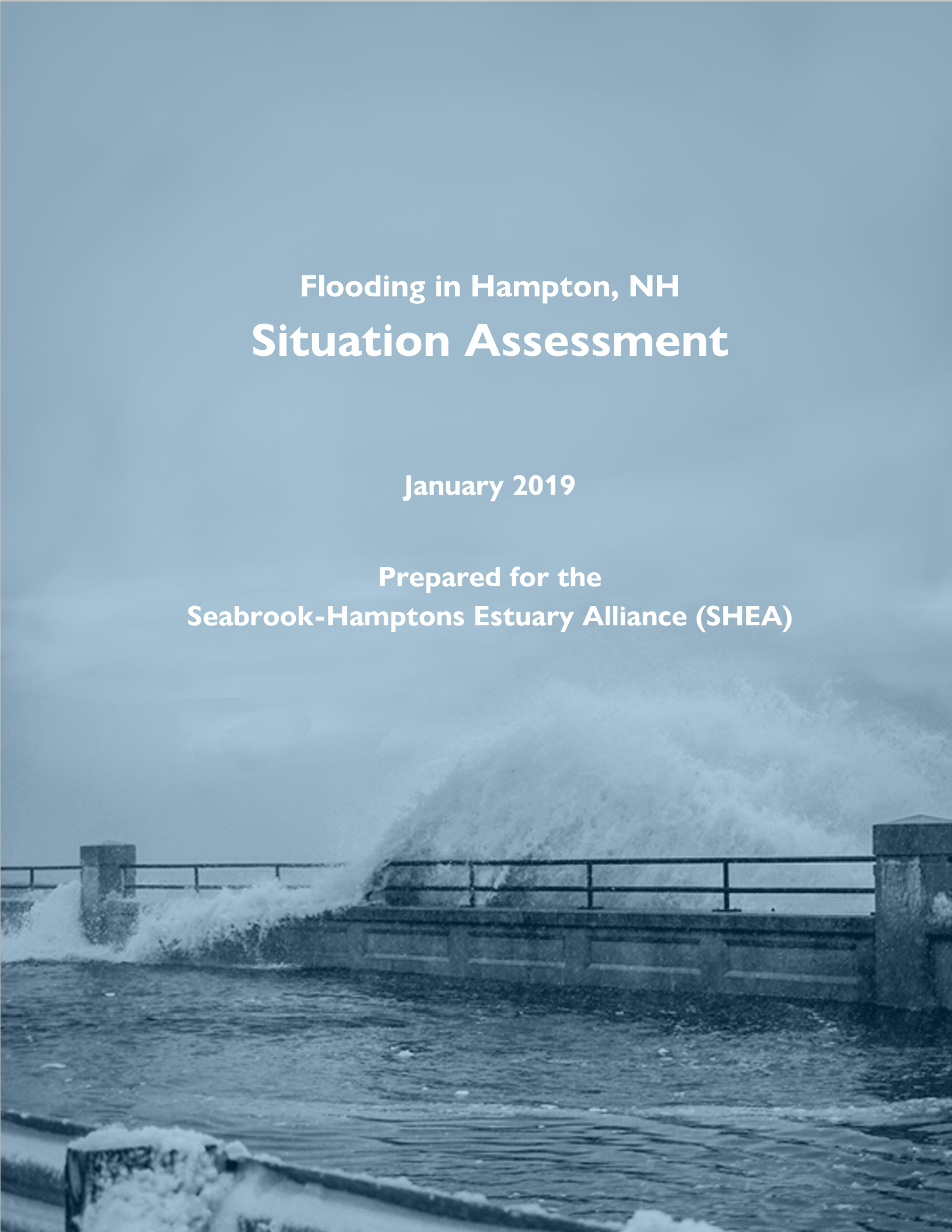
Flooding in Hampton, NH

Situation Assessment

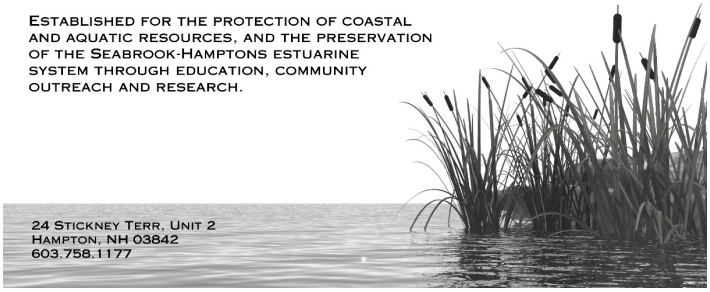
January 2019

Prepared for the
Seabrook-Hamptons Estuary Alliance (SHEA)



SEABROOK-HAMPTONS ESTUARY ALLIANCE

ESTABLISHED FOR THE PROTECTION OF COASTAL AND AQUATIC RESOURCES, AND THE PRESERVATION OF THE SEABROOK-HAMPTONS ESTUARINE SYSTEM THROUGH EDUCATION, COMMUNITY OUTREACH AND RESEARCH.



24 STICKNEY TERR, UNIT 2
HAMPTON, NH 03842
603.758.1177

This Situation Assessment of Flooding in Hampton, NH was prepared by EF | Design & Planning, LLC in collaboration with the Seabrook-Hamptons Estuary Alliance (SHEA) and the New Hampshire Coastal Program. Support for this effort was provided by the Climigration Network, through their partnership with the Lincoln Institute of Land Policy, the Doris Duke Charitable Foundation, and the Consensus Building Institute.

Contents

Appendices

Tables

Figures

Abstract

Hampton, NH is vulnerable to flooding associated with high tides, sea-level rise, and storm surge. Areas of town that lie along the Atlantic coast, low-lying neighborhoods, and locations with frontage along the salt marsh and rivers on the eastern side of Hampton are increasingly impacted by flood waters.

In order to identify flood management strategies, the Seabrook-Hamptons Estuary Alliance (SHEA) applied for funding through the Climigration Network's award program. SHEA was one of five award recipients. This award was made possible through a partnership with the Lincoln Institute of Land Policy, the Doris Duke Charitable Foundation, and the Consensus Building Institute.

The purpose of the Situation Assessment was to gather information and input, identify gaps in knowledge and needs, and convene stakeholders in order to better understand flood vulnerability and impacts. The process included compiling information from past studies and projects, conducting a survey and interviews, convening an advisory group, and reviewing case studies.

The need for a long-term plan to adapt to flooding and reduce the vulnerability of people and property is evident. There numerous and diverse adaptation strategies that may be appropriate at the site or regional scale in Hampton. A long-term adaptation plan for Hampton will likely include a suite of these adaptation strategies to. These strategies can generally be grouped into three categories: accommodation (living with water), protection (keeping water out), and retreat or relocation (moving out of the water's way).

Through preparing this Situation Assessment, SHEA reaffirmed the need to increase capacity to address flooding in Hampton and the opportunity to enhance coordination of flood-related projects and planning. A Coastal Hazards and Adaptation Team (CHAT) comprised of key local stakeholders was convened. The first CHAT work session was held in January 2019 to discuss formation of the group, roles and goals of the group, and next steps.

1. Introduction

1.1 Problem Statement(s)

Hampton's coastal geography and hydrology make it vulnerable to flooding. Properties located along the salt marsh are very low in elevation and have few natural or constructed protections from high tides and storm surges. Tides at ten feet or higher cause street and property flooding along the salt marsh. Annual prediction tide charts published by the National Oceanic and Atmospheric Administration (NOAA) indicated that Hampton Harbor would experience 49 high tides at 10.0 feet or higher, not including storm surges, in 2018.[1] Fifty-six instances where the tide is expected to exceed 10.0 feet are predicted for 2019. While many properties along the barrier beaches are protected from high tides and storms by elevated land features, constructed revetments, and/or sand dunes, infrastructure and properties are increasingly impacted by flooding.

Tides that reach 10.0 feet in Hampton trigger the "Action Stage", which is the state at which the National Weather Service or a partner needs to implement a mitigation action in preparation for possible significant hydrologic activity.

With rising sea levels, property flooding is becoming more frequent and more intense. Many owners are considering structural and/or landscaping options to make their properties more flood-resilient and are seeking municipal action to help reduce flood impacts. However, over the long-term, it is unlikely that these measures will offer sufficient protection on all parcels given current sea-level rise projections. Some homeowners have indicated a desire to sell their properties rather than continue to try to manage the increasingly disruptive and damaging high tide flooding and storm impacts. While some studies have evaluated Hampton's vulnerability to coastal flooding and sea-level rise, limited work has taken place to identify conceptual options to manage the growing flood hazards. A recent study by the University of New Hampshire and University of Massachusetts Boston evaluated the community-scale options for protecting Hampton from sea-level rise and storm impacts and proposed retreat — or removal of structures — as a component of the conceptual adaptation options for some of the most vulnerable marsh-side properties.[2]

Hampton and Hampton Beach Village Precinct governing boards and commissions have discussed and heard public comment on many aspects of intensifying flooding over the years; However, given multiple priorities, these bodies have had limited time and resources to address the topic in detail and limited opportunity to coordinate between boards and commissions. The Seabrook-Hamptons Estuary Alliance (SHEA) recognizes that a comprehensive, multi-faceted approach to reducing the community's vulnerability to flooding is needed. SHEA also recognizes that many management approaches, including accommodation (living with water), protection (keeping water out), and retreat or relocation (moving out of the water's way) are important options for decision makers and property owners to evaluate as part of the community's long-term plan for adaptation. The concepts of managed retreat and voluntary property buyout programs, in particular, are daunting and challenging topics to introduce to municipal officials and property owners, who are often understandably reluctant to consider and address these concepts. As a result, and in order to inform future decision-making, conducting a Situation Assessment was an important step to take prior to initiating discussions about multifaceted adaptation that includes possible retreat in Hampton.

Many management approaches, including **accommodation** (living with water), **protection** (keeping water out), and **retreat or relocation** (moving out of the water's way) are important options for decision makers and property owners to evaluate as part of the community's long-term plan for adaptation.

1.2 Purpose of the Situation Assessment

The purpose of the Situation Assessment is to:

- Gather information to better understand stakeholder concerns related to flooding in Hampton;
- Collect preliminary input on a potential suite of adaptation strategies for Hampton;
- Identify gaps in knowledge and needs;
- Convene key stakeholders to inform the development of a project proposal for future funding for building consensus on long-term adaptation to flooding in Hampton.

1.3 Project Team

The Project Team consists of SHEA and the New Hampshire Coastal Program. The Climigration Network award program enabled SHEA to hire an independent consultant to assist with conducting the Situation Assessment.

SHEA was established by concerned citizens in 2013 for the protection of coastal and aquatic resources, and the preservation of the Seabrook-Hamptons estuarine system through education, community outreach, and research. The Coastal Program is one of 34 federally approved coastal programs authorized under the Coastal Zone Management Act and is administered by the New Hampshire Department of Environmental Services (NHDES). The Coastal Program provides funding and staff assistance to towns and cities, and other local and regional groups who protect clean water, restore coastal habitats, and help make communities more resilient to flooding and other natural hazards. The Coastal Program has played an integral role in advancing climate adaptation in coastal New Hampshire.

1.4 Contents of the Situation Assessment

This Situation Assessment includes:

- Section 1: Introduction to the Situation Assessment
- Section 2: A summary of Hampton's location, geography, and population
- Section 3: A review of existing information about flood impacts and costs in Hampton
- Section 4: A summary of stakeholder engagement activities and results

2. Local Context

2.1 Location & Land Use

The Town of Hampton is located in Rockingham County in southeast New Hampshire. It is one of the state's seven ocean front communities, with approximately 5.4 miles of sandy beach and rocky shores.

The total area of Hampton is approximately 14 square miles. According to 2015 digitized land use data, wetlands/salt marsh (31%), residential land (26%), and forest land (18%) account for approximately three-quarters of land use in Hampton.[3] Hampton Harbor, formed by the confluence of the Hampton and Taylor Rivers, and the Hampton Salt Marsh Conservation Area are two of the town's significant natural features. Approximately 27% of the town is characterized by impervious surfaces,[4] including federal and state highways: Interstate 95 and NH Routes 101, 27, 101E, and IA, which is adjacent to the coast. With 75% of the town's population commuting either to another community in New Hampshire or out of state, these routes provide critical access to places of employment.[5] They also serve as evacuation routes.

Situated at sea level, Hampton's topography is relatively flat; the highest elevation on the west side of I-95 is around 140 feet above sea level. Hampton's low elevation, extensive surface water and wetlands, and location on the coast result in approximately 2,968 acres of land within the FEMA 100-year floodplain. Approximately 471 acres (16%) of

land within the 1% annual change (100-year) floodplain are developed, including 278 acres of residential development. An additional 32 acres of land lie beyond the 100-year floodplain but within the 0.2% annual change (500-year) floodplain. Except for a 0.5 mile stretch of dunes and beach just north of the Hampton Harbor Inlet, the landward side of Hampton's beaches is characterized by a harden shoreline of sea wall, riprap, and revetments.[6] Approximately 19 percent of Hampton's tidal shoreline is armored.[7]

2.2 Housing and Demographics Snapshot

Between 2010 and 2016, Hampton's year-round population declined by an estimated 1% from 15,340 to 15,216.[8,9] The town's year-round population is expected to change little, increasing slightly to 15,611 by 2040.[10] However, the Town has a large seasonal population and residential development continues at a high rate. As noted in the Town's 2017 Annual Report, 2017 was a record-breaking year for construction and renovations. The Town issued 1,798 permits representing $86,611,186 in construction value. A total of 102 new rental units became available 2017.[11] Residential land and buildings currently account for 85.2% of local assessed valuation in Hampton, while commercial land and buildings account for 11.8%, and public utilities, current use, and other uses account for 3.0%.[12]

Hampton has approximately 9,529 housing units. An estimated 2,659 units are vacant units; however, 83% (2,207 units) of vacant units are classified as seasonal, recreational, or occasional use homes.[13] Owner occupied homes account for approximately 74% of housing units. Of these, 3,185 (62%) have a mortgage. The median owner-occupied home value is $342,700; Median monthly rent is $1156.[14] A majority (84%) of the population of owner-occupied housing units moved to their current home after 1990. Over 82% of renters in Hampton moved to their current home between 2010 and 2014, indicating that many of Hampton's renters stay in place for two or more years.[15]

The median household income in Hampton is $77,337, compared to $82,398 in Rockingham County and $68,485 in New Hampshire.[16] Approximately 5% of the town's population (756 people), falls below the poverty level. Minority populations account for approximately 6% of the population. Over 10% of the population has a disability[a].[17]

Three of the five census tracts in Hampton (650.01, 605.05, 650.08) have a medium vulnerability ranking for environmental hazards according to the University of South Carolina's social vulnerability index.[18] These areas are located south of Lafayette Road and Route 1, west of Woodland and Locke Roads, and in the region bounded by High Street, Locke Street, Winnacunnet Road, and the shoreline. The remaining tracts (650.06, 650.07) rank low or medium-low (Figure 1).[19]

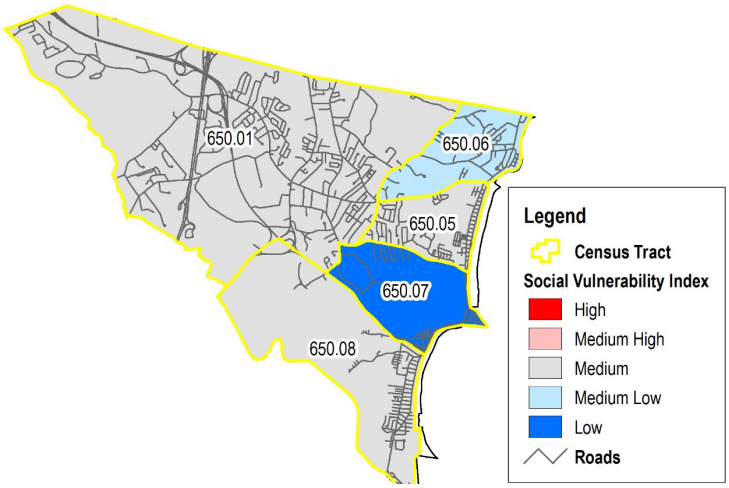


Figure 1. Social Vulnerability Index ranking of Census Tracts in Hampton, NH

[a] Disability includes the following, as self-reported in the American Community Survey: hearing difficulty, vision difficulty, cognitive difficulty, ambulatory difficulty, self-care difficulty, and independent living difficulty

3. Flooding in Hampton

3.1 Overview of Flood Vulnerability in Hampton

Previous studies and plans have documented Hampton's vulnerability to flooding through mapping, vulnerability assessments, stakeholder input, mitigation planning, and other tools. This section includes a summary of current flood-related projects and activities and a review of key findings from available resources including:

- Town of Hampton's Hazard Mitigation Plan (2016);
- Tides to Storms vulnerability assessment (2015);
- New Hampshire Coastal Risk and Hazard Commission's final report (2016);
- Local data extracted from a national study of sea-level rise impacts to homes by the Union of Concerned Scientists (2018);
- Results from the Coast in Action cost benefit analysis conducted for Maine and New Hampshire (2012).

3.2 Recent and Ongoing Projects and Activities

Floodplain Regulations

In 2017 the Town voted to adopt new floodplain regulations. The new ordinance requires that in Zone VE, the lowest horizontal structural member of the lowest floor has to be elevated at least one food above base flood elevation (BFE). In all other special flood hazard areas, the lowest floor of structures must be elevated at least one foot above the base flood elevation. In exchange, the height of the building may exceed the maximum height requirements in the district by not more than one foot.

Community Rating System

The Town of Hampton is working with Rockingham Planning Commission to officially participate in the FEMA NFIP Community Rating System (CRS). CRS is a voluntary incentive program for communities who participate in the NFIP. The residents and businesses of communities who participate in the CRS program receive a discount (typically 5-10%) on their annual flood insurance premiums.

Flood Study

In 2018, Hampton voters approved Warrant Article 20 to raise and appropriate the sum of $100,000 for the purpose of hiring a consultant engineering firm to study and report on the impacts of, and solutions to, flooding. The study will investigate flooding from the Hampton River and Hampton Harbor onto and along the West Side Streets off of Ashworth Avenue, Brown Avenue, and the Island Path and Glade Path areas.[20] As of December 2018, the Public Works Department had selected a consultant and conducted an initial public input session. It is anticipated that the study will be completed in 2019.[21]

Drainage Improvement Preliminary Design

Hampton voters also approved 2018 Warrant Article 22 to raise and appropriate $80,000 to conduct an investigation and preliminary design for a storm water drainage system for the King's Highway area from Winnacunnet Road to the closed 12th Street Sewer Pumping Station and from the closed 12th Street Sewer Pumping Station to High Street, to include Greene Street, Meadow Pond Road, Gentian Road and portions of High Street and the numbered streets where necessary and including the design for converting the abandoned sewer line and pumping station to move storm water in the new system.[22] These streets are regularly inundated with water covering and ponding in the roadways. The water is considered a traffic hazard due to the potential for freezing during the winter and also causes conflict during the summer when motorists are trying to avoid the water with pedestrians and bicyclists in the roadway. The

elevation of the water table and the infiltration rates of the soils prevent water from being able to infiltrate into the subsurface areas. The grade of the roads and the saturated soils cause water to cover and pond in the roadways and flood yards along these streets.[23] As of December 2018, the Public Works Department has selected a consultant to undertake the project and conducted an initial public input session.[24]

3.3 Severe Storm and Flooding Declared Disaster

On March 2-8, 2018 strong winds, a large storm surge, and coastal flooding overwhelmed State and local resources. Hampton was one of four communities along the coast that incurred seawall damaged as a result of the incident. As stated in the Governor's request for a Presidential Major Disaster Declaration, "the impacts [of the incident] considerably strained State and local resources; it consumed staff time and exhausted available resources due to repetitive high tides and storm surge conditions, strong winds, widespread roadway destruction, and significant seawall debris that restricted travel and emergency operations."[25] The incident was declared a disaster on June 8, 2018. As of November 2018, the Town of Hampton is working to recover these costs through FEMA.[26]

3.4 Vulnerabilities, Projects & Costs Identified in the Hazard Mitigation Plan

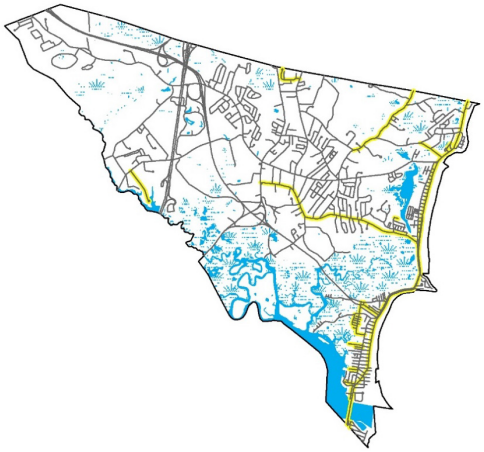
During the preparation of Hampton's 2016 Hazard Mitigation Plan, the Town evaluated flood hazards and identified risk. The riverine and coastal flooding hazard was ranked *severe* based on the potential impacts to humans, property, and business and the likelihood of occurrence of flooding.[27] Participants identified several assets and resources that are vulnerable to flooding and documented the number of floods in Hampton, which averaged three per year between the years 2011 and 2015. The Hazard Mitigation Plan documents $86,331,157 of property and infrastructure vulnerable to flooding under current conditions but does not estimate all property vulnerable to flooding. The location and assessed value of these facilities is displayed in Table 1.

Table 1. Critical facilities and assets that are vulnerable to flooding

Facility	Name/Location	Assessed Value
Police Station, EOC (Secondary)	Hampton Police / 100 Brown Ave	$9,171,000
Fire Station	Fire Station #1 / Winnacunnet Rd	$4,694,700
Public Works	Highway garage, transfer station, wastewater treatment plant/Hardardt's Way	$29,250,927
	13 sewage lift stations	$4,582,000
Transportation Routes & Resources	Town Dock	$227,000
High Population Areas/Entertainment Facilities (vulnerable to all hazards)	Hampton Beach	Varies
	Hampton Beach Casino / Ocean Blvd	$9,423,700
	Religious Facilities (6 plus 2 seasonal)	$13,578,600
	Hampton Public Schools	Varies
	Inn of Hampton Conference Center/Lafayette Rd	$3,409,500
	Ashworth Hotel and Function Room / Ocean Blvd	$9,741,900
	Downtown District	varies
	1-95 Toll Booths	$808,500
	Lane Memorial Library	$1,443,330
	TOTAL	$86,331,157

Source: Town of Hampton 2016 Hazard Mitigation Plan

To mitigate vulnerability, the Town developed a list of 18 projects to initiate during the life of the five-year mitigation plan. The total cost of flood mitigation projects identified in the Hazard Mitigation Plan is over $5 million dollars, including $4.05 million for four high priority projects.[28] Refer to Table A in Appendix 1 for a list of these flood mitigation projects.



Streets in Hampton with 1 or more of the following:
- Flood-prone property
- Property that has flooded during a high tide or storm
- Property that has been damaged by flooding
- Property that owners have filed a flood insurance claim on
- Property that owners have had to find an alternative route to get to or from due to flooding

Figure 2. Streets with Flood-Prone Property or Property that has been Impacted by Flooding, as Reported by Survey Participants

Locations in Hampton that are Vulnerable to Flooding

- Local roads landward of Route 1A at Hampton Beach, North Beach and near the North Hampton border (Source: Tides to Storms, 2015)
- Segments of Rt 1A, Rt 101, Rt 1 and municipal roads and land behind Rt 1A at Hampton Beach and North Beach (Source: Tides to Storms, 2015)
- Low-lying residential neighborhoods behind Ashworth Avenue experience nuisance flooding at the highest tides and flooding during coastal storms (Source: Tides to Storms, 2015)
- Low-lying upland areas behind Route 1A and in interior fringe areas of the Hampton-Seabrook Estuary are highly susceptible to flooding even at the lowest 1.7-foot sea-level rise scenario (Source: Tides to Storms, 2015)
- Route 1 south of the Route 101 interchange is impacted at 6.3 feet of SLR (Source: Tides to Storms, 2015)
- West of Ashworth Avenue, where many residences have been built on filled marshland; When storms strike in connection with high tides (Source: Town of Hampton Hazard Mitigation Plan, 2016)
- Gentian Avenue and Greene Street neighborhood (Source: DPW)
- Locations surrounding Meadow Pond (Source: DPW)

3.5 National Flood Insurance Program (NFIP)

The number of policyholders in the Federal Emergency Management Agency (FEMA)'s National Flood Insurance Rate Program (NFIP) is indicative of the community's vulnerability to flooding.

There are currently 1,822 policies in force in Hampton.[29] Since 1986 when Hampton joined NFIP, the New Hampshire Department of Homeland Security and Emergency Management (NH HSEM) reports that there have been 770 losses (574 paid out) and a total of $6,296,356 in payments made to Hampton property owners – this is the equivalent of an average of 24 losses and nearly $200,000 per year. Table 2 displays NFIP Loss Statistics documented by FEMA. (Table 2).[30] Hampton's losses over the last 32 years account for 42% of the total losses in Rockingham County and 20% of losses statewide.[31] With 44 repetitive loss buildings and 124 total repetitive losses, Hampton has the greatest number of repetitive losses in the state. A total of $2,314,953 in repetitive loss claims have been paid by the NFIP.[32] Of these, 37 repetitive losses were residential properties.[33] The Town recognizes in its Hazard Mitigation Plan that it is very difficult to deal with repetitive loss properties noting that "[the Town] can't buy them out and most have basement apartments which makes retrofitting hard."[34]

Table 2. NFIP Loss Statistics from 1986 through 7/31/18

	Total Losses	Closed Losses	Open Losses	CWOP[a] Losses	Total Payments
Hampton	770	570[b]	3	197	$6,271,228[b]
Rockingham County	1,827	1,364	4	459	$18,762,072
Hampton's % of Rockingham County	42%	42%	75%	43%	33%
New Hampshire	3920	2939	7	974	$51,996,973
Hampton's % of New Hampshire	20%	19%	43%	20%	12%

[a]Losses that have closed without payment.

[b]The number of closed losses documented in the FEMA Database differs slightly from the records provided by NH HSEM. NH HSEM reports 574 closed losses in Hampton, as of October 6, 2018, whereas FEMA reports 570. This difference impacts the total payments amount: NH HSEM reports a total of 6,296,356 payments to Hampton property owners, whereas FEMA reports $6,271,228.

Source: FEMA Database, accessed September 26, 2018. https://bsa.nfipstat.fema.gov/reports/1040.htm#33

In preparation to participate in the FEMA Community Rating System, the Town worked with Rockingham Planning Commission to document areas of the Town that have experienced repetitive loss. Twelve regions that have experienced repetitive loss have been mapped. These regions include: several areas along Rt 1A/Ocean Boulevard in the northern end of Hampton; the Gentian Road and Greene Street Neighborhood; the east end of Winnacunnet Road; adjacent to the marsh; the vicinity of Brown Avenue and Island Path; neighborhoods along the west side of Ashworth Avenue; and the Atlantic, Boston, and Concord Street neighborhoods to the east of Rt 1A/Ocean Boulevard. Figures 1 and 2 in Appendix 2 display these locations.

3.6 Tides to Storms Vulnerability Assessment

The Town worked with Rockingham Planning Commission in 2015 to complete the *Tides to Storms* vulnerability assessment that identified and measured impacts of flooding from sea level rise and storm surge on build structures, human populations, and natural environments in Hampton. The GIS-based assessment identified up to 3,065 parcels, with a total assessed value of $1.2 billion, as vulnerable to projected sea-level rise and storm surge by the year 2100.[35] Six scenarios were evaluated, including three sea level rise scenarios (1.7 ft sea-level rise, 4.0 feet of sea level rise, 6.3 feet of sea-level rise), and three scenarios that included both sea-level rise and storm surge. The assessment revealed that sea-level rise scenarios generally affected land within the current 100-yr floodplain and extended into the 500-yr floodplain in some areas. Table 3 displays a summary of three categories of at-risk vulnerable assets and resources that were identified through a mapping analysis.[36]

Table 3. Summary of Infrastructure, Natural Resources, and Parcels Affected by Six Sea Level Rise and Storm Surge Scenarios Conducted in the Tides to Storms Project in Hampton.

Sea Level Rise Scenarios (SLR)	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)	18	43	71	76	87	107
Critical Facilities (# of sites)	0	2	2	2	2	2
Roadways (miles)	3.4	13.2	20.6	20.7	26.7	30.8
Upland (acres)	319.4	632.3	897.8	879.7	1,123.5	1,321.2
Freshwater Wetlands (acres)	56.8	79.8	102.7	97.6	121.4	135.5
Tidal Wetlands (acres)	181.7	202.9	223.8	235.6	236.9	237.3
Conserved and Public Lands (acres)	39.5	59.9	87.9	107.9	123.9	150.3
100-Year Floodplain (acres)	2,393.0	2,738.3	2,810.9	2,836.2	2,865.8	2,872.9
500-Year Floodplain (acres)	2,393.0	2,739.1	2,886.0	2,910.4	2,941.7	2,948.9
Number of Parcels Affected	1,084.0	1,983.0	2,590	2,537	2,863	3,042
Aggregate Value of Affected Parcels	$518,193,700	$814,253,000	$1,092,485,300	$1,094,812,900	$1,239,764,700	$1,310,336,300

Note: Upland refers to land above mean higher high water (highest tidal extent); 500-yr floodplain impacts were calculated based on flooding within the extent of the 500-yr floodplain.
Source: Tides to Storms, 2015

Hampton's most vulnerable zoning district is its Residential High-Density district. [37] Similarly, residential land use is projected to be the most impacted land use, with as many as 432 acres (0.6 square miles) impacted under a high sea-level rise plus storm surge scenario. While culverts are the most frequently impacted type of infrastructure, impacts to roadways are significant. At 1.7 feet of sea-level rise, a total of 3.4 miles of road are impacted. This impact increases to 13.2 miles, including 10.1 miles of local roads and 2.1 miles of evacuation routes, under a 4.0-foot sea-level rise scenario. Under a 6.3-foot sea-level rise plus storm surge scenario, over 30 miles of roads are impacted. From an access perspective, the impact to transportation associated with flooded roadways will be much greater than the footprint of inundation or damage to roadways.

3.7 SLAMM Results

Results from a Sea Level Affecting Marshes Model (SLAMM) that was run in 2014 to determine how salt marshes may respond to different sea-level rise scenarios found that a 6.6-foot rise in sea level by 2100 may result in a loss of 240 acres of salt marsh as near as 2025 and a loss of 95 percent of existing salt marsh by 2100.[38] Salt marshes provide critical flood mitigation benefits. Therefore, the loss of this habitat would have compounding impacts on flooding.

3.8 Future At-Risk Homes

A national study conducted by the Union of Concerned Scientists assessed homes at risk from sea-level rise. This assessment found that by 2100 up to 40% of homes in Hampton are at risk of flooding due to high tides rising higher, resulting in impacts to over 5,000 people who occupy these homes.[39] Results of this study, which evaluated high and moderate sea-level rise scenarios in 2045 and 2100, are summarized in Table 4.

Table 4. Number, Value, and Population Living in At Risk Homes

Year	Sea Level Rise	Homes at Risk	% of Homes in Hampton	Population Living in Homes at Risk	Value (2018 $)	Contribution to Local Property Tax Base
2045	Moderate	734	7.5%	1,101	$215,291,083	$3,184,927
	High	1,498	18%	2,247	$424,531,841	$6,281,168
2100	Moderate	2,386	24%	3,579	$745,804,032	$11,033,936
	High	3,458	40%	5,142	$1,184,292,698	$17,518,464

Source: Union of Concerned Scientists, 2018

3.9 2012 Cost-Benefit of Adaptation Study

In 2012, the Piscataqua Region Estuaries Partnership (PREP), New England Environmental Finance Center, municipal staff, elected officials, and other stakeholders collaborated to model the costs of sea level rise and adaptation.[40] The study provided an assessment of the cost of damage due to low and high sea level rise under 'no adaptation' and 'protect to 2100 flood' scenarios. Under high and low sea level rise scenarios, it is estimated that the cumulative, discounted damage costs in 2050 in Hampton will reach $82.7 and $78.8 million, respectively. Adaptation costs to protect to the year 2100 flood under high and low sea level rise scenarios are $7.1 and $4.9 million, respectively, indicating that investments in adaptation have a significant net benefit. [41]

The expected damage costs to private assets by 2050 is estimated to be $318.8 million under a high sea level rise scenario and $287.7 under a low sea level rise scenario.[42] The study examined the costs and benefits of adaptation actions and found that the benefit cost ratio of adaptation (protecting to a high sea level rise 2100 100-year flood by regulation) was 8:1 under a high sea level rise scenario and 7:1 under a low sea level rise scenario. An additional key finding of this modeling assessment was a substantial portion of damage resulted from storm surge as opposed to sea level rise.[43]

4. Stakeholder Engagement

4.1 Overview

The Situation Assessment included two stakeholder engagement components: a) gathering public input through a survey and interviews and b) forming and convening the Hampton Coastal Hazards Adaptation Team (CHAT). SHEA conducted initial stakeholder engagement during October and November 2018.

4.2 Preliminary Public Input Findings

4.3 Flood Survey

The Project Team developed and conducted a 26-question survey between October 9 and October 25, 2018. The survey was reviewed by the Consensus Building Institute. The target audience of the survey included Hampton residents, property owners, businesses, municipal staff, and other stakeholders. The survey was advertised on SHEA's website, the Town's website, In the Know Hampton Facebook page, and distributed to SHEA's existing list serves. The survey was available online through SurveyMonkey and in print. A total of 69 individuals responded to the survey.

The survey produced compelling results about flood impacts and interest in adaptation strategies, including participants' desire to learn more about voluntary buyout and managed retreat, their ranking of adaptation strategies, and their experiences with flooding.

Many of the respondents (51%) had participated in flood workshops in Hampton in 2018 and 78% indicated that they are generally familiar with sea-level rise projections for New Hampshire. Over half (61%) of respondents indicated that they had owned property in Hampton for over 10 years. Thirty percent of respondents were year-round residents.

The survey also asked participants if they participated in the National Flood Insurance Program and whether participation was required or not due to the location of the structure with respect to the Special Flood Hazard Area and/or their home financing. Approximately 40% of participants indicated that they had flood insurance while 60% do not. Approximately 33% of the insured properties and 10% of uninsured properties were reported to have been damaged during flooding.

Participants were asked to indicate whether they had experienced a variety of flood impacts. The two most commonly reported impacts were "I have been concerned about the impact of flooding on natural resources, including beaches, sand dunes, freshwater, and/or salt marshes" and "I have been concerned about the safety of people and property during a flood event." Many participants (almost 40%) also indicated that "the road(s) I normally drive on to get to and from my home have been flooded during and/or damaged by a high tide or storm and I had to find an alternative route." Concern about the impact of flooding on businesses in Hampton was also a top response.

Participants' opinions on whether vulnerable property that is severely damaged in floods should be rebuilt even if it is likely that the property will flood again varied: Approximately 18% agreed or strongly agreed that property should be rebuilt, while 45% disagreed or strongly disagreed with this statement. When asked about long-term adaptation, nearly all survey respondents (94%) indicated that they thought a long-term plan to adapt to sea-level rise is needed.

To collect input on the types of adaptation strategies that Hampton stakeholders think may be most effective for the town, participants were asked to rank several adaptation strategies. Nature-based options, hard structural options, and phased out or no new development ranked highest. Eight-six percent of respondents agree or strongly agree that stricter development regulations are needed to prevent future development in areas that are likely to be impacted by sea-level rise and storm surges. Participants were also asked about the concepts of voluntary buyout and managed retreat. Over two-thirds agree or strongly agree that they would participate in a discussion about voluntary buyout or managed retreat. Seventy-one percent of survey respondents agree or strongly agree that managed retreat may be one component of a long-term adaptation strategy for parts of Hampton. More survey respondents expressed concern about how the program would change the sense of community in Hampton than concern with the cost of the program, loss of property tax revenue, or loss of tourism and recreational revenue. The results support the need to pursue funding to build on this preliminary Situation Assessment and advance adaptation planning for flooding in Hampton.

A copy of the survey questions and a five-page formatted summary of the flood survey results are included in Appendices 3 and 4.

4.4 Interviews

The Project Team developed a set of interview questions for municipal staff and a set of interview questions for residents. Three staff and four residents were asked to participate. A total of three 30-45-minute interviews were conducted by the consultant with two staff members and one resident. Highlights from the interview discussions have been categorized and summarized below.

Flooding and Vulnerable Areas

- Areas that are vulnerable to flooding include: Hampton Beach, locations around the marsh, Ashwood Avenue, Kings, Highway, Manchester St. and Hobson Ave area of the Hampton Beach District, High Street near Route 1, areas around Meadow Pond, including Gentian Avenue and Greene Street neighborhood, ocean front areas, and areas near the harbor.

- There are multiple factors contributing to flooding (tidal Meadow Pond, phragmites raising water level, channels filling in, lack of drainage, ineffective drainage)
- Shin-high flooding occurs in the Gentian Avenue and Green Street neighborhood
- There is disagreement about the location of tidal wetlands in Hampton, which impact the applicability of regulations.
- There is an issue with the culvert on Winnacunnet.
- Flooding has become a health and safety concern in certain neighborhoods.

Types of Adaptation Strategies

- It is likely that individual staff and board members will have different and conflicting opinions about appropriate adaptation strategies.
- Property owners and the Public Works Department are looking at what can be done and how to get there. Residents are frustrated that flooding is more frequent but know that the Department cannot control the tide.
- It is likely that Hampton will be implementing a combination of adaptation strategies in the future, including hard, structural solutions. The fact that there is a lot of development in vulnerable locations makes it very difficult to determine appropriate and effective solutions. It is challenging to determine whether a vulnerable road should be maintained long term to provide access to flood-prone structures. The upcoming flood study should help to address some of these difficult issues.
- Hard structural options are likely part of the solution.
- Stricter development regulations may be needed to prevent future development in vulnerable areas. The Town has recently adopted new floodplain regulations that require one foot of freeboard above base flood elevation (BFE) and allow a one-foot height bonus for structures that elevate above BFE. Residents and businesses would likely have mixed responses about new land use regulations. It is likely that the Planning Board would mostly be in favor of new land use regulations that reduce vulnerability to flooding. Stricter regulations for redevelopment are needed.
- The density and intensity, including impervious lot cover, needs to be considered. More absorbent surfaces are needed. Building should not be allowed in wetlands.
- Having strong evidence why development regulations are needed and incentives to encourage smarter development will be important.
- Some areas of Town are so vulnerable that buyout programs and/or managed retreat may have to be considered. It's likely that funding buyouts and lack of property owners' desire to sell would be hurdles to this type of program.
- A buyout program could offer the benefit of taking properties out of vulnerable areas and reducing the burden on emergency services personnel. Introducing the concept of managed retreat would require support from the Board of Selectmen and the community.
- Benefits of a buyout program would likely include affects at the shoreline, managing claims and repetitive losses, reducing concerns and issues related to flood impacts. This type of strategy may appeal to low income property owners or residents whose property value is declining.
- When thinking about a buyout program, we need to conceptualize creating new natural spaces for the future.
- Some questions about buyout programs include: Who distinguishes value? What is the legislative action that allows you to do it? Would a Town vote be needed? How could we (an SB2 Town) be authorized to do it? Where does the money come from? Would the town or program buy at commercial prices?
- A buyout program should be voluntary and the process must be participatory.
- Education is important.
- There is a need to determine if dredging will be a solution.
- Nature-based solutions and marsh restoration are important.

Funding and Cost of Flooding

- Staff recognize that funding is a difficult topic to discuss with residents.
- Municipal departments are allocating funding to flood mitigation planning and projects, such as revising the floodplain ordinance, partnering with Rockingham Planning Commission to prepare for participation in the FEMA Community Rating System (CRS). Public Works is reactive and responsive to flood events.
- During flood events, the Department's efficiency decreases as man power becomes overwhelmed. Public Works' vehicles are impacted by salt water. Following a flood event, the Town must allocate time and resources to the recovery process, including recuperating loses through FEMA for a declared disaster.
- Town may need to put aside funds to contribute to cost-sharing for federal climate adaptation projects.
- To be more resilient to flooding, Town departments need more resources (funding, planning, staff, equipment).
- Matching funds are needed for grants.
- People have had difficulty renting out their property and have experienced declining property values.
- Residents are not in the same boat economically; it is not financially feasible for everyone to elevate their property.
- The town needs to develop an action plan to strengthen grant proposals.

Stakeholders and Roles

- Implementing the Hazard Mitigation Plan, updating and implementing the Master Plan and Zoning ordinance, and increasing education and awareness are key roles of the Town with respect to flood mitigation and climate adaptation.
- Key stakeholders include: Board of Selectmen, Planning Board, Conservation Commission, staff, RPC, the State, FEMA, neighboring towns, Coast Guard, police and fire.
- The Town's role is to work to becoming more proactive rather than reactive, and to help residents with problems while looking to the future.
- The Town has to be a main player
- Residents need to be realistic and open to expert option and to recognize that others in Town are impacted by flooding even if their property is not. There are many second home property owners on the coast who lack the ability to vote in Hampton.
- The Town would play a role in education and awareness about the benefits and reasons for managed retreat.
- Residents can limit lawns and impervious surfaces.
- Residents can be politically active and show up at meetings.
- Town boards and departments should be speaking to each other and working together in a coherent process.
- Having groups like SHEA involved is good.

Past and Future Actions

- The Town passed two Warrant Articles in 2018 related to flooding. One is for an engineering study to look at flooding in areas including Kings Highway and west of Ashworth Ave. The department is hoping to hold a public input scoping meeting to gather input on what residents are hoping for before 12/25/18. The other is conducting preliminary design for drainage for King's Highway, where there is a closed system.
- The Town intends to include a climate adaptation chapter in its upcoming Master Plan update.
- The Town has been engaged in regional adaptation planning efforts, including Tides to Storms and the Coastal Risks and Hazard Commission.
- Staff have discussed locating new, future critical infrastructure outside of flood prone areas. There have not been discussions of relocating any existing infrastructure.

A copy of the interview questions is included in Appendix 5.

4.5 Hampton Coastal Hazards Adaptation Team (CHAT)

A key element of the Situation Assessment was the formation of a planning team that would guide the preparation and implementation of a fundable project concept for long-term adaptation. The Project Team identified several key stakeholders to participate in a preliminary work session in January 2019. This group was named the Coastal Hazards Adaptation Team (CHAT).

Participants in CHAT work session 1 included:

- Jason Bachand, Town Planner
- Regina Barnes, Board of Selectmen
- Deb Bourbeau, Resident
- Jay Diener, SHEA
- Rayann Dionne, SHEA
- Jennifer Hale, Department of Public Works
- Bob Ladd, Hampton Beach Village Precinct
- Mark Olson, Planning Board
- Nancy Stiles, Hampton Beach Area Commission.

These individuals were invited to participate in CHAT by SHEA, who approached Town boards and departments and asked for a representative.

The CHAT work session was facilitated and supported by:

- Elizabeth Durfee, EF | Planning & Design, LLC
- Kirsten Howard, NH Coastal Program
- Nathalie Morison, NH Coastal Program

SHEA anticipates inviting additional stakeholders to participate in this core planning group during the implementation of Phase II.

CHAT Work Session 1

SHEA convened the first CHAT Work Session on January 10, 2017. The meeting included both an overview of the Situation Assessment and a discussion of the vision for CHAT.

The proposed role of CHAT is to serve an advisory role for the Town on coastal flooding issues and existing projects. CHAT will add capacity to address flood-related challenges in Hampton by:

- Providing educational opportunities for stakeholders to learn about adaptation strategies from each other and from other communities
- Plugging into ongoing projects, such as the two flood engineering studies that commenced in 2018
- Helping to steer the development of a new Coastal Hazards and Climate Adaptation Master Plan Chapter
- Providing recommendations to the Board of Selectmen
- Identifying funding for projects and funding alternatives to help the Town determine appropriate mechanisms for raising match needed for grants.

Proposed CHAT Goals

- Improve coordination of flood hazard management and adaptation efforts in Hampton
- Investigate, analyze, and prioritize flood management and adaptation strategies to present to the Town of Hampton for consideration
- Inform residents about the flood hazard and management and adaptation options the Town is considering, and enable residents to provide input on flood hazard management

The initial vision for CHAT is that group will meet on a regular basis to share information, learn from experts, and engage in ongoing and future projects. CHAT will also be a mechanism for increase communication across entities in town. One upcoming project that CHAT is well suited to support and inform is Hampton's Coastal Hazards and Climate Adaptation Master Plan Chapter. The Town is preparing for a comprehensive update of its Master Plan, which will include this hazards chapter.

CHAT meetings will also provide an opportunity for reviewing key flood concepts and discussing and synthesizing past studies and data, including impacts and adaptation strategies identified through the Tides to Storms Adaptation project and the Town's Hazard Mitigation Plan. Preliminary areas of interest and opportunities for CHAT include:

- Ensuring the coordination of the Hampton Beach Area Master Plan and the Coastal Hazards and Climate Adaptation Master Plan Chapter
- Reviewing the Community Rating System participation process and progress
- Learning more about FEMA funding opportunities from NH HSEM
- Hosting NHDES staff to review the Resilient Tidal Crossings project
- Identifying mechanisms to generate local matching funds and other funds for flood adaptation projects
- Coordinating with emergency management personnel and improving emergency evacuation procedures and awareness
- Reviewing case studies of flood adaptation from other communities
- Communicating key messages and information to the public.

It is likely that some CHAT meetings will serve as public educational events, while others will be intended as work sessions where the group focuses on issues such as developing the group and its processes and procedures, laying out a workplan, reviewing findings and drafts from ongoing projects, or preparing for a speaker. Two additional members will be invited to participate in subsequent CHAT meetings: a representative from the Zoning Board of Adjustment and the Budget Committee.

CHAT Work Session 2 was scheduled for February 19, 2019. A copy of the meeting minutes from Chat Work Session 1 are included in Appendix 6.

5. Next Steps

Phase II of this project is to implement a multi-faceted approach to advancing flood adaptation efforts in Hampton. This approach includes convening the newly formed advisory group (CHAT), developing the Coastal Hazards and Adaptation Chapter of the Town of Hampton's Master Plan, and hosting a Flood Smart Roundtable series.

SHEA will convene CHAT on a bi-monthly basis for a one-year period, after which the group will reevaluate its process, progress, effectiveness, and needs. The Coastal Hazards and Adaptation Master Plan Chapter will be completed over a two-year period and will coincide with the preparation of other Master Plan chapters. The Master Plan update will be overseen by the Hampton Planning Board. It is anticipated that CHAT will play a critical role in the development of the Coastal Hazards and Adaptation Chapter.

The third component of this approach, a Flood Smart Roundtable series, will be implemented by SHEA, with the assistance of the NH Coastal Program. The target audience of this series, which includes bi-monthly education and discussion, includes residents and property owners. The Roundtable will provide an opportunity for residents to ask questions, share concerns, learn about flood adaptation and resources, and provide input on vulnerable areas. At the Roundtables, SHEA will have the opportunity to provide the public with CHAT updates.

SHEA will submit this Situation Assessment to the Consensus Building Institute, who will assist with identifying funding for implementation of Phase II.

[1] Annual Prediction Tide Tables for Hampton Harbor, NH (8429489). 2018. https://tidesandcurrents.noaa.gov/noaatideannual.html?id=8429489
[2] Kirshen, et al. Integrated Analysis of the Value of Wetland Services in Coastal Adaptation; Methodology and Case Study of Hampton-Seabrook Estuary, New Hampshire. 2018.
[3] NH GRANIT. 2015 Land Use GIS layer.
[4] Piscataqua Regional Estuaries Partnership. Town of Hampton – Final PREPA Report: 2015-2016. https://prepestuaries.org/01/wp-content/uploads/2016/11/Hampton.pdf
[5] U.S. Census Bureau, 2012-2016 ACS 5-Year Estimates
[6] NH Coastal Viewer. Shoreline Structure Inventory GIS layer.
[7] New Hampshire Department of Environmental Services. 2017. Inventory of Tidal Shoreline Protection Structures. https://www.des.nh.gov/organization/commissioner/pip/publications/documents/r-wd-16-09.pdf
[8] NH Economic and Labor Market Information Bureau. Town of Hampton. 6/1/17.
[9] U.S. Census Bureau, 2012-2016 ACS 5-Year Estimates
[10] NH Office of Strategic Initiatives. State of New Hampshire county Population Projections, By Municipality. September 2016. https://www.nh.gov/osi/data-center/documents/2016-subcounty-projections-final-report.pdf
[11] Town of Hampton. 2017 Annual Report. http://www.hampton.lib.nh.us/sites/default/files/Uploads/2017_Hampton_Annual_Report.pdf
[12] NH Economic and Labor Market Bureau Information. Town of Hampton. 6/1/2017.
[13] U.S. Census Bureau, 2012-2016 ACS 5-Year Estimates
[14] Ibid.
[15] Ibid.
[16] Ibid.
[17] Ibid.
[18] University of South Carolina. Social Vulnerability Index 2010. https://coast.noaa.gov/digitalcoast/data/sovi.html
[19] Ibid.
[20] Town of Hampton 2018 Warrant
[21] Conversation with Jennifer Hale, P.E., Deputy Director of Hampton Public Works Department. November 15, 2018.
[22] Town of Hampton 2018 Warrant
[23] Ibid.
[24] Conversation with Jennifer Hale, P.E., Deputy Director of Hampton Public Works Department. November 15, 2018.
[25] State of New Hampshire Office of the Governor. Request for Presidential Major Disaster Declaration. April 5, 2018.
[26] Conversation with Jennifer Hale, P.E., Deputy Director of Hampton Public Works Department. November 15, 2018.
[27] Town of Hampton. 2016 Hazard Mitigation Plan.
[28] Ibid.
[29] NH Office of Strategic Initiatives. Email correspondence Samara Ebinger, 10/4/18 and 10/6/18.
[30] Ibid.
[31] Federal Emergency Management Agency NFIP Database. Accessed 10/2/18. https://bsa.nfipstat.fema.gov/reports/1040.htm#33
[32] NH Office of Strategic Initiatives. Email correspondence Samara Ebinger, 10/4/18 and 10/6/18.
[33] Town of Hampton. 2016 Hazard Mitigation Plan.
[34] Ibid.
[35] Rockingham Planning Commission. Tides to Storms. Town of Hampton, New Hampshire Vulnerability Assessment. 2015. http://www.rpc-nh.org/application/files/6014/6920/2314/Hampton_Vulnerability_Assessment.pdf
[36] Ibid.
[37] Ibid.
[38] New Hampshire Coastal Risk and Hazard Commission. Final Report and Recommendations. 2016. http://www.nhcrhc.org/wp-content/uploads/2016-CRHC-final-report.pdf
[39] Union of Concerned Scientists. US Coastal Property at Risk from Rising. 2018. https://ucsusa.maps.arcgis.com/apps/MapSeries/index.html?appid=cf07ebe0a4c9439ab2e7e346656cb239
[40] Ibid.
[41] Ibid.
[42] Ibid.
[43] Ibid.

APPENDIX 1: Table A Flood Hazard Mitigation Projects listed in the 2016 Hazard Mitigation Plan

Project	Responsibility/Oversight	Funding/ Support	Timeframe[1]	Priority H/M/L)	Estimated Cost
Improve drainage at Lower End of High Street	DPW	Staff Time & Contractor	Short Term	High	$100,000.00
Repair Bicentennial Park Seawall. In 2016, the town contracted with an engineering firm that determined that the seawall has shallow embedment into the beach and is supported on sand that is prone to storm erosion. It has been determined that under certain conditions the seawall could fail	DPW	Town Budget and State/Federal Grants	Short Term	High	$2,350,000.00
Study for improved drainage at Meadow Pond Area (Gill St., Redman Lane, Gentian St., Greene St. & lower end of Winnacunnet Rd.)	DPW	Staff Time & Contractor	Short Term	High	$100,000.00
Improve drainage at Kings Highway Street Area	DPW	Town Budget	Long Term	High	$1,500,000.00
Continue enforcement of National Flood Insurance Program (NFIP) regulations and educate the public on the NFIP program	Building and Code Enforcement	Staff Time	Short Term	Medium	$500.00
Add a cumulative substantial improvement requirement to the floodplain ordinance	Town Planner	Staff Time, RPC, Grants	Short Term	Medium	$5,000.00
Improve drainage at Brown Ave Area (Church St/Diane Land/Joanne Lane/Suzanne Lane/Nudd Ave/William St. Ave)	DPW	Staff Time & Contractor	Short Term	Medium	$100,000.00
Plan for emergency responders to respond to ocean flooding at Ocean Blvd. Area (Kings Hwy, H Street, K Street, Surfside 30-493, Ocean Blvd.) during high storm surge (Estimated cost $5-10k)	Public Safety Agencies	Staff Time	Short Term	Medium	$75,000.00
Reduce tidal flooding (through elevation of road) at Island Path / Glade Path Area	DPW	Town Budget	Long Term	Medium	$100,000.00
Reduce tidal flooding (based on current engineering practices) at Plaice Cove area (Ocean Blvd, Beachplum Way, Ancient Hwy & Shaw St.)	DPW	Town Budget	Short Term	Medium	$100,000.00
Apply to the Community Rating System	Town Planner and Conservation Commission	Staff Time/RPC	Short Term	Medium	$100,000.00
Education/clarification of wetlands conservation ordinance	Conservation Commission	Staff Time	Short Term	Low	$250.00
Assist repetitive loss properties (i.e. education, technical assistance, grants)	Planning/Building/ Conservation Commission	Staff Time and Grants	Short Term	Low	$2,000.00
Coordinate with NHDOT to improve drainage at Great Boar's Head (Ocean Blvd)	DPW/NHDOT	State budget	Long Term	Low	$300,000.00
Improve drainage at Nilas Brook Area (NW of Quinn Land and North Shore Road)	DPW	Town Budget	Long Term	Low	$50,000.00
Drainage improvement at Cogger, Mill, Barbour, and Vanderpool roads	DPW	Town Budget	Long Term	Low	$50,000.00
Drainage/sand maintenance at Whites Island drainage improvement	DPW	Town Budget	Long Term	Low	$50,000.00
Campton, Portsmouth, Plymouth Ave - ocean discharge	DPW	Town Budget	Long Term	Low	$50,000.00
TOTAL					**$5,032,750.00**

[1]Short=1yr or less; Mid= 2-3 yrs; Long = 4-5 yrs (Source: 2014 Hazard Mitigation Plan)

APPENDIX 2: Repetitive Loss Areas


Repetitive Loss Areas
Hampton, NH - South
Fall 2016
HAMPTON
SEABROOK
Ocean Blvd
Repetitive Loss Areas
Parcel Lines
Roads Impacted by Sea-Level Rise of 1.7 feet
Flood Hazard Zones
AO- 1% annual chance flooding with BFEs
AE - 1% annual chance flooding, with BFEs
V - 1% annual chance flooding with velocity hazard (wave action); with BFEs
A - 1% annual chance flooding, No BFEs
Areas of High Flood Risk
Approx. MHHW - Tidal Extent
Map Key
Major Roads
Local Roads
Town Boundaries
Waterbodies
Approx. MHHW - Tidal Extent
2014 NAIP 1 Meter Aerial Photo
Miles
0
0.125
0.25
0.5

APPENDIX 3: Flood Survey Questions

SEABROOK-HAMPTONS ESTUARY ALLIANCE (SHEA) SURVEY

Thank you for taking the time to complete this survey.
If you prefer to take this survey online, please visit shea4nh.org.

PLEASE COMPLETE THIS SURVEY BY OCTOBER 19, 2018

What is this survey about?

The purpose of this survey is to gauge community understanding and concerns related to coastal flooding and options for addressing current and future flood-related impacts in Hampton, NH. Your responses will help inform future workshops, discussions, and research. We anticipate that this survey will take about 10 minutes to complete. Your answers will remain anonymous.

Why conduct this survey now?

The Seabrook-Hamptons Estuary Alliance (SHEA), in partnership with the NH Department of Environmental Services Coastal Program, is embarking on a long-term planning process to research and guide coastal adaptation strategies to cope with coastal flooding from high tides, storm surges, and sea-level rise in Hampton, NH. SHEA has secured funding to perform a "Situation Assessment" to better understand flooding impacts, costs, concerns, and experiences in Hampton as well as lessons learned from other communities around the country. The results of this assessment will help inform a future effort to convene residents, property owners, Town employees and board members, businesses, and other stakeholders in Hampton to evaluate a range of strategies to "keep water out," "live with water," and "get out of the water's way" at the property and Town-wide scales. The ultimate goal of this long-term planning process is to empower Hampton to plan for community-wide adaptation.

Survey Questions

1. How did you hear about this survey?

- O I received an email about the survey
- O I picked up a survey at the library or Town Office
- O A friend, colleague, or family member shared the survey with me
- O SHEA's website
- O SHEA Facebook page
- O The Town of Hampton's website
- O In The Know Hampton Facebook page
- O Other _____

2. Did you participate in any of the three Building a Flood Smart Seacoast Workshops that were held in summer 2018?

- O Yes
- O No
- O I don't know

3. How long have you owned property in Hampton?

- O 5 years or less
- O 6-10 years
- O Over 10 years
- O I don't own property Hampton

4. Please select all that apply:

- O I own residential property in Hampton
- O I own commercial property in Hampton
- O I rent a home in Hampton
- O I live in Hampton year-round
- O I am an employee of the Town of Hampton
- O I am a board or commission member in the Town of Hampton
- O Other:_____

5. What is your age?

- O Under 18
- O 18-25
- O 26-45
- O 46-65
- O 66-85
- O Over 86

6. Do you have flood insurance for your home or business?

- O Yes
- O No
- O Does not apply (e.g., I do not own property in Hampton)

7. If you answered *yes* on Question 6, please select the option that best characterizes your situation:

- O My property is located within a FEMA Special Flood Hazard Area and I am required to have flood insurance
- O My property is located within a FEMA Special Flood Hazard Area and I have opted to have flood insurance even though I am not required to
- O My property is not located within a FEMA Special Flood Hazard Area and I have opted to have flood insurance even though I am not required to
- O I don't know

8. If you answered *no* to Question 6, please select the option that best characterizes your situation:

- O My property is not located within a FEMA Special Flood Hazard Area and I am not required to have flood insurance
- O My property is located within a FEMA Special Flood Hazard Area but I am not required to have flood insurance
- O I don't know

9. Have you experienced any of the following situations in Hampton? (select all that apply)

- O Property I own or rent has been flooded during a high tide
- O Property I own or rent has been flooded during a storm
- O Property I own or rent has been damaged by flooding
- O I have filed a flood insurance claim for flood damage to my property
- O The road(s) I normally drive on to get to and from my home have been flooded during and/or damaged by a high tide or storm and I had to find an alternative route
- O My business has been impacted by flooding
- O I have been concerned about the safety of people and property during a flood event
- O I have been concerned about the impact of flooding on natural resources, including beaches, sand dunes, freshwater, and/or salt marshes
- O I have been concerned about the impact of flooding on businesses in Hampton
- O None of the above
- O Other _____

10. I am generally familiar with sea-level rise projections for New Hampshire.

O Strongly Agree O Agree O Neutral O Disagree O Strongly Disagree

11. Which adaptation strategies do you think are most effective for long term flood resilience in Hampton? Please rank the following strategies from one to seven, with one being the most effective and seven being the least effective.

____ Hard structural options (e.g., levees, floodwalls, flood gates, etc.)
____ Nature-based options (e.g., beach nourishment, dune restoration/creation, wetland restoration/creation)
____ Elevating structures and roads
____ Relocating threatened buildings
____ Phased out or no new development in vulnerable areas
____ Creating upland buffers
____ Other _____

12. Stricter development regulations are needed to prevent future development in areas that are likely to be impacted by sea-level rise and storm surges.

O Strongly Agree O Agree O Neutral O Disagree O Strongly Disagree

13. Property that is severely damaged in floods should be rebuilt even if it is likely that the property will flood again.

O Strongly Agree O Agree O Neutral O Disagree O Strongly Disagree

14. Who is responsible for addressing flooding in Hampton?

Property owners should be responsible for protecting their own property.

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

The Town is responsible for protecting properties from flooding.

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

The State is responsible for protecting properties from flooding.

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

The federal government is responsible for protecting properties from flooding.

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

Questions 15-17: Inland and coastal communities and states around the country and world have initiated voluntary 'buyout' programs in which local, state, and/or federal governments purchase buildings from willing property owners in flood-prone areas at current or pre-flood market value as opposed to paying for repairs to damaged structures that are likely to flood again. Buildings are typically demolished and then the area is revegetated into natural areas that can absorb and slow storm surge and flood waters during a future storm or high tide. This type of program has been used following major storm events like Hurricane Irene and Superstorm Sandy but can also be used to protect vulnerable people and properties from future flooding events. The purpose of questions 15-17 is to collect some preliminary opinions about possible strategies to "get out of the water's way."

15. The following are examples of real and perceived opinions of stakeholders in communities that have participated in buyout programs.

I am concerned about the cost of the program.

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

I think the program would reduce risk to Hampton residents and emergency personnel.

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

I am concerned about the loss of property tax revenue from a program like this.

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

I think the program benefits will outweigh the program costs over the long-term.

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

I think the program, if managed well, would help Hampton property owners.

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

(question 15 continued on next page)

15. *(continued)*

I am concerned about loss of tourism and recreation revenue.

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

I think the program would improve Hampton by creating more green space in areas that are vulnerable for development.

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

I am concerned about how the program would change the sense of community in Hampton.

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

Other: _____

16. **Managed retreat (abandoning or converting areas where the frequency and severity of flooding impacts are damaging and frequent enough that development is no longer desired or viable) may be one component of a long-term adaptation strategy for parts of Hampton.**

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

17. **I would participate in a discussion about a voluntary buyout program and/or managed retreat.**

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

Questions 18-20 are intended for flood-prone property owners. If you do not own flood-prone property, please skip to question 20.

18. **I would like to take action to make my property more resilient to flooding (e.g., elevating my structure, floodproofing, improving landscaping)**

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

19. **Given the opportunity, I would consider moving to a location that I feel safer in.**

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

20. **I would like to like to learn more about the potential of a voluntary buy-out program in Hampton.**

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

21. **What do you envision your community will be like 50 years from now?**

_____

_____

22. **What could the Town of Hampton be doing now to address your concerns related to sea-level rise, storm surge, and flooding to enable your most optimistic vision of the future of the community?**

_____

_____

23. **Do you think a long-term plan to adapt to sea-level rise is needed?** ○ Yes ○ No

If yes, what do you think this plan should include?

_____

_____

24. **How would you like to be involved in future long-term adaptation planning in Hampton?** (select all that apply)

- O Stay informed through an email list
- O Participate in discussions at regular Town board and commission public meetings
- O Attend a workshop on adaptation planning
- O Participate in an educational conference
- O Volunteer to help with a hands-on project, such as dune restoration
- O Other _____

25. **Please provide your email or phone number if you would like to receive updates about future discussions or events** (optional; your contact information will be separated from your survey by an independent contractor to maintain your anonymity).

_____

26. **Optional: What street is your property located on?** _____

Thank you for your time!

PLEASE LEAVE YOUR COMPLETED SURVEY IN THE SHEA SURVEY FOLDER BY OCT. 19, 2018
IN THE CONSERVATION COMMISSION OFFICE AT THE HAMPTON TOWN OFFICES

If you prefer, you may also mail your survey to:
Seabrook-Hamptons Estuary Alliance
24 Stickney Terr, Unit #2, Hampton, NH 03842

Appendix 4: Flood Survey Results Summary

FLOOD SURVEY SUMMARY

Seabrook-Hamptons Estuary Alliance (SHEA)

- Conducted: October 9, 2018 - October 25, 2018
- Total Participants: 69
- Target Audience: Hampton residents, property owners, businesses, municipal staff, and other stakeholders

How did participants hear about the survey?

63% Received an email

16% In The Know Hampton Facebook page

21% Other (SHEA Facebook, Town or SHEA website, friend, Town Hall)

Who Responded?

51% Had participated in the 2018 flood workshops

61% Owned property in Hampton for over 10 years

7% Do not own property in Hampton

5 Board or Commission members in Hampton

1 Employee of Hampton | Renter | Commercial property owner

30% Year-round Hampton residents

61 Residential property owners

88% Ages 46-85

78% Are generally familiar with sea-level rise projections for NH

Flood Insurance Status

40% Participants have Flood Insurance

of these:

15 Properties are located in a SFHA* and are required to have insurance

6 Properties are located in a SFHA and have opted to have insurance

2 Properties are not located in SFHA but have opted to have insurance

2 Do not know

9 Properties have been damaged during flooding

60% Participants do not have Flood Insurance

of these:

20 Properties are not located in a SFHA and flood insurance is not required

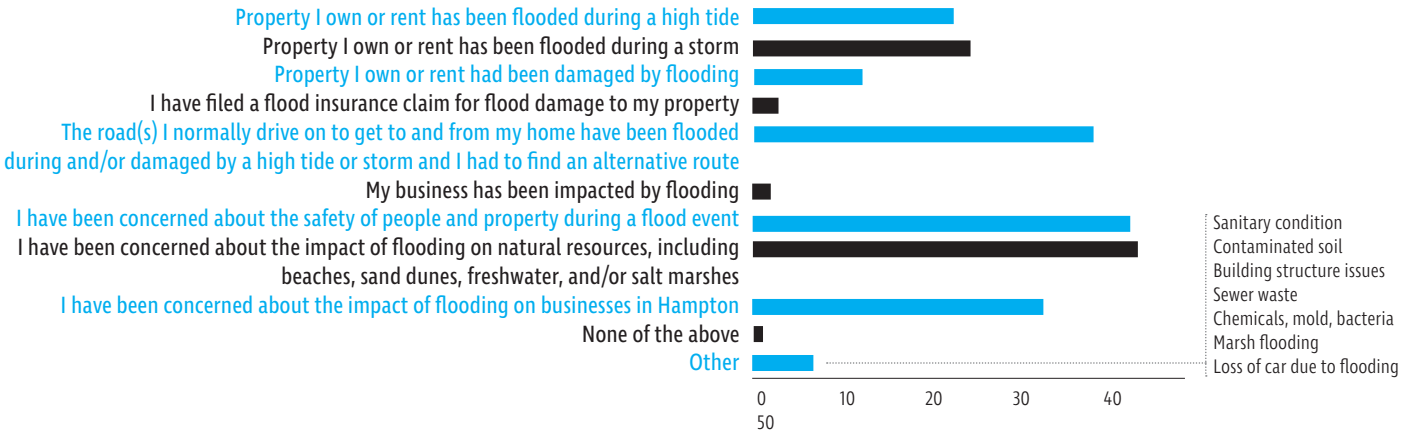
6 Properties are located in a SFHA but insurance is not required

7 Do not know

4 Properties have been damaged during flooding

*Special Flood Hazard Area

What Flood Impacts Have Participants Experienced?



Who is Responsible for Flooding?

63% Agree or Strongly Agree that property owners are responsible

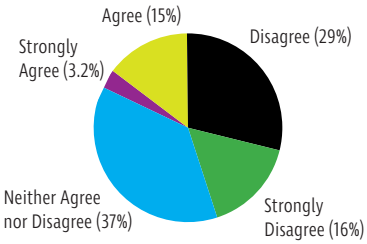
69% Agree or Strongly Agree that the Town is responsible

69% Agree or Strongly Agree that the State is responsible

58% Agree or Strongly Agree that the federal government is responsible

Should Vulnerable Properties be Rebuilt?

Property that is severely damaged in floods should be rebuilt even if it is likely that the property will flood again.



How Did Participants Rank the Most Effective Adaptation Strategies for Hampton?

1. Nature-based options
2. Hard structural options
3. Phased out or no new development
4. Elevating structures and roads
5. Creating upland buffers
6. Relocating threatened buildings
7. Other

86% Agree or strongly agree that stricter development regulations are needed to prevent future development in areas that are likely to be impacted by sea-level rise and storm surges.

Owners of Flood-Prone Property

32 Participants own flood-prone property.

25 Given the opportunity, would like to take action to make their property more resilient to flooding.

7 Would consider moving to a location that they feel safer in.

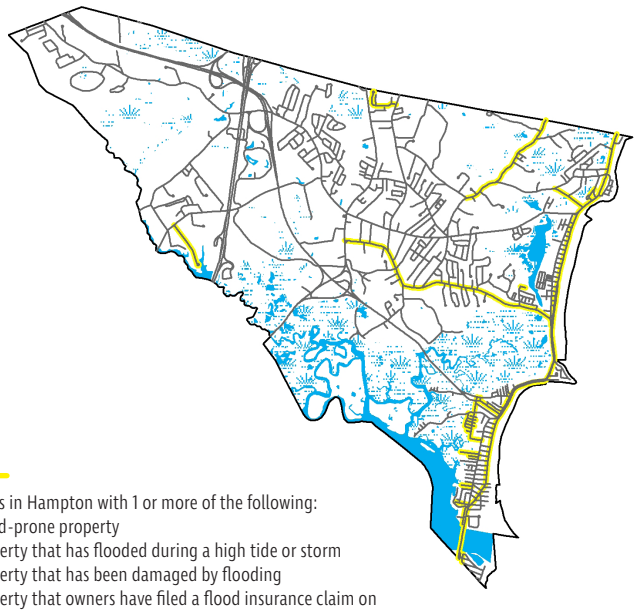
16 Would like to like to learn more about the potential of a voluntary buy-out program in Hampton.

59% Have flood insurance.

29% Disagree or Strongly Disagree that property that is severely damaged in floods should be rebuilt even if it is likely that the property will flood again.

53% Agree or Strongly Agree that property owners should be responsible for addressing flooding in Hampton.

Streets with Flood-Prone Property or Property that has been Impacted by Flooding, as Reported by Survey Participants



Streets in Hampton with 1 or more of the following:
- Flood-prone property
- Property that has flooded during a high tide or storm
- Property that has been damaged by flooding
- Property that owners have filed a flood insurance claim on
- Property that owners have had to find an alternative route to get to or from due to flooding

Long-Term Adaptation Planning

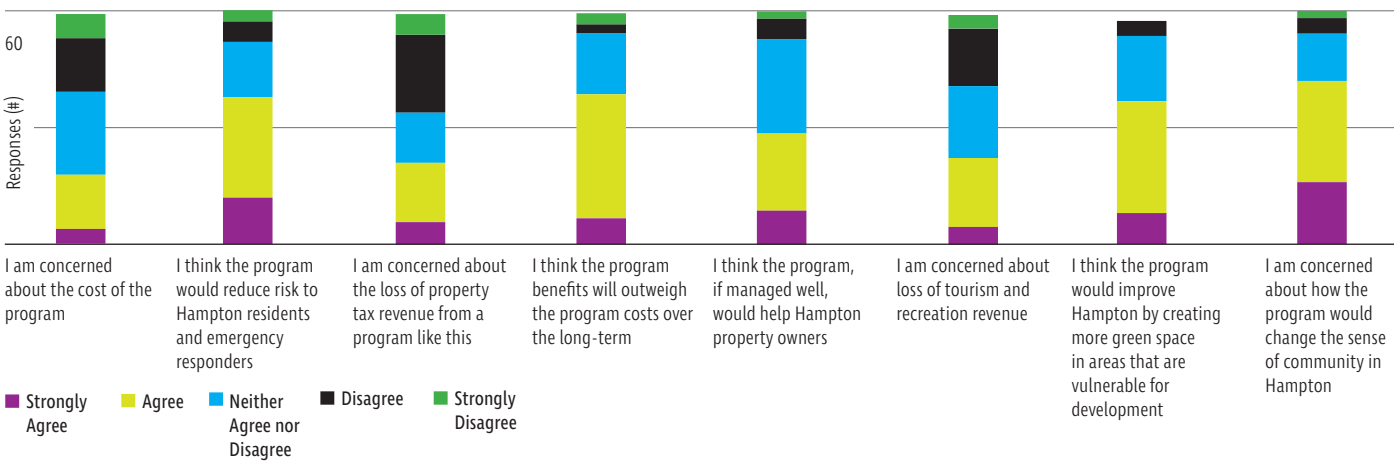
94% Think a long-term plan to adapt to sea-level rise is needed

Buyout and Managed Retreat

68% Agree or strongly agree that they would participate in a discussion about voluntary buyout or managed retreat.

71% Agree or strongly agree that managed retreat may be one component of a long-term adaptation strategy for parts of Hampton.

Local Opinions About a Buyout or Managed Retreat Program



What do you envision your community will be like 50 years from now?

Changed

- Ocean front property will be gone.
- If precautions not in place streets would disappear.
- My house and road are gone to the marsh.
- Deteriorating houses due to flood damage.
- Retreated from coastline.
- Reduced impervious surfaces would be a goal.
- Forested wetlands and marshes would increase.
- Not sure but low lying streets will be gone
- An island.
- I think the Hampton will still be a beach community but I think there will be significantly less development at the main beach area because it will be regularly underwater.
- Climate Ready Boston predicts 3 feet of sea level rise by 2070 - our oceanfront community will look much different if this prediction is correct.
- Lost roads; lost infrastructure (DPW/Fire station); limited access to beach recreation areas.
- Large parts of it could be covered by the ocean.
- Very little shorelines, if any.
- Shifted from single family dwellings to condominiums.

Resilient & Protected

- More living shorelines to manage sea level rise which would create inviting habitats for wildlife. This would create a eco-tourisms type of economy.
- Underwater near the coast but still great.
- A community that lives in harmony with nature.
- Thriving.
- I would love to see it remain intact for new generations.
- Safe and prepared.
- Flood free from both Hampton river and ocean.
- Clean and safe.
- Land protected from the water.
- I would like to see less development and more wetlands and perhaps dunes to work with nature to reduce flooding.
- Similar to now. We will need stronger sea walls and protection from the rise of the salt marsh.

Vulnerable

- Under water.
- More impact from flooding.
- Flooded.
- Potentially underwater.
- I think flooding (tide or wave-action) will be much more common and some land that is dry now will be permanently submerged.
- Due to insufficient planning and inaction, about the same as it is today.

Too Developed

- Overbuilt better planning.
- At the rate of development - horrible!
- I'm afraid it will be even more overbuilt that it is now, unless we do something about it.
- Continued commercial development.

Other

- I live at the beach. I would like it to stay very much the same but with less buildings.
- I would like to see beach access continue into the future but find more sustainable ways to accomplish this.
- It depends on the amount of development that occurs.
- I won't be alive!
- Not sure.

What could the Town of Hampton be doing now to address your concerns related to sea-level rise, storm surge, and flooding to enable your most optimistic vision of the future of the community?

Education

- Educating prop owners. Hosting public dialogue. Planning.
- As much public awareness events as possible, targeting various aspects of the population... SHEA is doing a great job - just keep it up & ramp it up if possible!
- Working with other communities, like Boston, to make sure people are educated and making good decisions about building and safety as a start.
- Continue to educate residents and future residents of the issues with the flood plains.
- Continue to educate the public on these issues.
- Options for mitigation, simplified, easier access
- Provide education through channels such as SHEA.

Zoning & Land Use Regulations

- Don't allow future development in flood prone areas
- Limit development in flood plain thru zoning.
- Stop building in flood zones
- Stop all the condo building.
- Stop building on the marsh and if buildings are deserted don't rebuild -let those buildings go back to nature.
- Reduce development in vulnerable areas.
- Allowing people to build up their yards and driveways and relax rules for flood plain areas.
- Make development work towards betterment on the Seacoast instead of variances that make things worse.

Hard Structural Options

- Flood walls
- Sea walls
- Build a wall along the marsh to keep water out of lower lying areas
- Flood gates
- Build a sea wall like they have in Salisbury, MA. Raise my road significantly. Allow me to build my home up considerably. Allow me to raise my driveway without going through tons of red tape because seagulls who use the marsh don't pay taxes.
- Continue to maintain the sea walls with vigor.

Upland & Shoreline Nature-Based Solutions

- Develop natural barriers to reduce impact of sea-level rise.
- Replenish the sand on the beach.
- Creation of living shorelines.
- Completely give over the barrier islands to nature!
- Protecting wet lands, strict rules trash, etc.

Building Codes & Infrastructure

- Change building codes.
- Set building codes that require much higher foundations.
- Adopting more stringent building regulations.
- Looking at environmentally sound solutions to our infrastructure and adapt to prevent and address flood conditions.
- More drainage.
- Fix the streets that are flooding.

Science & Research

- Conduct the $100,000 study already approved
- Continue to investigate and implement best practices with respect to impervious surfaces and coastal flooding.
- Keep studying sea level rise.
- Engineering studies with plans and actions to prevent the flooding.

Relocating Threatened Buildings

- Develop managed retreat as an option.
- Acquisition of natural flood water storage areas thru buyouts.
- Push the Federal Government for buy-out programs.

Partnerships

- Work with property owners on a permit process.
- Work closely with owners to come up with a plan to save property.
- Work with the State to figure out better ways for allowing the salt marsh to rise without flooding homes.
- Continue to work with FEMA and the Army Corp of Engineers to dredge the Hampton river.
- Partner with beach residents.

Dredge

- Dredging of harbor.
- Dredge.
- Dredging the marsh.
- Also a lot of people talk about dredging as a solution - is it or is that a fallacy.
- Restore and dredge the marshes.
- Be more proactive in protecting and making the marsh more receptive to storm surge without imposing harsh restrictions on current property. Is it possible to deepen (dredge) the marsh?

Other

- Nothing. The homeowners should be responsible for their homes and property. They are insured. Homes can be raised. You cannot buy in a flood prone area and expect your local, state or federal government spend millions maybe 100s of millions to protect your property.
- Trying to stop water flooding so close to the ocean would be impossible and to divert it for someone else to deal with could wind up costing millions more in damages to others.
- What you're doing is a start
- Take all measures to prevent flooding from the marsh.
- Don't know.

What Should a Long-Term Adaptation Plan Include?

Zoning, Land Regulations & Land Use Planning

- Stricter regulation of new development.
- No building near the marsh areas.
- Development plans that respect increasing ocean levels
- Strong environmental protection plans.
- Plans to reshape focus of our economic development.
- The marsh land needs to be addressed to prevent tidal flooding.
- A long term plan is critical involving the town, state, and all resident owners including seasonal residents.
- Reduce new or expanded construction including parking lots.
- People should be allowed to build up their land. We are on landfill so to say we shouldn't put new dirt on in our back yards doesn't make a lot of sense to people.
- Limited building.
- Homes not being built in floodplains.

Hard Structural Options

- Build a sea wall.
- Intensification of sea wall maintenance.
- Maintenance and strengthening of the sea walls.
- Protection against surges (beach walls, drainage, buildings on stilts, etc.

Upland & Shoreline Nature-Based Solutions

- Development of natural barriers, Reclamation of flood prone areas.
- Dune restoration, improve buffers.
- Plans to increase working with nature to absorb storm surge and flooding.
- Maybe more nature-centered than it is today.
- Completely give over the barrier islands to nature!
- Reconstruct the wetlands.

Building Code & Infrastructure

- How to raise house up.
- Help me finance raising my house and driveway.
- New building codes.
- Raise my road.
- Improved drainage of Ocean Blvd, Kings Highway and others.
- Protection via programs allowing funds to raise properties.

Relocating Threatened Buildings

- Economic plans to assist those whose homes and businesses will need to be removed.
- Start realistic buying out.

Science & Research

- Exhibits of Coastal Viewer models for all flood prone areas in town in 2050/2080.
- Continually update projections & modify recommendations for preserving our structures and the natural land/sea scape.
- It should include ongoing studies.
- A good estimate of impacts. How high will the sea rise?

Partnerships

- State and Federal funding and civil engineering experts involved.
- Assisting residents with plans to mitigate damages from flooding.

Dredging

- Possible dredging of the harbor.
- We need more dredging more often.

Other

- I think is more storm surge than sea level rise.
- A new vision for the back side of the Main beach area - open space/park area.

APPENDIX 5: Interview Questions

Municipal Staff Interview Questions
About the interviews: Staff and resident interviews were conducted to obtain information about flooding as part of the Phase I Situation Assessment implemented by SHEA. The purpose of the interviews was to collect information about flooding and adaptation strategies. SHEA recognizes that there are a range of adaptation strategies and that not all adaptation strategies are appropriate for the Town of Hampton or for all areas of Hampton. One of the objectives of the Situation Assessment was to gain a better understanding of the awareness of and perception of one category of adaptation strategy that has not been explored in Hampton: voluntary buyout and managed retreat.
1. How long have you worked in Hampton?
2. Do you live in Hampton?
3. What areas of Town are the most vulnerable to flooding from high tides, storms, and sea-level rise?
4. Has flooding impacted you personally? (property impacts, commute time, neighborhood, etc.)
5. Have major flood events affected your department (day to day business, budget, projects, etc.)? Other departments, boards, or commissions?
6. I have heard that property owners have increasingly approached the Town (staff, boards) with flood-related questions and problems. What are some examples of requests that residents have made?
7. Can you briefly describe some of the Town's recent efforts to be more resilient to flooding (new floodplain regs, specific mitigation projects, etc.) and how residents responded or became engaged?
8. Has the Town considered relocating any critical infrastructure?
9. Which adaptation strategies do you think are most effective for long term resilience in Hampton? (examples: Hard structural options (e.g., levees, floodwalls, flood gates, etc.); Nature-based options (e.g., beach nourishment, dune restoration/creation, wetland restoration/creation); Elevating structures and roads; Relocating threatened buildings; Phased out or no new development in vulnerable areas; Creating upland buffers; Other).
10. Do you think stricter development regulations are needed to prevent future development in areas that are likely to be impacted by sea level rise and storm surge?
11. What is your perception of how residents/businesses would respond to new land use regulations?
12. Are you familiar with buy-out programs and the concept of managed retreat? (retreat as described in CRHC report: abandoning or converting areas where the frequency and severity of flooding impacts are such that permanent settlement is no longer viable or desirable)
13. If the Town were to initiate a buyout program in the future, what questions and concerns do you think you would have?
14. What do you think the benefits of a buyout program are?
15. What steps do you think the Town would need to take before introducing the concept of managed retreat?
16. What do you think the Town's role is regarding flood mitigation and climate adaptation?
17. What do you think property owners' roles are regarding flood mitigation and climate adaptation?
18. Who else needs to be involved?
19. What resources does your department need to make Hampton more resilient to future flooding? (equipment, information, staff, funding, plan, etc.)
20. What is your biggest concern related to coastal flooding from high tides, storms, and sea-level rise?
21. What are your top priorities to accomplish in the next 5 years related to climate change adaptation?
22. Is there anything else you would like to share with me on this topic?

Resident Interview Questions
About the interviews: Staff and resident interviews were conducted to obtain information about flooding as part of the Phase I Situation Assessment implemented by SHEA. The purpose of the interviews was to collect information about flooding and adaptation strategies. SHEA recognizes that there are a range of adaptation strategies and that not all adaptation strategies are appropriate for the Town of Hampton or for all areas of Hampton. One of the objectives of the Situation Assessment was to gain a better understanding of the awareness of and perception of one category of adaptation strategy that has not been explored in Hampton: voluntary buyout and managed retreat.
1. Where do you live?
2. How long have you lived in Hampton?
3. What areas of Town do you think are the most vulnerable to flooding from high tides, storm surges, and sea-level rise?
4. Has flooding impacted you personally? (property impacts, commute time, neighborhood, recreation, etc.)
5. Has your property flooded? How many times?
6. What steps have you taken (or do you plan to take) to reduce your property's risk to flooding?
7. Do you have flood insurance? Are you required to?
8. Which adaptation strategies do you think are most effective for long term resilience in Hampton? What will work best? What do you think will be most acceptable? (examples: Hard structural options (e.g., levees, floodwalls, flood gates, etc.); Nature-based options (e.g., beach nourishment, dune restoration/creation, wetland restoration/creation); Elevating structures and roads; Relocating threatened buildings; Phased out or no new development in vulnerable areas; Creating upland buffers; Other).
9. Do you think stricter development regulations are needed to prevent future development in areas that are likely to be impacted by sea level rise and storm surge?
10. Are you familiar with buy-out programs and the concept of managed retreat? (retreat as described in CRHC report: abandoning or converting areas where the frequency and severity of flooding impacts are such that permanent settlement is no longer viable or desirable)
11. If the Town were to initiate a buyout program in the future, what questions and concerns do you think you would have?
12. What do you think the benefits of a buyout program are?
13. What steps do you think the Town would need to take before introducing the concept of managed retreat?
14. What do you think the Town's role is regarding flood mitigation and climate adaptation?
15. What do you think property owners' roles are regarding flood mitigation and climate adaptation?
16. Where do you live?
17. How long have you lived in Hampton?
18. What areas of Town do you think are the most vulnerable to flooding from high tides, storm surges, and sea-level rise?
19. Has flooding impacted you personally? (property impacts, commute time, neighborhood, recreation, etc.)
20. Has your property flooded? How many times?
21. What steps have you taken (or do you plan to take) to reduce your property's risk to flooding?
22. Do you have flood insurance? Are you required to?

Coastal Hazards Adaptation Team (CHAT) Work Session #1

January 10, 2019
3pm-5pm
St. James Masonic Lodge
77 Tide Mill Road, Hampton, NH

NOTES

Participants:

- Jason Bachand (Town Planner)
- Regina Barnes (Board of Selectmen)
- Deb Bourbeau (property owner; Hobson Ave. area)
- Jay Diener (Seabrook Hamptons Estuary Alliance SHEA)
- Rayann Dionne (Hampton Conservation Coordinator/Commission)
- Liz Durfee (EF | Design & Planning, LLC)
- Ona Ferguson (Consensus Building Institute)
- Jennifer Hale (Hampton DPW)
- Kirsten Howard (NHDES Coastal Program)
- Bob Ladd (Hampton Beach Village Precinct)
- Nathalie Morison (NHDES Coastal Program)
- Mark Olsen (Planning Board)
- Nancy Stiles (Hampton Beach Area Commission)

1. Welcome & Introductions (Jay and Liz)

Jay introduced the project; would like to develop the path forward for Hampton to deal with flooding issues; the purpose of this effort is to develop a trusted group of town and Town representatives to work on the topic of flooding in Hampton; the group will help Jay, Rayann, Liz, Nathalie, and Kirsten put together a work plan/project proposal to submit to Consensus Building Institute for a possible next round of funding to move this issue further forward.

Liz reviewed the ground rules. Participants introduced themselves.

2. Setting the Scene (Liz)
    a. Local context and flood vulnerability and impacts

- Prepared a Situation Assessment (SA) that included a review of existing conditions, plans, and projects, as well as a survey and some interviews (participants received the Situation Assessment prior to the meeting)
- Jennifer asked if the bigger project being referred to would be a planning project or a construction project.

    - Liz responded that it would be a planning project/coordination effort. This bigger project might involve convening the Coastal Hazards Adaptation Team (CHAT) which can serve as an advisory group that helps the town coordinate its flooding issues and efforts to mitigate those issues and might also include some analysis and research work to inform the CHAT and town.
- Liz reviewed demographics and geography from the SA. (See slides)
    - Jennifer stated that she disagrees with the characterization that there is little population growth and that Hampton's population is ~15,000+ people. This does not reflect the seasonal population. The homes we're building are not necessarily for full time residents, but we are adding homes. "Vacant" homes are lived in quite often. Majority of people coming are not residents of Hampton but own properties in these vulnerable areas. They are people who live here and they impact the town. The SA should reflect that.
    - Regina added that some days the population is 500% larger (according to police/fire).
    - Others agreed that Jennifer and Regina made good points and the project team agreed to change how population was characterized in the SA to better reflect the temporary/part-time population.
- Liz showed the areas that experience repetitive flood losses. (See slides)
    - Rayann stated that the repetitive loss areas aren't all that surprising to folks who work and live in Hampton.
- Liz reviewed recommendations in Hazard Mitigation Plan, other planning efforts, and ongoing efforts/projects. (See slides)
    - Jennifer provided a short update about the two engineering studies; they are working on contracts and at the data collection point.
    - Jason updated the group on the approaching master plan effort. The Town is working toward a Comprehensive Master Plan with a warrant article coming up in March.
    - Rayann mentioned that the Conservation Commission is putting forward a warrant article dealing with zoning changes (freeboard). Another warrant article is in draft (pilings required in certain AE zone areas).
- Liz reviewed survey results (See handout and SA)
    - Regina asked whether recommending raising homes makes sense when residents still can't access their homes in a flood; when does raising roads become part of the solution?
        - Jay responded that because foundations are cracking in high tide and storm flooding, raising homes/structures is a solution to address that structural risk. Protecting your structure is an advantage of raising your home but getting to and from your home is not one of the advantages of raising your home. That's important

to recognize and acknowledge. This group can help think through that.

3. CHAT
    a. Proposed CHAT goals

- Liz reviewed proposed CHAT goals and asked for feedback

Proposed Goal 1: Improve coordination of flood hazard management and adaptation efforts in Hampton.

Proposed Goal 2: Investigate, analyze, and prioritize flood management and adaptation strategies to present to the Town of Hampton for consideration

Proposed Goal 3: Inform residents about the flood hazard management and adaptation options the Town is considering and enable residents to provide input on flood hazard management

- Nancy asked for goal #1; how do you propose to accomplish it?
    - Liz responded that one way to accomplish Goal #1 is through regular meetings of this particular group and a report out to different boards and commissions
    - Jay explained that since many people at the table represent important groups in the Town; if we can get to a point where we can get this group to speak with a unified voice then it will carry a lot of weight; maybe the Town will take the issues more seriously
- **In general the group seemed to agree with the goals. Liz mentioned they could revisit the goals next meeting to confirm.**
- Jennifer mentioned that she thinks the Budget Committee and the Zoning Board are missing from the table as key Town decision making bodies.
    - Regina agreed that, in particular, the Zoning Board should be at the table and also that the Budget Committee made sense at the table. She said she recognizes that people want a solution, whether or not they have to sell their house, they need to know. She hopes CHAT can work on communication.
    - Jay mentioned that one thing we should discuss today is how this process moves forward; he thinks expanding the group is fine but is also concerned about making it too big. He wondered if the group should first focus on learning. Perhaps the group would bring in external experts, speakers. Some meetings could be open to the public.
    - Jennifer agreed that a bringing in guest speakers for certain topics makes sense; she mentioned buyout program opportunities which she doesn't know much about so would need to learn from external experts.
    - Nancy mentioned that you could invite other town representatives to the CHAT meetings depending on whether that meeting's speaker was relevant.

- Jay agreed that someone could come talk about FEMA programs, Hazard Mitigation Grant Program, buyouts.
- Jennifer reiterated that she still thinks the Zoning Board and Budget Committee should be represented at the table regularly as key members.
- Regina mentioned that the Zoning Board is talking about rezoning; flooding might really need to be considered in rezoning and that's why she's concerned about not having the ZB at the table.
- **The group agreed that the Budget Committee could be represented by Regina and Bob. Jay would invite Bryan Provencal, Chair, to participate on behalf of the Zoning Board.**
- Nathalie and Kirsten offered to work with SHEA to find appropriate external speakers and serve as liaisons to other state agency staff.
- Bob mentioned that he can put CHAT meetings/presentations on the Village District Channel 2.
- Jay suggested bringing in a person from the assessor's office at some point.
- Bob pointed out that a first task is to get the town to vote for the master plan. Others seemed to agree that having CHAT help with the Coastal Hazards and Climate Adaptation Master Plan Chapter would be a good use of time/starting point.

- **The group agreed that meetings every other month seemed like a reasonable frequency at minimum but would also meet more often, as needed.**

- Liz reviewed roles of CHAT from slides and asked for input from the group:

Primary role: Serve an advisory role for the town on coastal flooding issues and existing projects.

- *Provide educational opportunities for stakeholders to learn about adaptation strategies from each other and from other communities.*
- *Plug into ongoing projects, like the flood engineering studies.*
- *Help steer the development of the Coastal Hazards and Climate Adaptation Master Plan Chapter.*
- *Provide recommendations to the Board of Selectmen.*
- *Others?*
    - Jennifer mentioned that the group could be an advisor to funding alternatives such as Hazard Mitigation Grant Programs and TAP[1] funds and help the town determine appropriate mechanisms for raising match.
    - Jay agreed that they could call out funding as a focus of their role. In Barrington the town put aside money for match for projects like that.

[1] Transportation Alternatives Program

- Mark asked why there isn't a mechanism for a surplus at the end of the year to go into a matching fund.
    - Jennifer mentioned that a certain percentage has to go back to the General Fund. Also wrestling with the issue that if a line item isn't spent, it doesn't get budgeted the following year. There is an undesignated fund but would a Capital Reserve fund be better?
        - Liz mentioned that discussion on Capital Reserve Fund; might be a good early meeting topic.
- Ona asked about need for authority, decision-making rules, official staff resources, and whether meetings need to be or should be public.
    - **Group agreed that they have adequate authority as liaisons for their boards/commissions/departments/groups. They prefer to keep the group informal without set decision-making rules. Decided to continue discussions about what meetings should be public at a later work session.**
- Bob mentioned that the status of the CRS[2] application should be a topic at a future meeting.
- Nancy mentioned she would like there to be coordination between the Coastal Hazards and Adaptation Master Plan Chapter development and the update to the environmental component for the Hampton Beach Area Commission.
    - Jason agreed and mentioned that the Beach's Master Plan is part of the overall master plan of Hampton. Grant proposal submitted with Coastal Program for funding for the Coastal Hazards chapter.
    - They agreed that the timelines for the two chapters/plans align well for coordination. Timeline for Master Plan: Phase 1; RPC will set up the foundation over the course of about 1 year starting in March (draft vision chapter and template of the overall plan); Phase II full update longer term. Supported unanimously by the Selectboard; supported by the Planning Board; Village District
    - The proposal for the Coastal Hazards Chapter, if funded, would run from October 2019 through March 2021.
    - Rayann mentioned that they would work with a consultant to develop the Coastal Hazards Master Plan Chapter; wouldn't be as overwhelming as it sounds.
    - **Group seemed to agree that advising/guiding the Master Plan Chapter on Coastal Hazards and Climate Adaptation should be part of their role.**
    - Nathalie mentioned that for their climate adaptation master plan chapter, the City of Dover established a subcommittee of the Planning Board of staff and residents and they responded to input from SRPC and got the word out. That might be a model that could work. If you start by getting

[2] Community Rating System

educated over the next few months, you'd be in a good place to provide that guidance.

- Jennifer mentioned that the engineering studies will provide recommendations; there won't be a fix to fix everything. There will be steps and solutions to get to a better place. Will provide data. Hydrological component that works with climate adaptation. Not every area in the Hazard Mitigation Plan is being studied by the two studies, but lots are. They could be speakers to this group. (General agreement)
- Rayann mentioned that having someone come talk about the Hazard Mitigation Grant Program would be really helpful with; we need help figuring out how we will handle the process; do we have resources? How can we handle those grants? Interesting opportunity.
- Bob mentioned that Emergency Management should be part of this discussion at key points Has the problem reached the point of an Emergency Management Committee being needed?

- Public meetings?
  - Jay mentioned that Deb and Tom are serving leadership resident roles on CHAT
  - Bob mentioned that it might be premature to open the meetings up publicly until there is enough to present to residents. Focus on learning as a group first.
  - Jennifer agreed but also wants to take a step back; one goal is to educate the public; they may need to be fully invested and that might help to invite people
  - Deb mentioned that people think this is a quick fix but it's really not; so everyone needs help understanding that. Interested in learning about abatements.
  - Jay mentioned that they plan to continue the flood workshops in a more roundtable resident process/more informal/etc. which could be a forum for CHAT to interact with larger groups of residents.
  - Rayann said she supports opening up specific CHAT meetings to the public.
  - Nathalie mentioned they could duplicate the topics discussed at CHAT meetings with the resident roundtables.
  - Bob brought up the issue of emergency management and capacity. Hampton has 2 evacuation plans and one is school system.
    - Jennifer responded; sits in on some emergency management scenario exercises; we have a member that is part of the School Board; we have a protocol from notice to evacuation and depending on the way the winds are blowing the route changes based on that.
    - Bob mentioned that the public doesn't know those plans.
    - Group agreed emergency management and evacuation planning could be a future meeting topic and the Emergency Manager would be

invited to join for that session but likely would not want to be a regular member.

- **Meeting topics suggested:**
  - Focus on Hampton's vulnerabilities; major issues; basic Coastal Flooding 101; getting everyone on the same page
  - HSEM; Hazard Mitigation Grant Programs; funds for raising and buying out properties as well as municipal priority projects
  - Engineering studies
  - CRS update
  - Abatements, budget process (for public too); funding opportunities/CIP
  - Resilient tidal crossings; culvert maintenance responsibilities (Kevin Lucey; NHDOT)
  - How to figure out what emergency management's roles are and how to fill other capacity needs; evacuation planning
  - Master Plan Chapter
- Ona mentioned a few resources: Flood Forum USA (https://anthropocenealliance.org/floodforumusa/) for resident groups, Climigration.org. Also mentioned that the group is doing really cutting edge, impressive work.

4. Next Steps
   a. Project team will put together meeting notes, draft CHAT informal charter document for review at next meeting, and proposal for the next meeting (focused on more learning)
   b. Jay will invite Zoning Board member Bryan Provencal
   c. Next meeting: Tuesday, February 19 from 3-5pm; location TBD
   d. In general, meet on the 3rd Tuesday (either monthly or every other month, depending on need)

5. Adjourn