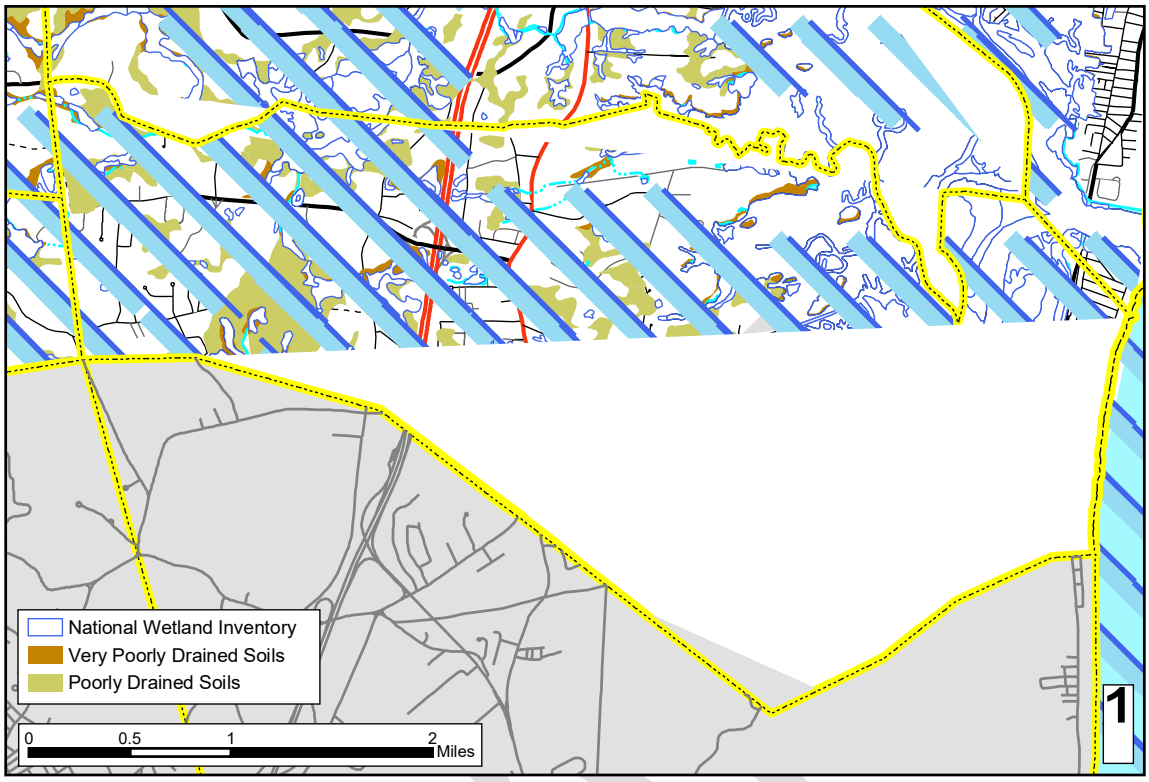


Figure 3: Wetland Soils, Seabrook, NH

The Town of Seabrook defines wetlands as "an area that is inundated or saturated by surface or ground water at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions." Seabrook has two distinct wetland environments: tidal and fresh water. Tidal wetlands are dominant covering 1,734 acres, 31% of town, and comprise the largest expanse of this type of wetland in the state. Fresh water wetlands are also very prevalent in Seabrook covering 1,044 acres or 18% of town. Combined, tidal and freshwater wetlands cover 49% of the Town of Seabrook.

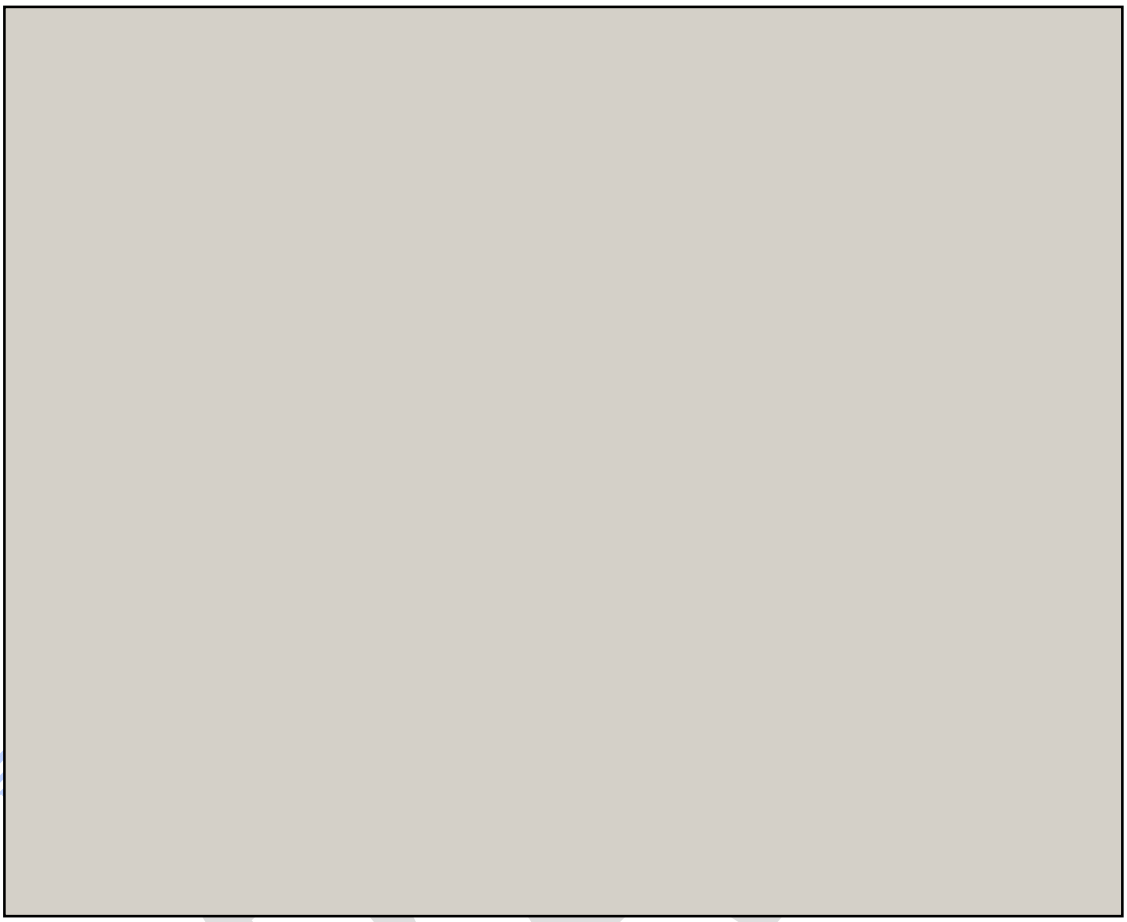


Figure 4: Floodplain Map, Seabrook, NH

Floodplains for this Plan are defined as the 100-year and 500-year flood hazard zones, as depicted on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM). Floodplains in the Town of Seabrook are shown in Figure 4. Seabrook maintains participation in the National Flood Insurance Program administered by FEMA. Development should be located away from wetlands and floodplains whenever possible. The filling of wetlands for building construction not only destroys wetlands and their numerous benefits but may also lead to groundwater contamination. Building within a flood zone may also reduce the floodplain's capacity to absorb and retain water during periods of excessive precipitation and runoff. Moreover, regarding building within floodplains, contamination may result from flood damage to septic systems.

Current and Future Development Trends

The Town of Seabrook has established several land use zones to guide growth and development. Zones include residential, industrial, commercial, mixed use, harbor, beach residential, beach commercial, and beach conservation. Current land use and development in the Town of Seabrook is dominated by commercial and residential uses. Residential development is scattered throughout Town on the available upland areas, with higher density development in the beach area. Commercial uses are most prevalent along Route 1, and Industrial development is

common west of Interstate 95. The Hazard Mitigation Committee anticipates future land use to be like current land use, with pockets of new residential development across town and commercial development and redevelopment along Route 1. The Town's Master Plan calls for wise use and protection of surface waters, wetlands, and aquifers.

Seabrook has experienced population growth and development due to its proximity to major employment centers and easy access to the metropolitan Boston region, with the population increasing steadily since the 1980's. The NH Office of Planning and Development anticipates the population to increase from 8,753 in 2025 to 9,291 in 2050. From 2018 to 2024, the Town issued permits for 29 commercial buildings, 67 single-family homes, 17 multi-family homes, and 74 mobile homes.

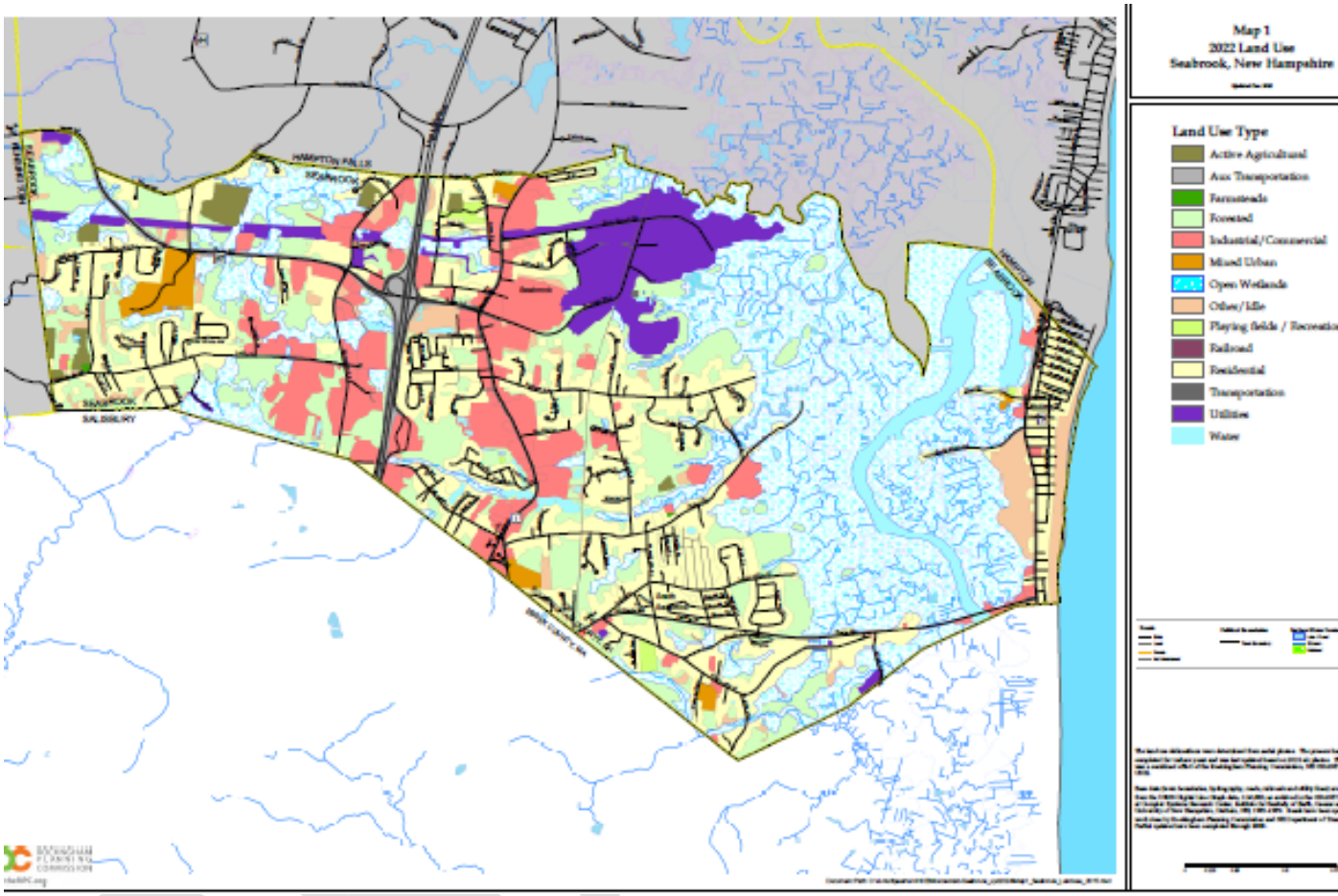
The 2025 Master Plan highlights resident support for keeping Seabrook a primarily residential community with preserved natural open spaces. The 2025 Housing Needs Assessment vision statement includes the following plan for future development, "Seabrook's vision is to retain its rural residential character and historic resources, protect natural resources, encourage a diversity of housing opportunities, and provide or ensure basic services, infrastructure, and amenities that serve the greater community and support the health, safety, well-being, and quality of life of its residents."

It is important that future development along the coast, harbor, and tidal rivers prepare for saltwater inundation from storm surge as well as sea level rise. Much of eastern Seabrook will be vulnerable to groundwater rise as the sea rises, and the Town is encouraging future development to be situated away for the coast. Planning for these conditions is underway with the town partnering with the Rockingham Planning Commission and other organizations to identify areas at risk. Reports include the 2009 Adaptation Strategies to Protect Areas of Increased Risk from Coastal Flooding Due to Climate Change and the 2015 Seabrook Coastal Vulnerability Assessment. These plans include site-specific information about sea level rise and applicability to future land use, policy options to mitigate sea level rise flooding hazards and maps that depict storm surge inundation and an extended coastal flood hazard overlay. The Town has incorporated this information into the CIP, infrastructure planning, local land use regulations, and town policies.

Seabrook's foresight in taking title to the coastal dunes offers beach homeowners a great deal of protection from coastal storms. The Town has been vigilant in protecting the healthy dune grass, keeping the dunes in place, and in prohibiting building construction atop the dunes. The recent degradation of protective dunes in the adjacent community of Salisbury Beach, MA illustrates the consequences of failing to do so.

The Town has adopted, and enforces, land use regulations designed to mitigate hazards, including wetlands protection, shoreland buffers, stormwater management, and flood hazard regulations. These regulations are increasing the resiliency to climate change and other hazards, including extreme precipitation events. Despite these efforts, the Town's vulnerability has increased due to climate change and an increasing number of natural hazard events, and this vulnerability is expected to increase. Natural hazards identified in this Plan update, as well as mitigation strategies discussed in this Plan, will be considered during local review of development proposals, development and update of land use regulations, the Master Plan, CIP, and Emergency Operations Plan, and infrastructure planning.

Map 1 – Existing Land Use



CHAPTER III – NATURAL HAZARDS IN THE TOWN OF SEABROOK

Introduction

The first step in planning for natural hazard mitigation is to identify hazards that may affect the Town. Some communities are more susceptible to certain hazards (i.e., flooding near rivers, hurricanes on the seacoast, etc.). The Town of Seabrook is prone to several types of natural hazards. These hazards include flooding, hurricanes or other high-wind events, severe winter weather, wildfires, earthquakes, drought, extreme temperatures, climate change, and infectious disease. Flooding from extreme precipitation events that may be the result of climate change impact Seabrook and mitigation actions for this type of hazard are included in actions developed for flood events. Other natural hazards can and do affect the Town of Seabrook, but these were the hazards prioritized by the Committee for mitigation planning. These were the hazards that were considered to occur with regularity and/or were considered to have high damage potential and are discussed below.

Natural hazards that are included in the State's Hazard Multi-Hazard Mitigation Plan Update 2023 that are not included in the in this Plan Update include: landslide, subsidence, radon, avalanche, solar storm, and space weather. Subsidence and avalanche are rated by the State as having Low and No risk in Rockingham County, respectively; due to this they were left out of the Plan. Seabrook has no record of landslides and little chance of one occurring that could possibly damage property or cause injury and so landslides were not included in this Plan. The State's Plan indicates that Rockingham County is at Moderate risk to radon; this hazard was not included in the Plan. When compared with natural hazards that could be potentially devastating to the Town, such as flooding and severe winter weather, it was not considered an effective use of the Committee time to include radon in the Plan at this time. Solar storms and space weather are rated as a low risk for all of New Hampshire. There are no significant past occurrences of impact from space weather or solar storms in the state per the State Plan and so the Committee did not include this hazard in the Plan Update.

The hazard profiles below include a description of the natural hazard, the geographic location of each natural hazard (if applicable), the extent of the natural hazard (e.g. magnitude or severity), probability, past occurrences, and community vulnerability. Past occurrences of natural hazards were mapped on Map 2: Past and Future Hazards. Community vulnerability identifies the specific areas, general type of structures, specific structures, or general vulnerability of the Town of Seabrook to each natural hazard. Probability was defined as high, a roughly 66-100% chance of reoccurrence annually; medium, roughly a 33-66% chance of reoccurrence annually; and low, roughly a 0-33% chance of reoccurrence annually.

Flooding

Description - Floods are defined as a temporary overflow of water onto lands that are not normally covered by water. Flooding results from the overflow of major rivers and tributaries, storm surges, and/ or inadequate local drainage. Floods can cause loss of life, property damage, crop/livestock damage, and water supply contamination. Floods can also disrupt travel routes on roads and bridges.

Inland floods are most likely to occur in the spring due to the increase in rainfall and melting of snow; however, floods can occur at any time of the year. A sudden thaw in the winter or a major

downpour in the summer can cause flooding because there is suddenly a lot of water in one place with nowhere to go.

- **100-year Floodplain Events** - Floodplains are usually located in lowlands near rivers, and flood on a regular basis. The term 100-year flood does not mean that flood will occur once every 100 years. It is a statement of probability that scientists and engineers use to describe how one flood compares to others that are likely to occur. It is more accurate to use the phrase "1% annual chance flood". What this means is that there is a 1% chance of a flood of that size happening in any year.

- **Erosion and Mudslides** - Erosion is the process of wind and water wearing away soil. Typically, in New Hampshire, the land along rivers is relatively heavily developed. Mudslides may form when a layer of soil atop a slope becomes saturated by significant precipitation and slides along a more cohesive layer of soil or rock. Erosion and mudslides become significant threats to development during floods. Floods speed up the process of erosion and increase the risk of mudslides.

- **Rapid Snowpack Melt** - Warm temperatures and heavy rain cause rapid snowmelt. Quickly melting snow coupled with moderate to heavy rains are prime conditions for flooding.

- **River Ice Jams** - Rising waters in early spring often break ice into chunks, which float downstream and often pile up, causing flooding. Small rivers and streams pose special flooding risks because they are easily blocked by jams. Ice in riverbeds and against structures presents significant flooding threats to bridges, roads, and the surrounding lands.

- **Dam Breach and Failure** - Dam failure results in rapid loss of water that is normally held by the dam. These kinds of floods are extremely dangerous and pose a significant threat to both life and property.

- **Severe Storms and Extreme Precipitation Events** - Flooding associated with severe storms can inflict heavy damage to property. Heavy rains during severe storms are a common cause of inland flooding. An extreme precipitation event can be identified as one where more than one inch of rain falls within 24 hours, or more than 2-4 inches falls in 48 hours.

- **Sea Level Rise, Coastal Flooding, Storm Surge, and Compound Flooding** - Seabrook's tidal coastline along the Atlantic Ocean and Hampton-Seabrook Estuary means homes and businesses, roadways and infrastructure, and critical natural habitats such as salt marsh and mud flats are at risk due to coastal flooding caused by storm surges and rising sea levels. The risks of flood impacts from compound flooding in low-lying coastal areas is often much greater than from either coastal flooding or inland flooding in isolation. The Town's 2015 Vulnerability Assessment Report of Sea Level Rise and Coastal Storm Surge Flooding, completed by the Rockingham Planning Commission, identifies areas in town at risk of flooding from expected increases in storm surge and rates of sea level rise. These

locations are listed below under Community Vulnerability and discussed in Chapter V Potential Hazard Damage.

Table 1: FEMA Flood Zones in Seabrook and Structures in each Zone
Source: NH Office of Planning and Development, July 2023

FEMA Special Flood Hazard Area	Description of FEMA Zone	Number of Structures in Zone
Zone A	Areas subject to inundation by the 1-percent-annual-chance flood event. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown.	0
Zone AE	Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. BFEs are shown within this zone.	46
Zone AO	Areas subject to inundation by 1-percent-annual-chance shall flooding where average depts are 1-3 feet. Average flood depth derived from detailed hydraulic analyses are shown within this zone.	0
Zone V	Areas along coasts subject to inundation by the 1-percent-annual-chance flood event with additional hazards due to storm-induced velocity wave action. BFEs derived from detailed hydraulic coastal analyses are shown within this zone.	0
Zone X	Areas of minimal flood hazard, usually depicted on FIRMs as outside the 500-year flood level.	6

Research shows the climate of New Hampshire, and the Seacoast region has changed over the past century and predicts the future climate of the region will be affected by human activities that are warming the planet. Overall, New England has been getting warmer and wetter over the last century, and the rate of change has increased over the last four decades. The challenges posed by climate change, such as more intense storms, frequent heavy precipitation, heat waves, drought, and extreme flooding could significantly alter the types and magnitudes of hazards faced by Seabrook. The Town's 2017 Vulnerability Assessment identified potential impacts from a changing climate, and produced a set of flood elevation maps, sea-level rise scenarios, and recommendations for adaptation planning.

Location - Seabrook is vulnerable to flooding in several locations. Generally, the Town is at risk within the Flood Zones identified by FEMA on Flood Insurance Rate Maps (FIRM). There are also several areas susceptible to flooding that are not within these flood zones. These areas are listed below, displayed on Map 2: Past and Future Hazards, and discussed in Chapter V, Potential Hazard Damage.

- Route 1 at Cains Brook, adjacent to Home Depot
- Route 1A
- Stone arch under railroad bridge behind Home Depot on Cains Brooks
- South Main St., west of the wastewater treatment plant
- Route 286 at the west side of the Blackwater River
- Intersection of Route 1A and Route 286
- River Street
- Cross Beach Road
- Causeway Street
- Woodstock Street
- Folly Mill Road Extension
- Walton Road at railroad abutments
- Zagarella Drive

Extent – Seabrook is vulnerable to flooding from tropical storms and hurricanes from late summer through fall. Extra-tropic storms, such as Nor'Easters, can occur in any month. These storms bring strong winds and heavy rain and snow. The extent of the flooding in Seabrook can range from minimal to severe. Minimal flooding can result in highwater alongside roads and in yards; severe flooding can result in washed out roads and homes and businesses isolated by high and fast-moving water. The extent of the zones can be seen in Map 2: Past and Future Hazards. This area includes FIRM zones as well as areas of locally chronic flood problems. The NH Dam Bureau reports there are four active dams in Seabrook, listed in Table 1. One dam is classified as a Non-Menace structure, and three dams are classified as Low Hazard structures.

Dams - The State of New Hampshire places every dam into one of four classifications, which are differentiated by the degree of potential damage that a failure of the dam is expected to cause, The classifications are as follows:

- Non-Menace structure – not a menace because it is in a location and of a size that failure or mis-operation of the dam would not result in probable loss of life or loss to property, less than six feet in height if it has a storage capacity greater than 50-acre feet, or less than 25 feet in height if it has a storage capacity of 15 to 50 acre-feet.

- Low Hazard structure – has a low hazard potential because it is in a location and of a size that failure or mis-operation of the dam would result in no possible loss of life, low economic loss to structures or property, structural damage to local or private roads that could render roads impassable, the release of liquid industrial, agricultural or commercials wastes, septage or contaminated sediment if the storage capacity is less than two-acre feet and is located more than 250 feet from a water body, reversible environmental losses to environmentally sensitive areas.

- Significant Hazard structure – has a significant hazard potential because it is in a location and of a size that failure or mis-operation of the dam would result in no probable loss of lives, major economic loss to structures or property, structural damage to a Class I or II road that could render the road impassable, major environmental or public health losses.

- High Hazard structure – has a high hazard potential because it is in a location and of a size that failure or mis-operation of the dam would result in probable loss of human life, structural damage to an interstate highway which could rend the road impassable, the release of a quantity and concentration of hazardous waste, and any other circumstance that would more likely cause one or more deaths.

Table 2 - Active Dams in Seabrook
Source: NH Dam Bureau, June 2025

Dam Name	Dam Owner	Hazard Classification	River/Source	Height/ Impoundment Area
Noyes Pond Dam	Stanley Hamel	Non-Menace	Cains Brook	8 feet/0.9 acres
Secord Pond Dam	Town of Seabrook	Low Hazard	Cains Brook	10 feet/2.7 acres
Mary's Pond Dam	Town of Seabrook	Low Hazard	Cains Brook	7 feet/1 acres
Cains Brook Dam	Town of Seabrook	Low Hazard	Cains Brook	7 feet/2.4 acres

Probability – The probability of roadways and properties flooding from heavy rain and rapid snow melt is high, especially in the areas listed above. The Town monitors dam integrity and manages water levels. The Town also regularly assesses culverts to ensure integrity and the ability to pass stormwater. See Table 3, Hazard Identification and Risk Assessment.

Past Occurrence – Flooding is the most common hazard impacting Seabrook, with several storms impacting the town since the 2018 Plan. A severe thunderstorm in June 2021 resulted in flooded roads, yards, and property damage from uprooted trees. Heavy rainstorms also impacted roads and property in July 2023. Winter storms in December 2022, March 2023, and January and March 2024 produced heavy rain and wet snow. The January 2024 winter storm closed Rt. 286 completely, preventing access for school buses and residents. Several locations were identified by the Committee as at risk for reoccurring flooding or potential for future flooding, as listed above and identified on Map 2. The Town inspects culverts annually to mitigate flooding.

Community Vulnerability - Flooding is most likely to impact roads listed above and structures located in the flood zones and the areas listed above and depicted on Map 2. Closure of roads due to high water and/or unsafe driving conditions can prevent travel to homes, schools, businesses, and restrict emergency response vehicles. High tides, high water levels and swiftly moving water can also cause culvert failure and erosion, undermining road safety. The Town and State continue to work on mitigating flooding from storm events and sea level rise, but more work is needed, especially along Rt. 1A to enable storm surge to flow from the east side of Rt. 1A to the west side and into the estuary. There are no high hazard potential dams in Seabrook.

National Flood Insurance Program (NFIP) - In 1968, Congress created the National Flood Insurance Program (NFIP) in response to the rising cost of taxpayer funded disaster relief for flood victims and the increasing amount of damage caused by floods. The Federal Insurance and Mitigation Administration (FIMA), a component of the Federal Emergency Management Agency

(FEMA) manages the NFIP and oversees the floodplain management and mapping components of the program.

Communities participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce flood damage. In exchange, the NFIP makes federally subsidized flood insurance available to homeowners, renters, and business owners in these communities. Flood insurance, Federal Grants and loans, Federal disaster assistance and federal mortgage insurance is unavailable for the acquisition or construction of structures located in the floodplain shown on the NFIP maps for those communities that do not participate in the program.

To get secure financing to buy, build or improve structures in the Special Flood Hazard areas, it is legally required by federal law to purchase flood insurance. Lending institutions that are federally regulated or federally insured must determine if the structure is in the SFHA and must provide written notice requiring flood insurance. Flood insurance is available to any property owner located in a community participating in NFIP.

Table 3: Seabrook NFIP Policy and Loss Statistics
Source: NH Office of Planning and Development, June 2024

Policies in force	Insurance in Force	Number of Paid Losses (since 1978)	Total Losses Paid (since 1978)
59 policies: 21 single-family residential 8 multi-family residential 30 other residential	$10,868,000	50 paid losses: 40 single-family 9 other residential 1 non-residential	$287,348

The Town of Seabrook and the Village Beach District have been a part of NFIP since June 17,1986, with the most recent update to the Flood Insurance Rate Map and Flood Insurance Study dated January 29, 2021. There are 59 policies in force. Fifty policies are in Flood Zone A and nine policies are in Flood Zone X. Twenty-six losses were in Flood Zone A, seven losses in Flood Zone x, and one loss in another zone. The most recent community assistance visit took place on November 20, 2014.

Repetitive Loss Properties - A specific target group of repetitive loss properties is identified and serviced separately from other NFIP policies by the Special Direct Facility (SDF). The target group includes every NFIP insured property that, since 1978 and regardless of any change(s) of ownership during that period, has experienced four or more paid losses, two paid flood losses within a 10-year period that equal or exceed the current value of the insured property, or three or more paid losses that equal or exceed the current value of the insured property, regardless of any changes of ownership, since the buildings construction or back to 1978. Target group policies are afforded coverage, whether new or renewal, only through the SDF.

The FEMA Regional Office provides information about repetitive loss properties to State and local floodplain management officials. The FEMA Regional Office may also offer property owners

building inspection and financial incentives for undertaking measures to mitigate future flood losses. These measures include elevating buildings from the flood area, and in some cases drainage improvement projects. If the property owners agree to mitigation measures, their property may be removed from the target list and would no longer be serviced by the SDF.

Seabrook NFIP Repetitive Flooding Losses – Seabrook has had five repetitive loss buildings and six total repetitive losses, with total repetitive loss payments of $50,850.02.

Floodplain Management Goals/Reducing Flood Risks - A major objective to floodplain management is to continue participation in the NFIP. Communities that agree to manage Special Flood Hazard Areas shown on NFIP maps participate in the NFIP by adopting minimum standards. The minimum requirements are the adoption of the floodplain Ordinances and Subdivision/Site Plan Review requirements for land designated as Special Flood Hazard Areas. Under Federal Law, any structure located in a floodplain is required to have flood insurance. Federally subsidized flood insurance is available to any property owner located in a community participating in the NFIP. Communities that fail to comply with the NFIP will be put on probation and/or suspended. Probation is a first warning where all policy holders receive a letter notifying them of a $50 increase in their insurance. In the event of suspension, the policyholders lose their NFIP insurance and are left to purchase insurance in the private sector, which is of significantly higher cost. If a community is having difficulty complying with NFIP policies, FEMA is available to meet with staff and volunteers to work through the difficulties and clear up any confusion before placing the community on probation or suspension.

The Floodplain Administrator of the Town of Seabrook is responsible for making determinations of substantial improvement and substantial damage. These determinations are made for all development in a special flood hazard area that proposes to improve an existing structure including alterations, movement, enlargement, replacement, repair, additions, rehabilitations, renovations, repairs of damage from any origin, such as, but not limited to flood, fire, wind, or snow, and any other improvement of or work on such structure including within its existing footprint.

The Floodplain Administrator, in coordinate with any other applicable municipal officials, shall be responsible for the following:

- Determining if a substantial damage (SD) determination needs to be made and communicate SD and permit requirements to property owners.
- Verifying the cost of repairs to the structure.
- Verifying the market value of the structure.
- Making the SD determination and issuing it to the property owner.
- Permitting development and ensuring compliance with municipal ordinance.
- Inspecting development and maintaining as-built compliance documentation post construction.

Potential Administrative Techniques to Minimize Flood Losses in Seabrook - A potential step in mitigating flood damage is participating in NFIP. Seabrook continues to consistently enforce NFIP compliant policies to continue its participation in this program and has effectively worked within

the provisions of NFIP. Below is a list of actions Seabrook should consider, or continue to perform, to comply with NFIP:

- Participate in NFIP training offered by the State and/or FEMA (or in other training) that addresses flood hazard planning and management.
- Establish Mutual Aid Agreements with neighboring communities to address administering the NFIP following a major storm event.
- Address NFIP monitoring and compliance activities.
- Revise/adopt subdivision regulations, erosion control regulations, board of health regulations to improve floodplain management in the community.
- Prepare, distribute or make available NFIP insurance and building codes explanatory pamphlets or booklets.
- Identify and become knowledgeable of non-compliant structures in the community.
- Inspect foundations at time of completion before framing to determine if the lowest floor is at or above Base Flood Elevation (BFE), if they are in the floodplain.
- Require the use of elevation certificates.
- Enhance local officials, builders, developers, local citizens and other stakeholders' knowledge of how to read and interpret the FIRM.
- Work with elected officials, the state and FEMA to correct existing compliance issues and prevent any future NFIP compliance issues through continuous communications, training and education.

Hurricane-High Wind Events

Description - Significantly high winds occur especially during hurricanes, tornadoes, winter storms and thunderstorms. Falling objects and downed power lines are dangerous risks associated with high winds. In addition, property damage and downed trees are common during high wind occurrences.

- **Hurricanes and Coastal Storms** - A hurricane is a tropical cyclone in which winds reach speeds of 74 miles per hour or more and blow in a large spiral around a relatively calm center. The eye of the storm is usually 20-30 miles wide and may extend over 400 miles. High winds are a primary cause of hurricane-inflicted loss of life and property damage. The Saffir–Simpson hurricane wind scale (SSHWS), or the Saffir–Simpson hurricane scale (SSHS) for short, classifies hurricanes into five categories distinguished by the intensities of their sustained winds. To be classified as a hurricane, a tropical cyclone must have maximum sustained winds of at least 74 mph, Category 1. The highest classification in the scale, Category 5, is reserved for storms with winds exceeding 156 mph. The Saffir/Simpson Hurricane Scale is included in Appendix C. Seabrook proximity in southeastern New Hampshire on the Atlantic coast makes the community vulnerable to hurricanes and coastal storms.

- **Tornadoes** - A tornado is a violent windstorm characterized by a twisting, funnel shaped cloud. They develop when cool air overrides a layer of warm air, causing the warm air to rise rapidly. The atmospheric conditions required for the formation of a tornado include great thermal instability, high humidity and the convergence of warm, moist air at low levels with cooler, drier air aloft. Most tornadoes remain suspended in the atmosphere, but if they touch down, they become a force of destruction. Tornadoes produce the most

violent winds on earth, at speeds of 280 mph or more. In addition, tornadoes can travel at a forward speed of up to 70 mph. Damage paths can be more than one mile wide and 50 miles long. Violent winds and debris slamming into buildings cause the most structural damage. The Enhanced Fujita Scale is the standard scale for rating the severity of a tornado as measured by the damage it causes. A tornado is usually accompanied by thunder, lightning, heavy rain, and a loud "freight train" noise. In comparison with a hurricane, a tornado covers a much smaller area but can be more violent and destructive.

- **Severe Thunderstorms** - All thunderstorms contain lightning. During a lightning discharge, the sudden heating of the air causes it to expand rapidly. After the discharge, the air contracts quickly as it cools back to ambient temperatures. This rapid expansion and contraction of the air causes a shock wave that we hear as thunder, which can damage building walls and break glass.

- **Lightning** - Lightning is a giant spark of electricity that occurs within the atmosphere or between the atmosphere and the ground. As lightning passes through air, it heats the air to a temperature of about 50,000 degrees Fahrenheit, considerably hotter than the surface of the sun. Lightning strikes can cause death, injury and property damage.

- **Hail** - Hailstones are balls of ice that grow as they're held up by winds, known as updrafts, which blow upwards in thunderstorms. The updrafts carry droplets of supercooled water – water at a below freezing temperature – but not yet ice. The supercooled water droplets hit the balls of ice and freeze instantly, making the hailstones grow. The faster the updraft, the bigger the stones can grow. Most hailstones are smaller in diameter than a dime, but stones weighing more than a pound have been recorded. Details of how hailstones grow are complicated, but the results are irregular balls of ice that can be as large as baseballs, sometimes even bigger. While crops are the major victims, hail is also a hazard to vehicles and windows.

Location - Hurricane events are more potentially damaging with increasing proximity to the coast. Seabrook's location adjacent to the Atlantic Coast makes hurricanes and high wind events severe threats. For this Plan, high-wind events, lightning, hail, and thunderstorms were considered to have an equal chance of affecting any part of the Town of Seabrook.

Extent – Hurricane strength is measured using the Saffir-Simpson scale, located in the appendix of this Plan. Seabrook is located within Zone II hurricane-susceptible region (indicating a design wind speed of 160 mph). From 1950 to 2018 Rockingham County was subject to 9 tornado events, these included 2 type F0 (Gale Tornado, 40-72 mph), 2 type F1 (Moderate Tornado, 73-112 mph), 4 type F2 (Significant Tornado, 113-157 mph) and 1 type F3 (Severe Tornado, 158-206 mph). Type 3 tornados can cause severe damage including tearing the roofs and walls from well-constructed homes, trees can be uprooted, trains over-turned, and cars lifted off the ground and thrown. Between 1900 and 2018 2 hurricanes have made landfall in New Hampshire, category 1 and category 2. Measurement scales for hurricanes, tornadoes, thunderstorms, lightning risk, and hail can be found in the appendix of this Plan.

Probability -High. The State of New Hampshire's Multi-Hazard Mitigation Plan Update 2023 rates Rockingham County with high likelihood of hurricane, tornado and "Nor'-Easters" events. Also, it

rates the risk of downbursts, lightning and hail events as moderate. See Table 3, Hazard Identification and Risk Assessment.

Past Occurrence – Between 1635 and 2018 14 hurricanes have impacted the State of New Hampshire. The worst of these occurred on September 21, 1938, with wind speeds of up to 186 mph in MA and 138 mph elsewhere. Thirteen of 494 people killed by this storm were residents of New Hampshire. The storm caused $12,337,643 in damage (1938 dollars); timber not included. Hurricanes Sandy and Irene created areas of localized flooding in Seabrook and power loss. High wind events in 2016, 2018, 2023, and 2024 resulted in extensive power outages, downed wires and trees in Seabrook.

Community Vulnerability – The Committee determined that high winds and heavy rain associated with hurricanes, as well as lightning and hail, can impact every neighborhood in Seabrook before, during, and after the storm, resulting in downed trees, flooding of ponds, rivers, streams, roads and basements, and damage to home, businesses, and infrastructure. Infrastructure most at risk includes power lines, shoreline infrastructure, trees, shingled roofs, chimneys, shorefront neighborhoods, boats and docks, parks and harbors.

Severe Winter Weather

Description – Severe winter weather in the form of heavy snowstorms, ice storms and Nor'easters are a threat to the community with subzero temperatures from extreme wind chill and storms causing low visibility for commuters. Heavy snow loads from storms are known to collapse buildings. Ice storms disrupt power and communication services. Extreme cold affects vulnerable populations, including the elderly.

- **Heavy Snowstorms** - A winter storm can range from moderate snow to blizzard conditions. Blizzard conditions are considered blinding wind-driven snow over 35 mph that lasts several days. A severe winter storm deposits four or more inches of snow during a 12-hour period or six inches of snow during a 24-hour period.

- **Ice Storms** - An ice storm involves rain, which freezes upon impact. Ice coating at least one-fourth inch in thickness is heavy enough to damage trees, overhead wires and similar objects. Ice storms also often produce widespread power outages.

- N**or'easter** - A Nor'easter is a large weather system traveling from South to North passing along or near the seacoast. As the storm approaches New England and its intensity becomes increasingly apparent, the resulting counterclockwise cyclonic winds impact the coast and inland areas form a Northeasterly direction. The sustained winds may meet or exceed hurricane force, with larger bursts, and may exceed hurricane events by many hours (or days) in terms of duration.

Location - Severe winter weather events have an equal chance of affecting any part of Seabrook.

Extent - Large snow events in Southeastern New Hampshire can produce 30 inches of snow. Portions of central New Hampshire recorded snowfalls of 98" during one slow moving storm in February of 1969. Ice storms occur regularly in New England. The Sperry-Piltz ice accumulation

scale is found in the Appendix of this Plan. Seven severe ice storms have been recorded that have affected New Hampshire since 1929. These events caused disruption of transportation, loss of power and millions of dollars in damage.

Probability - High. The State of New Hampshire's Multi-Hazard Mitigation Plan Update 2023 rates Rockingham County with high likelihood of heavy snow and ice storms. See Table 3, Hazard Identification and Risk Assessment.

Past Occurrence – Seabrook has been impacted by six severe winter storms in the past five years. Two Nor'easters in 2018 and a heavy snowstorm in December 2022 resulted in power outages and downed trees. At its peak the 2022 snowstorm dropped four inches of snow in one hour. Two Nor'Easters in March 2023 and March 2024 produced wet, heavy snowfall amounts over six inches combined with gusty winds, resulting in power outages and required extensive snow removal, removal of fallen trees, repair of coastal infrastructure and utilities.

Community Vulnerability - Severe winter weather has struck Seabrook and every other community in the region on an annual basis in recent memory. The Committee determined that heavy snow, strong and gusty winds, and frigid temperatures can impact all parts of town equally, resulting in downed trees and power lines, extended power outages, and unsafe driving condition. Extended power outages and the resulting loss of heat in homes of elderly residents are of concern. Rapid snow melting after severe winter weather can result in flooding of rivers and streams, posing risk to roads and structures. The Committee identified the elderly and vulnerable populations, utility lines and towers, and trees at greatest risk from severe winter weather.

Wildfire

Description - Wildfire is defined as an uncontrolled and rapidly spreading fire, including grass and forest fires. A forest fire is an uncontrolled fire in a woody area. They often occur during drought and when woody debris on the forest floor is readily available to fuel the fire. Grass fires are uncontrolled fires in grassy areas.

Location – The Committee identified Farm Lane, Lake Shore Drive, and Beckmans Island as areas at risk of wildfire, identified on Map 2 Past and Future Hazards.

Extent - A large wildfire in the Town of Seabrook is unlikely, but if a crown fire were to occur it could be very damaging to several small sections of town. A large grass fire could threaten structures and neighborhoods building near large open areas. A large grass and forest fire has not impacted Seabrook in recent memory. The largest wildfire in town was no larger than two acres. The Hazard Mitigation Committee expects a wildfire of less than five acres to be the worst scenario. The Wildland-Urban Interface Scale, a tool to quantify the expected severity of wildfire events in developed areas, is included in Appendix J and the Wildfire Index is included in Appendix K.

Probability - Medium. The State of New Hampshire's Multi-Hazard Mitigation Plan Update 2023 rates Rockingham County with moderate risk to wildfires.

Past Occurrence - Most wildfires in Seabrook are minor brush fires. There has been no increase in minor brush fires since the 2018 Plan. In 1996 a controlled burn fire started in Seabrook.

However, due to the density of the Phragmites, the fire burned so hot, it melted the vinyl siding off a nearby house. That fire was the impetus for a current Phragmites elimination project at that site funded by the NH Coastal Program. A fire in nearby Salisbury, MA on April 8, 1999, is indicative of the danger that Phragmites poses. This fire began in the Phragmites and within 20 minutes had consumed seven acres of the marsh. The fire then jumped over a road, burned down a vacant home and threatened three other occupied dwellings. Fire fighters responding from four communities saved these dwellings. Seabrook was one of the fire departments to respond and the firefighters spent six hours bringing the blaze completely under control. Although the three houses were saved, one of them lost the vinyl siding on one side of the house and at least one outbuilding was lost. Wildfire has not impacted Seabrook in recent memory.

Community Vulnerability - The Committee determined that all forested and open areas and coastal areas with Phragmites are prone to wildfires, with the threat increasing during periods of drought. Increasing residential development increases vulnerability to wildfire as the number of structures and the population increase. The Committee summarized the threat as follows:

- Beckmans Island due to vandals starting fires
- Structures located near large open vegetated areas prone to lightning strikes
- Vulnerability increases during drought events
- Tree debris created by high wind and winter storm events

Earthquakes

Description – Seismic activity including landslides and other geologic events. An earthquake is a rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. Earthquakes can cause buildings and bridges to collapse, disrupt gas, electricity and phone lines, and often cause landslides, flash floods, fires, and avalanches. Larger earthquakes usually begin with slight tremors but rapidly take the form of one or more violent shocks, and end in vibrations of gradually diminishing force called aftershocks. The underground point of origin of an earthquake is called its focus; the point on the surface directly above the focus is the epicenter. The magnitude and intensity of an earthquake is determined using scales such as the Richter Magnitude Scale, located in the Appendix of this Plan.

Location – An earthquake has an equal chance of affecting all areas on Seabrook.

Extent - Geologic events are often associated with California, but New England is considered a moderate risk earthquake zone. New England is particularly vulnerable to the injury of its inhabitants and structural damage because of our built environment. Few New England States currently include seismic design in their building codes. Massachusetts introduced earthquake design requirements into their building code in 1975 and Connecticut very recently did so. However, these specifications are for new buildings, or very significantly modified existing buildings only. Existing buildings, bridges, water supply lines, electrical power lines and facilities, etc. have rarely been designed for earthquake forces and New Hampshire has no such code specifications.

Probability - Medium. The State of New Hampshire's Multi-Hazard Mitigation Plan 2023 ranks all the counties in the State with at moderate risk to earthquakes. See Table 3, Hazard Identification and Risk Assessment.

Past Occurrence – Earthquakes have not impacted Seabrook within recent memory. The strongest damaging quakes to impact New Hampshire were centered in Tamworth on December 20 and 24, 1940, both with a measured magnitude of 5.8. The Hazard Mitigation Committee expects a 3.4 to 4.5 magnitude earthquake to be the worst-case scenario.

Community Vulnerability - The Committee determined that earthquakes do not pose a frequent threat to Seabrook, but if one were to occur the most vulnerable structures include dams, bridges, brick structures, infrastructure and utility lines, as well as secondary hazards such as fire, power outages or a hazardous material leak or spill.

Drought

Description - Drought is a period of unusually constant dry weather that persists long enough to cause deficiencies in water supply (surface or underground). Droughts are slow-onset hazards that can severely affect municipal water supplies, private water wells, crops, recreation resources, and wildlife. If drought conditions extend over several years, the direct and indirect economic impacts can be significant. High temperatures, high winds, and low humidity can worsen drought conditions and make areas more susceptible to wildfire. In addition, human actions and demands for water resources can accelerate drought-related impacts.

Location – The Committee determined that drought poses risks to water supplies throughout town, both private and municipal. The risks of wildfire associated with drought conditions are greatest in forested and open grassland areas and coastal areas with Phragmites.

Extent - Although New Hampshire is typically thought of as a water-rich state, there are times the demand for water can be difficult to meet. A combination of increased population and extended periods of low precipitation can cause reduced water supplies. Drought can impact Seabrook after extended periods with limited rain and snowfall, often for several months, and is a town-wide hazard, impacting both private wells and public water systems. Rockingham County experienced extreme drought in 2021 and 2022, referred to as a D3 on the U.S. Drought Monitor Scale. The Hazard Mitigation Committee expects extreme drought to be the worst-case scenario. The Town of Seabrook works with private water companies serving the town to monitor the information provided by the DES Drought Management Program. The U.S. Drought Monitor Scale is in Appendix L.

Probability - Medium. See Table 3 Hazard Identification and Risk Assessment.

Past Occurrence - The State of New Hampshire Multi-Hazard Mitigation Plan Update 2023 rates Rockingham County at low risk for drought. However, drought conditions persisted across southern New Hampshire for two of the last five years, including Seabrook. The Town has a robust groundwater protection management plan and has issued voluntary and mandatory water bans in response to drought conditions, utilizing outdoor electronic signs and Town social media to inform residents. The Town has enacted voluntary water use restrictions on three occasions since the last plan update - from October 5, 2020 to April 15, 2021, from June 8, 2021 to November 15, 2021, and from August 15, 2022 to March 6, 2023.

Community Vulnerability - The Committee determined that water supply and fire flow are the most at risk due to drought conditions. Increasing development and associated populations growth also stress water supply during periods of drought, enacting volunteer water restrictions and banning outdoor watering when warranted. The Town has developed a groundwater management plan to guide the efficient use of water resources. The Town is also aware of saltwater intrusion into groundwater supplies due to demands placed on these supplies during periods of drought and due to the Town's location along the Atlantic seaboard.

Extreme Temperatures

Description - Temperatures across New Hampshire have increased by an average of three degrees since 1901, the result of climate change. Warming is highest during the fall and winter seasons and is associated with a decrease in frequency and severity of cold extremes. Conditions of extreme heat are defined as a prolonged period of excessively hot weather, with temperatures above the average high temperature for a particular region for that time of year, often combined with high humidity. In New Hampshire, extreme heat conditions are defined as two days of temperatures over 90 degrees. The heat index is a measure of how hot it really feels when relative humidity is factored in with actual air temperature. The hottest temperature recorded in the region was 104 degrees in Portsmouth on August 2, 1975.

Winter storms, blizzards, and episodes of high barometric pressure accompanied by clear night skies can bring extreme cold temperatures to the region, increasing the risk of frostbite and hypothermia. The risk of extended power outages increases during winter storms, increasing the vulnerability of elderly and vulnerable residents. The coldest temperature recorded in the region was -27 degrees below zero on January 22, 1984.

Location – Extreme temperatures can affect all areas of Seabrook.

Extent - Extreme heat events impact Seabrook for three to ten days each summer, and extreme cold events impact the town five to seven days each winter. Extreme heat events have impacted Seabrook in 2021, 2023, and 2025, with temperatures exceeding 90 degrees. FEMA's Heat Index measures a number in degrees Farenheit that tells how hot it feels when relative humidity is added to the air temperature. The National Weather Service Heat Index is included in Appendix M and the Wind Chill Chart is included in Appendix N.

Probability – High. See Table 3, Hazard Identification and Risk Assessment.

Past Occurrence – Annually. The Town uses Crossroad House in Portsmouth as an overnight shelter. In 2023, a priviate citizen funded the opening of the elementary school as a warming shelter for two days during a period of extreme cold.

Community Vulnerability - The Committee determined that all parts of Seabrook are at risk of impacts associated with extreme temperatures. Extreme heat can cause heat-related illnesses, like heat stroke or heat exhaustion, which occur when the body is unable to cool itself fast enough. The young, elderly and vulnerable populations are especially vulnerable to heat stroke. The EMD maintains a list of these populations, including addresses for homes, day care centers, and congregate care facilities.

Climate Change

Description - Climate is defined as the long-term, prevailing pattern of temperature, precipitation, and other weather variables at a given location as described by statistics, such as means and extremes. Climate differs from weather in that weather is the current state or short-term variation of these variables at a given location. Climate change is the observed change in atmospheric variables over time that are the result of natural and anthropogenic, or human-caused, influences. Climate change is directly related to the ongoing increase in global temperature, a rise that is influenced by the steady increase in the concentration of atmospheric greenhouse gases that has been occurring and continues to occur across the globe. Seabrooks's Atlantic seacoast and estuary are vulnerable to extremes of storm water runoff and storm surge from coastal storms and hurricanes. A storm surge, especially when coupled with astronomical high tides and sea level rise, presents a threat to all land areas adjacent to the marine environment.

Location – Climate change can affect all areas of Seabrook, in the form of increased temperatures, extreme precipitation events, sea-level rise, and coastal storm surge. The Town's Vulnerability Assessment Report of Sea Level Rise and Coastal Storm Surge Flooding, completed by the Rockingham Planning Commission in 2015, identifies areas in town at risk of flooding from expected increases in storm surge and rates of sea level rise.

Extent – Coastal storms could affect much of Seabrook, due to the Town's low elevation and location along the Atlantic Ocean. Assuming the Town is vulnerable to category 3 hurricanes, the potential storm surge related to such a wind event could reach several feet above normal sea level. Extreme heat events impact Seabrook for 4-5 days each summer and the number of days may increase as the result of climate change. The average annual temperature in New Hampshire has increased three degrees since the early 20th century. Winter warming has been larger than any other season. Future winter warming will have large effects on snowfall and snow cover. Flooding from extreme precipitation events increasingly impact Seabrook and the Town is planning for increasing temperatures and flooding from extreme precipitation. Mean precipitation and precipitation extremes are projected to increase in the future, with associated increases in flooding.

Probability – The Committee determined the probability of climate change impacting Seabrook as high given the increase in hazard events since the last Plan Update. See Table 3, Hazard Identification and Risk Assessment.

Past Occurrence – Annually. Since the 2018 Plan Update, Seabrook has experienced drought, extreme heat, and extreme precipitation events, as described under the individual hazard.

Community Vulnerability - The Committee determined that all parts of Seabrook are at risk of impacts associated with climate change and the effects of climate change pose real and significant threats to community safety, resilience, and quality of life. The 2015 Vulnerability Assessment

identified and mapped the following assets and resources as being vulnerable to sea level rise and coastal storm surge:

- Evacuation routes
- Municipal facilities, including Seabrook Elementary – Middle School
- Wastewater treatment plant
- Erosion of the harbor bulkhead and retaining wall
- Sewage pump stations at River Street, north of the Welcome Center on Route 1A, bridge at Causeway Street, Cross Beach Road
- Sewer main under Route 286
- Sewer line across the harbor to Hampton servicing Sun Valley at Seabrook Beach
- Water pump station at Cross Beach Road
- NHDOT transportation infrastructure
- State and Municipal road culverts
- Bridges
- Harbor and marinas
- Seabrook beach and dunes
- Seabrook Station access road and parking lot
- Tidal and freshwater wetlands
- Aquifers
- NH Fish and Game Wildlife Action Plan Tier 1 and Tier 2 habitats

Infectious Disease

Description – Infectious diseases are illnesses caused by organisms – such as bacteria, viruses, fungi, or parasites. Many organisms live in and on our bodies. They are normally harmless or even helpful, but under certain conditions, some organisms may cause disease. Some infectious diseases can be passed from person to person, some are transmitted by bites from insects or animals, and others are acquired by ingesting contaminated food or water or being exposed to organisms in the environment. Signs and symptoms vary depending on the organism causing the infection but often include fever and fatigue. Mild infections get better on their own without treatment, while some life-threatening infections may require hospitalization. A definition of infectious diseases by the Mayo Clinic is in the Appendix.

According to the Unites States Centers for Disease Control and Prevention (CDC), the number of people with a disease that is usually present in a community is referred to as the baseline or endemic level of the disease. This number of infections is not necessarily the desired level, which may in fact be zero, but rather is the typical or normal number of people infected. In the absence of intervention and if the number of infections is not high enough to deplete the pool of susceptible people, the disease may continue to occur at this level indefinitely. Thus, the baseline level is often regarded as the expected level of the disease. While some diseases are so rare in each population that a single case warrants an epidemiologic investigation (e.g., rabies, plague, polio), there are other diseases that occur more commonly so that only deviations from the norm (i.e. seeing more cases than expected) warrants investigation.

Epidemics occur when an agent (the organism) and susceptible hosts are present in adequate numbers, and the agent can be effectively conveyed from a source to the susceptible people.

More specifically, an epidemic may result from a recent increase in the amount or virulence of the agent, the recent introduction of the agent into a setting where it has not been before, an enhanced mode of transmission so that more susceptible persons are exposed, a change in the susceptibility of people's response to the agent, and/or factors that increase exposure or involve introduction through new portals of entry.

Epidemics may be caused by infectious diseases, which can be transmitted through food, water, the environment, or person-to-person or animal-to-person, and noninfectious diseases, such as chemical exposure, that causes increased rates of illness. Infectious diseases that may cause an epidemic can be broadly categorized into the following groups: foodborne (E.Coli), water (Giardiasis), vaccine preventable (Measles), sexually transmitted (HIV), person-to -person (TB), arthropod borne (Lyme), zoonotic (Rabies), and opportunistic fungal and fungal infections (Candidiasis). An epidemic may also result from a bioterrorist event in which an infectious agent is released into a susceptible population, often through an enhanced mode of transmission, such as aerosolizing.

Location – Infectious disease can affect all areas of Seabrook.

Extent – The magnitude and severity of infectious disease is described by its speed of onset (how quickly people become sick, or cases are reported) and how widespread the infection is. Some infectious diseases are inherently more dangerous and deadly than others, but the best way to describe the extent of infectious diseases relates to the disease occurrence:

- Endemic – Constant presence and/or usual prevalence of a disease or infection agent in a population within a geographic area
- Hyperendemic – There persistent, high levels of disease occurrence
- Cluster – Aggregation of cases grouped in place and time that are suspected to be greater than the number expected even though the expected number may not be known
- Epidemic – An increase, usually sudden, in the number of cases of a disease above what is normally expected
- Outbreak – The same as epidemic, but over a much smaller geographical area
- Pandemic – Epidemic that has spread over several countries or continents, usually affecting many people

Probability – The probability of infectious disease is high. See Table 3, Hazard Identification and Risk Assessment.

Past Occurrence – Infectious diseases, such as COVID-19, seasonal influenza, and gastrointestinal illness occur annually in Seabrook. The CDC now considers COVID-19 endemic and Seabrook continues to experience cases of COVID-19 and community transmission.

Community Vulnerability – The Committee determined that all parts of Seabrook are at risk of impacts associated with infectious disease. Rates of illness, duration of disease, and the ability to treat or prevent illness once the causative agent is identified are just a few factors that will further determine the vulnerability of the population. In response to the COVID-19 pandemic, Town

administration oversaw information sharing and coordination of the Town's pandemic response. The Town used its website and social media channels to inform the public as well as a message board at the community center and signage at Town recreation facilities. The Town assisted with food distribution. Vulnerable populations in Seabrook include elderly residents and residents with underlying health conditions. The COVID-19 pandemic impacted town and school operations, the general work force, and supply chains for everyday items.

Table 4 summarizes Seabrook's vulnerability to the natural hazards identified in this Plan Update. Isolated flooding, high wind events, and extreme preciptiation events resulting from climate change present the greatest risks to Seabrook, damaging infrastructure and threatening safety.

Table 4 – Hazard Identification and Risk Assessment

Scoring for Probability Columns A, B & C	**Column A** Probability of death or injury	**Column B** Probability of physical losses and damage	**Column C** Probability of interruption of service	**Column D** Probability of occurring within 25 years	**Column E** (A+B+C/3) Impact average	**Column F** (D x E) Relative threat	**Column G** Risk
1=Very Low (0-20%)							**High** 13.0-21.9
2=Low (21-40%)							
3=Moderate (41-60%							**Medium** 6.0-12.9
4=High (61-80%)							
5=Very High (81-100%							**Low** 0-5.9
	Human Impact	**Property Impact**	**Business Impact**	**Probability of Occurrence**	**Severity**	**Risk Severity x Occurrence**	
Natural Hazard							
Flooding	4.00	5.00	5.00	5.00	4.66	23.30	High
Hurricane/High Wind	3.00	5.00	5.00	5.00	4.33	21.66	High
Coastal Storms	3.00	5.00	5.00	5.00	4.33	21.66	High
Severe Winter Weather	4.00	4.00	4.00	5.00	4.00	20.0	High
Climate Change includes sea-level rise, extreme precipitation events	2.00	5.00	5.00	5.00	4.00	20.00	High
Extreme Temperatures	3.00	3.00	2.00	5.00	2.66	13.33	High
Infectious Disease	5.00	1.00	5.00	4.00	3.66	14.66	High
Lightning/Hail	2.00	3.00	2.00	5.00	2.33	11.66	Medium
Earthquakes	5.00	5.00	5.00	2.00	5.00	10.00	Medium
Drought	1.00	3.00	2.00	5.00	2.00	10.00	Medium
Wildfires	2.00	4.00	3.00	3.00	3.00	9.00	Medium

Table 5 highlights Presidential declared disasters and emergency declarations for natural hazard events in New Hampshire from 1986-2025.

Table 5: State of New Hampshire
Presidentially Declared Disasters (DR) and Emergency Declarations (EM) 1986-2025
Source: *State of NH Multi-Hazard Mitigation Plan, 2013 Update and FEMA*

Date Declared	Event	FEMA DR	Program	Amount	Counties Declared
08/27/86	Severe storms/flooding	FEMA-771-DR	PA	$1,005,000	Cheshire and Hillsborough
04/16/87	Severe storms/flooding	FEMA-789-DR	PA/IA	$4,888,889	Carroll, Cheshire, Grafton, Hillsborough, Merrimack, Rockingham, and Sullivan
08/29/90	Severe storms/winds	FEMA-876-DR	PA	$2,297,777	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, and Sullivan
09/09/91	Hurricane	FEMA-917-DR	PA	$2,293,449	Statewide
11/13/91	Coastal storm/flooding	FEMA-923-DR	PA/IA	$1,500,000	Rockingham
03/16/93	Heavy snow	FEMA-3101-DR	PA	$832,396	Statewide
01/03/96	Storms/floods	FEMA-1077-DR	PA	$2,220,384	Carroll, Cheshire, Coos, Grafton, Merrimack, and Sullivan
10/29/96	Severe storms/flooding	FEMA-1144-DR	PA	$2,341,273	Grafton, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan
01/15/98	Ice storm	FEMA-1199-DR	PA/IA	$12,446,202	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, Strafford, and Sullivan
07/02/98	Severe storms	FEMA-1231-DR	PA/IA	$3,420,120	Belknap, Carroll, Grafton, Merrimack, Rockingham, and Sullivan
10/18/99	Hurricane/tropical storm Floyd	FEMA-1305-DR	PA	$750,133	Belknap, Cheshire, and Grafton
3/2001	Snow emergency	FEMA-3166-EM	PA	$4,500,000	Cheshire, Coos, Grafton, Hillsborough, Merrimack, Rockingham, and Strafford
2/17/2003 - 2/18/2003	Snow emergency	FEMA-3177-EM	PA	$3,000,000	Cheshire, Hillsborough, Merrimack, Rockingham, and Strafford
09/12/03	Severe storms/flooding	FEMA-1489-DR	PA	$1,300,000	Cheshire and Sullivan

03/11/03	Snow emergency	FEMA-3177-EM	PA	$3,000,000	Cheshire, Hillsborough, Merrimack, Rockingham, and Strafford
01/15/04	Snow emergency	FEMA-3193-EM	PA	$3,200,000	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, and Sullivan
03/30/05	Snow emergency	FEMA-3207-EM	PA	$4,654,738	Belknap, Carroll, Cheshire, Grafton, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan
03/30/05	Snow emergency	FEMA-3208-EM	PA	$1,417,129	Carroll, Cheshire, Coos, Grafton, and Sullivan
04/28/05	Snow emergency	FEMA-3211-EM	PA	$2,677,536	Carroll, Cheshire, Hillsborough, Rockingham, and Sullivan
10/26/05	Severe storm/flooding	FEMA-1610-DR	PA/IA	$14,996,626	Belknap, Cheshire, Grafton, Hillsborough, Merrimack, and Sullivan
05/31/06	Severe storm/flooding	FEMA-1643-DR	PA/IA	$17,691,586	Belknap, Carroll, Grafton, Hillsborough, Merrimack, Rockingham, and Strafford
4/15/2007 - 4/23/2007	Severe storm/flooding	FEMA-1695-DR	PA/IA	$27,000,000	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan
08/11/08	Severe storms/tornado/flooding	FEMA-1782-DR	PA	$1,691,240	Belknap, Carroll, Merrimack, Rockingham, and Strafford
09/05/08	Severe storms/flooding	FEMA-1787-DR	PA	$4,967,595	Belknap, Coos, and Grafton
10/03/08	Severe storms/flooding	FEMA-1799-DR	PA	$1,050,147	Hillsborough and Merrimack
12/11/08	Severe winter storm	FEMA-3297-EM	DF A/P A	$900,000	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan
01/02/09	Severe winter storm	FEMA-1812-DR	DF A/P A	$19,789,657	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan

03/29/10	Severe winter storm	FEMA-1892-DR	PA	$9,103,138	Merrimack, Rockingham, Strafford, and Sullivan
05/12/10	Severe winter storm	FEMA-1913-DR	PA	$3,057,473	Hillsborough and Rockingham
07/22/11	Severe storms/flooding	FEMA-4006-DR	PA	$1,664,140	Coos and Grafton
09/03/11	Tropical storm Irene	FEMA-4026-DR	PA/IA	$11,101,752	Belknap, Carroll, Coos, Grafton, Merrimack, Strafford, and Sullivan
12/07/11	October Nor'easter	FEMA-4049-DR	PA	$4,411,457	Hillsborough and Rockingham
06/18/12	Severe storms/flooding	FEMA-4065-DR	PA	$3,046,189	Cheshire
10/30/12	Hurricane Sandy	DR-4095 EM-3360	PA DFA	$2,132,376	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan
2/8/2013 - 2/10/2013	Severe storm/blizzard	DR-4105	PA	$6,127,598	Belknap, Carroll, Cheshire, Hillsborough, Merrimack, Strafford, and Rockingham
6/26/2013 – 7/3/2013	Severe storms/flooding	DR-4139	PA	$6,389,705	Cheshire, Sullivan, and Grafton
1/26/2015 – 1/29/2015	Severe winter storm/snowstorm	DR-4209	PA	$4,607,527	Strafford, Rockingham, and Hillsborough
3/14/2017 – 3/15/2017	Severe winter storm/snowstorm	DR-4316	PA	$8,306.550	Belknap and Carroll
1/1/2017 – 1/2/2017	Severe storms/flooding	DR-4329	PA	$6,218,291	Grafton and Coos
10/29/2017 - 11/1/2017	Severe Storm/flooding	DR-4355	PA	$4,710,744	Sullivan, Merrimack, Belknap, Carroll, Grafton, Coos
3/2/2018 – 3/8/2018	Severe Storm/flooding	DR-4370	PA, IA	$8,588,765	Rockingham
3/13/2018 – 3/14/2018	Severe Winter Storm/snowstorm	DR-4371	PA. IA	$1,981,453	Carroll, Strafford, Rockingham
7/11/2019- 7/12/2019	Severe Storm/flooding	DR-4457	PA	$675,907,70	Grafton
7/17/2021- 7/19/2021	Severe Storm/flooding	DR-4622	PA	$1,195,832	Cheshire
3/13/2020 – 5/11/2023	COVID-19 Pandemic	EM-3445	PA, IA	NA – still active	New Hampshire
1/20/2020- 5/11/2023	COVID-19 Pandemic	DR-4516	PA, IA	NA – still active	New Hampshire
7/29/2021- 8/2/2021	Severe Storm/flooding	DR-4624	PA	$3,530,071	Cheshire, Sullivan

12/22/2022-12/25/2022	Severe Storm/flooding	DR-4693	PA	$1,251,386	Belknap, Carroll, Grafton, Coos
7/9/2023-7/13/2023	Severe Storm/flooding	DR-4740	PA	$170,675	Rockingham, Cheshire, Sullivan, Grafton, Belknap, Carroll, Coos
12/17/2023-12/21/2023	Severe Storm/flooding	DR-4761	PA	NA	Carroll, Grafton, Coos
1/9/2025-1/14/2025	Severe Storms/flooding	DR-4771	PA	NA	Rockingham, Grafton

Map 2: Insert Past and Future Hazards

CHAPTER IV – CRITICAL FACILITIES

The Critical Facilities List for the Town of Seabrook has been identified by Seabrook's Hazard Mitigation Committee. The Critical Facilities List has been broken up into four categories. The first category contains facilities needed for Emergency Response in the event of a disaster. The second category contains Non-Emergency Response Facilities that have been identified by the committee as non-essential. These are not required in an emergency response event but are considered essential for the everyday operation of Seabrook. The third category contains Facilities/Populations that the committee wishes to protect in the event of a disaster. The fourth category contains Potential Resources, which can provide services or supplies in the event of a disaster. Tables 6 – provide descriptions of critical facilities and Map 3 depicts their locations.

Table 6: Category 1 - Emergency Response Services and Facilities

Critical Facility Name	Address	Comments
Seabrook Town Office	99 Lafayette Rd	Back Up Power
Seabrook Station	626 Lafayette Rd	Nuclear Power Plant
Seabrook Police Station	7 Liberty Ln.	Back-up Power
Seabrook Fire Department	87 Centennial Rd.	Emergency Operations Center/Back up Power
Seabrook Public Works	43 Railroad Ave.	Back-up Power
Seabrook Community Center	311 Lafayette Rd.	Warming and cooling shelter
Route 107 Bridge	NH 107	Evacuation Route
Route 1A Draw Bridge	NH 1A	Evacuation Route
Rt. 286 Bridge over Black Water River	NH 286	Evacuation Route
Causeway Street over Mill Creek Bridge	Causeway St.	Evacuation Route
Centennial Road over Mill Creek Bridge	Centennial Rd.	Evacuation Route
Box culvert on Rt 1 south of Home Depot at Cains Mill Pond	Rt 1	Large box culvert that operates as bridge

Table 7: Category 2 - Non-Emergency Response Facilities

The town has identified these facilities as non-emergency facilities; however, they are considered essential for the everyday operation of Seabrook.

Critical Facility Name	**Address**	**Comments**
Seabrook Wastewater Plant	274 Rt. 286, Wrights Island	Back Up Power
Sewage Pump Stations 1 - 19	Sewer Department	
Water Treatment Plant	550 Rt. 107	Back Up Power
Seabrook Transfer Station	70 Rocks Rd.	

Water Tanks 1 and 2	54 Ledge Road	
Water Wells 1-12	46 True Road	Back Up Power
Hamel Dam	Walton Road	Hazard Class A (Low Hazard)
Cains Brook Dam at Lakeshore Drive	Lakeshore Drive	Hazard Class A (Low Hazard)
Cains Mill Pond Dam	Nicholas Way	Hazard Class A (Low Hazard)
Secord Pond Dam	Raymond Drive	Hazard Class A (Low Hazard)

Table 8: Category 3 - Facilities/Populations to Protect

The third category contains people and facilities that need to be protected in the event of a disaster.

Critical Facility Name	Address	Comments
Cemetery	28 Lafayette Road, 879 Lafayette Road, 132 So. Main Street	
Aero Dynamic Industries	142 Batchelder Rd	Storage
Atomic Fireworks	287 Lafayette Road	Hazardous Materials
Bocra Industries	140 Batchelder Road	Hazardous Materials
Bond Adhesives	896 Lafayette Road	Hazardous Materials
Coastal Hydraulics	28 Rt. 286	Hazardous Materials
Corium Corporation	9 Batchelder Road	Hazardous Materials
ERA Industries	142 Batchelder Road	Hazardous Materials
Fantasy Fireworks	571 Lafayette Road	Hazardous Materials
Fireworks Over the Border	433 Rt. 286	Hazardous Materials
Hannah International Foods	1 Hannah Drive	Hazardous Materials
J&C Industries	21 Batchelder Road	Hazardous Materials
LocTite	167 Batchelder Road	Hazardous Materials
MacKenzie Heating & Cooling	28 London Lane	Hazardous Materials
Microvision Inc.	20 London Lane	Hazardous Materials
RG Machine Inc.	9 Whitakers Way	Hazardous Materials
Rudy Fireworks Enterprises Inc	919 Lafayette Road, Unit 7	Hazardous Materials
Seabrook International	13 & 15 Woodworkers Way	Hazardous Materials
Smokey Quartz Distillery	894 Lafayette Road	Hazardous Materials
Syvinski Landscaping Inc	151 Batchelder Road	Hazardous Materials
US Foods	100 Ledge Road	Hazardous Materials
Waterline Industries	7 London Lane	Hazardous Materials
Industrial Facility	725 Ocean Boulevard	Industry
Seabrook Library	25 Liberty Lane	Library
Four Corners Church	1 Farm Lane	Religious Facility
Healing Rain Ministries	49 New Zealand Road	Religious Facility
Rand Memorial Church	134 South Main Street	Religious Facility
Seabrook Church of Christ	867 Lafayette Road	Religious Facility
St Elizabeth's	1 Lowell Street	Religious Facility
Trinity United	103 Lafayette Road	Religious Facility

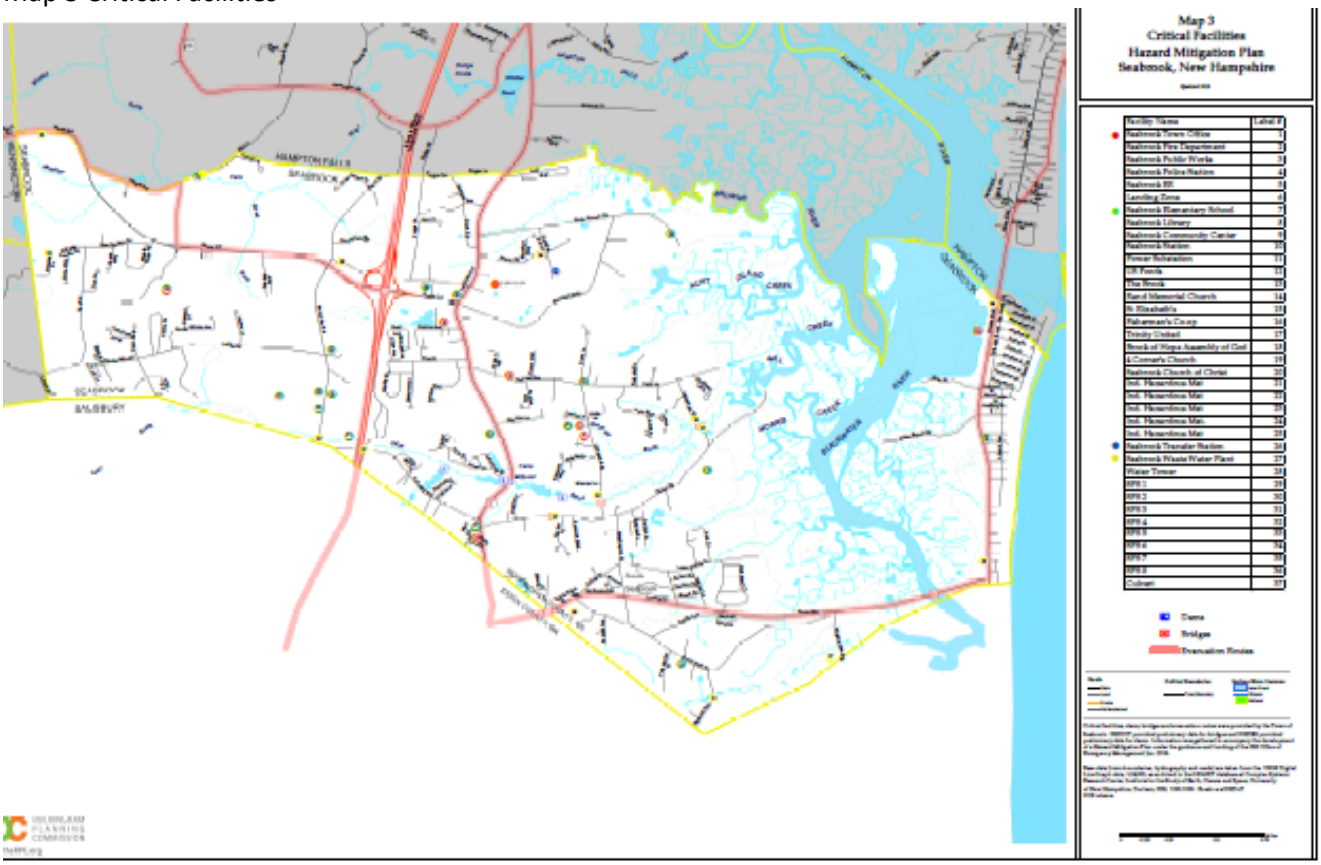
Seabrook Community Center	311 Lafayette Road	Backup Power
Seabrook Elementary and Middle School	256 Walton Road	School
Head Start and Rockingham CAP	146 Lafayette Road	Childcare Facility
Ocean Mist/Seabreeze Village	81 Railroad Avenue	Elderly Housing
Adams Village Mobile Home Park	51 B Street	Manufactured Housing
Andy's Mobile Park	171 New Zealand Road	Manufactured Housing
Blacksnake Mobile Home Park	60 Blacksnake Road	Manufactured Housing
Carolyn Mobile Home Park	65 Perkins Avenue	Manufactured Housing
Seabrook Village Co-op	25 Perkins Avenue	Manufactured Housing
Staples Mobile Home Park	168 Walton Road	Manufactured Housing
Stonybrook Village	Rt. 286	Manufactured Housing
Zealand Mobile Home Park	233 Rt. 107	Manufactured Housing
Meadowstone -seasonal	308 Rt. 286	Manufactured Housing
Twin Brooks - seasonal	211 Lower Collins	Manufactured Housing

Table 9: Category 4 - Potential Resources:

This category contains facilities that provide potential resources for services or supplies in the event of a natural disaster.

Critical Facility Name	Address	Comments
Seabrook Emergency Room	603 Lafayette Road	Emergency Medical Care
ClearChoiceMD	636 Lafayette Road	Urgent Care
Beth Israel Lahey Health Primary Care	570 Lafayette Road	Primary Medical Care
Cargo Landing Pad	725 Ocean Boulevard	Aviation

Map 3 Critical Facilities



CHAPTER V – POTENTIAL HAZARD DAMAGE

Identifying Vulnerable Facilities and Calculating Potential Loss

Numerous studies to identify areas in Seabrook at risk of natural hazard, as well as options for mitigating hazards, have been completed by the Town, Rockingham Planning Commission, and the State of New Hampshire. Several of these mitigation measures have been completed, such as amending land use regulations to limit development in areas at risk and assessing infrastructure resources vulnerable to hazards. Preparing to protect Seabrooks's wealth of recreational and natural resources is an important challenge facing the community.

Flooding

The 2015 Seabrook Vulnerability Assessment completed by the Rockingham Planning Commission finds several municipal facilities are directly impacted by sea-level rise and coastal storm surge flooding, including sewage pump stations, and land adjacent to the Elementary-Middle School, wastewater treatment plant, and NextEra nuclear power plant. The Town identifies the following infrastructure as critical facilities located in existing flood prone areas:

- Sewer pump stations at River Street, north of the Welcome Center on the Route 1A, bridge at Causeway Street
- Sewer pump stations and water pump stations at Cross Beach Road
- Sewer main under Route 286
- Sewer line across the harbor to Hampton servicing Sun Valley at Seabrook Beach

The town's local and state roadways are vulnerable to flooding with the greatest vulnerability at the 6.3 feet sea-level rise scenario and the 3 feet sea-level plus storm surge scenarios. State roadways affected include Route 1A, Route 286, Route 1, and I-95. Local roadways affected by flooding are located primarily west of Route 1A in low-lying areas adjacent to the Hampton-Seabrook estuary, including Walton Road, Centennial Avenue, Cross Beach Road, River Street, and Seabrook Beach from Campton Street south to Dracut Street. Road impacted by sea-level rise plus storm surge include Farm Lane, NextEra North Access Road, A and B Streets, and Beckman's Landing. Routes 1A and 286 are highly susceptible to flooding from the sea-level rise and coastal storm surge scenarios. Forty-three percent of the 18 miles that make up Route 1A in New Hampshire will be inundated twice daily by 2100 under the 6.3 feet sea-level rise scenario.

The 2022 Seacoast Transportation Corridor Vulnerability Assessment and Resiliency Plan completed by the Rockingham Planning Commission focuses on the daily operation of the roadway network. Roads in Seabrook impacted by the four feet sea-level rise scenario are South Main Street and Route 286. Roads impacted by the 6.3 feet sea-level rise scenario include these two roads and Centennial Road, Route 1A at Route 286, and Route 1A between River Street and Andover Street.

Seabrook's tidal wetlands including saltmarsh are very susceptible to both sea-level rise and coastal storm surge. Freshwater wetlands and surface waters are also impacted by sea-level rise and storm surge, including Cains Brook and Cains Pond.

Inland flooding is most likely to occur in the spring due to the increase in rainfall and melting of snow. However, flooding can occur at any time of year, and climate change is creating more extreme precipitation events, damaging infrastructure such as roads, bridges, and culverts, as well as buildings. Increased rainfall intensity during storms can also result in greater flood damage because flood zones are

underestimated on current flood maps. Severe storms in July 2023 and January 2024 did cause roadway flooding in Seabrook.

Table 9 – Summary of 2015 Vulnerability Assessment Data

Sea-Level Rise (SLR)Scenarios	SLR 1.7 feet	SLR 4.0 feet	SLR 6.3 feet	SLR 1.7 feet + storm surge	SLR 4.0 feet + storm surge	SLR 6.3 feet + storm surge
Infrastructure (# of sites)	8	12	21	20	22	27
Critical Facilities (# of sites)	1	5	6	6	6	9
Roadways (miles)	0.37	2.43	5.65	7.48	7.83	10.29
Uplands (acres)	270.4	439.7	613.6	580.0	727.6	850.1
Freshwater Wetlands (acres)	7.8	26.8	41.0	38.5	46.1	50.7
Tidal Wetlands (acres)	235.3	257.3	264.2	266.5	268.4	268.6
Conserved and Public Land (acres)	21.3	55.7	81.0	80.9	102.4	122.0
100-year Floodplain (acres)	1,730.1	1,902.5	1,919.7	1,923.8	1,932.9	1,945.8
500-year Floodplain (acres)	1,730.1	1,903.1	1,979.5	1,982.7	1,993.9	2,007.1

The 2024 economic report prepared by the NOAA Office for Coastal Management for the Seabrook-Hamptons Estuary Alliance, entitled "The Economy and Flood Vulnerability for Hampton, Hampton Falls, and Seabrook, New Hampshire" provides economic information for the three coastal towns by analyzing the coastal economy and marine economy across the towns, evaluating the vulnerability of businesses and employees to flooding from sea-level rise and storm surge, and evaluating residential vulnerability to coastal inundation from sea-level rise and storm surge. Results indicate the marine businesses in these three communities account for approximately 12% of all business establishments and employ 15% of all workers. Furthermore, the tourism and recreation sector is a large portion of the marine economy. In Seabrook, the report estimates that 446 to 905 residential parcels will be affected by a one-foot sea-level rise and storm surge, representing 13% and 27% of all analyzed parcels in town.

Hurricane/ High Wind Events

Hurricanes do affect the New Hampshire coast periodically. Since 1900, two hurricanes have made landfall in New Hampshire. Most hurricanes would likely degrade to tropical storms by the time they impact Seabrook, but even degraded hurricanes or tropical storms can still bring flooding and high winds, disrupting the economy, impacting roadways and buildings, and downing trees and damaging utility infrastructure. Tornadoes are uncommon in New Hampshire and damage largely depends on where the tornado strikes. The potential loss posed by high wind events was calculated by multiplying the assessed value of structures by the percent of damage expected by the hazard event. The assessed value of all the residential and commercial structures in Seabrook, with the exception of the NextEra Energy Seabrook Station, was $3,476,040,200. Assuming 1% to 5% damage, a hurricane or tornado could result in $34,760,402 to $173,802,010 of structural damage. The amount of damage caused by lightning will vary according to the type of structure hit and the type of contents inside.

Severe Winter Weather

Heavy snowstorms typically occur during January and February. New England usually experiences at least one or two heavy snowstorms with varying degrees of severity each year. Power outages, extreme cold, and impacts to utility infrastructure are all effects of winter storms that have been felt in Seabrook in the

past. Ice storms often cause widespread power outages by downing power lines and downing trees. All these impacts are a risk to the community, including isolation, especially of the elderly, and increased traffic accidents. Seabrook experienced severe impacts from the 2008 ice storm that left residents without power for over a week and significantly damaged electrical and road infrastructure.

Damage caused by severe winter weather and ice storms varies according to wind velocity, snow accumulation and duration. Seabrook was impacted by winter storms in March 2023 and March 2024, resulting in power outages and tree damage. The potential loss posed by severe winter weather was calculated by multiplying the assessed value of structures by the percent of damage expected by the hazard event. The assessed value of all the residential and commercial structures in Seabrook, with the exception of the NextEra Energy Seabrook Station, was $3,476,040,200. Assuming 1% to 5% damage, severe winter weather could result in $34,760,402 to $173,802,010 of structural damage..

Wildfire

Forest fires are more likely to occur during years of drought. Climate change has resulted in the average length of snowpack decreasing over 12 days over the last fifty years and higher temperatures are allowing diseases and insects that damage trees to move north, providing more fuel for fires. Extreme weather events, such as high winds or ice storms, are also downing trees, providing more fuel for fires. The number of woodland fires in the state increased by over 200% during the 2016, 2017, and 2022 droughts. The areas identified as at risk of wildfire (Map 2: Past and Future Hazards) by the Hazard Mitigation Committee are in forested parts of town, which often abut residential neighborhoods.

Extreme Temperatures

New Hampshire experiences between two to ten days per year where the heat index reaches 95 degrees and climate change is increasing the number of extreme heat events impacting Seabrook. NOAA estimates New Hampshire's temperatures have risen on average more than 3° F since the beginning of the 20th century. The greatest increase occurs in the winter, with an increase of more than 4° F since 1900. Extreme heat impacts health, stresses energy infrastructure, and exacerbates drought conditions.

Seabrook is also at risk of extremely cold events, typically caused by artic airmasses moving south over the region. Extreme cold impacts human health and can damage utility infrastructure, water pipes in buildings, and vehicle batteries. The Committee determined that all parts of Seabrook are at risk of the impacts associated with extreme temperatures. Young and elderly populations are particularly vulnerable to extreme temperatures and the Emergency Management Director can direct vulnerable residents to heating and cooling centers.

Drought

Extended drought impacts water supplies and makes vegetated areas more susceptible to wildfire. There is no record of monetary damage in Seabrook related to drought.

Earthquakes

Earthquakes can cause buildings and bridges to collapse, disrupt utility infrastructure, and are often associated with landslides and flash floods. Four earthquakes in New Hampshire between 1924-1989 had magnitudes of 4.2 or more. Two of these occurred in Ossipee, one west of Laconia, and one near the Quebec border. If an earthquake were to impact Seabrook, buildings that are not built to a high seismic design level would be susceptible to structural damage. The assessed value of all the residential and commercial structures in Seabrook, with the exception of the NextEra Energy Seabrook Station, was

$3,476,040,200. Assuming 1% to 5% damage, an earthquake could result in $34,760,402 to $173,802,010 of structural damage.

Climate Change

The potential hazard damage from climate change is described above under flooding, extreme temperatures, and drought.

Infectious Disease

Epidemics have the potential to cause a significant loss of life and/or widespread illness throughout the State, as well as cause disruptions to economies at all levels. The threat of a pandemic influenza, such as COVID-19, exemplifies a devastating situation where there may be an extreme shortage of essential service workers, a rapid transmission of disease from person-to-person, and no effective vaccination to prevent the illness. The monetary value of this impact cannot be determined.

CHAPTER VI - EXISTING HAZARD MITIGATION PROGRAMS

Research shows how the climate of New Hampshire and the Seacoast region has changed over the past century and predicts the future climate of the region will be affected by human activities that are warming the planet. Overall, New England has been getting warmer and wetter over the last century and the rate of change has increased over the last four decades. Seabrook is increasingly vulnerable to higher temperature events and more intense storm events impacting both the built and natural environments. To address these challenges, the Town has proactively designed several hazard mitigation programs to mitigate the impacts of natural hazards and increase resiliency. Table 10 describes programs that are currently in place as hazard mitigation actions or strategies for Seabrook.

Table 10 - Existing Hazard Mitigation Programs for the Town of Seabrook

Existing Protection	Description/ Area Covered	Responsible Local Agent	Effectiveness/Comments
2024 Zoning Ordinance	Town Wide, except Seabrook Village Beach District	Planning Board and Code Enforcement Officer	Reviewed and updated annually, includes wetlands and aquifer protection regulations, and stormwater management.
2021 Subdivision and Site Plan Review Regulations	Town Wide, except Seabrook Village Beach District	Planning Board and Code Enforcement Officer	Includes stormwater management regulations
2021 Building Code	NH State Building Code	Code Enforcement Officer	Reviewed and updated as needed
2024 Master Plan	Town Wide	Planning Board	Chapters updates as needed, includes chapter on climate change and adaptation planning
2024 Seabrook Village Beach District Zoning Ordinance	Seabrook Village Beach District (SBVD)	SBVD Planning Board and Building Inspector	Includes flood control regulations
2021 Seabrook Village Beach District Subdivision and Site Plan Review Regulations	SBVD	SBVD Planning Board and Building Inspector	Includes stormwater management regulations
2024 Capital Improvement Plan	Town Wide	Town Manager and Planning Board	Updated as needed
2023 Emergency Operations Plan	Town Wide	Fire/Police Departments	Updated as needed
2024 Town Continuity of Operations Plan	Town Wide	Emergency Management Director, Town Manager	Updated as needed

Existing Protection	Description/ Area Covered	Responsible Local Agent	Effectiveness/Comments
2023 Seabrook Elementary School Emergency Response Plan	School	School Administration, Emergency Management Director	Updated as needed
Flood Warning System	Town Wide, Siren	Fire/Police Departments	Good
Hazardous Materials Plan/ Team	Seacoast "START" Plan	Fire Chief	Annual training makes this program very effective. Improvements reviewed and updated annually.
Emergency Services: Police Department	Town Wide	Police Chief	Annual training and meetings make this program more effective. Program is reviewed and updated annually or as needed.
Emergency Services: Fire Department	Town Wide	Fire Chief	The fire department continues extensive training to ensure effective emergency response. Task is reviewed and updated annually or as needed.
Emergency Services: EMS	Town Wide	Fire Chief	Good. Program is reviewed and updated annually or as needed.
Public Works	Town Wide	Department of Public Works	Program is reviewed and updated annually or as needed.
NFIP Floodplain Ordinance and participation	Town Wide	Zoning Officer	Reviewed annually
2023 Hampton-Seabrook Estuary Management Plan	Estuary	Planning Board, Conservation Commission	Identifies threats to the estuary and recommendations to increase the estuary's resilience to human and natural threats, including land use regulations
2015 Adaptation Strategies to Protect Areas of Increased risk from Coastal Flooding Due to Climate Change Plan	Beach District, Coastal Flooding Area up to the 15' contour	Planning Board, Selectmen	Recommendations have been incorporated into Town polices

Existing Protection	Description/ Area Covered	Responsible Local Agent	Effectiveness/Comments
Catch basin, drainage way maintenance program	Town Wide	Department of Public Works	Good program, done yearly to ensure proper drainage in town. Is reviewed and updated annually.
Harbor Master	Seabrook Harbor	NH Division of Ports and Harbors of the Pease Development Authority	Harbor master ensures effective sea navigation to and from the harbor.
1999 Beach Management Plan	North Beach, Hooksett Street to Hampton town line	DPW/Board of Selectmen	Updated as needed
Genesis emergency calling system	Town Wide	Police and Fire Departments	
MS4 Stormwater Management Program	Town Wide	DPW	In compliance with EPA MS4 permit requirements
Groundwater Management Plan	Water supply areas	Water Department	Updated as needed
Public Education and Outreach via social media	Town Wide via cable access TV, Town website, Facebook, Twitter, Town newsletter, digital signs	Town Departments	Each Town Department manages their own social media accounts to inform residents of hazard mitigation

CHAPTER VII – POTENTIAL MITIGATION ACTIONS

The Hazard Mitigation Committee reviewed the Town's existing hazard mitigation programs described in Table 10 and mitigation actions listed in the *2013 FEMA Mitigation Ideas Resource Guide* to develop a comprehensive list of potential mitigation actions, listed below in Table 10. Actions listed in the 2018 Plan were also reviewed by the Committee to determine if they were relevant to this Plan Update and if the action was completed, ongoing, or no longer necessary and removed. Actions were ranked in five mitigation categories – prevention, preparedness, structural protection, emergency services, and public information and involvement, as well as by the type of hazards mitigated. New actions were also identified by the Committee based on recent natural hazard events.

Table 11: Potential Mitigation Actions

Mitigation Strategies or Action	Hazard(s) Mitigated	Description	Type of Activity	Status 2025: New/Completed/ Deferred /Removed
Review existing infrastructure, continue culvert maintenance management program	All Hazards	Evaluate existing infrastructure (Roads, Bridges, Storm water Management Devices, Etc.) for repair replacement needs. Emphasis on infrastructure critical during hazard situation (e.g. evacuation route, culverts); continue culvert maintenance program	Prevention/ Property Protection	Completed
Purchase and Install Generators in Shelters	All Hazards	Provide back-up power generators for all evacuation/emergency shelters	Emergency Services/ Prevention	Deferred - Beach Precinct shelter needs a generator
Repair seawall North side of Fisherman's Coop Bank Stabilization Project	Flooding/ Coastal Storms/Sea Level Rise Earthquakes/ Severe Winter Weather	Hillside banks are eroding into the main navigable way of Hampton Harbor. Sink holes are also found in this location which is a Town Park. Bank erosion is also impacting Hampton water lines negatively	Structural/ Prevention	Completed

Mitigation Strategies or Action	Hazard(s) Mitigated	Description	Type of Activity	Status 2025: New/Completed/ Deferred /Removed
Implementation of adaptation strategies from the plan, "Adaptation Strategies to Protect Areas of Increased Risk from Coastal Flooding Due to Climate Change Seabrook, NH" developed for the town by the Rockingham Planning Commission	Coastal Storm Surge/ Flooding/ Sea Level Rise	The plan includes regulatory and non-regulatory approaches for mitigating the impacts the Town is likely to experience from sea level rise and storm surge	Prevention	Completed
Build flood protection berm around Seabrook Elementary School to protect against current and future flooding	Flooding	A 24- inch rise in sea level will cause extensive flooding around this critical facility and potential emergency shelter	Structural Protection/ Prevention	Deferred
Work with owner of the Noyes Pond Dam to ensure dam integrity	Flooding	During 2007 storm the Noyes Pond Dam failed, damaging a sewer pump station on Centennial Street	Structural Protection	Deferred
I-95 Culvert Replacement on West side of Folly Mill Road	Flooding	Larger culvert needed to mitigate flooding to properties downstream	Structural Protection /Property Protection Prevention	Completed
Tree Trimming Program	Hurricane/ High Wind Events	Identification and management of hazard trees to prevent damage to structures and utilities	Prevention	Completed
Acquire and permit five new wells for municipal water supply and connect new wells to water system	Drought/ Extreme Heat	Drought and extreme heat result in increased demands on municipal water supply	Prevention	New

Mitigation Strategies or Action	Hazard(s) Mitigated	Description	Type of Activity	Status 2025: New/Completed/ Deferred /Removed
Work with NHDOT to elevate portions of Rt. 286 due to flooding by storm surge, and evaluate structural integrity of bridge on Rt. 286	Flooding, Hurricane, Coastal Storm Surge, Sea-Level Rise	Rt. 286 is a primary evacuation route from Seabrook Beach. The road is prone to flooding during storms and high tide events	Prevention/ Emergency Services/ Structural Protection	Evaluation of structural integrity of bridge completed/ Elevation of roadway deferred
Raise wastewater treatment plant as the facility is at risk of flooding from rising tides and saltwater intrusion	Hurricane/ Flooding/ Coastal Storm Surge/Sea Level Rise	The wastewater treatment plant location along the marsh makes the facility at risk of damage from flooding rising tides, coastal storm surge, hurricanes, and saltwater intrusion	Prevention/ Structural Protection	New
Purchase three portable electronic messaging signs	All Hazards	Signs will be used to inform public about natural hazards and hazard mitigation	Prevention	New
Purchase and install generator for transfer station	All Hazards	Backup power is needed so the transfer station can continue operation during power outages	Prevention	New
Work with NHDOT to increase the number of outfalls along Route 1A to enable flow of floodwater from beach streets into the estuary to prevent road flooding and road closure	Hurricane/ Flooding/ Coastal Storm Surge	Stormwater outfalls along Route 1A would enable flood water to flow from beach streets into the estuary, mitigating road flooding and road closure	Prevention/ Emergency Services/ Property Protection/ Structural Protection	New

CHAPTER VIII - FEASIBILITY AND PRIORITIZATION OF PROPOSED MITIGATION ACTION

The goal of each strategy or action is reduction or prevention of damage from a hazard event. To determine their effectiveness in accomplishing this goal, a set of criteria was applied to each proposed strategy. A set of questions developed by the Committee that included the STAPLEE method was developed to rank the proposed mitigation actions. The STAPLEE method analyzes the Social, Technical, Administrative, Political, Legal, Economic and Environmental aspects of a project and is commonly used by public administration officials and planners for making planning decisions. The following questions were asked about the proposed mitigation strategies identified in Table 11:

- Does it reduce disaster damage?
- Does it benefit the environment?
- Does it meet regulations?
- Will historic structures be saved or protected?
- Does it help achieve other community goals?
- Could it be implemented quickly?

STAPLEE criteria:

- **Social**: Is the proposed strategy socially acceptable to the community? Are there equity issues involved that would mean that one segment of the community is treated unfairly?
- **Technical**: Will the proposed strategy work? Will it create more problems than it solves?
- **Administrative**: Can the community implement the strategy? Is there someone to coordinate and lead the effort?
- **Political**: Is the strategy politically acceptable? Is there public support both to implement and to maintain the project?
- **Legal**: Is the community authorized to implement the proposed strategy? Is there a clear legal basis or precedent for this activity?
- **Economic**: What are the costs and benefits of this strategy? Does the cost seem reasonable for the size of the problem and the likely benefits?
- **Environmental**: How will the strategy impact the environment? Will the strategy need environmental regulatory approvals?

Each proposed mitigation strategy was evaluated using the above criteria and assigned a score (Good = 3, Average = 2, Poor = 1) based on the above criteria. An evaluation chart with total scores for each strategy can be found in the collection of individual tables under Table 12.

After each strategy was evaluated and prioritized according to the final score. The highest scoring strategies were determined to be of more importance, economically, socially, environmentally, and

politically feasible and, hence, prioritized over those that were lower scoring. This prioritizing was used as a basis for developing the Action Plan outlined in Table 13.

Table 12a: Purchase and install a generator for then Beach Precinct Shelter

Criteria	Score
Does it reduce disaster damage?	1
Does it contribute to other goals?	3
Does it benefit the environment?	1
Does it meet regulations?	3
Will historic structures be saved or protected?	1
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	2
E: Are other Environmental approvals required?	3
Total	**32**

Table 12b: Build protective flood protection berm around Seabrook Elementary School

Criteria	Score
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	2
Does it meet regulations?	3
Will historic structures be saved or protected?	3
Does it help achieve other community goals?	3
Could it be implemented quickly?	1
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	3
E: Are other Environmental approvals required?	32
Total	**38**

Table 12c: Work with owner of Noyes Pond Dam to insure dam integrity to protect sewer pump station

Criteria	Score
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	3
Does it meet regulations?	3
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	3
Could it be implemented quickly?	1
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	3
E: Are other Environmental approvals required?	1
Total	**37**

Table 12d: Acquire and permit five new wells for municipal water supply and connect new wells to water system

Criteria	Score
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	3
Does it meet regulations?	3
Will historic structures be saved or protected?	1
Does it help achieve other community goals?	3
Could it be implemented quickly?	1
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	3
E: Are other Environmental approvals required?	1
Total	**36**

Table 12e: Work with NHDOT to elevate portion of Rt. 286 prone to flooding

Criteria	Score
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	3
Does it meet regulations?	3
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	3
Could it be implemented quickly?	1
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	2
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	2
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	3
E: Are other Environmental approvals required?	1
Total	**35**

Table 12f: Raise wastewater treatment plant to reduce risk of flooding from rising sea levels and saltwater intrusion

Criteria	Score
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	3
Does it meet regulations?	3
Will historic structures be saved or protected?	1
Does it help achieve other community goals?	3
Could it be implemented quickly?	1
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	3
E: Are other Environmental approvals required?	1
Total	**36**

Table 12g: Purchase three portable electronic messaging signs

Criteria	Score
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	1
Does it meet regulations?	3
Will historic structures be saved or protected?	1
Does it help achieve other community goals?	3
Could it be implemented quickly?	3
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	3
E: Are other Environmental approvals required?	3
Total	**38**

Table 12h: Purchase and install generator for transfer station

Criteria	Score
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	3
Does it meet regulations?	3
Will historic structures be saved or protected?	1
Does it help achieve other community goals?	3
Could it be implemented quickly?	3
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	3
E: Are other Environmental approvals required?	3
Total	**40**

Table 12i: Work with NHDOT to increase the number of outfalls along Route 1A to enable flow of flood water from beach streets into estuary to prevent road flooding and closure

Criteria	Score
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	3
Does it meet regulations?	2
Will historic structures be saved or protected?	1
Does it help achieve other community goals?	3
Could it be implemented quickly?	1
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	3
E: Are other Environmental approvals required?	1
Total	**35**

CHAPTER IX – IMPLEMENTATION SCHEDULE FOR PRIORITY MITIGATION ACTIONS

This step involves developing an action plan that outlines who is responsible for implementing each of the prioritized strategies determined in the previous step, as well as when and how the actions will be implemented. The following questions were asked to develop an implementation schedule for the identified priority mitigation strategies:

WHO? Who will lead the implementation efforts? Who will put together funding requests and applications?

HOW? How will the community fund these projects? How will the community implement these projects? What resources will be needed to implement these projects?

WHEN? When will these actions be implemented, and in what order?

Table 13 is the Action Plan and includes the responsible party (WHO), how the project will be supported (HOW), and what the timeframe is for implementation of the project (WHEN).

Table 13: Action Plan for Proposed Mitigation Actions

STAPLEE Score	Project	Responsibility/ Oversight	Funding/ Support	Estimated Cost	Timeframe
39	Implement strategies from Town's Coastal Adaptation Plan	Board of Selectmen/Planning Board/DPW	Town/HMPG	Unknown	Medium-term 2-3 years
38	Noyes Pond Dam rebuild/replace	Board of Selectmen/Conservation Commission	Town/HMPG	$400K	Long-term 3-5 years
37	Protective berm around Elementary School	School Board/Board of Selectmen	Town/HMPG	$350K	Long-term 3-5 years
36	Establish tree trimming program	DPW/Utilities	Town/Utilities	Unknown	Short-term 1 year or less
34	Acquire new sources of municipal water supply	Board of Selectmen/Water Department	Town/NHDES	Unknown	Long-term 3-5 years
34	Elevate Portions of Rt. 286	NHDOT/DPW	State	Unknown	Long-term 3-5 years
32	Purchase generator for Beach Village District Shelter	SBVD Commissioners/EMD	Town/HMPG	$40K	Short-term 1 year or less

Sources of funding and support for the projects listed above include:

- Town of Seabrook – Annual operating budgets for Town departments and Town boards and commissions, Capital Improvements Plan allocation, and department staff time.

- State of New Hampshire – The State of New Hampshire oversees several competitive grant programs designed to fund the projects listed in Table 13, including the Clean Water State Revolving Fund, Climate Pollution Reduction Grants, Coastal Resilience Grants, Drinking Water-Related Grants, Drinking Water State Revolving Fund, Drinking Water and Groundwater Trust Fund, Infrastructure Funding/ARPA, Watershed Assistance Grants, and the Department of Transportation Ten Year Plan prioritized projects.

- Federal – Sources of federal grants for hazard mitigation are included in Appendix B.

CHAPTER X- INCORPORATING, MONITORING, EVALUATING, AND UPDATING THE PLAN

Incorporating the Plan into Existing Planning Mechanisms

Upon review and approval by FEMA and the State of New Hampshire Homeland Security and Emergency Management, the Hazard Mitigation Plan Update 2025 will be adopted by the Seabrook Board of Selectmen as a standalone document and as an appendix of the Town's Emergency Operations Plan (EOP). The Plan Update will be consulted during updates to the Master Plan and Capital Improvement Plan (CIP). The Planning Board is responsible for updating the Master Plan and CIP and will review the Action Plan during each update. The Planning Board in conjunction with Emergency Management Director and Town Administrator will determine what items can and should be added to the CIP based on the Town's annual budget and sources of other funding. Considerations about future land use and proximity to current and potential hazard areas need to be inherently part of the planning process. NH RSA 674:2 III (e) gives cities the authority to include a natural hazards section, which documents the physical characteristics, severity, and extent of any potential natural hazards to the community, within the framework of a Master Plan.

Monitoring, Evaluating and Updating the Plan

Recognizing that many mitigation projects are ongoing, and that while in the implementation stage communities may suffer budget cuts, experience staff turnover, or projects may fail altogether, a good plan needs to provide for periodic monitoring and evaluation of its successes and failures and allow for updates of the Plan where necessary.

To track progress and update the Mitigation Strategies identified in the Action Plan, the Hazard Mitigation Committee shall remain active and will revisit the Plan annually and after each natural hazard event. These reviews will assess the Plan's effectiveness, accuracy, and completeness in achieving its stated purpose and goals. Plan reviews will also address the recommended improvements to the Plan as contained in the FEMA plan review checklist and any weaknesses the Town identified that the Plan did not adequately address. Plan reviews will also incorporate any new information based on changing conditions in land use, hazard types, vulnerable populations, and climate change. The Emergency Management Director is responsible for initiating these reviews and will involve appropriate stakeholders via public meetings, presentations to governing bodies, neighborhood-specific meetings, climate change planning forums, and soliciting feedback via the Town's website and social media accounts. The Plan will also be thoroughly updated every five years.

In keeping with the process of adopting the 2025 Plan Update, a public meeting to receive public comment on Plan maintenance and updating will be held during any review of the Plan. This publicly noticed meeting will allow for members of the community not involved in developing the Plan to provide input and comments each time the Plan is revised. The final revised Plan will be adopted by the Board of Selectmen appropriately, at a second publicly noticed meeting, and posted on the Town website and social media to enable public review.

Changes should be made to the Plan to accommodate for projects that have failed or are not considered feasible after a review of their consistency with STAPLEE, the timeframe, the community's priorities, and funding resources. Priorities that were not ranked highly initially, but identified as potential mitigation strategies, should be reviewed during the monitoring and update of this Plan to determine feasibility of future implementation.

Appendix A - Summary of Hazard Mitigation Strategies

https://www.fema.gov/node/mitigation-ideas-resource-reducing-risk-natural-hazards

I. RIVERINE AND COASTAL FLOOD MITIGATION

A. PREVENTION - Prevention measures are intended to keep the problem from occurring in the first place, and/or keep it from getting worse. Future development should not increase flood damage. Building, zoning, planning, and/or code enforcement officials usually administer preventative measures.

- **Planning and Zoning -** Land use plans are put in place to guide future development, recommending where - and where not - development should occur. Sensitive and vulnerable lands can be designated for uses that would not be incompatible with occasional flood events - such as parks or wildlife refuges. A Capital Improvements Program can recommend the setting aside of funds for public acquisition of these designated lands. The zoning ordinance can regulate development in these sensitive areas by limiting or preventing some or all development - for example, by designating floodplain overlay, conservation, or agricultural districts.

- **Open Space Preservation -** Preserving open space is the best way to prevent flooding and flood damage. Open space preservation should not, however, be limited to the flood plain, since other areas within the watershed may contribute to controlling the runoff that exacerbates flooding. Land Use and Capital Improvement Plans should identify areas to be preserved by acquisition and other means, such as purchasing easements. Aside from outright purchase, open space can also be protected through maintenance agreements with the landowners, or by requiring developers to dedicate land for flood flow, drainage and storage.

- **Floodplain Development Regulations -** Floodplain development regulations typically do not prohibit development in the special flood hazard area, but they do impose construction standards on what is built there. The intent is to protect roads and structures from flood damage and to prevent development from aggravating the flood potential. Floodplain development regulations are generally incorporated into subdivision regulations, building codes, and floodplain ordinances, which either stand-alone or are contained within a zoning ordinance.

  Subdivision Regulations: These regulations govern how land will be divided into separate lots or sites. They should require that any flood hazard areas be shown on the plat, and that every lot has a buildable area that is above the base flood elevation.

  Building Codes: Standards can be incorporated into building codes that address flood proofing for all new and improved or repaired buildings.

  Floodplain Ordinances: Communities that participate in the National Flood Insurance Program are required to adopt the minimum floodplain management regulations, as developed by FEMA. The regulations set minimum standards for subdivision regulations and building codes. Communities may adopt more stringent standards than those set forth by FEMA.

- **Stormwater Management -** Development outside of a floodplain can contribute significantly to flooding by covering impervious surfaces, which increases storm water runoff. Storm water management is usually addressed in subdivision regulations. Developers are typically required to build retention or detention basins to minimize any increase in runoff caused by new or expanded impervious surfaces, or new drainage systems. Generally, there is a prohibition against storm

water leaving the site at a rate higher than it did before the development. One technique is to use wet basins as part of the landscaping plan of a development. It might even be possible to site these basins based on a watershed analysis. Since detention only controls the runoff rates and not volumes, other measures must be employed for storm water infiltration - for example, swales, infiltration trenches, vegetative filter strips, and permeable paving blocks.

- **Drainage System Maintenance -** Ongoing maintenance of channel and detention basins is necessary if these facilities are to function effectively and efficiently over time. A maintenance program should include regulations that prevent dumping in or altering watercourses or storage basins; regrading and filling should also be regulated. Any maintenance program should include a public education component, so that the public becomes aware of the reasons for the regulations. Many people do not realize the consequences of filling a ditch or wetland or regrading their yard without concern for runoff patterns.

B. PROPERTY PROTECTION - Property protection measures are used to modify buildings subject to flood damage, rather than to keep floodwaters away. These may be less expensive to implement, as they are often carried out on a cost-sharing basis. In addition, many of these measures do not affect a building's appearance or use, which makes them particularly suitable for historical sites and landmarks.

- **Relocation -** Moving structures out of the floodplain is the surest and safest way to protect against damage. Relocation is expensive, however, so this approach will probably not be used except in extreme circumstances. Communities that have areas subject to severe storm surges, ice jams, etc. might want to consider establishing a relocation program, incorporating available assistance.

- **Acquisition -** Acquisition by a governmental entity of land in a floodplain serves two main purposes: (1) it ensures that the problem of structures in the floodplain will be addressed; and (2) it has the potential to convert problem areas into community assets, with accompanying environmental benefits. Acquisition is more cost effective than relocation in those areas that are subject to storm surges, ice jams, or flash flooding. Acquisition, followed by demolition, is the most appropriate strategy for those buildings that are simply too expensive to move, as well as for dilapidated structures that are not worth saving or protecting. Relocation can be expensive; however, there are government grants and loans that can be applied toward such efforts.

- **Building Elevation -** Elevating a building above the base flood elevation is the best on-site protection strategy. The building could be raised to allow water to run underneath it, or fill could be brought in to elevate the site on which the building sits. This approach is cheaper than relocation and tends to be less disruptive to a neighborhood. Elevation is required by law for new and substantially improved residences in a floodplain and is commonly practiced in flood hazard areas nationwide.

- **Floodproofing -** If a building cannot be relocated or elevated, it may be floodproofed. This approach works well in areas of low flood threat. Flood proofing can be accomplished through barriers to flooding, or by treatment to the structure itself.

Barriers: Levees, floodwalls, and berms can keep floodwaters from reaching a building. These are useful, however, only in areas subject to shallow flooding.

Dry Flood proofing: This method seals a building against the water by coating the walls with waterproofing compounds or plastic sheeting. Openings, such doors, windows, etc. are closed either permanently with removable shields or with sandbags.

Wet Flood proofing: This technique is usually considered a last resort measure since water is intentionally allowed into the building to minimize pressure on the structure. Approaches range from moving valuable items to higher floors to rebuilding the floodable area. An advantage over other approaches is that simply by moving household goods out of the range of floodwaters, thousands of dollars can be saved in damages.

- **Sewer Backup Protection -** Storm water overloads can cause backup into basements through sanitary sewer lines. Houses that have any kind of connection to a sanitary sewer system - whether it is downspouts, footing drain tile, and/or sump pumps, can be flooded during a heavy rain event. To prevent this, there should be no such connections to the system, and all rain and ground water should be directed onto the ground, away from the building. Other protections include:

  Floor drain plugs and floor drain standpipe, which keep water from flowing out of the lowest opening in the house.

  Overhead sewer - keeps water in the sewer line during a backup.

  Backup valve - allows sewage to flow out while preventing backups from flowing into the house.

- **Insurance -** Above and beyond standard homeowner insurance, there is other coverage a homeowner can purchase to protect against flood hazard. Two of the most common are National Flood Insurance and basement backup insurance.

  National Flood Insurance: When a community participates in the National Flood Insurance Program, any local insurance agent can sell separate flood insurance policies under rules and rates set by FEMA. Rates do not change after claims are paid because they are set on a national basis.

  Basement Backup Insurance: National Flood Insurance offers an additional deductible for seepage and sewer backup, provided there is a general condition of flooding in the area that was the proximate cause of the basement getting wet. Most exclude damage from surface flooding that would be covered by the NFIP.

C. NATURAL RESOURCE PROTECTION - Preserving or restoring natural areas or the natural functions of floodplain and watershed areas provide the benefits of eliminating or minimizing losses from floods, as well as improving water quality and wildlife habitats. Parks, recreation, or conservation agencies usually implement such activities. Protection can also be provided through various zoning measures that are specifically designed to protect natural resources.

- **Wetlands Protection -** Wetlands can store large amounts of floodwater, slowing and reducing downstream flows, and filtering the water. Any development that is proposed in a wetland is

regulated by either federal and/or state agencies. Depending on the location, the project might fall under the jurisdiction of the U.S. Army Corps of Engineers, which in turn, calls upon several other agencies to review the proposal. In New Hampshire, the N.H. Wetlands Board must approve any project that impacts a wetland. And many communities in New Hampshire also have local wetland ordinances. Generally, the goal is to protect wetlands by preventing development that would adversely affect them. Mitigation techniques are often employed, which might consist of creating a wetland on another site to replace what would be lost through the development. This is not an ideal practice, however, since it takes many years for a new wetland to achieve the same level of quality as an existing one.

- **Erosion and Sedimentation Control -** Controlling erosion and sediment runoff during construction and on farmland is important, since eroding soil will typically end up in downstream waterways. And, because sediment tends to settle where the water flow is slower, it will gradually fill in channels and lakes, reducing their ability to carry or store floodwaters. Practices to reduce erosion and sedimentation have two principal components: (1) minimize erosion with vegetation and (2) capture sediment before it leaves the site. Slowing the runoff increases infiltration into the soil, thereby controlling the loss of topsoil from erosion and the resulting sedimentation. Runoff can be slowed by vegetation, terraces, contour strip farming, no-till farm practices, and impoundments (such as sediment basins, farm ponds, and wetlands).

- **Best Management Practices -** Best Management Practices (BMPs) are measures that reduce nonpoint source pollutants that enter waterways. Nonpoint source pollutants are carried by storm water to waterways, and include such things as lawn fertilizers, pesticides, farm chemicals, and oils from street surfaces and industrial sites. BMPs can be incorporated into many aspects of new developments and ongoing land use practices. In New Hampshire, the Department of Environmental Services has developed best management practices for a range of activities, from farming to earth excavations.

D. EMERGENCY SERVICES - Emergency services protect people during and after a flood. Many communities in New Hampshire have emergency management programs in place, administered by an emergency management director (very often the local police or fire chief).

- **Flood Warning -** On large rivers, the National Weather Service handles early recognition. Communities on smaller rivers must develop their own warning systems. Warnings may be disseminated in a variety of ways, such as sirens, radio, television, mobile public-address systems, or door-to-door contact. It seems that multiple or redundant systems are the most effective, giving people more than one opportunity to be warned.

- **Flood Response -** Flood response refers to actions that are designed to prevent or reduce damage or injury, once a flood threat is recognized. Such actions and the appropriate parties include activating the emergency operations center (emergency director), sandbagging designated areas (public works department), closing streets and bridges (police department), shutting off power to threatened areas (utilities), releasing children from school (school district), ordering an evacuation (selectmen/city council/emergency director), opening evacuation shelters (churches, schools, Red Cross, municipal facilities).

These actions should be part of a flood response plan, which should be developed in coordination with the persons and agencies that share the responsibilities. Drills and exercises should be conducted so that the key participants know what they are supposed to do.

- **Critical Facilities Protection -** Protecting critical facilities is vital, since expending efforts on these facilities can draw workers and resources away from protecting other parts of the community. Buildings or locations vital to the flood response effort:

  - emergency operations centers
  - police and fire stations
  - hospitals
  - highway garage
  - selected roads and bridges
  - evacuation routes
  - buildings or locations that, if flooded, would create secondary disasters
  - hazardous materials facilities
  - water/wastewater treatment plants
  - schools
  - nursing homes

  All such facilities should have their own flood response plan that is coordinated with the community's plan. Nursing homes, other public health facilities, and schools will typically be required by the state to have emergency response plans in place.

- **Health and Safety Maintenance -** The flood response plan should identify appropriate measures to prevent danger to health and safety. Such measures include:

  - patrolling evacuated areas to prevent looting
  - providing safe drinking water
  - vaccinating residents for tetanus
  - clearing streets
  - cleaning up debris

  The plan should also identify which agencies will be responsible for carrying out the identified measures. A public information program can be helpful to educate residents on the benefits of taking health and safety precautions.

Structural Projects - Structural projects are used to prevent floodwater from reaching properties. These are all man-made structures and can be grouped into the six types of discussed below. The shortcomings of structural approaches are that they can be very expensive**,** they disturb the land, disrupt natural water flows, and destroy natural habitats**,** they are built to an anticipated flood event, and may be exceeded by a greater-than-expected flood**,** and they can create a false sense of security.

Reservoirs - Reservoirs control flooding by holding water behind dams or in storage basins. After a flood peaks, water is released or pumped out slowly at a rate the river downstream can handle.

Reservoirs are suitable for protecting existing development, and they may be the only flood control measure that can protect development close to a watercourse. They are most efficient in deeper valleys or on smaller rivers where there is less water to store. Reservoirs might consist of man-made holes dug to hold the approximate amount of floodwaters, or even abandoned quarries. As with other structural projects, reservoirs:

- are expensive
- occupy a lot of land
- require periodic maintenance
- may fail to prevent damage from floods that exceed their design levels
- may eliminate the natural and beneficial functions of the floodplain

Reservoirs should only be used after a thorough watershed analysis that identifies the most appropriate location and ensures that they would not cause flooding somewhere else. Because they are so expensive and usually involve more than one community, they are typically implemented with the help of state or federal agencies, such as the Army Corps of Engineers.

Levees/Floodwalls - Probably the best know structural flood control measure is either a levee (a barrier of earth) or a floodwall made of steel or concrete erected between the watercourse and the land. If space is a consideration, floodwalls are typically used, since levees need more space. Levees and floodwalls should be set back out of the floodway, so that they will not divert floodwater onto other properties.

Diversions - A diversion is simply a new channel that sends floodwater to a different location, thereby reducing flooding along an existing watercourse. Diversions can be surface channels, overflow weirs, or tunnels. During normal flows, the water stays in the old channel. During flood flows, the stream spills over the diversion channel or tunnel, which carries the excess water to the receiving lake or river.

Diversions are limited by topography; they won't work everywhere. Unless the receiving water body is relatively close to the flood prone stream and the land in between is low and vacant, the cost of creating a diversion can be prohibitive. Where topography and land use are not favorable, a more expensive tunnel is needed. In either case, care must be taken to ensure that the diversion does not create a flooding problem somewhere else.

Channel Modifications - Channel modifications include making a channel wider, deeper, smoother, or straighter. These techniques will result in more water being carried away, but, as with other techniques mentioned, it is important to ensure that the modifications do not create or increase a flooding problem downstream.

Dredging: Dredging is often cost-prohibitive because the dredged material must be disposed of somewhere else, and the stream will usually fill back in with sediment. Dredging is usually undertaken only on larger rivers, and then only to maintain a navigation channel.

Drainage modifications: These include man-made ditches and storm sewers that help drain areas where the surface drainage system is inadequate or where underground drainage ways may be safer or more attractive. These approaches are usually designed to carry the runoff from smaller, more frequent storms.

Storm Sewers - Mitigation techniques for storm sewers include installing new sewers, enlarging small pipes, street improvements, and preventing back flow. Because drainage ditches and storm sewers convey water faster to other locations, improvements are only recommended for small local problems where the receiving body of water can absorb the increased flows without increased flooding.

In many developments, streets are used as part of the drainage system, to carry or hold water from larger, less frequent storms. The streets collect runoff and convey it to a receiving sewer, ditch, or stream. Allowing water to stand in the streets and then draining it slowly can be a more effective and less expensive measure than enlarging sewers and ditches.

Public Information - Public information activities are intended to advise property owners, potential property owners, and visitors about the hazards associated with a property, ways to protect people and property from these hazards, and the natural and beneficial functions of a floodplain.

- **Map Information -** Flood maps developed by FEMA outline the boundaries of the flood hazard areas. These maps can be used by anyone interested in a property to determine if it is flood prone. These maps are available from FEMA, the NH Office of Emergency Management, the NH Office of State Planning, or your regional planning commission.

Outreach Projects - Outreach projects are proactive; they give the public information even if they have not asked for it. Outreach projects are designed to encourage people to seek out more information and take steps to protect themselves and their properties. Examples of outreach activities include:

- Mass mailings or newsletters and e-newsletters to all residents
- Posting resource information on town website and social media accounts
- Notices directed to floodplain residents
- Displays in public buildings, malls, etc.
- Newspaper articles and special sections
- Radio and TV news releases and interview shows
- A local flood proofing video for cable TV programs and to loan to organizations
- A detailed property owner handbook tailored for local conditions
- Presentations at meetings of neighborhood groups

Research has shown that outreach programs work, although awareness is not enough. People need to know what they can do about the hazards, so projects should include information on protection measures. Research also shows that locally designed and run programs are much more effective than national advertising.

Real Estate Disclosure - Disclosure of information regarding flood-prone properties is important if potential buyers are to be able to mitigate damage. Federally regulated lending institutions are required to advise applicants that a property is in a floodplain. However, this requirement needs to be met only five days prior to closing, and by that time, the applicant is typically committed to the purchase. State laws and local real estate practice can help by making this information available to prospective buyers early in the process.

Library - Your local library can serve as a repository for pertinent information on flooding and flood protection. Some libraries also maintain their own public information campaigns, augmenting the activities of the various governmental agencies involved in flood mitigation.

Technical Assistance - Certain types of technical assistance are available from the NFIP Coordinator, FEMA, and the Natural Resources Conservation District. Community officials can also set up a service delivery program to provide one-on-one sessions with property owners. An example of technical assistance is the flood audit, in which a specialist visits a property. Following the visit, the owner is provided with a written report, detailing the past and potential flood depths, and recommending alternative protection measures.

Environmental Education - Education can be a great mitigating tool, if people can learn what not to do before damage occurs. And the sooner the education begins, the better. Environmental education programs for children can be taught in the schools, park and recreation departments, conservation associations, or youth organizations. An activity can be as involved as course curriculum development or as simple as an explanatory sign near a river. Education programs do not have to be limited to children. Adults can benefit from knowledge of flooding and mitigation measures. And decision-makers, armed with this knowledge, can make a difference in their communities.

II. EARTHQUAKES

- **PREVENTIVE -** Planning/zoning to keep critical facilities away from fault lines.
  Planning, zoning and building codes to avoid areas below steep slopes or soils subject to liquefaction.
  Building codes to prohibit loose masonry, overhangs, etc.
- **PROPERTY PROTECTION:**
  Acquire and clear hazard areas.
  Retrofitting to add braces, remove overhangs.
  Apply mylar to windows and glass surfaces to protect from shattering glass.
  Tie down major appliances provide flexible utility connections.
  Earthquake insurance riders.
- **EMERGENCY SERVICES -** Earthquake response plans to account for secondary problems, such as fires and hazardous materials spills.
  Slope stabilization.

III. DAM FAILURE

- **PREVENTIVE:**
  Dam failure inundation maps.
  Planning/zoning/open space preservation to keep area clear.
  Building codes with flood elevation based on dam failure.
  Dam safety inspections.
  Draining the reservoir when conditions appear unsafe.

- **PROPERTY PROTECTION -** Acquisition of buildings in the path of a dam breach flood. Flood insurance.
- **EMERGENCY SERVICES -** Dam conditioning monitoring; warning and evacuation plans based on dam failure.
- **EMERGENCY SERVICES -** Dam improvements, spillway enlargements. Remove unsafe dams.

IV. WILDFIRES AND CONFLAGRATION

- **PREVENTIVE:**
  Zoning districts reflect fire risk zones.
  Planning and zoning to restrict development in areas near fire protection and water resources.
  Requiring new subdivisions to space buildings, provide firebreaks, on-site water storage, wide roads multiple accesses.
  Building code standards for roof materials, spark arrestors.
  Maintenance programs to clear dead and dry bush, trees.
  Regulation of open fires.
- **PROPERTY PROTECTION:**
  Retrofitting of roofs and adding spark arrestors.
  Landscaping to keep bushes and trees away from structures.
  Insurance rates based on distance from fire protection.
- **NATURAL RESOURCE PROTECTION -** Prohibit development in high-risk areas.
- **EMERGENCY SERVICES -** Fire Fighting

V. WINTER STORMS, HURRICANES, AND HIGH WIND EVENTS

- **PREVENTIVE -** Building code standards for light frame construction, especially for wind-resistant roofs.
- **PROPERTY PROTECTION:**
  Storm shutters and windows
  Hurricane straps on roofs and overhangs
  Seal outside and inside of storm windows and check steals in spring and fall.
  Family and/or company severe weather action plan & drills - include a NOAA weather radio, designate a shelter area or location, keep a disaster supply kit, including stored food and water, keep snow removal equipment in good repair; have extra shovels, sand, rock, salt and gas, know how to turn off water, gas, and electricity at home or work
- **NATURAL RESOURCE PROTECTION -** Maintenance program for trimming tree and shrubs
- **EMERGENCY SERVICES -** Early warning systems/NOAA Weather Radio Evacuation Plans

VI. DROUGHT

- **PREVENTITVE –** Assess vulnerability to drought risk, develop criteria for drought-related actions.
- **PROPERTY PROTECTION -** Regularly check for leaks to minimize water supply losses
- **NATURAL RESOURCE PROTECTION** – Require water conservation during drought emergencies
- **EMERGENCY SERVICES** – Monitor drought conditions

VII. EXTREME TEMPERATURES

- **PREVENTITIVE**:
  Increase awareness of extreme temperature risk and safety through public education and outreach
  Reduce urban heat island effect by increasing tree plantings
  Assist vulnerable populations

- **PROPERTY PROTECTION**:
  Educate residents on how to protect pipes from freezing
  Add building insulation to walls ant attics
- **NATURAL RESOURCE PROTECTION** – Monitor drought conditions during periods of extreme heat
- **EMERGENCY SERVICES** – Identify at-risk populations, establish and promote accessible heating and cooling centers

VIII. CLIMATE CHANGE – see strategies listed above

IX. INFECTIOUS DISEASE - https://www.fema.gov/sites/default/files/2020-07/fema_r2_guide-to-connecting-mitigation-public-health_booklet.pdf

- **PREVENTATIVE** – Combine risk awareness and emergency preparedness campaigns with public health campaigns
- **PROPERTY PROTECTION** – Zoning changes to enable safe and flexible use of public spaces
- **NATURAL RESOURCE PROTECTION** – Maintain public open spaces to provide safe recreational opportunities
- **EMERGENCY SERVICES** – Collaborate with health services and mental health providers

Appendix B – Technical and Financial Assistance for Hazard Mitigation

Local Municipalities must have a FEMA-approved Hazard Mitigation Plan to be eligible for Hazard Mitigation Assistance Grants. Consult with your NH Homeland Security and Emergency Management Field Representative about active funding opportunities.

HAZARD MITIGATION GRANT PROGRAM (HMGP) - Authorized under Section 404 of the Stafford Act, the Hazard Mitigation Grant Program (HMGP) provides grants to States and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the program is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The purpose of the program is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.
Hazard Mitigation Grant Program funding is only available in States following a Presidential disaster declaration. Eligible applicants are:

- State and local governments
- Indian tribes or other tribal organizations
- Certain private non-profit organization

Individual homeowners and businesses may not apply directly to the program; however, a community may apply on their behalf. HMGP funds may be used to fund projects that will reduce or eliminate the

losses from future disasters. Projects must provide a long-term solution to a problem, for example, elevation of a home to reduce the risk of flood damage as opposed to buying sandbags and pumps to fight the flood. In addition, a project's potential savings must be more than the cost of implementing the project. Funds may be used to protect either public or private property or to purchase property that has been subjected to, or is in danger of, repetitive damage.

PRE-DISASTER MITIGATION GRANTS PROGRAM – The Pre-Disaster Mitigation Grants Program provides technical and financial assistance to States and local governments for cost-effective pre-disaster hazard mitigation activities that complement a comprehensive mitigation program, and reduce injuries, loss of life, and damage and destruction of property. FEMA provides grants to States and Federally recognized Indian tribal governments that, in turn, provide sub-grants to local governments (to include Indian Tribal governments) for mitigation activities such as planning, and the implementation of projects identified through the evaluation of natural hazards.

FLOOD MITIGATION ASSISTANCE (FMA) PROGRAM - FEMA provides funding to assist States and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program (NFIP). There are three types of grants available under FMA: Planning, Project, and Technical Assistance Grants. FMA Planning Grants are available to States and communities to prepare Flood Mitigation Plans. NFIP-participating communities with approved Flood Mitigation Plans can apply for FMA Project Grants. FMA Project Grants are available to States and NFIP participating communities to implement measures to reduce flood losses. Ten percent of the Project Grant is made available to States as a Technical Assistance Grant. These funds may be used by the State to help administer the program. Communities receiving FMA Planning and Project Grants must participate in the NFIP.

EMERGENCY MANAGEMENT PERFORMANCE GRANT

GUIDELINES - Emergency Management Performance Grant (EMPG Program) funding is available to local communities and eligible Agencies for projects that fall in FOUR general areas of Emergency Management: Planning activities; Training activities; Drills and Exercises; and Emergency Management Administration. Contact Heather Dunkerley at NHHSEM,

The following list of possible projects and activities is meant to guide you in selecting projects for an EMA Grant Submission. This list of suggested projects is not intended to be all-inclusive. Local communities or agencies may have other specific projects and activities that reflect local needs based on local capability assessments and local hazards.

Planning Activities may include:

- Develop a Hazard Mitigation Plan for your community.
- Prepare a hazard mitigation project proposal for submission to NHHSEM.
- Create, revise, or update Dam Emergency Action plans.
- Update your local Emergency Operations Plan (EOP). Consider updating a number of specific annexes each year to ensure that the entire plan is updated at least every four years.
- If applicable, develop or incorporate a regional HazMat Team Annex into your EOP.
- Develop an Anti-Terrorism Annex into your EOP.
- Develop a local/regional Debris Management Annex into your EOP.
- Develop and maintain pre-scripted requests for additional assistance (from local area public works, regional mutual aid, State resources, etc.) and local declarations of emergency.

- Develop and maintain written duties and responsibilities for EOC staff positions and agency representatives.
- Develop and maintain a list of private non-profit organizations within your local jurisdiction to ensure that these organizations are included in requests for public assistance funds.
- Prepare a submission for nomination as a "Project Impact" Community.

Training Activities may include:

- Staff members attend training courses at the Emergency Management Institute.
- Staff members attend a "field delivered" training course conducted by NHHSEM.
- Staff members attend other local, State, or nationally sponsored training events, which provides skills or knowledge relevant to emergency management.
- Staff members complete one or more FEMA Independent Study Courses.
- Identify and train a pre-identified local damage assessment team.

Drills and Exercises might include:

- Conduct multi-agency EOC Exercise (Tabletop or Functional) and forward an Exercise Evaluation Report, including after action reports, to NHHSEM (external evaluation of exercises is strongly encouraged). Drills or Exercises might involve any of the following scenarios:
    - Hurricane Exercise
    - Terrorism Exercise
    - Severe Storm Exercise
    - Communications Exercise
    - Mass Causality Exercise involving air, rail, or ship transportation accident
- Participate in multi-State or multi-Jurisdictional Exercise and forward Exercise Report to NHHSEM.
- HazMat Exercise with Regional HazMat Teams
- NHHSEM Communications Exercises
- Observe or evaluate State or local exercise outside your local jurisdiction.
- Assist local agencies and commercial enterprises (nursing homes, dams, prisons, schools, etc.) in developing, executing, and evaluating their exercise.
- Assist local hospitals in developing, executing and evaluating Mass Care, HazMat, Terrorism, and Special Events Exercises.
- Administrative Projects and Activities may include:
- Maintain an Emergency Operations Center (EOC) and alternate EOC capable of accommodating staff to respond to local emergencies.
- Establish and maintain a Call-Down List for EOC staff.
- Establish and maintain Emergency Response/Recovery Resource Lists.
- Develop or Update Emergency Management Mutual Aid Agreements with a focus on Damage Assessment, Debris Removal, and Resource Management.
- Develop and maintain written duties and responsibilities for EOC staff positions and agency representatives.
- Develop or Update Procedures for tracking of disaster-related expenses by local agencies.

FLOOD MITIGATION ASSISTANCE (FMA) PROGRAM - FMA was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101) with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP). FMA regulations can be found in 44 CFR Part 78. Funding for the program is provided through the National Flood Insurance Fund. FMA is funded at $20 million nationally. FMA provides funding to assist States and communities in implementing measures to reduce

or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program (NFIP).

There are three types of grants available under FMA: Planning, Project, and Technical Assistance Grants. FMA Planning Grants are available to States and communities to prepare Flood Mitigation Plans. NFIP-participating communities with approved Flood Mitigation Plans can apply for FMA Project Grants. FMA Project Grants are available to States and NFIP participating communities to implement measures to reduce flood losses. Ten percent of the Project Grant is made available to States as a Technical Assistance Grant. These funds may be used by the State to help administer the program. Communities receiving FMA Planning and Project Grants must participate in the NFIP. A few examples of eligible FMA projects include: the elevation, acquisition, and relocation of NFIP-insured structures.

States are encouraged to prioritize FMA project grant applications that include repetitive loss properties. The FY 2001 FMA emphasis encourages States and communities to address target repetitive loss properties identified in the Agency's Repetitive Loss Strategy. These include structures with four or more losses, and structures with 2 or more losses where cumulative payments have exceeded the property value. State and communities are also encouraged to develop Plans that address the mitigation of these target repetitive loss properties.

Appendix C - Saffir/Simpson Hurricane Scale

This scale can be used to give an estimate of the potential property damage and flooding expected along the coast with a hurricane.

Category	Definition	Effects
One	Winds 74-95 mph	No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Also, some coastal road flooding and minor pier damage
Two	Winds 96-110 mph	Some roofing material, door, and window damage buildings. Considerable damage to vegetation, mobile homes, and piers. Coastal and low-lying escape routes flood 2-4 hours before arrival of center. Small craft in unprotected anchorages break moorings.
Three	Winds 111-130 mph	Some structural damage to small residences and utility buildings with a minor amount of curtainwall failures. Mobile homes are destroyed. Flooding near the coast destroys smaller structures with larger structures damaged by floating debris. Terrain continuously lower than 5 feet ASL may be flooded inland 8 miles or more.
Four	Winds 131-155 mph	More extensive curtainwall failures with some complete roof structure failure on small residences. Major erosion of beach. Major damage to lower floors of structures near the shore. Terrain continuously lower than 10 feet ASL may be flooded requiring massive evacuation of residential areas inland as far as 6 miles.
Five	Winds greater than 155 mph	Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Major damage to lower floors of all structures located less than 15 feet ASL and within 500 yards of the shoreline. Massive evacuation of residential areas on low ground within 5 to 10 miles of the shoreline may be required.

Appendix D - Enhanced Fujita Tornado Damage Scale

The Enhanced Fujita Scale			
F-Scale Number	**Potential Damage**	**Wind Speed**	**Type of Damage**
F0	Light	65 – 85 mph	Little to no damage to man-made structures. Breaks branches off trees; pushes over shallow-rooted trees; damages signs
F1	Moderate	86 – 110 mph	Beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off roads; Moderate damage.
F2	Considerable	111 – 135 mph	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars from trains pushed over; large trees snapped or uprooted; light object missiles generated.
F3	Severe	136 – 165 mph	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cards lifted and thrown.
F4	Devastating	166 – 200 mph	Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.
F5	Incredible	Over 200 mph	Strong frame houses leveled off foundations and carried considerable distances; automobile-sized missiles fly through the air in excess of 109 yards; trees debarked; steel reinforced concrete structures badly damaged. Complete devastation.

Appendix E - The Richter Magnitude Scale

Earthquake Severity

Magnitudes	Earthquake Effects
Less than 3.5	Generally, not felt but recorded.
3.5-5.4	Often felt, but rarely causes damage.
Under 6.0	At most slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions.
6.1-6.9	Can be destructive in areas up to about 100 kilometers across where people live.
7.0-7.9	Major earthquake. Can cause serious damage over larger areas.
8 or greater	Great earthquake. Can cause serious damage in areas several hundred kilometers across.

The Richter Magnitude Scale - Seismic waves are the vibrations from earthquakes that travel through the Earth; they are recorded on instruments called seismographs. Seismographs record a zig-zag trace that shows the varying amplitude of ground oscillations beneath the instrument. Sensitive seismographs, which greatly magnify these ground motions, can detect strong earthquakes from sources anywhere in the world. The time, locations, and magnitude of an earthquake can be determined from the data recorded by seismograph stations.

Earthquakes with magnitude of about 2.0 or less are usually call microearthquakes; they are not commonly felt by people and are generally recorded only on local seismographs. Events with magnitudes of about 4.5 or greater - there are several thousand such shocks annually - are strong enough to be recorded by sensitive seismographs all over the world. Great earthquakes, such as the 1964 Good Friday earthquake in Alaska, have magnitudes of 8.0 or higher. On average, one earthquake of such size occurs somewhere in the world each year. The Richter Scale has no upper limit. Recently, another scale called the moment magnitude scale has been devised for more precise study of great earthquakes. The Richter Scale is not used to express damage. An earthquake in a densely populated area which results in many deaths and considerable damage may have the same magnitude as a shock in a remote area that does nothing more than frightens wildlife. Large-magnitude earthquakes that occur beneath the oceans may not even be felt by humans.

Appendix F – Thunderstorm Criteria

Extreme Weather Madness
Thunderstorm Criteria

THUNDERSTORM TYPES	Rainfall Rate/hr	MAX WIND GUST	HAIL SIZE	PEAK TORNADO Possibility	LIGHTNING FREQUENCY (5 min Intervals)	Darkness Factor	STORM IMPACT
T-1 – Weak thunderstorms or Thundershowers	.03-.10	< 25 MPH	None	None	Only a few strikes during the storm.	Slightly Dark. Sunlight may be seen under the storm.	1. No damage. 2. Gusty winds at times.
T-2 – Moderate Thunderstorms.	.10"-.25"	25-40 MPH	None	None	Occasional 1-10	Moderately Dark. Heavy downpours may cause the need for car lights.	1. Heavy downpours. 2. Occasional lightning. 3. Gusty winds. 4. Very little damage. 5. Small tree branches may break 6. Lawn furniture moved around
T-3 – Heavy Thunderstorms 1. Singular or lines of storms.	.25"-.55"	40-57 MPH	1/4 " to ¾"	EF0	Occasional to Frequent 10-20	Dark. Car lights used. Visibility low in heavy rains. Cars may pull off the road.	1. Minor Damage. 2. Downpours that produce some flooding on streets. 3. Frequent lightning could cause house fires. 4. Hail occurs within the downpours. 5. Small branches are broken. 6. Shingles are blown off roofs.
T-4 – Intense Thunderstorms 1. Weaker supercells 2. Bow Echos or lines of Storms	.55" – 1.25"	58 to 70 MPH	1" to 1.5"	EF0 to EF2	Frequent 20-30	Very Dark. Car lights used. Some street lights come on..	1. Moderate Damage. 2. Heavy rains can cause flooding to streams and creeks. Roadway flooding. 3. Hail can cause dents on cars and cause crop damage. 3. Wind damage to trees and buildings. 4. Tornado damage. 5. Power outages
T-5 – Extreme Thunderstorms 1. Supercells with familty of tornadoes. 2. Derecho Windstorms	1.25" – 4"	Over 70 Mph	Over 1.5" to 4"	EF3 to EF5	Frequent to Continuous. > 30	Pitch Black, Street Lights come on. House lights maybe used	1. Severe Damage to Trees and Property. Damage is widespread. 2. Flooding rains. 3. Damaging hail. 4. Damaging wind gusts to trees and buildings. 5. Tornadoes F3-F5 or family of tornadoes can occur. Tornadoes can cause total devastation. 6. Widespread power outages.

Appendix G - Lightning Risk Definitions

Lightning Risk Definitions	
Low Risk	Thunderstorms are only expected to be isolated or widely scattered in coverage (20 Percent Chance). Atmospheric conditions do not support frequent cloud-to-ground lightning strikes.
Moderate Risk	Thunderstorms are forecast to be scattered in coverage (30-50 Percent Chance). Atmospheric conditions support frequent cloud-to-ground lightning strikes.
High Risk	Thunderstorms are forecast to be numerous or widespread in coverage (60-100 Percent Chance). Atmospheric conditions support continuous and intense cloud-to-ground lightning strikes.

Appendix H - Hail Size Description Chart

Hail Size Description Chart

Hailstone size	Measurement	
	in.	cm.
bb	< 1/4	< 0.64
pea	1/4	0.64
dime	7/10	1.8
penny	3/4	1.9
nickel	7/8	2.2
quarter	1	2.5
half dollar	1 1/4	3.2
golf ball	1 3/4	4.4
billiard ball	2 1/8	5.4
tennis ball	2 1/2	6.4
baseball	2 3/4	7.0
softball	3.8	9.7
Compact disc / DVD	4 3/4	12.1

Note: Hail size refers to the diameter of the hailstone.

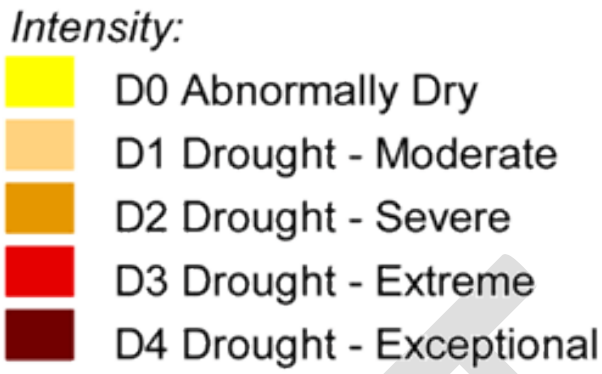
Appendix I - Sperry-Pitz Ice Accumulation Index

The Sperry-Piltz Ice Accumulation Index, or "SPIA Index" – Copyright, February, 2009

ICE DAMAGE INDEX	DAMAGE AND IMPACT DESCRIPTIONS
0	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
2	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
3	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
4	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines & some high voltage transmission lines/structures. Outages lasting 5 – 10 days.
5	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.

(Categories of damage are based upon combinations of precipitation totals, temperatures and wind speeds/directions.)

Appendix J - NOAA U.S. Drought Monitor Scale



Appendix K - Class of Wildfire and Wildland Urban Zones

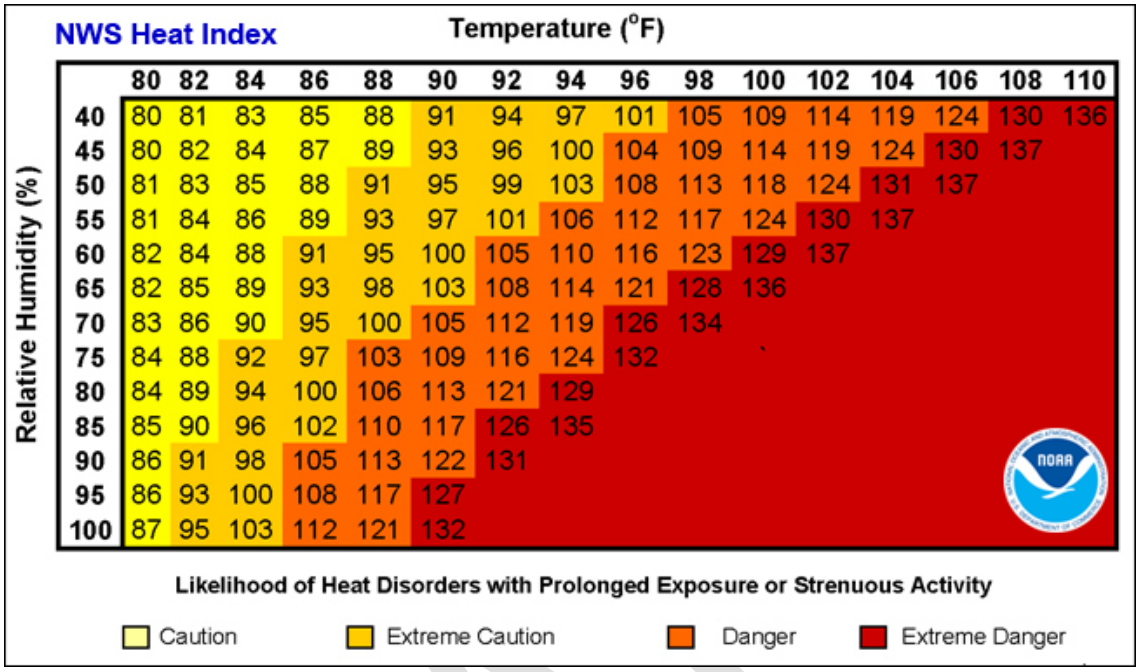
Size Class of Fire

- Class A - one-fourth acre or less;
- Class B - more than one-fourth acre, but less than 10 acres;
- Class C - 10 acres or more, but less than 100 acres;
- Class D - 100 acres or more, but less than 300 acres;
- Class E - 300 acres or more, but less than 1,000 acres;
- Class F - 1,000 acres or more, but less than 5,000 acres;
- Class G - 5,000 acres or more.

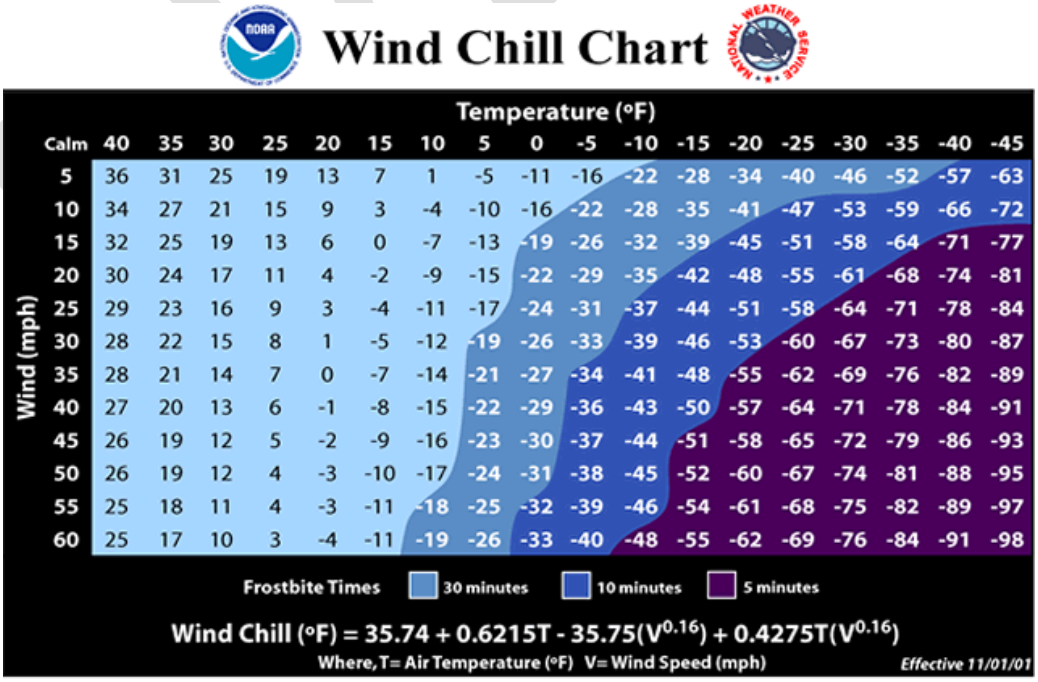
Table 4: E-Scale Building Construction Classes and Attributes

WUI scale	Building Construction Class	Ignition Vulnerabilities from Embers and Fire	Building Construction and Landscaping Attributes for Protection against Embers
E1 or F1	WUI 1	None	Normal Construction Requirements: - Maintained Landscaping - Local AHJ-Approved Access for firefighting equipment
E2 or F2	WUI 2	In this area, highly volatile fuels could be ignited by embers. Weathered, dry combustibles with large surface areas can become targets for ignition fro m embers.	Low Construction Hardening Requirements: - Treated combustibles allowed on structure - Attached treated combustibles allowed - Treated combustibles allowed around structure - Low flammability plants - Irrigated and well maintained Landscaping - Local AHJ-Approved Access for firefighting equipment
E3 or F3	WUI 3	Exposed combustibles are likely to ignite in this area from high ember flux or high heat flux	Intermediate Construction Hardening Requirements: - No exposed combustibles on structure - Combustibles placed well away from structure - Low flammability plants - Irrigated and well maintained landscaping - Local AHJ-Approved Access for firefighting equipment
E4 or F4	WUI 4	Ignition of combustibles from direct flame contact is likely.	High Construction Hardening Requirements: - No exposed combustibles - All vents, opening must be closed - Windows and doors must be covered with insulated non-combustible coverings. - Irrigated and well maintained low flammability landscaping - Local AHJ-Approved Access for firefighting equipment

Appendix L - Extreme Temperatures Heat Index



Appendix M – Wind Chill Chart



Appendix N - Definition of Infectious Diseases – Mayo Clinic

Infectious diseases are disorders caused by organisms — such as bacteria, viruses, fungi or parasites. Many organisms live in and on our bodies. They're normally harmless or even helpful. But under certain conditions, some organisms may cause disease.

Some infectious diseases can be passed from person to person. Some are transmitted by insects or other animals. And you may get others by consuming contaminated food or water or being exposed to organisms in the environment.

Signs and symptoms vary depending on the organism causing the infection, but often include fever and fatigue. Mild infections may respond to rest and home remedies, while some life-threatening infections may need hospitalization.

Many infectious diseases, such as measles and chickenpox, can be prevented by vaccines. Frequent and thorough hand-washing also helps protect you from most infectious diseases.

Appendix O - Documentation of Planning Process

To initiate the Plan Update process, the Town Administrator and the Emergency Management Director invited Department Heads from all Town departments to participate in the Plan Update, as well as representatives from the business community, academia, and organizations serving vulnerable populations. The Plan Update Committee met on May 7, 2024, August 19, 2024, and November 26, 2024 to develop the Plan Update. The Hazard Mitigation Committee included the individuals listed below.

Plan Update Committee Member Name	Plan Update Committee Member Title
William Manzi	Town Manager, Town of Seabrook, NH
Joseph Titone	Emergency Management Director, Town of Seabrook, NH
Brett Walker	Police Chief, Town of Seabrook, NH
William Edwards	Fire Chief, Town of Seabrook, NH
Kelly McDonald	Fire and Emergency Management Secretary, Town of Seabrook, NH
Lacey Fowler	Building Inspector/Health Officer, Town of Seabrook, NH
John Starkey	Public Works Director, Town of Seabrook, NH
Curtis Slayton	Water and Sewer Superintendent, Town of Seabrook, NH
Bonnie Armentrout	Welfare Agent, Town of Seabrook, NH
Tom Morgan	Planner, Town of Seabrook, NH
Don Hawkins	Commissioner, Beach Village District, Seabrook, NH

Rockingham Planning Commission (RPC) staff worked with the Town Manager and Emergency Management Director to directly seek input from residents, including neighborhoods most impacted by flooding, local businesses, academia, organizations supporting socially vulnerable populations, and Emergency Management Directors in abutting communities. The RPC reviewed the draft Plan Update with representatives serving vulnerable populations. Emergency Management Directors in the abutting communities were emailed the draft Plan Update and invited to comment. Individuals listed below were invited to participate in the Plan Update process and review the draft Plan Update.

Social Service Organization	Contact Person
Southern New Hampshire Services	Ryan Clouthier, Chief Operating Officer
Seacoast Public Health Network	Julia Foulks, Public Health Network Manager
Abutting Communities	**Contact Person**
Town of Hampton, NH	Michael McMahon, EMD
Town of South Hampton, NH	Josh Moulton, EMD
Town of Hampton Falls, NH	Jay Lord, EMD
Town of Kensington, NH	Benjamin Cole, Interim EMD
City of Amesbury, MA	James Nolan, EMD
Town of Salisbury, MA	Scott Carrigan, EMD

Public notices about the Plan Update meetings were posted on the Town website and social media accounts to inform viewers and followers about meetings and opportunities to comment on the Plan. Notice about the Plan Update process was also posted on the Rockingham Planning Commission's website and published in the RPC's monthly newsletter. The newsletter is distributed to local officials in the 27-

town RPC region. All Plan Update meetings were open to the public. RPC staff facilitated the Plan Update Committee meetings, guided the plan update process, and prepared the Plan Update.

Looking for Public Outreach for the Natural Hazard Mitigation Plan

Posted on May 15, 2024 at 3:53 pm.

The Town of Seabrook is updating the Natural Hazard Mitigation Plan. FEMA requires every municipality in the country to develop and maintain a Natural Hazard Mitigation Plan to identify and evaluate the risks posed by natural hazards such as coastal storms, extreme temperatures, and flooding. Residents are welcome to share information on where and how natural hazards impact Seabrook via email, (kmcdonald@seabrooknh.org). The 2018 Hazard Mitigation Plan is available on the Town website for review (https://seabrooknh.info/wp-content/uploads/2018/08/Seabrook_HazMitPlan_Draft_June2018.pdf).

Town of Seabrook, New Hampshire
Emergency Operations Management Committee Meeting

AGENDA

Wednesday, May 1, 2025

10:00am – Open Committee Meeting:

- The meeting will be opened at 10:00 AM on Wednesday, May 1, 2025, in the Selectmen's Office at the Seabrook Town Hall.

Attendance: Roll call of all personnel on committee

New Business:

- Review updated portions of the Town's Hazard Mitigation Plan.
- Incorporate input received from identified stakeholders.
- Discuss next steps for updating the plan.

Future Agenda:

- Next Meeting TBA-committee.

RPC Begins Updates to Hazard Mitigation Plans in Atkinson and Portsmouth

NH Homeland Security and Emergency Management has awarded FEMA grant funds to the RPC to work with the towns of Atkinson and Portsmouth on updates to their Hazard Mitigation Plans. These Plans will include actions to mitigate and reduce the risks and impacts of natural hazards on people and property. Residents, landowners, business owners, municipal officials and other members of the public are welcome to attend plan update meetings.

Please contact Theresa Walker, RPC Consulting Planner, for information on meeting dates, or to share comments or questions, theresawalker@comcast.net.

Appendix P – Plan Approval Letter from FEMA