



HAMPTON BEACH AREA COMMISSION COASTAL RESILIENCE SYMPOSIUM

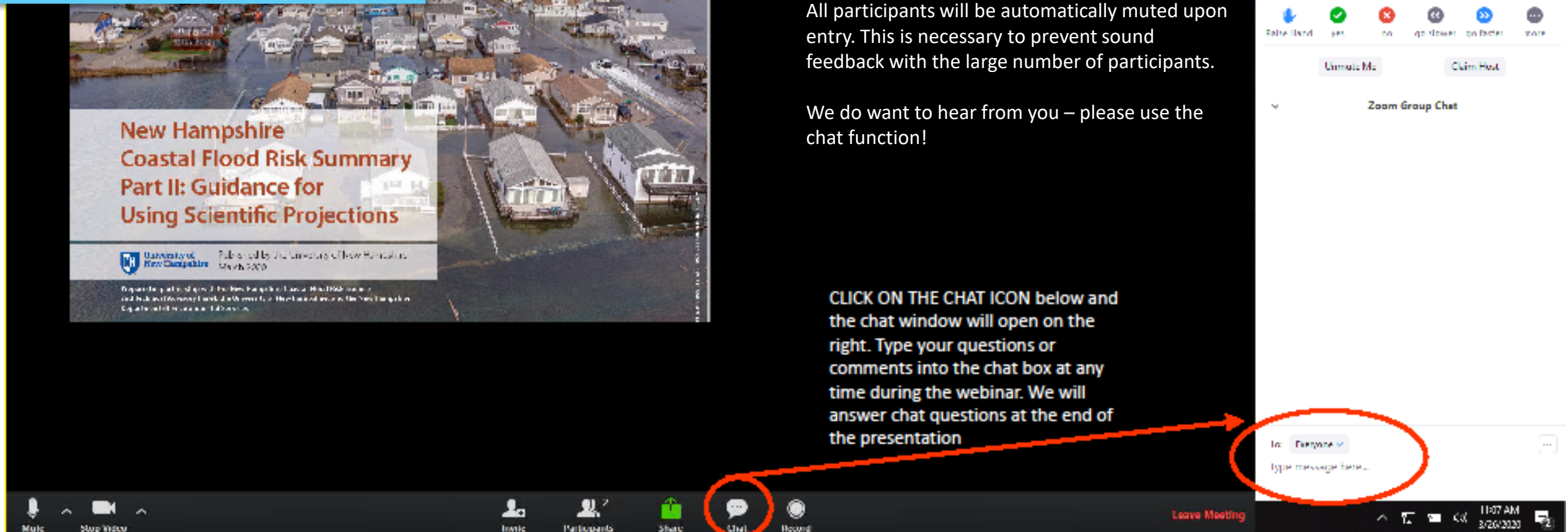
February 9, 2021
8:30AM – 2:30PM

This event was funded, in part, by the National Oceanic and Atmospheric Administration Office for Coastal Management in conjunction with the NH Department of Environmental Services Coastal Program.



ZOOM Tips and Technical Support

For technical support during the Symposium, contact Tiffany Chin at 603-559-0024, Tiffany.Chin@des.nh.gov or via Zoom chat



The screenshot shows a Zoom webinar in progress. The main window displays a presentation slide titled "New Hampshire Coastal Flood Risk Summary Part II: Guidance for Using Scientific Projections". The slide features an aerial view of a coastal town with houses partially submerged in water. Text on the slide includes "University of New Hampshire" and "Published by the University of New Hampshire March 2020".

On the right side of the screen, the Zoom interface shows the "Participants (1)" list with "Amende Stone (Me)" listed. Below this is the "Zoom Group Chat" window, which is currently empty. At the bottom of the screen, the Zoom toolbar is visible, including icons for "Mute", "Stop Video", "Join", "Participants", "Share", "Chat", and "Record".

Two red circles highlight specific UI elements: one around the "Speaker View" button in the top right corner of the presentation area, and another around the "Chat" icon in the bottom toolbar. A red arrow points from the "Chat" icon to the chat window on the right.

Text overlays on the image provide instructions:

- CLICK ON SPEAKER VIEW** when you enter the Zoom screen so you can see the presenter during the webinar. Note that when you click on "speaker view" the icon text will change to "Gallery View". That is OK and you don't need to do anything further – it means you are on Speaker View.
- CLICK ON THE CHAT ICON** below and the chat window will open on the right. Type your questions or comments into the chat box at any time during the webinar. We will answer chat questions at the end of the presentation

Additional text on the slide reads: "All participants will be automatically muted upon entry. This is necessary to prevent sound feedback with the large number of participants. We do want to hear from you – please use the chat function!"



AGENDA

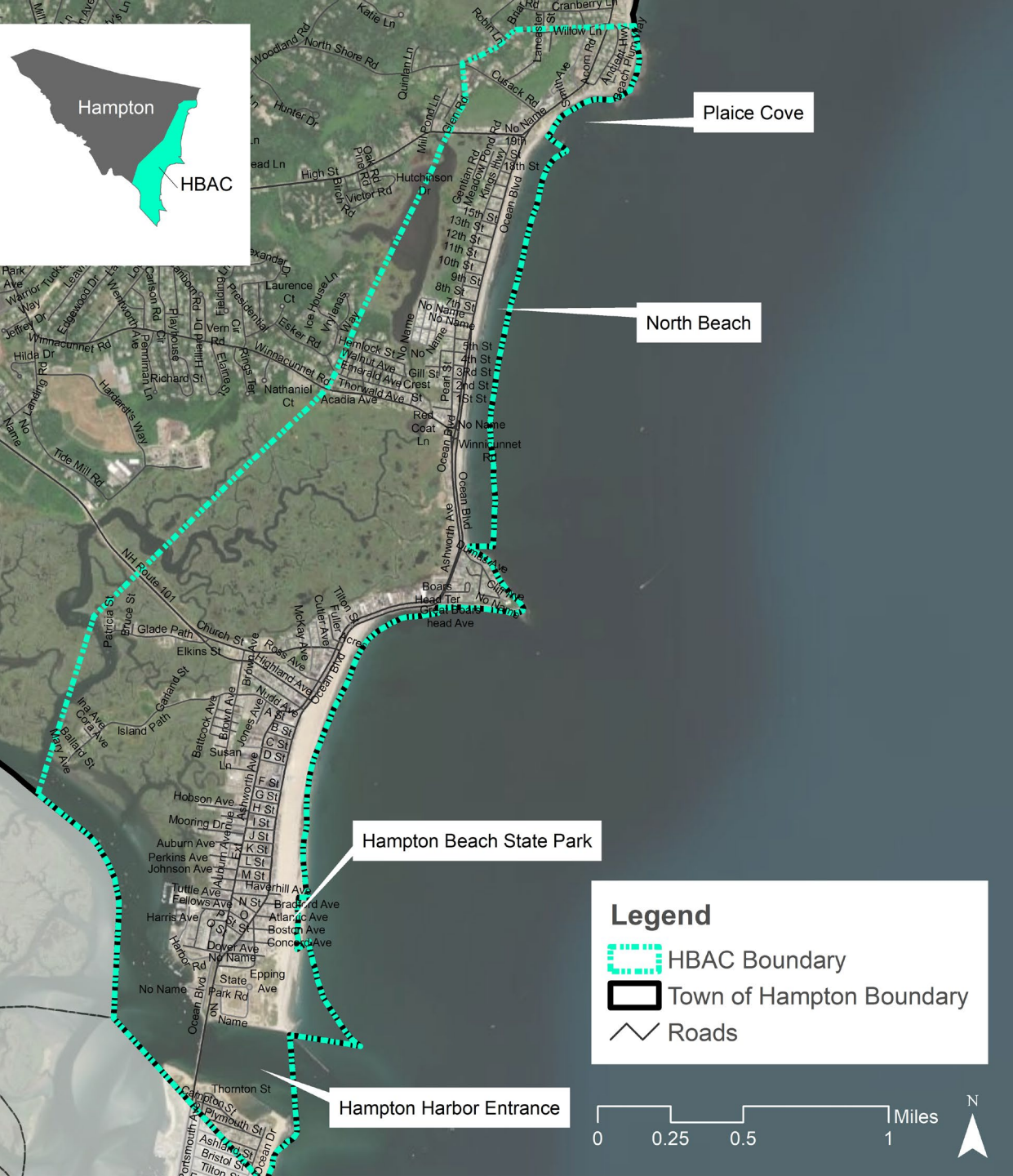
8:30 - 9:00 AM	Sign On
9:00 – 9:15 AM	Welcome & Introductions
9:15 – 10:30 AM	Presentations, Bob Casassa, Moderator
10:30 – 10:45 AM	Break
10:45 – 11:45 AM	Presentations (continued)
11:45 AM – 12:30 PM	Q&A and Discussion with Presenters and Symposium Participants
12:30 – 1:15 PM	Lunch Break
1:15 – 1:25 PM	Debrief of Morning Sessions and Introduction of Afternoon Sessions
1:25 – 2:25 PM	Advisory Panel, Bob Casassa, Moderator
2:25 – 2:30 PM	Closing Remarks and Next Steps
2:30	HBAC Commission Meeting (all welcome)

Full Agenda & Meeting Packet: <https://www.nhcaw.org/hbac-coastal-resilience-symposium/>



WELCOME & INTRODUCTIONS

The goal of the Symposium is to inform the Coastal Resilience Update to the HBAC Master Plan through discussion of the many ongoing works to increase Hampton Beach resilience to coastal environmental hazards.



HBAC JURISDICTION

ADVISORY PANEL



Laurel Adams
REDC



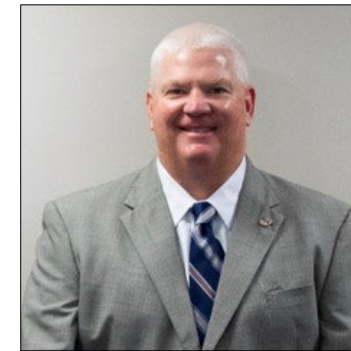
Roger Stephenson
Union of Concerned
Scientists



Kirsten Howard
NH DES Coastal
Program



Rick Friberg
TEC, Inc.



Jamie Sullivan
Town Manager



Tim Roache
Rockingham Planning
Commission



Rep. Renny Cushing
NH House of Reps



Johanna Lyons
NH State Parks



John Nyhan
Hampton Area Chamber
of Commerce



Tom McGuirk
McGuirk Properties /
McGuirk's Ocean View



Steve Whitman
Resilience Planning &
Design, LLC



MORNING BREAK

Reconvene at 10:45 AM



LUNCH BREAK

Reconvene at 1:15 PM



HBAC COMMISSION MEETING

2:30 PM

All are welcome to attend



2019-2020

NH COASTAL FLOOD RISK SUMMARY

PART I: SCIENCE & PART II: GUIDANCE FOR USING SCIENTIFIC PROJECTIONS



Nathalie DiGeronimo

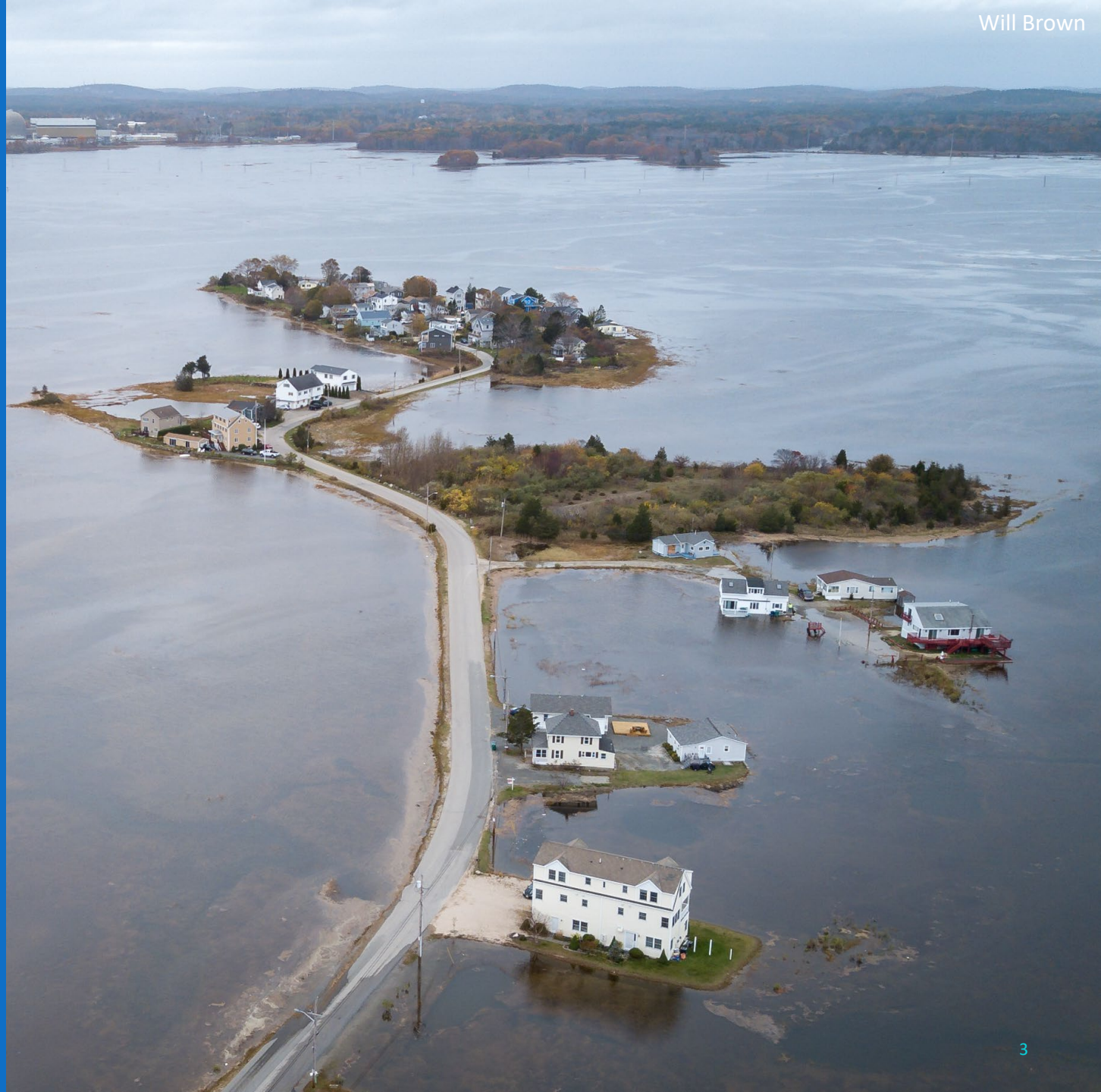
THE FUTURE IS NOW



“Coastal flooding is already occurring in New Hampshire and is expected to increase in frequency and severity in the future.”

PART I: SCIENCE

- ↑ SEA-LEVEL RISE
- ↑ COASTAL STORMS
- ↑ GROUNDWATER RISE
- ↑ PRECIPITATION
- ↑ FRESHWATER FLOODING





SEA-LEVEL RISE

Local sea level has risen

7.5 to 8.0 inches from 1912-2018

More widespread and damaging
flooding during storms and high tides



Marie Sapienza



Peter DiGeronimo



Rich Beauchesne



SEA-LEVEL RISE

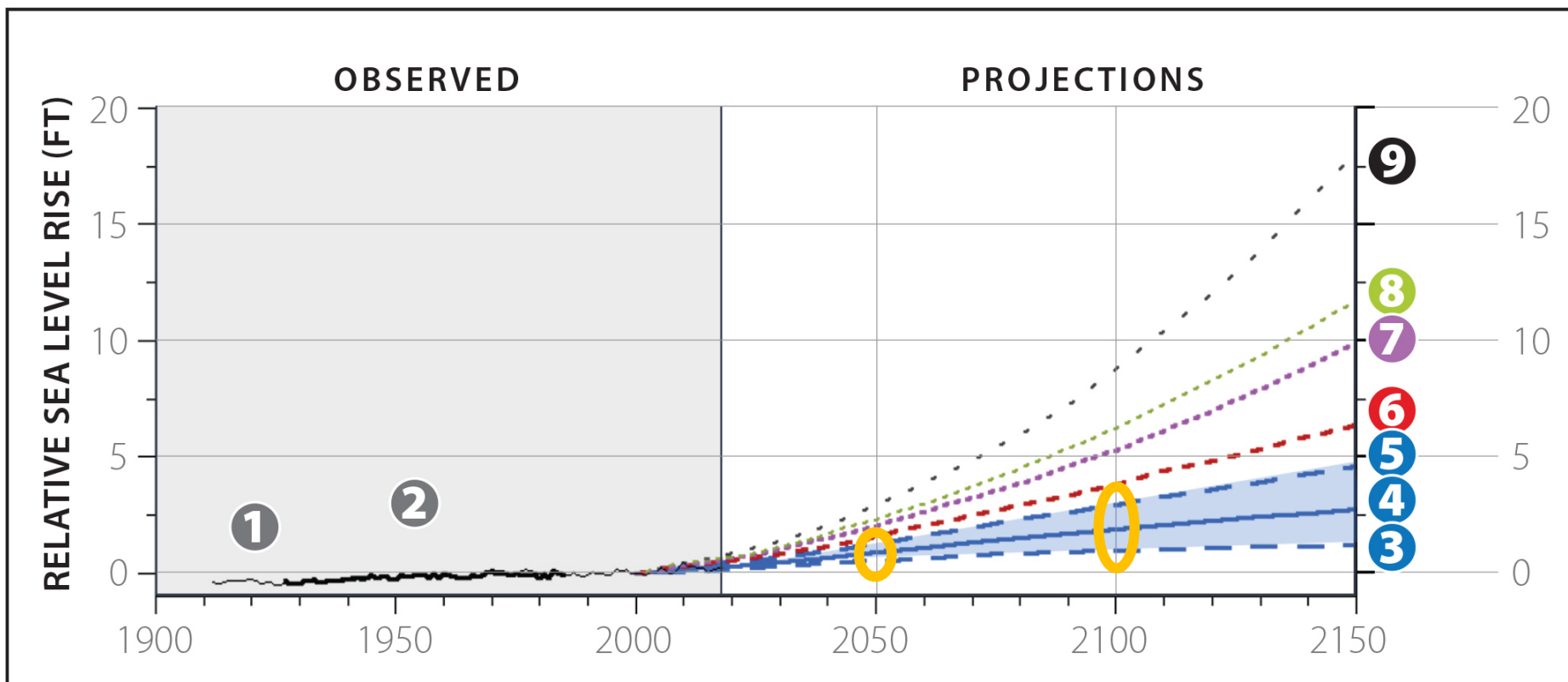


Figure 4.5. Observed and Projected Relative Sea-Level Rise for Seavey Island Tide Gauge K14 Projections | Stabilized Greenhouse Gas Concentrations (RCP 4.5).

- ❶ Historical data for Portland, ME (1912-2018; thin black line)
- ❷ Historical data for Seavey Island, ME (1927-1986; thick black line)
- ❸ Lower end of “likely range”
- ❹ Central estimate
- ❺ Upper end of “likely range”
- ❻ 1-in-20 chance estimate
- ❼ 1-in-100 chance estimate
- ❽ 1-in-200 chance estimate
- ❾ 1-in-1000 chance estimate



GROUNDWATER RISE

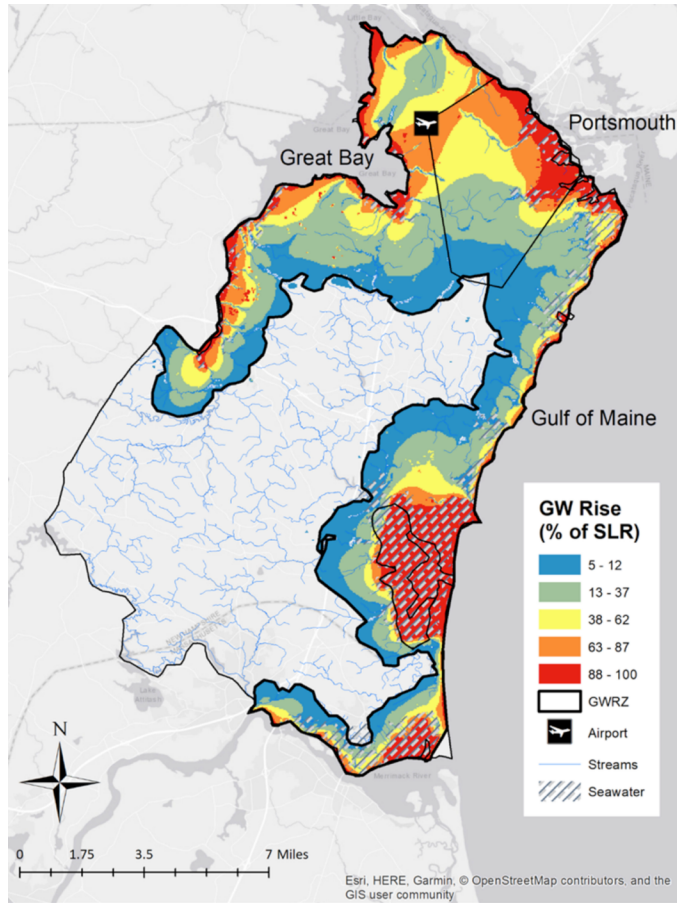


Figure 6.5. Projected groundwater rise as a percent of RSLR in the coastal New Hampshire study area. **Source:** Modified from Knott et al. (2018a).





COASTAL STORMS

More frequent and intense

More damaging storm surge

Faster currents will increase coastal erosion



PRECIPITATION AND FRESHWATER FLOODING



1 to 2 more inches of rainfall during extreme 24-hour events since the 1950s

More frequent extreme events

More freshwater flooding

PART II: GUIDANCE FOR USING SCIENTIFIC PROJECTIONS

GUIDING PRINCIPLES

STEP-BY-STEP APPROACH





TOLERANCE FOR FLOOD RISK

Willingness to accept higher or lower probability of flood impacts based on:

- Project value or replacement cost
- Capacity to adapt
- Importance for public function/safety
- Sensitivity to flooding





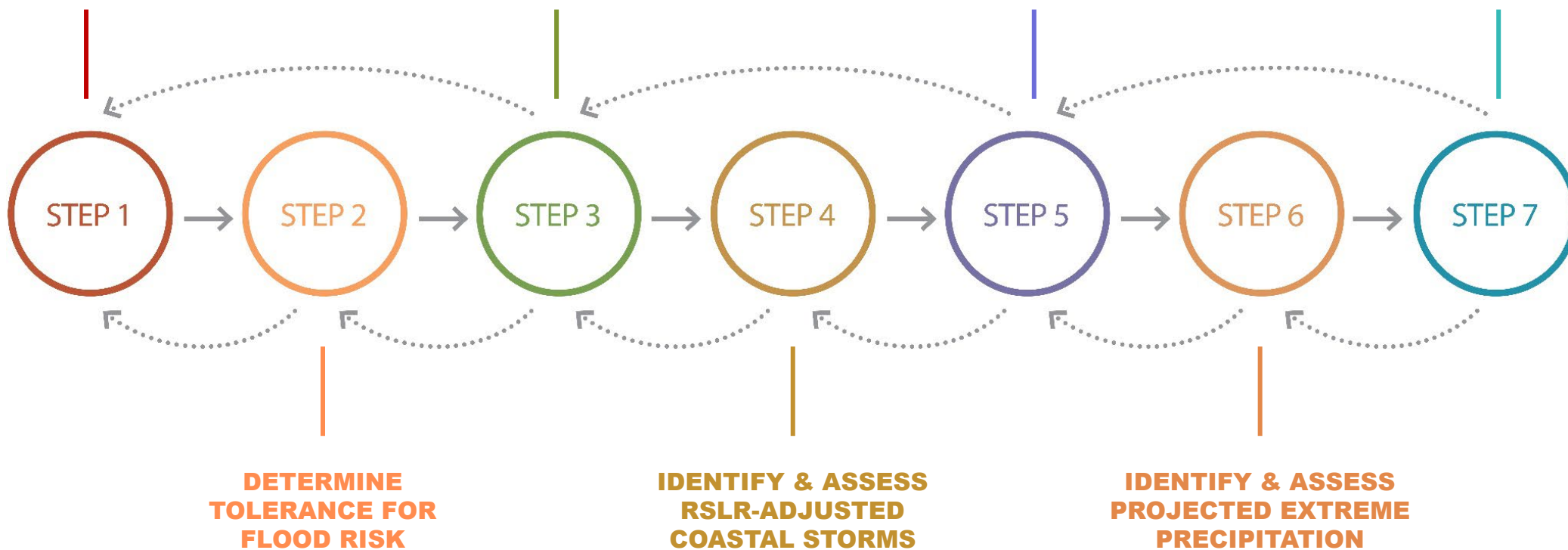
STEP-BY-STEP APPROACH

**DEFINE PROJECT GOAL,
TYPE, LOCATION,
& TIMEFRAME(S)**

**SELECT & ASSESS
RELATIVE SEA-
LEVEL RISE (RSLR)**

**IDENTIFY & ASSESS
RSLR-INDUCED
GROUNDWATER RISE**

**ASSESS CUMULATIVE
RISK & EVALUATE
ADAPTATION OPTIONS**





PART I: SCIENCE

WWW.TINYURL/CFRSCIENCE

PART II: GUIDANCE FOR USING SCIENTIFIC PROJECTIONS

WWW.TINYURL/CFRGUIDANCE



THANK YOU



Nathalie DiGeronimo (Morison)



603.559.0029



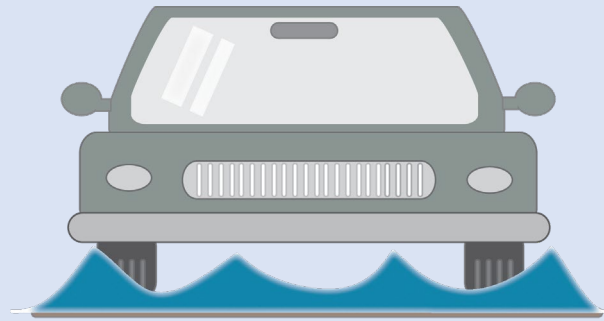
nathalie.morison@des.nh.gov



ROCKINGHAM
PLANNING
COMMISSION

Empowering Communities
theRPC.org

Julie LaBranche
STCVA Project Manager/
Senior Planner



Seacoast Transportation Corridor Vulnerability Assessment

Hampton Beach Area Commission
Coastal Resilience Symposium
February 11, 2021

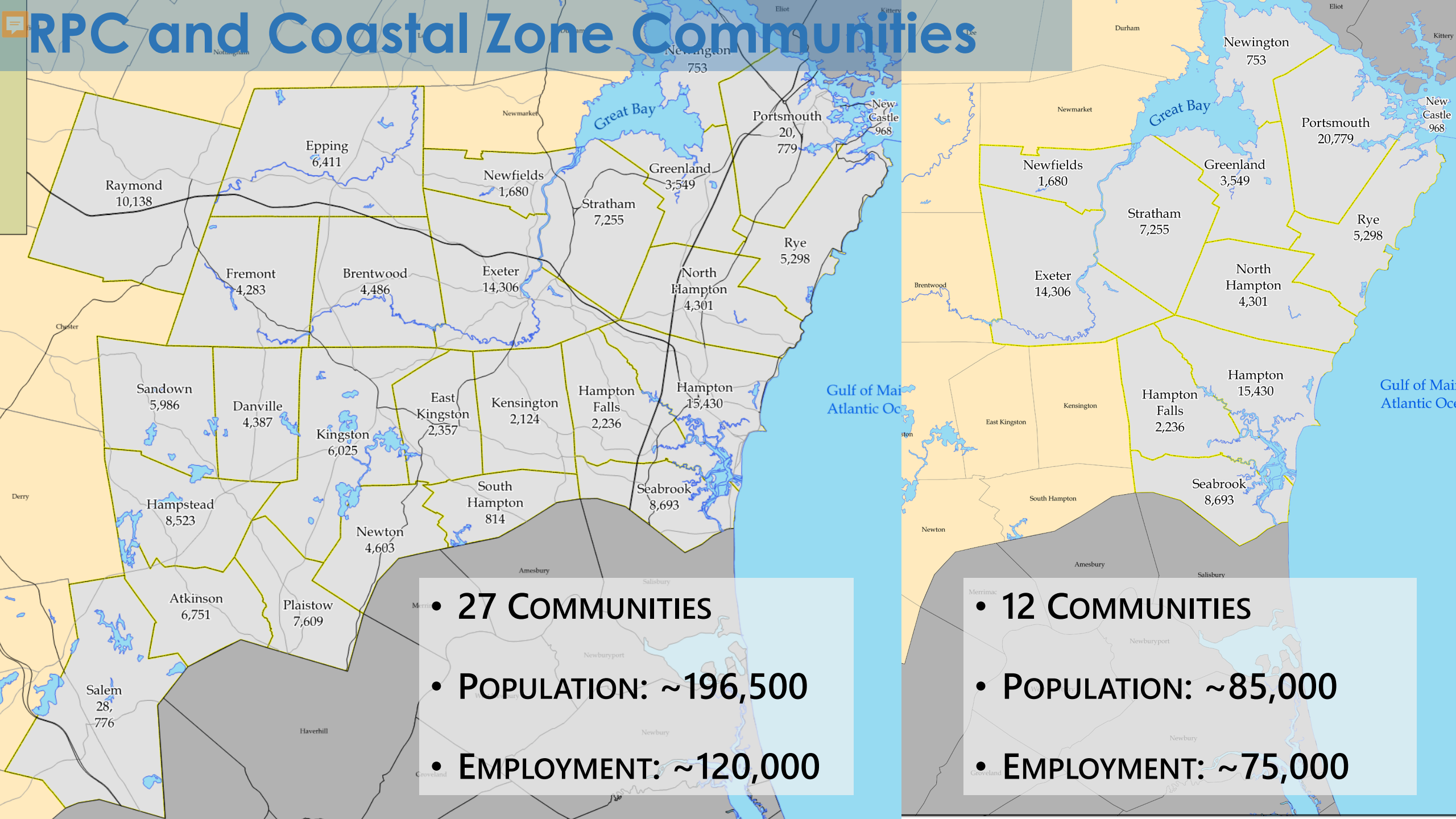
Seacoast Transportation Corridor Vulnerability Assessment (STCVA)

- A partnership between:
 - Rockingham Planning Commission
 - NH DES Coastal Program
 - NH Department of Transportation
 - University of New Hampshire
 - 10 NH coastal municipalities
- Funded as a 2019 NOAA Project of Special Merit

This project was funded, in part, by NOAA's Office for Coastal Management under the Coastal Zone Management Act in conjunction with the New Hampshire Department of Environmental Services Coastal Program.



RPC and Coastal Zone Communities



- 27 COMMUNITIES
- POPULATION: ~196,500
- EMPLOYMENT: ~120,000

- 12 COMMUNITIES
- POPULATION: ~85,000
- EMPLOYMENT: ~75,000

Seacoast Transportation Corridor Vulnerability Assessment (STCVA)

Project goals are to:

- Assess the impacts of projected sea-level rise on the seacoast transportation network
 - 1.0', 1.7', 4.0' and 6.3' sea-level rise at 2050
- (Tides to Storms and consistent with 2020 NH Science Summary)
- Evaluate changes in traffic volume, travel patterns, road capacity, road conditions
 - Identify priority sites impacted by flooding
 - Identify adaptation and resilience strategies for priority sites
 - Improve RPC/MPO decision making processes

Regional Travel Demand Model

- Travel Demand Model - demographic data – employment, population, travel volume
- Uses demographic data aggregated into zones to estimate future travel in the region
- Model attempts to find most efficient path for all trips between aggregated zones
- Many, but not all, (local) roads are included
- Focused on impacts on primary travel corridors

Seacoast Transportation Corridor Vulnerability Assessment (STCVA)

- Corridor Advisory Committee - capitalize on municipal expertise and experiences
- Understand NHDOT and municipal roadway network management, policies and planning decisions
- Inform state and local hazard mitigation planning efforts
- Inform coastal region climate adaptation and resilience planning

Importance of Resiliency Planning

MPO's purpose is to plan for the long-term needs of the regional transportation system

- Provides the means for people to access social, economic, and environmentally valuable/desired locations
- Current science indicates that planners need to account for sea level rise to maintain access to those locations in coastal NH

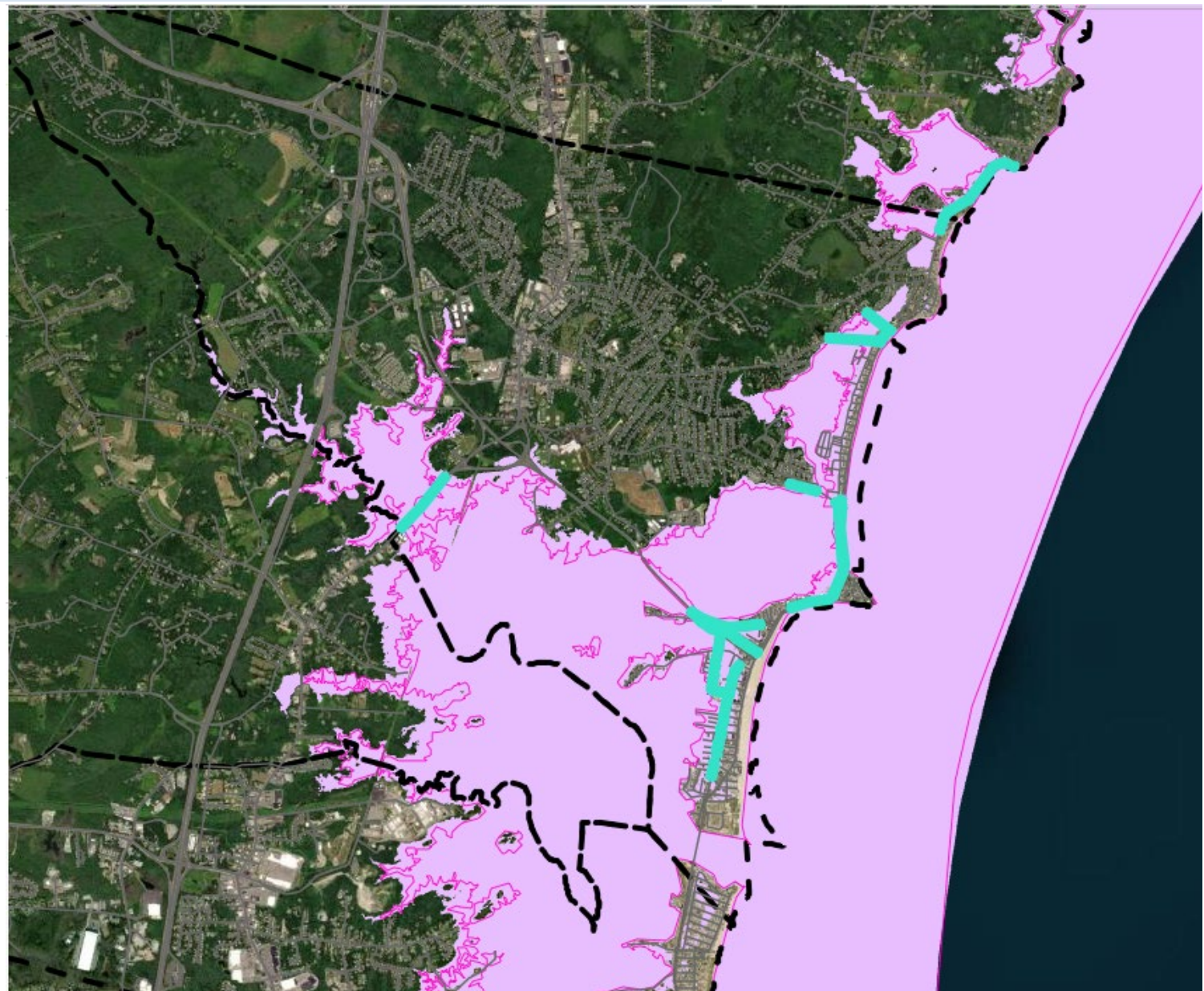
Planning a Resilient Transportation System helps to

- Reduce the likelihood of systemic disruptions to roadway functions
- Increase the capacity to absorb these disruptions and still function
- Ensure that all have the ability to access the transportation system during disruptions
- Reduce the time that is needed to return to normal functioning

STCVA Transportation Planning Outcomes

- Enhanced understanding of risks to transportation network from climate change
- Identify critical links and impacts of closures on overall transportation network
- Develop improvement concepts and costs to better understand scope and scale of building a more resilient system
- Improve use of resiliency factors in the project selection process
- Provide data and analysis for other planning and project development efforts.
- Define policies that can facilitate a more resilient transportation system

Regional Travel Demand Model Results



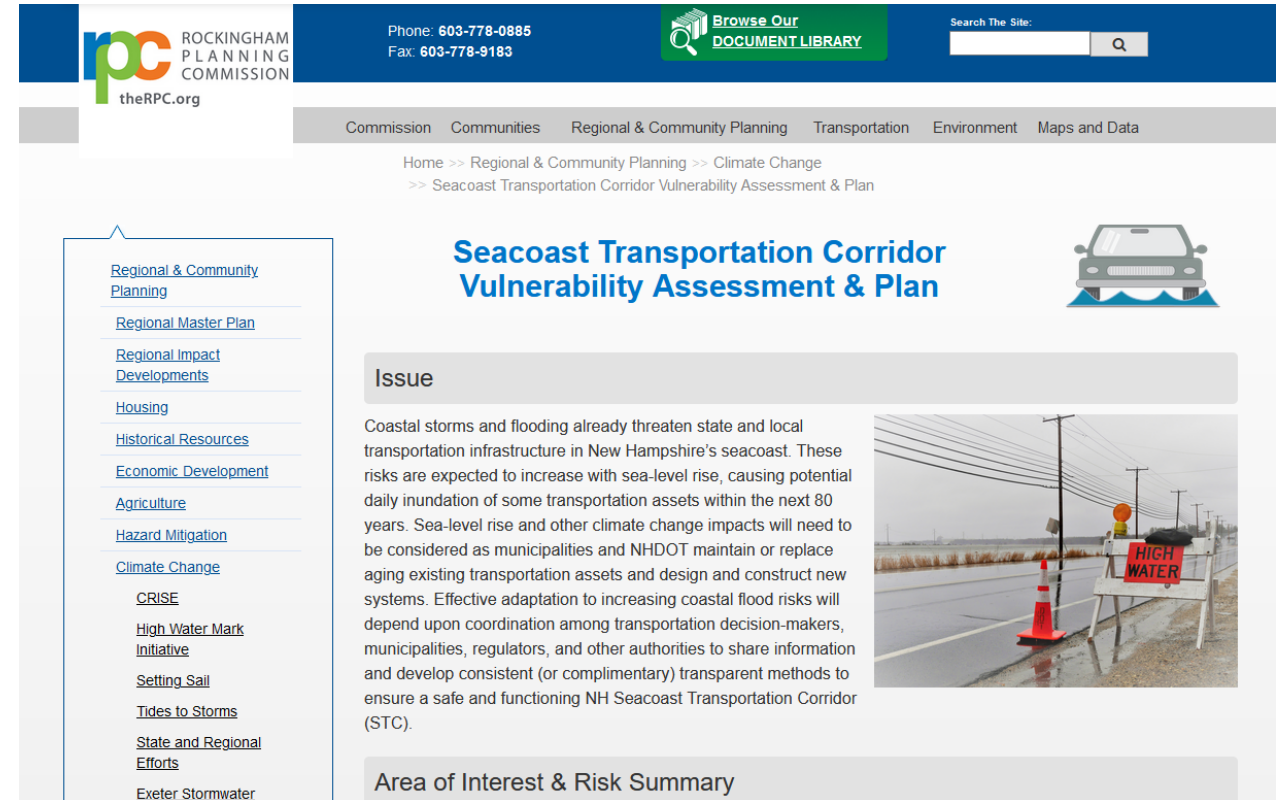
For More Information

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Senior Planner
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Dave Walker
Assistant Director/Transportation
Program Manager
dwalker@therpc.org

Christian Matthews
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www.therpc.org



<https://www.therpc.org/regional-community-planning/climate-change/STCVA>

Seabrook- Hamptons Estuary Alliance (SHEA)

Established for the protection of coastal and aquatic resources, and the preservation of the Seabrook-Hamptons estuarine system through education, community outreach, and research.



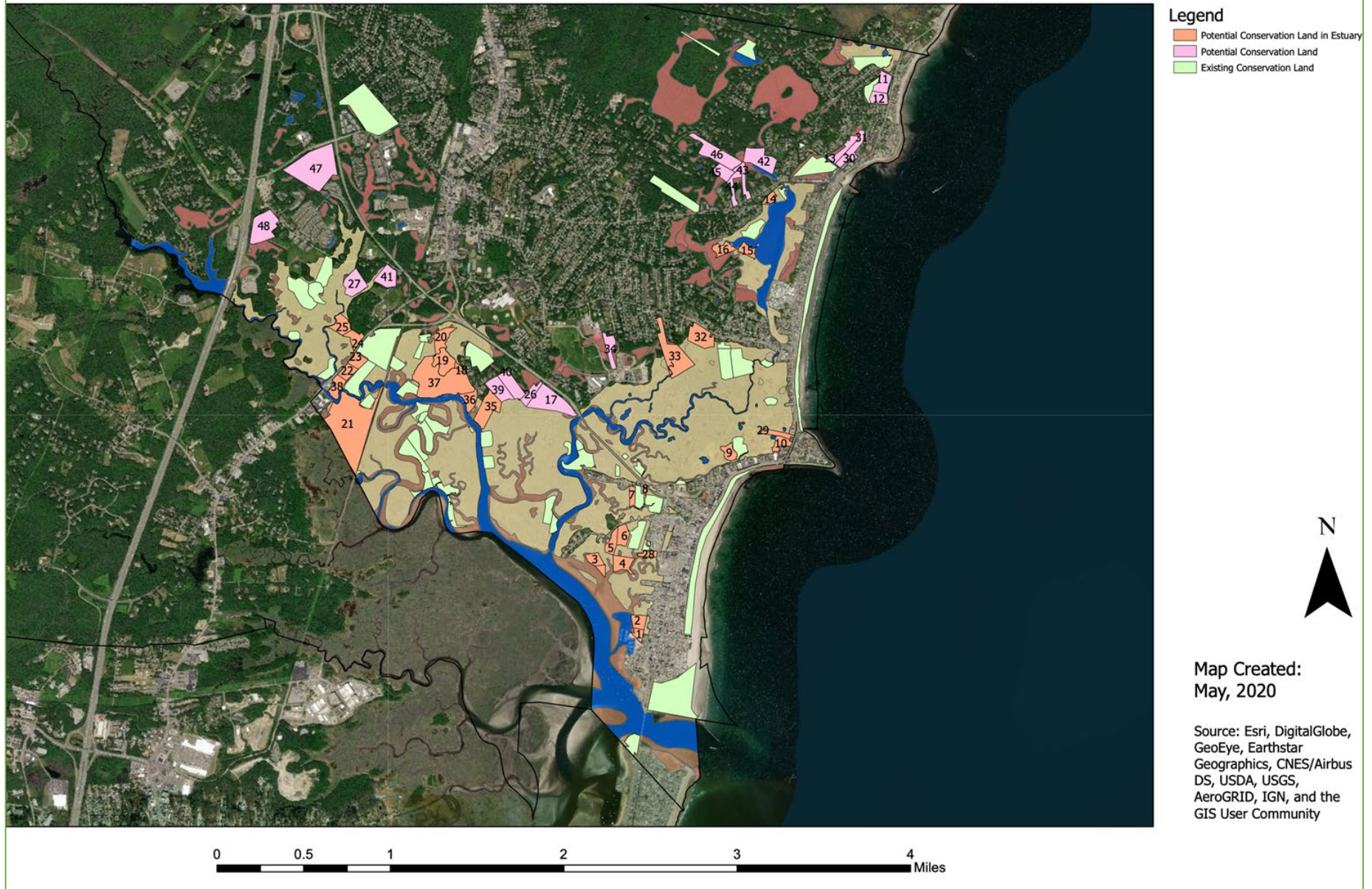


Hampton Harbor Tide Forecast – 2021 203 - 38



Photo by Matt Parker

Hampton Potential Conservation Land



Coastal Hazards Adaptation Team

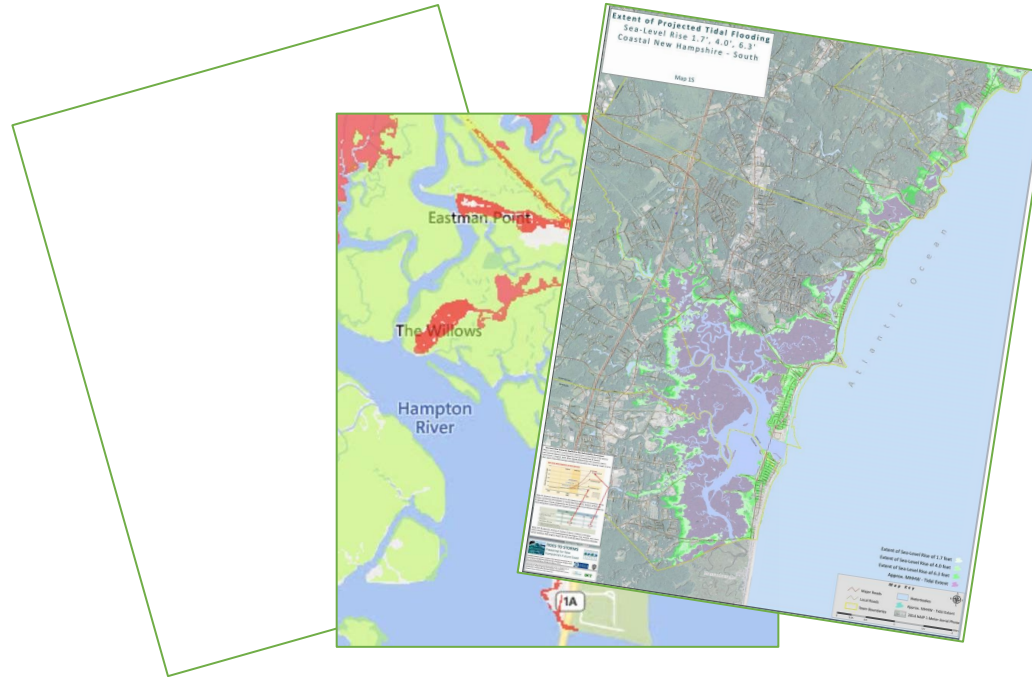


CHAT Members

- Board of Selectmen
- Planning Board
- Budget Committee
- Conservation Commission
- Hampton Beach Area Commission
- Hampton Beach Village Precinct
- Zoning Board of Adjustment
- Town Planner
- DPW Deputy Director
- Hampton Beach residents
- NHDES Coastal Program

CHAT Meetings

Case Histories



Local Flood Maps

Natural Protection



Flood Insurance



CHAT Recommendations

Tactics

Build a wall

Raise the roads

Temporary flood barriers



Strategies

Planning

Policies & Ordinances

Data collection & Research
Public outreach

CHAT Recommendations

Review ordinances and regulations

Coastal Hazards Overlay District

Community Resilience and Floodplain Administrator

Understand economic impacts

Implementation Committee

Estuary Management Plan



Shellfish

Estuary Vision

Existing Data

Needs & Gaps

Management Goals & Strategies

Plan Adoption

Implementation

Periodic Review & Update



Vegetation



Avian wildlife



Salt Marsh

- Marsh migration to help protect local properties
- CHAT recommendations focused on increased flood resilience
- Estuary Management Plan to ensure a healthy and protective Hampton-Seabrook Estuary



Photo: Univ. of New Hampshire

Collaborating Toward Coastal Resilience

Lessons from Community Based Programs



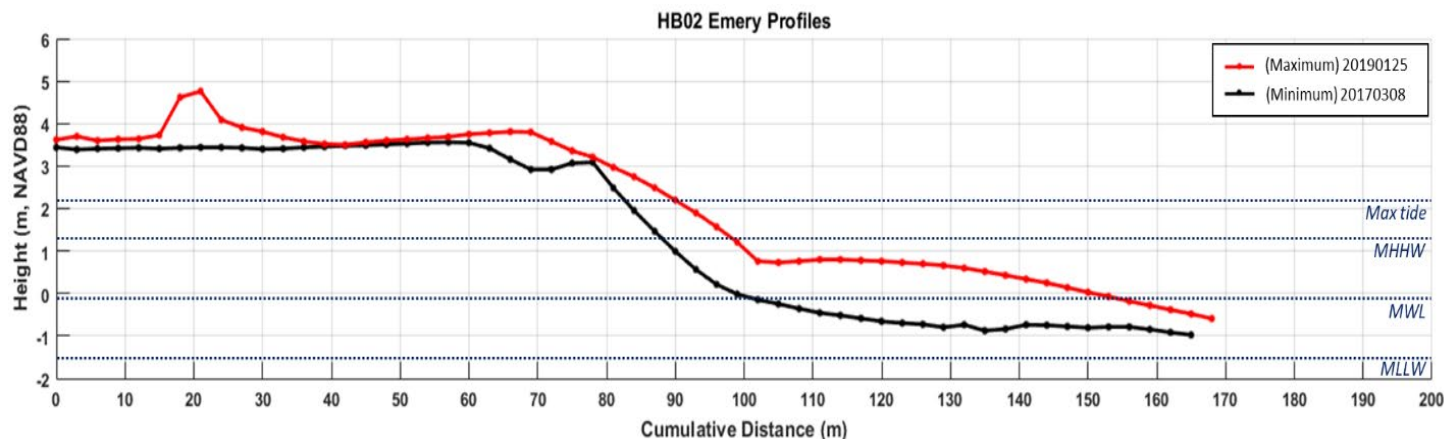
NH Volunteer Beach Profiling Program



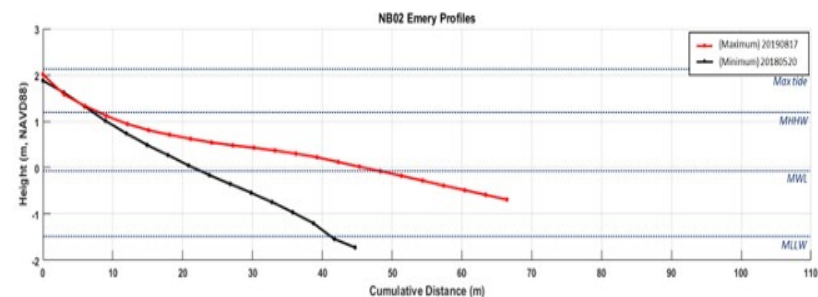
Wide beaches with higher elevation offer more storm protection.

Beaches with seawalls result in more wave reflection, and more erosion.

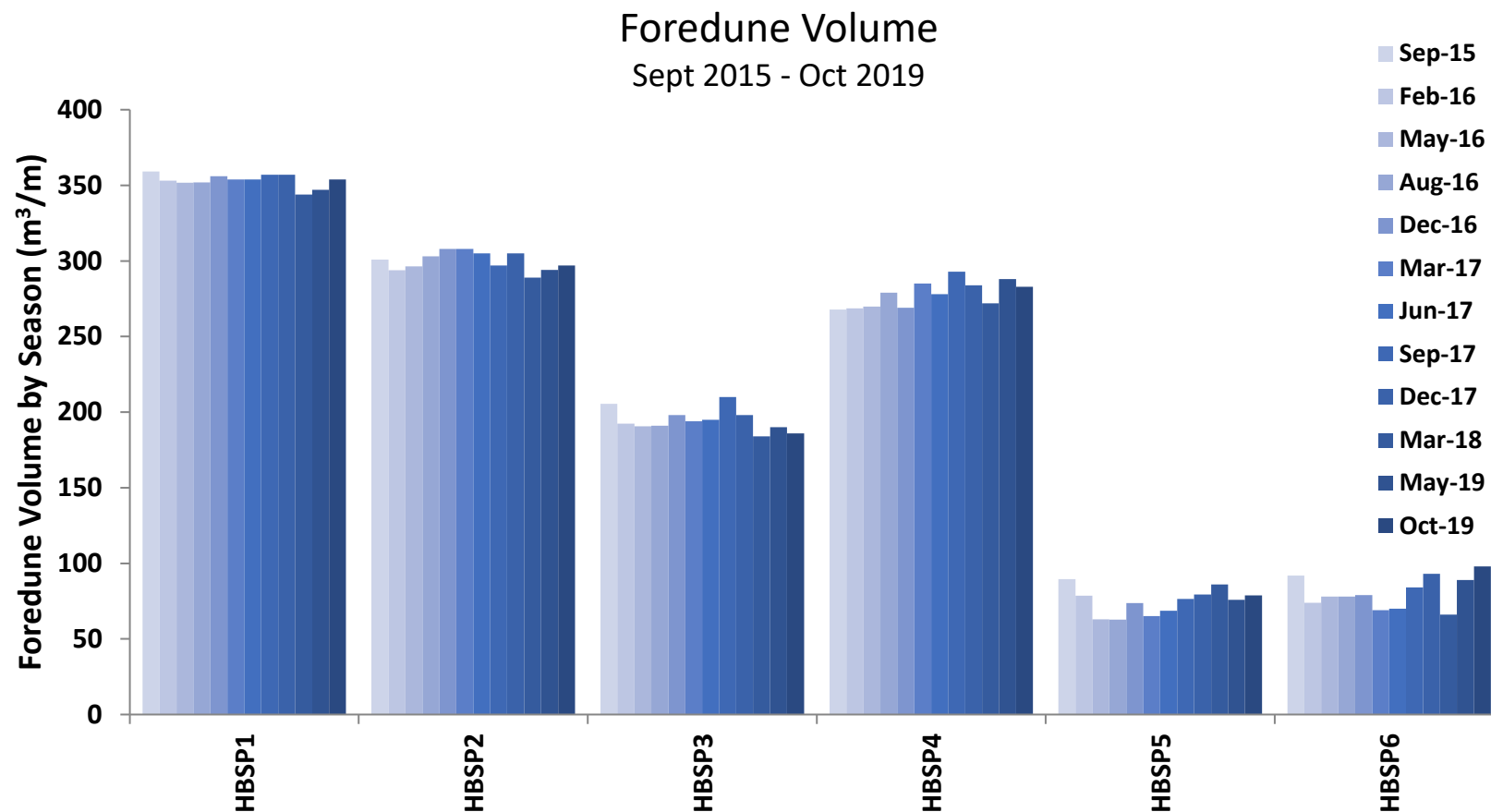
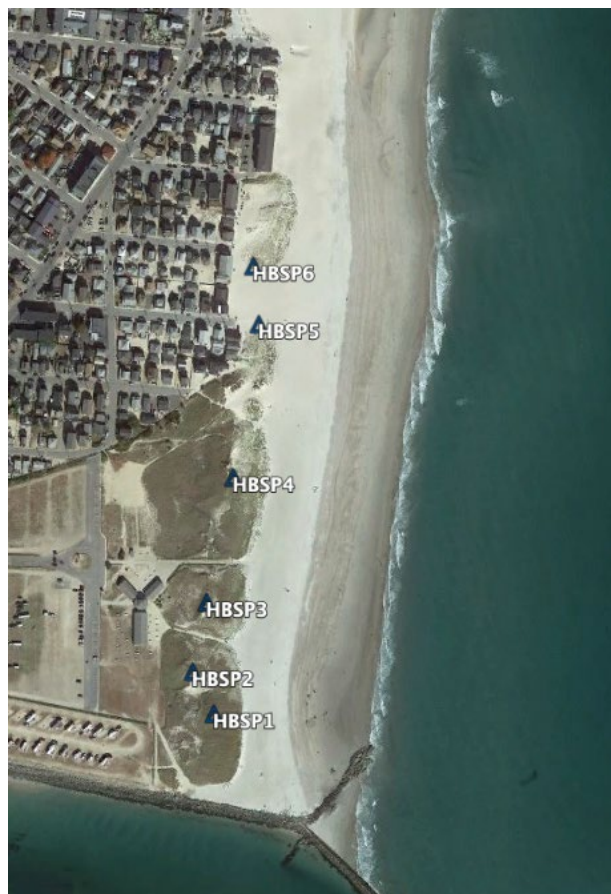
Hampton Beach



North Beach



Beaches and dunes work together as a coupled system. They are some of our most important storm protection assets.



Considerations for the Coastal Environmental Hazards Master Plan update

Restore dunes wherever possible – e.g., Sun Valley, north of the State Park

Explore options for living shorelines

Maintain processes that supply sediment to the system
Dune walkover structures
Leave seaweed on beaches

Establish a committee to create a long-term plan for beach nourishment





The Coastal Landowner Technical Assistance Program

To provide equitable technical assistance, information, tools, and contacts to coastal residents to help :

- reduce individual and community flood risk
- utilize nature-based approaches to mitigate erosion and flood risk
- restore natural habitats to enhance the resilience of native ecosystems



What we are hearing from Hampton residents in LTAP

They are looking to better understand their flood risk

Many underestimate their flood risk

They are looking for flood mitigation solutions at both the property and the community scale

Oceanfront residents are interested in rebuilding sand dunes

Concern exists about the impact of groundwater rise

Some residents are interested in a voluntary buyout option at fair market value



Considerations for the Coastal Environmental Hazards Master Plan update

Provide landowner technical assistance regarding flood risk and flood mitigation

Develop a long-term plan for dune restoration and maintenance

Further explore future impacts of groundwater rise

Access the Hazard Mitigation Assistance Program for home elevation and voluntary buyouts



Acknowledgements

Wellsley Costello, NH Sea Grant Extension
Larry Ward, UNH Center for Coastal and Ocean Mapping
Rachel Morrison, UNH Center for Coastal and Ocean Mapping
David Burdick, UNH Jackson Estuarine Laboratory
Gregg Moore, UNH Jackson Estuarine Laboratory
Kirsten Howard, NH DES Coastal Program
Chris Williams, NH DES Coastal Program
Nathalie Morison DiGeronimo, NH DES Coastal Program
Jay Diener, Seabrook-Hamptons Estuary Alliance
Rayann Dionne, Seabrook-Hamptons Estuary Alliance

Funded, in part, by NOAA's Office for Coastal Management
under the Coastal Zone Management Act in conjunction with
the NH DES Coastal Program

Beach Profiling Volunteers

Lee Pollock	Dave Perkins
Sylvia Pollock	Sally Nickerson
Claudia Gilmartin	Joe St. Onge
Ellen Saas	Katherine Brown
Molly Dennett	Hugh Evans
Alfred Ackerman	Mike Stockdale
Kaye Jaus	Terry Stockdale
Craig Jaus	Sherri Townsend
Lisa Sweet	Peter Leary
NH Coastal Program staff	Mike Jeans
Dennis Barrett	Barry Simard
Hank Bautzmann	Mark Davidson
Bob Walsh	Dave Canedy
Tom Adams	Kathy Canedy
Rick Cliche	Colin Canedy
Leslie Cliché	Jennifer Stetson
Steve McCarthy	Bryce Stetson
Dave Samara	Rebecca Beasley

Resilient Tidal Crossings NH

Prioritizing tidal crossing replacement for community and ecosystem resilience



NEW HAMPSHIRE
DEPARTMENT OF
Environmental
Services



What is a Tidal Crossings?

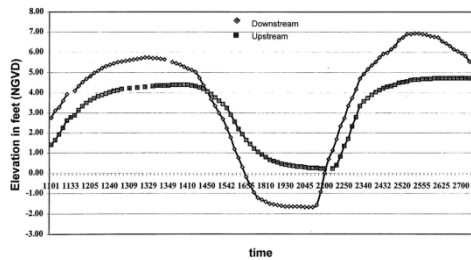
a culvert or bridge that conveys bidirectional tidal flow, or that is predicted to become tidally influenced in the near future considering sea level rise (SLR) of 1.7 feet.



Why Tidal Crossings?

Complex Systems and Decision Making

Dynamic, Bi-
Directional Flow



Salt Marsh
Health & Migration



Low Lying
Infrastructure



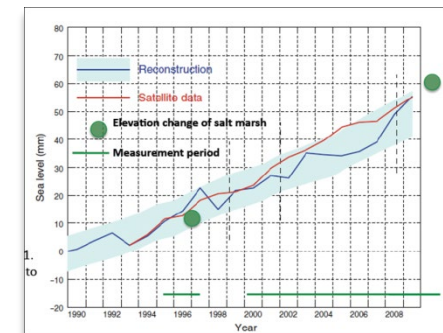
Increased Storm
Intensity



Operations &
Maintenance



Rising Sea Levels



INFRASTRUCTURE SCORES

1. Structure Condition
2. Inundation Risk To Roadway
3. Inundation Risk To Crossing Structure
4. Inundation Risk To Low-Lying Development

ECOLOGICAL SCORES

- | | | |
|--|---|---------------------------------------|
| 5. Tidal Range Ratio | } | 8. Tidal Restriction
Overall Score |
| 6. Crossing Ratio | | |
| 7. Erosion Classification | | |
| 9. Tidal Aquatic Organism Passage Evaluation | | |
| 10. Salt Marsh Migration Potential Watershed | | |
| 11. Salt Marsh Migration Potential Evaluation Unit | | |
| 12. Vegetation Evaluation | | |

COMBINED SCORES

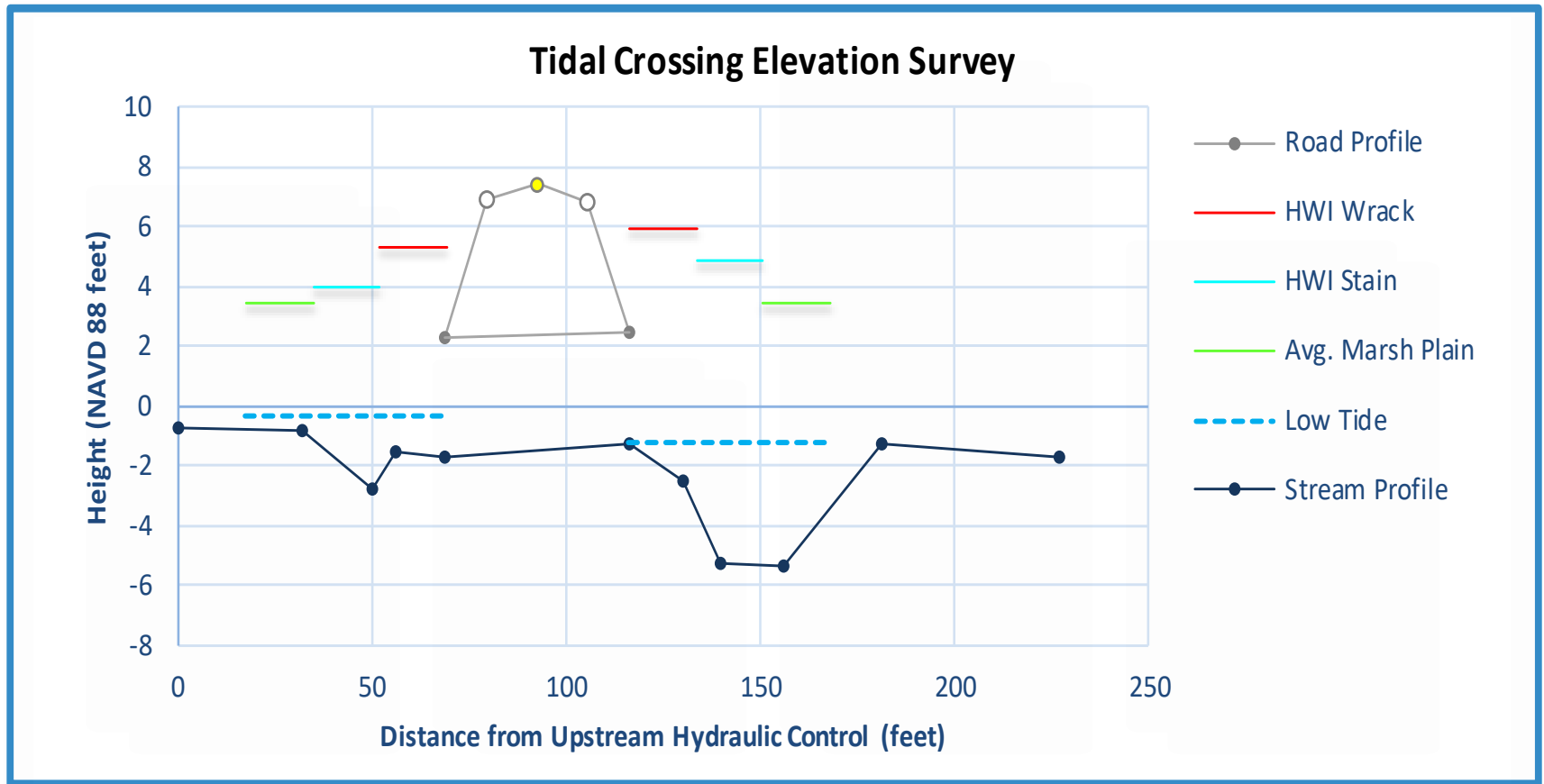
13. Overall Infrastructure Score
14. Overall Ecological Score
15. Overall Combined Score

Scoring System

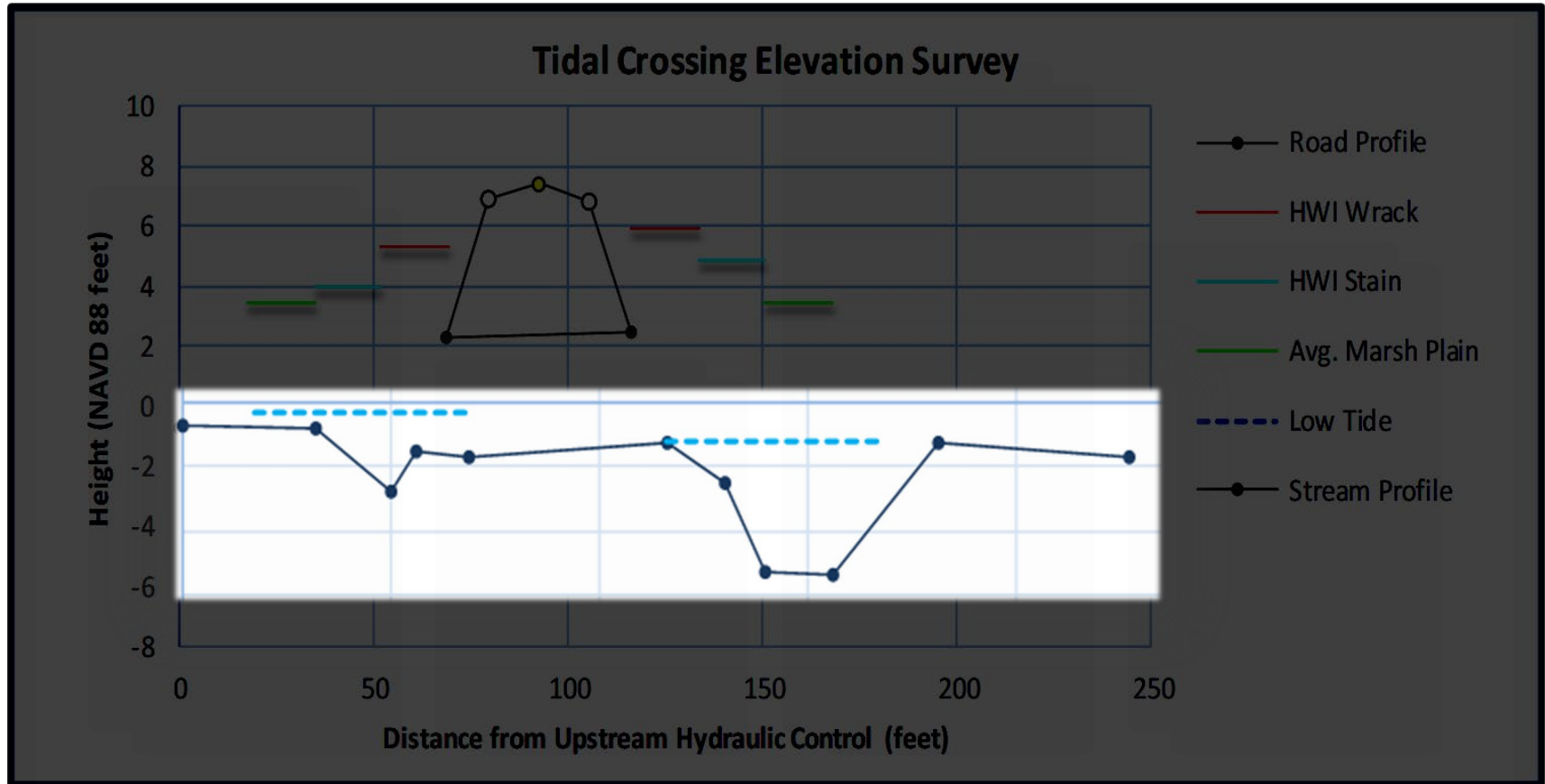
SCORE	SCORING CHARACTERIZATION	RECOMMENDED ACTION
1	<ul style="list-style-type: none"> - good structure condition - no tidal restriction - allows organism passage - low salt marsh migration potential - vegetation unaffected by crossing - low flood risk - many adverse impacts 	Low Replacement Priority
2		
3		
4		
5	<ul style="list-style-type: none"> - poor structure condition - severe tidal restriction - reduced organism passage - high salt marsh migration potential - vegetation affected by crossing - high flood risk - few adverse impacts 	High Replacement Priority

Evaluation Criteria ≥ 3 indicate a cause for concern

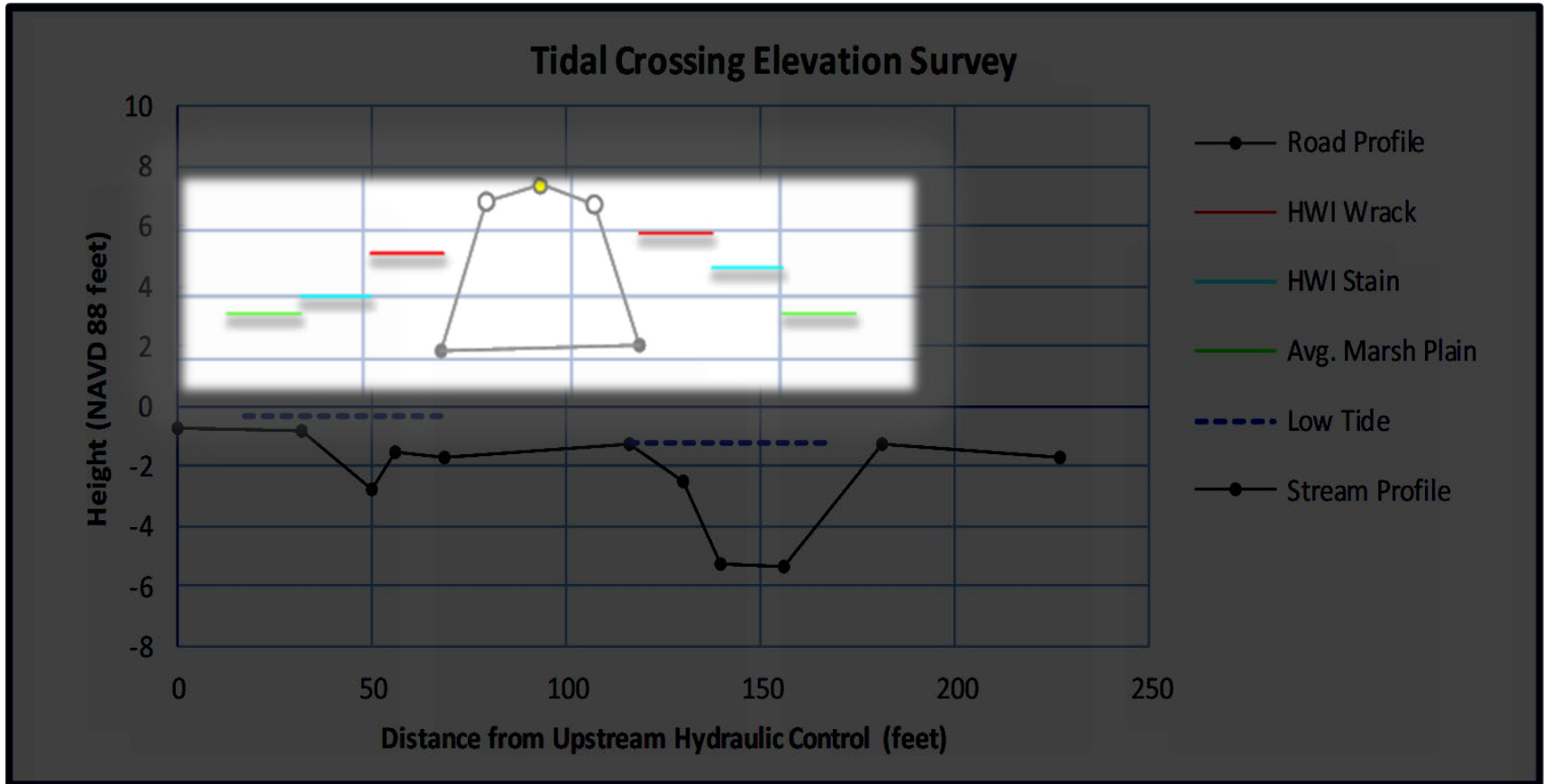
Tidal Crossing Elevation Survey



Tidal Crossing Elevation Survey

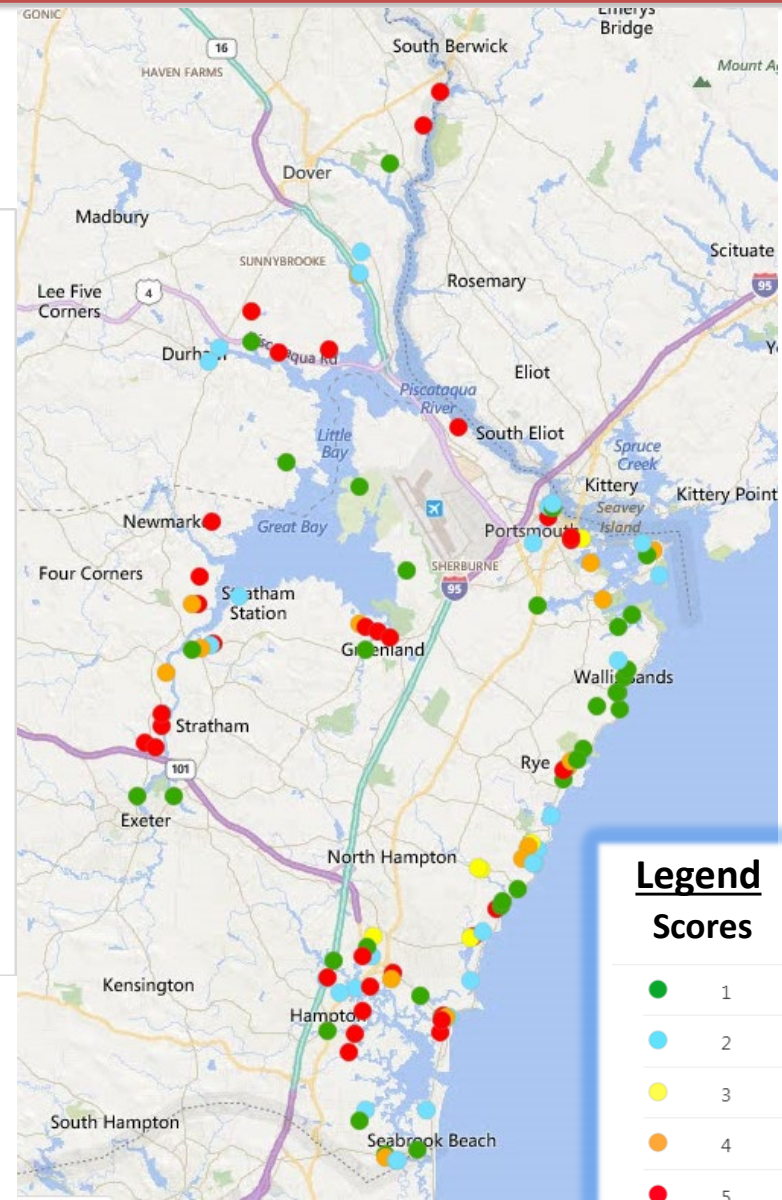
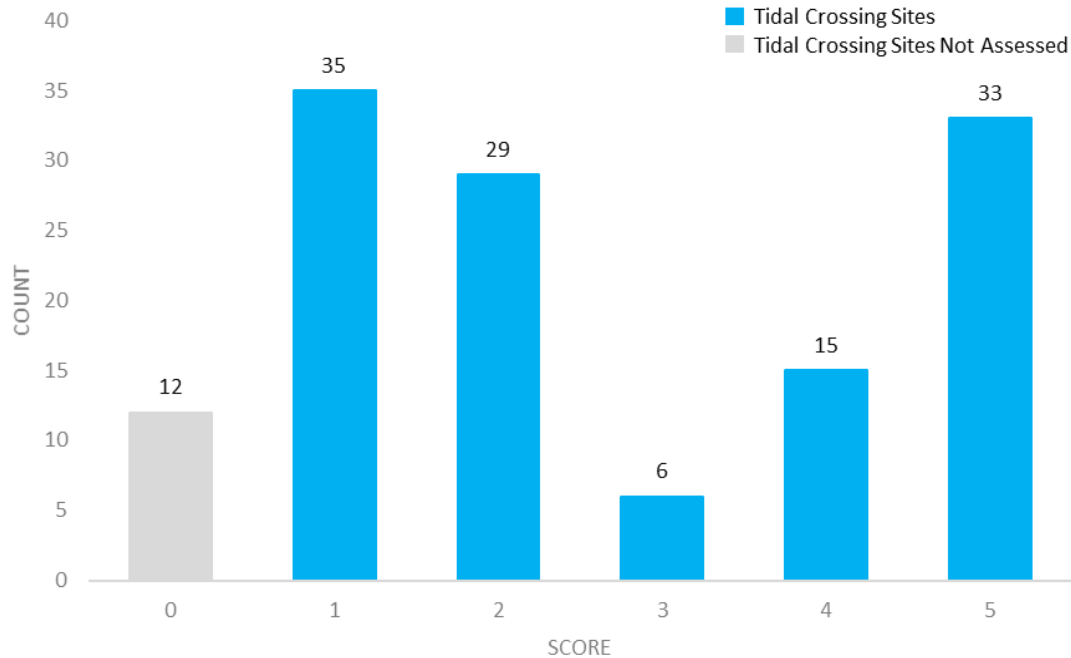


Tidal Crossing Elevation Survey



Structure Condition

Crossing Condition Evaluation

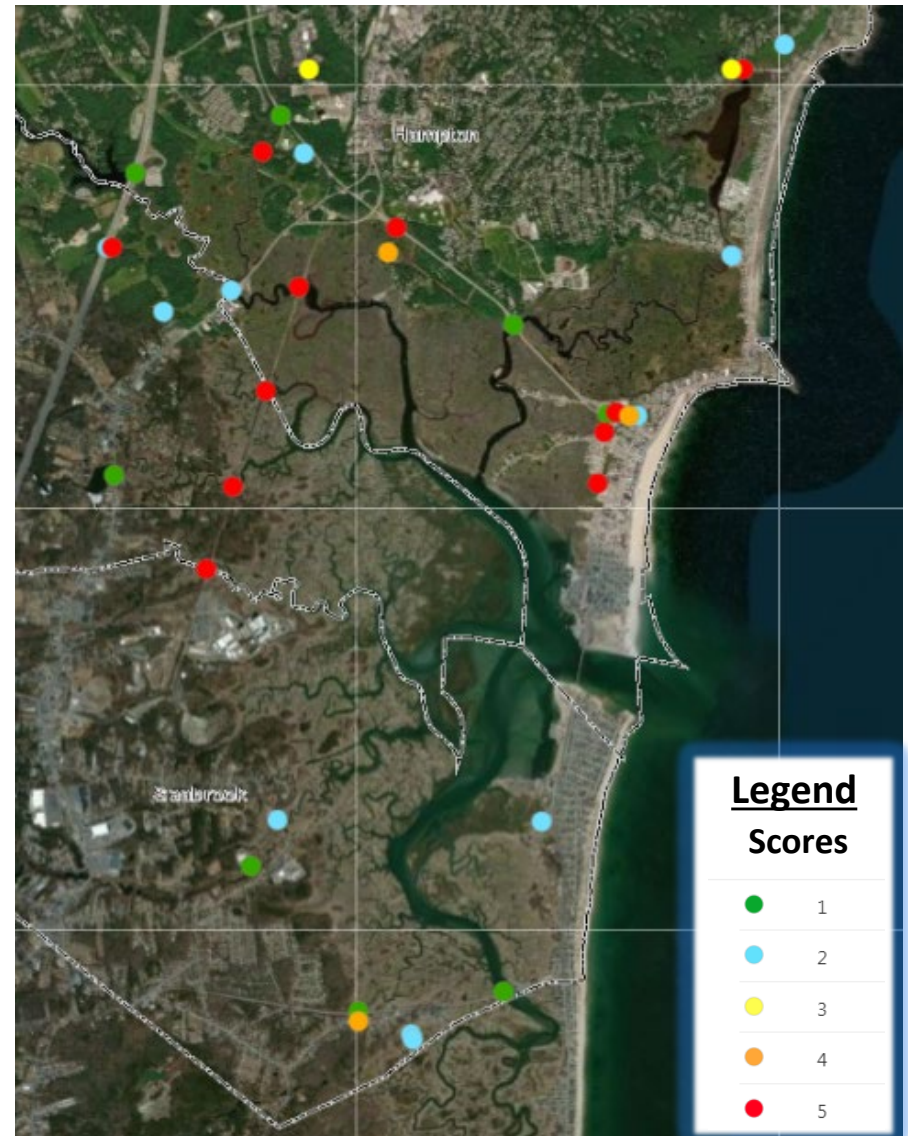


Structure Condition

Tidal Crossings In Hampton Seabrook Estuary

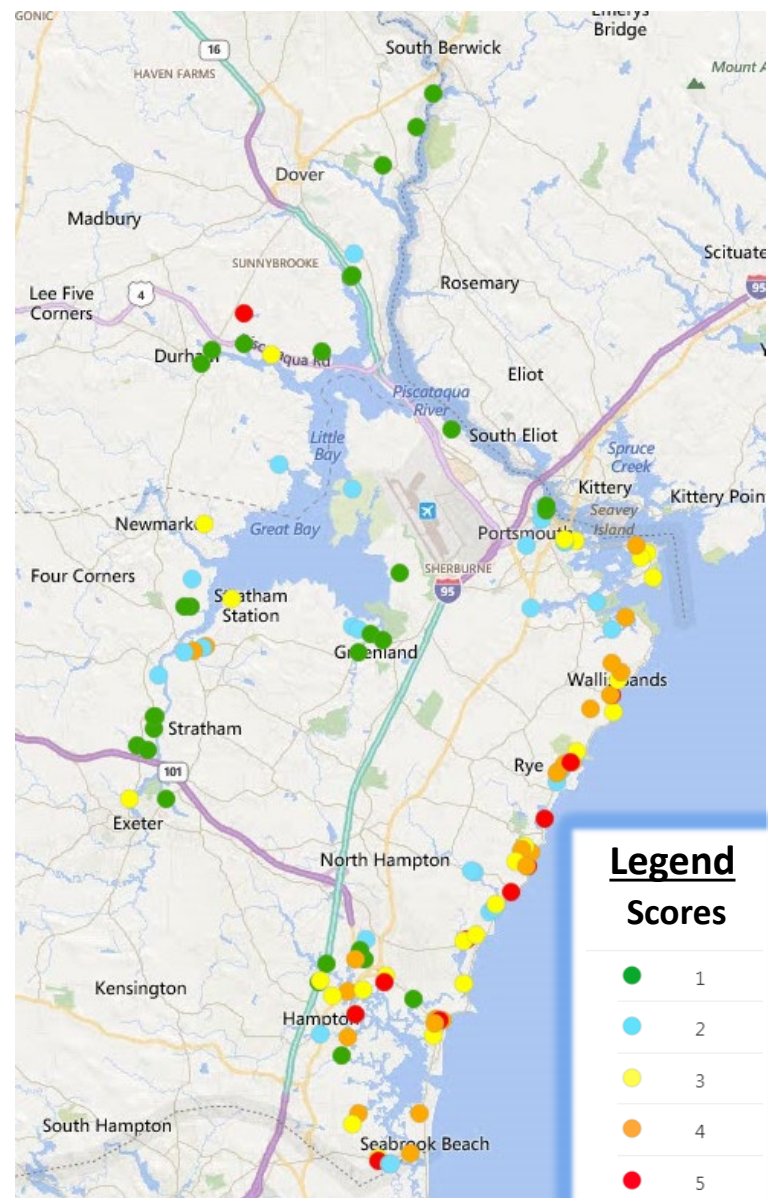
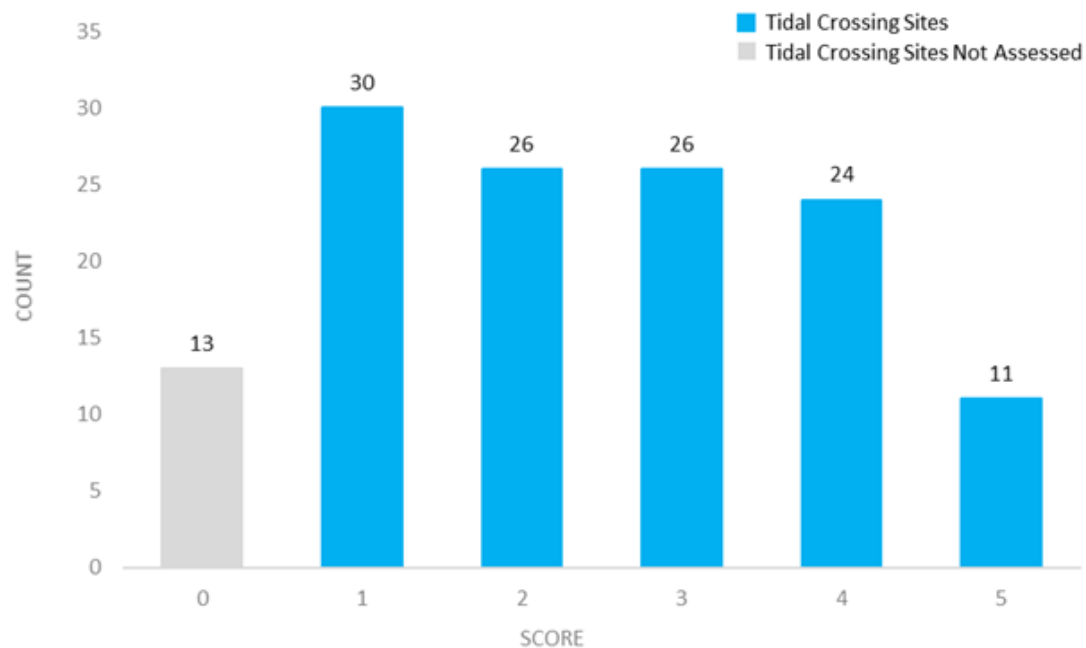
53% received a score of 1-2

47% received a score of 3-5



Inundation Risk to the Roadway

Inundation Risk to Roadway

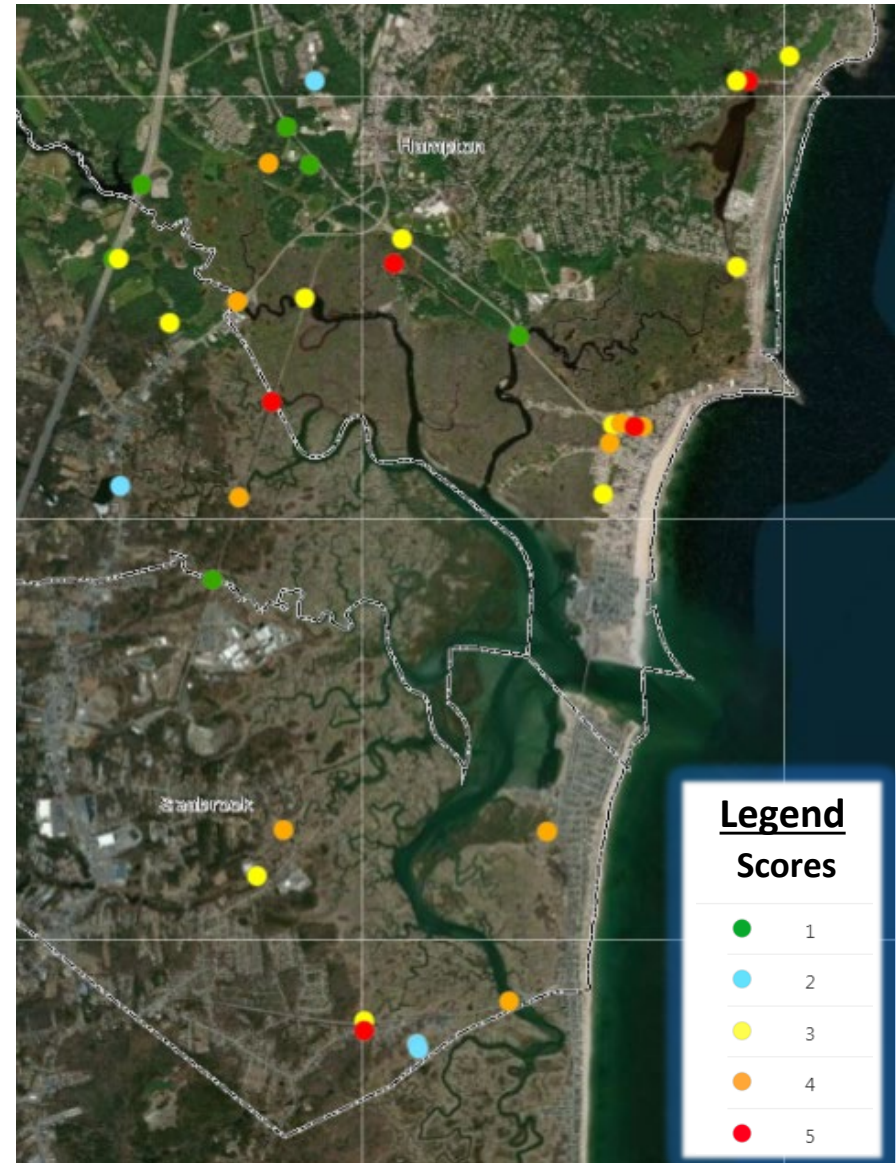


Inundation Risk to the Roadway

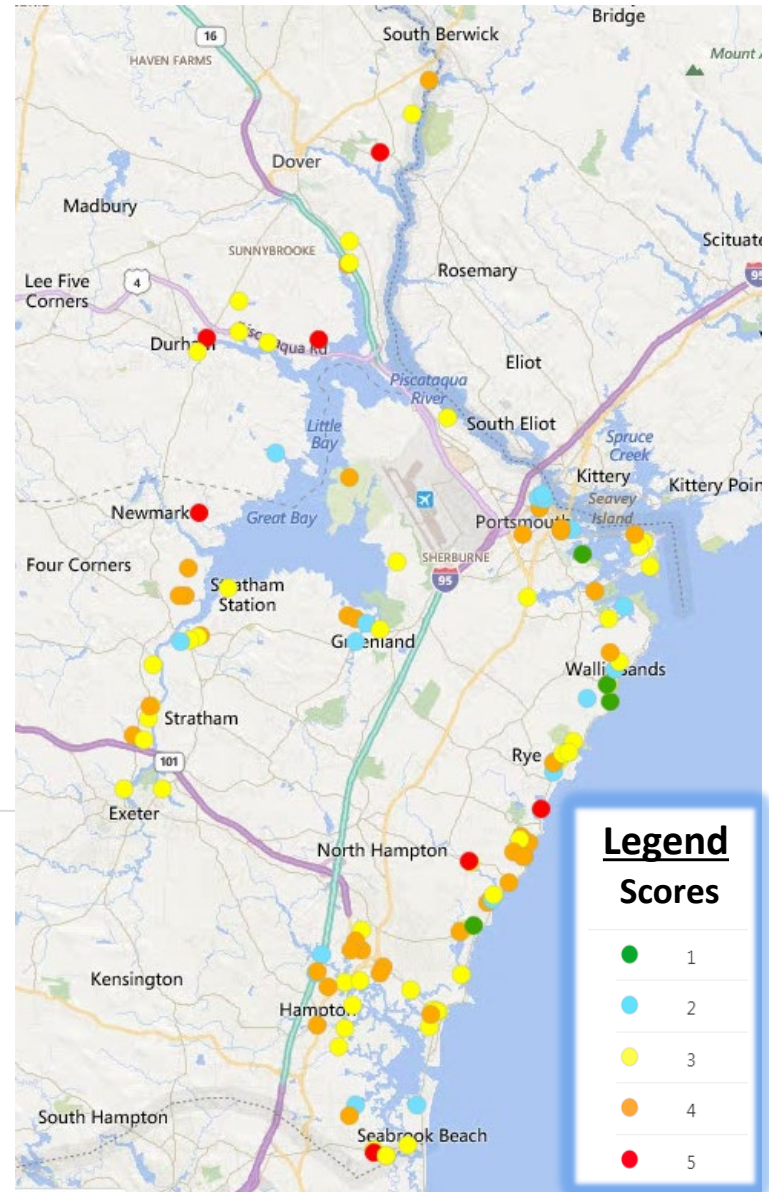
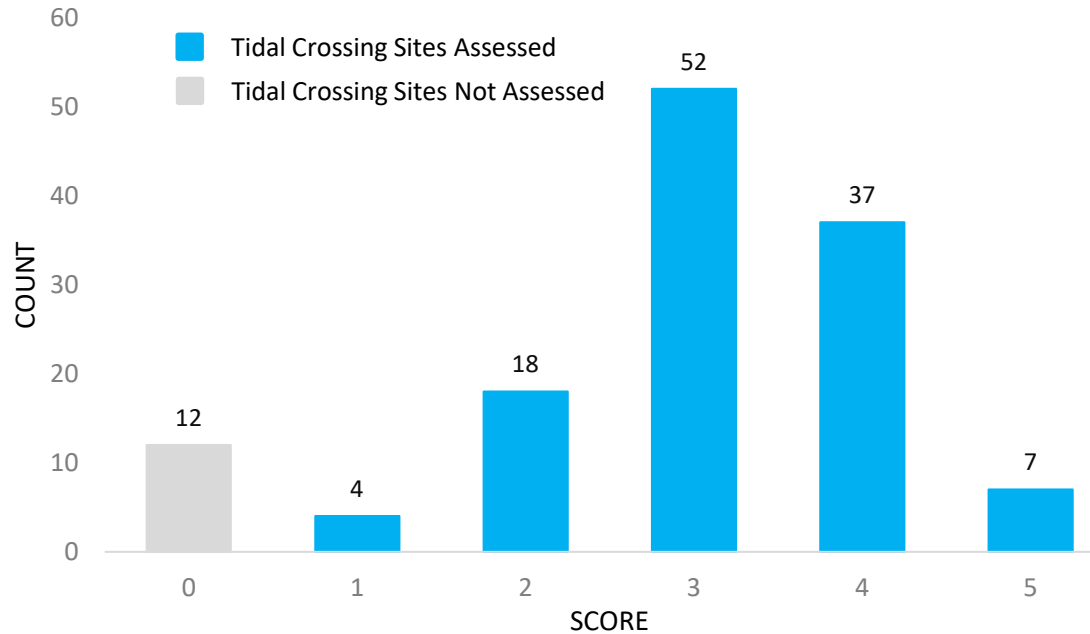
Tidal Crossings In Hampton Seabrook Estuary

31% received a score of 1-2

69% received a score of 3-5



Tidal Restriction Overall

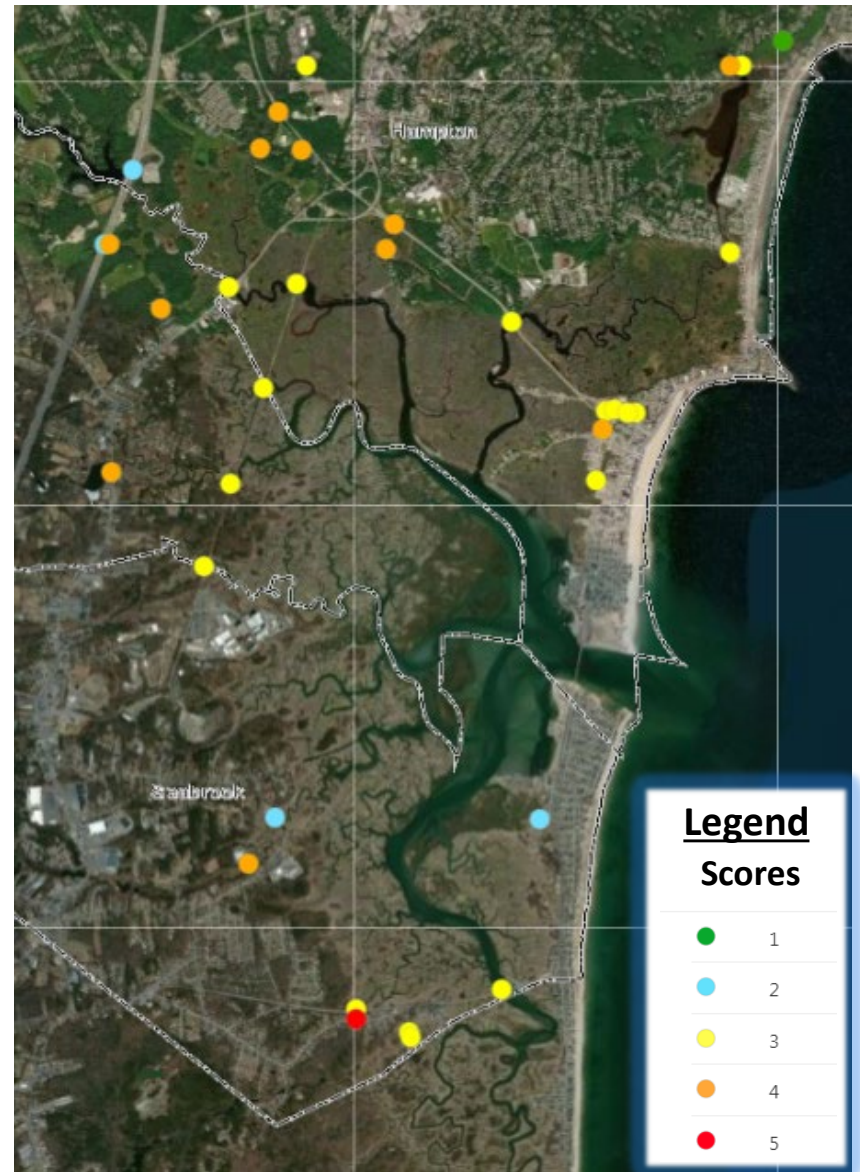


Tidal Restriction Overall

Tidal Crossings In Hampton Seabrook Estuary

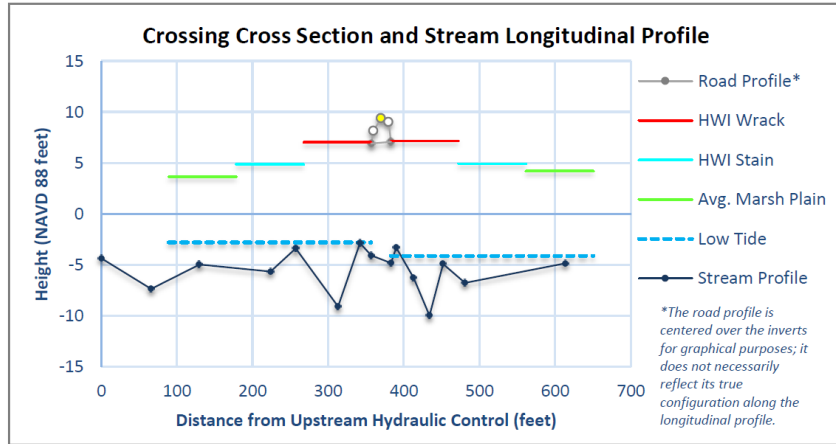
14 % received a score of 1-2

86 % received a score of 3-5

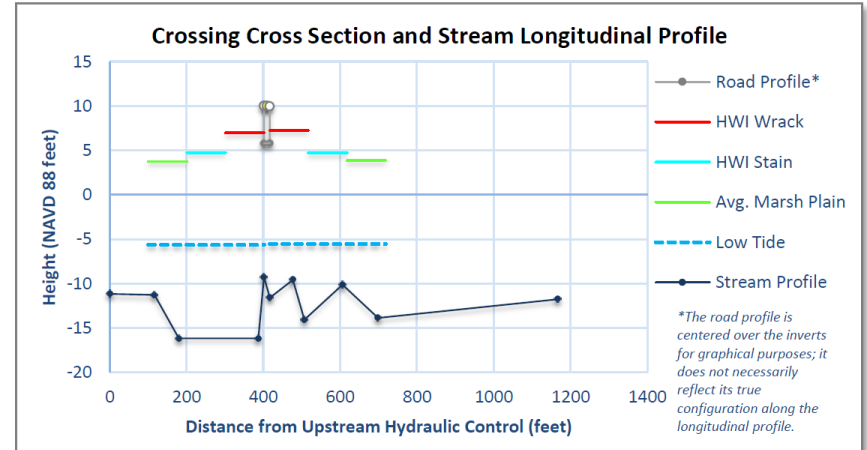


Tidal Restriction: Scour Pool Depth in the Hampton Seabrook Estuary

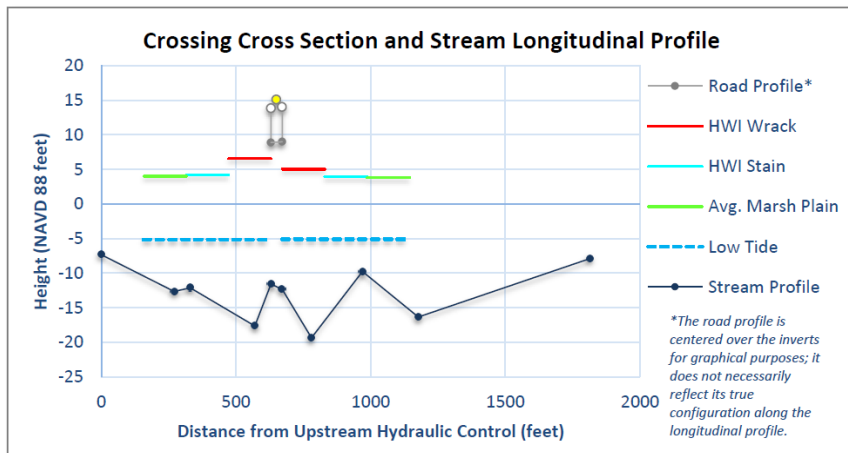
Hampton Falls River at railroad, Site ID# 29



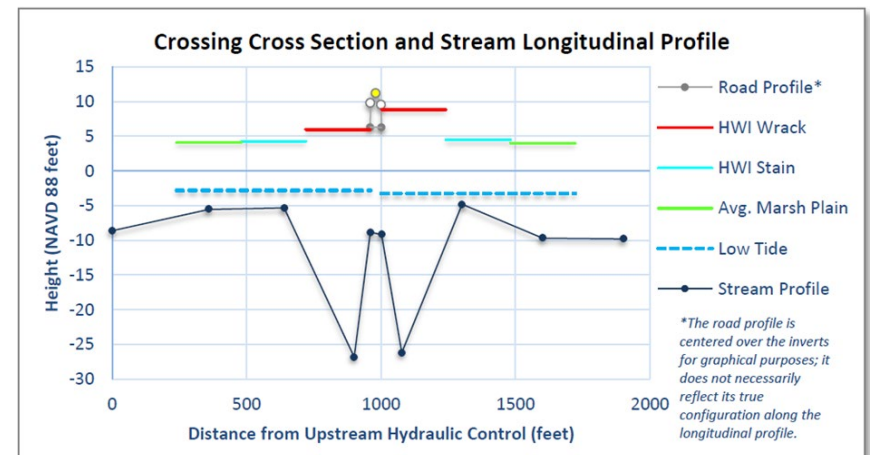
Taylor River at railroad, Site ID# 26



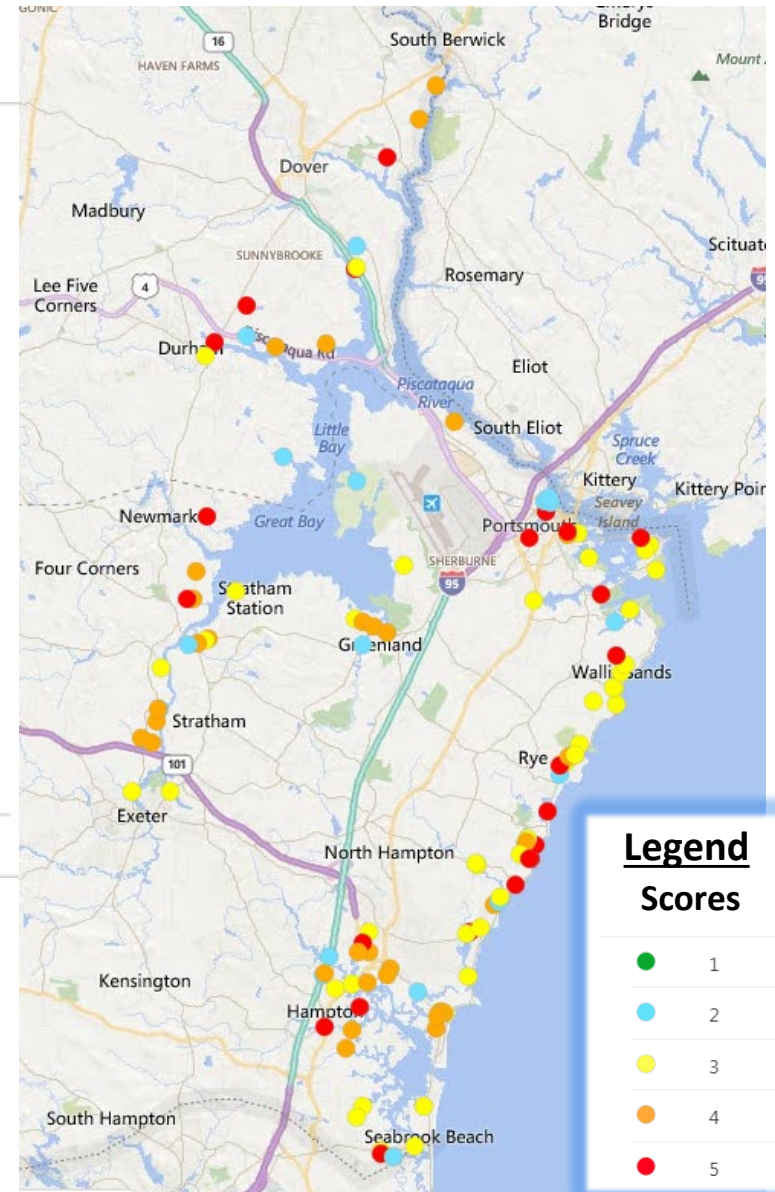
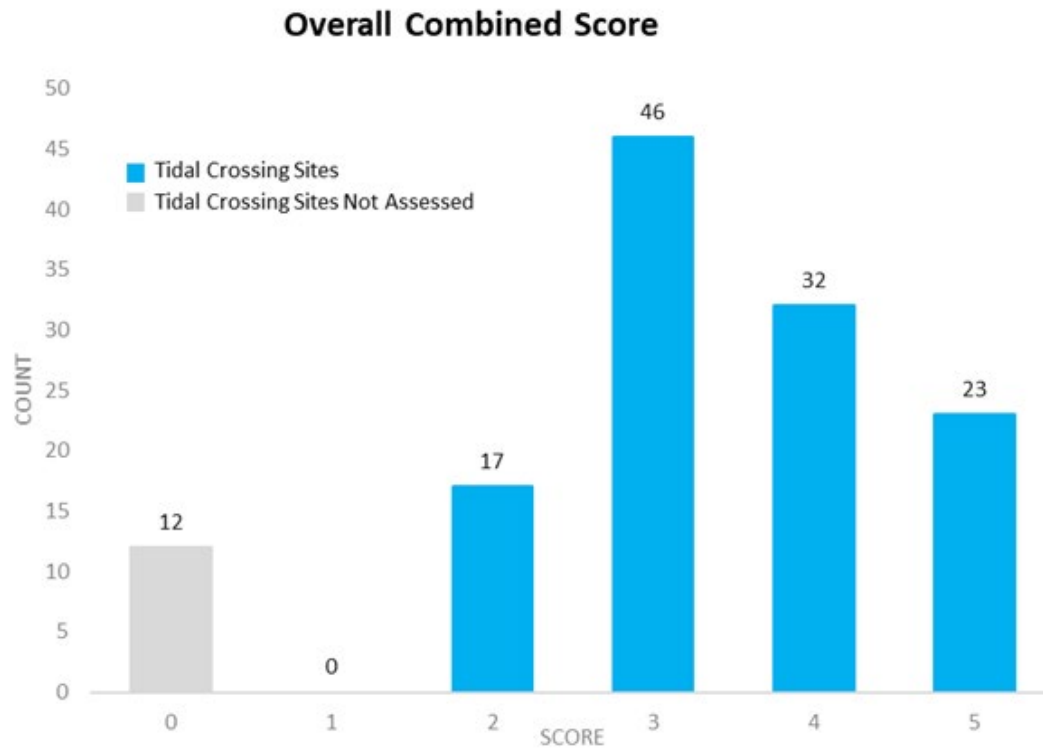
Tide Mill Creek at Rt 101, Site ID# 18



Blackwater River at Rt 286, Site ID# 1



OVERALL COMBINED SCORE

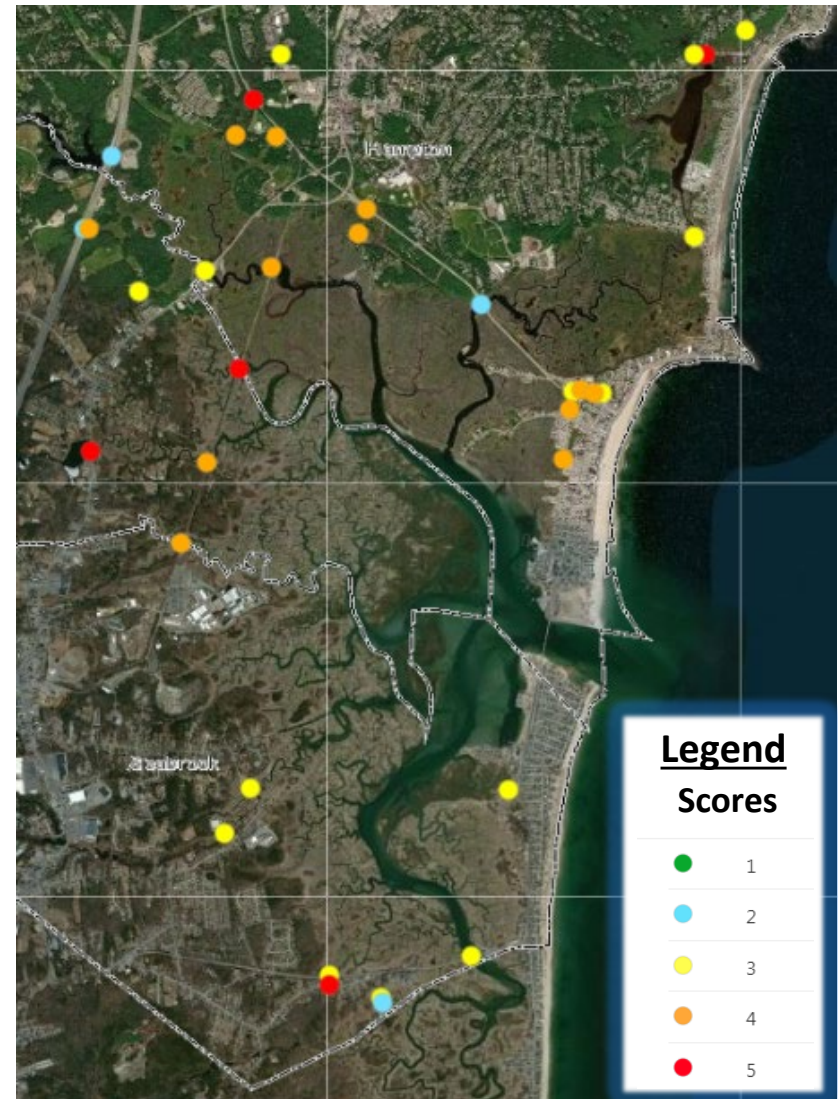


OVERALL COMBINED SCORE

Tidal Crossings In Hampton Seabrook Estuary

11 % received a score of 1-2

89 % received a score of 3-5



Data Sharing

Tidal Crossing Summary Sheet

New Hampshire's Tidal Crossing Assessment Protocol

Crossing ID: 46

Observer(s) & Organization:	JB TS KL (NHDES Coastal)	Date:	5/25/2018
Municipality:	RYE	Start Time:	1:30:00 PM
Stream Name:	N/A	End Time:	4:30:00 AM
Road Name:	Ocean Blvd	Tide Prediction	High Low
		Time:	9:35 AM 2:47 AM
		Elevation:	8.7 0.3
		Tide Chart Location:	Portsmouth Harbor

Crossing Condition Evaluation Score*

Crossing Condition 4

Tidal Restriction Evaluation

Tidal Range Ratio 1

Crossing Ratio 4

Erosion Classification 4

Tidal Restriction Overall Score 3

Tidal Aquatic Organism Passage

Tidal Range Ratio 1

Salt Marsh Migration Evaluation

Salt Marsh Migration Potential (Eval. Unit) 1

Salt Marsh Migration Potential (Wshed.) 5

Vegetation Evaluation

Vegetation Comparison Matrix 3

Infrastructure Risk Evaluation

Inundation Risk to the Roadway (US, DS) 2,2

Inun. Risk to the Crossing Structure (US, DS) 4,3

Adverse Impacts Evaluation**

Inundation Risk to Low-Lying Development 1

Overall Scores

Infrastructure 4

Ecological 3

Combined 3

DS view toward structure



US view above structure



US view toward structure



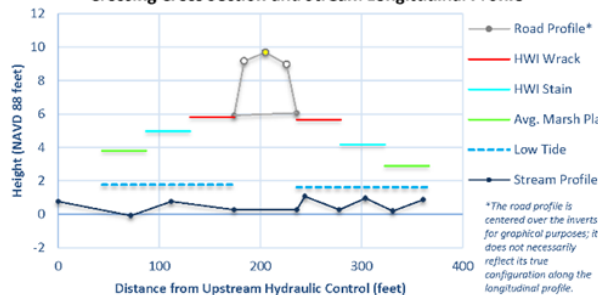
DS view above structure



Long. Profile

Dist.	Hght.	Feat.	Sub.
0	0.76	HC	C/S
72	-0.09	P	C/S
112	0.76	HC	S
174	0.26	I	G
236	0.26	I	G
244	1.06	GC	C
278	0.26	P	G
304	0.96	HC	G
331	0.19	P	G
361	0.86	HC	G

Crossing Cross Section and Stream Longitudinal Profile



*The road profile is centered over the inverts for graphical purposes; it does not necessarily reflect its true configuration along the longitudinal profile.

Crossing Context:

One of two crossings of Rye Harbor Marsh as it passes across Route 1A from east to west, this branch conducts the tide to the Locke Road area through an old granite structure capped by concrete. The unfavorable crossing ratio and high erosion indicators lead to a moderate priority for replacement, with an overall combined score of 3. Tidal restriction here influences three more crossings upstream that limit flow to a significant marsh area.



Structure Characteristics:

Structure Type:	Bridge with Abutments	Date of Last Known Replacement:	N/A
Structure Material:	Stone		
Tide Gate Present:	No		

Crossing Dimensions (ft):	Upstream	Downstream
Dimension A (width):	3.9	4
Dimension B ^{CB} (height):	5.35	5.9
Crossing Length (Invert to Invert):	62	

Crossing Condition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
Upstream	Concrete	Good	Masonry	Good	Wingwalls	Medium
Downstream	Concrete	Good	Masonry	Poor	Wingwalls	Medium

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	Good	One US	Poor

Structure Condition Comments: 20 inch section of masonry collapse in structure

Ecological Assessment:

Natural Community Classification:	Upstream	Downstream
Upstream Salt Marsh Migration Potential (acres):	High Salt Marsh	Low Salt Marsh
	36.40	

Flood Hazard & Emergency Access

Site Identified in Hazard Mitigation Plan:	Yes
Emergency Access or Evacuation Route:	Yes
History of Flooding:	higher tides flood US Marsh. 6" harbor rd 1/4/18

Data Sharing



Final Report with
Summary Sheets and
static maps for 132
assessed Tidal Crossings

<https://www.des.nh.gov/>



Abridged Tidal Crossing
Assessment scores available
for display and download on
NH Coastal Viewer

<http://www.nhcoastalviewer.org/>



Complete Tidal Crossing
Assessment dataset
available for display and
download through
SADES

<https://www.nhsades.com/>

NHDES Stream Crossing Policy

Structure type requirements are based upon contributing watershed area and waterbody type.

Tier 1	Tier 2	Tier 3	Tier 4
≤200 acres	>200 - <640 acres	greater than 640 acres	Tidal Watercourse



New tidal stream crossings rules (Tier IV) became effective on December 15, 2019

NHDES Tidal Stream Crossing Policy

ENV-WT 904.07 Tier 4 Stream Crossing Regulatory Design Criteria

Shall be a designed :

- Of sufficient size to accommodate the 100-Year 24-hour design storm.
- To prevent a restriction of tidal flows
- To account for channel morphology
- To consider sea level rise.

Hampton Beach Area Commission Coastal Resilience Symposium

Incorporating Coastal Flood Risk into NHDOT's NH 1A Projects

Presented by:

Jennifer Reczek, P.E., NHDOT Project Manager

Tuesday, February 9, 2021

Concurrent Projects on NH 1A



- Final Hampton 40797 Limits TBD based on community input and funding availability

Seabrook-Hampton 15904 – Bridge Project

Purpose

- Provide a safe, reliable, and structurally sound crossing
- Improve mobility for the travelling public (vehicles, bicyclist, and pedestrians) and marine users

Need

- Structurally deficient and functionally obsolete bridge
- Many original mechanical components and outdated electrical system
- Substandard shoulder and sidewalk widths



Bascule span coupler

Seabrook-Hampton 15904 - Climate Change Considerations

- Managed to “Intermediate-High” scenario of 3.9’ by 2100:
 - Included in the bridge underclearance determination
 - Roadway approach is located above this elevation
 - Drainage outlet elevations will consider expected future sea-level

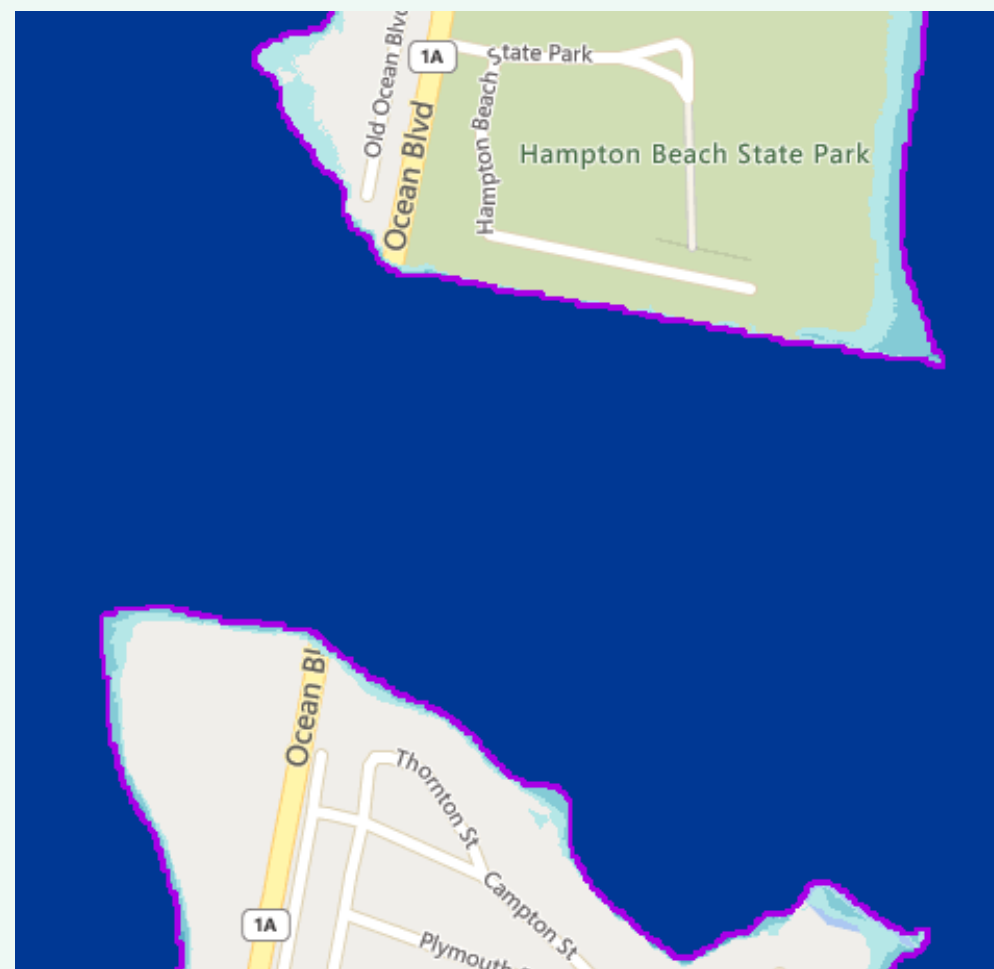


Aerial of Proposed Fixed Bridge

Seabrook-Hampton 15904 – Sea Level Rise



MHHW Baseline

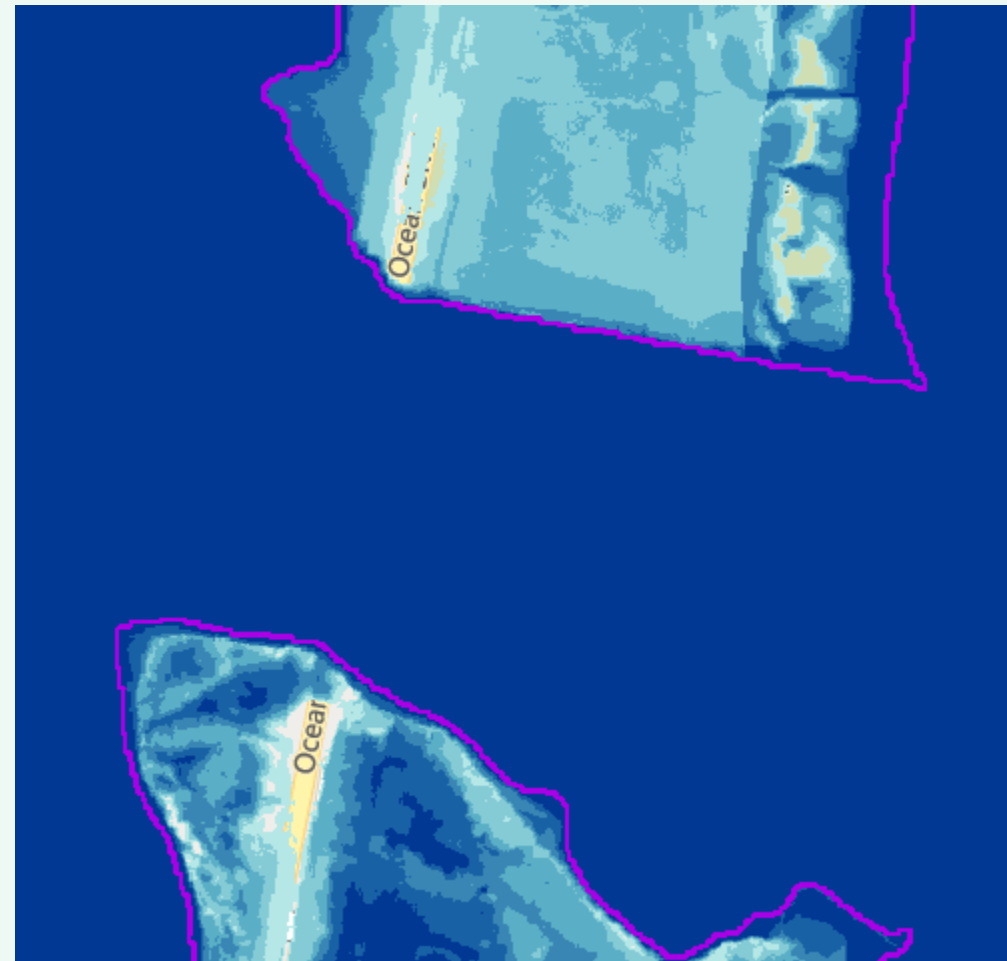


MHHW + 4ft SLR

Seabrook-Hampton 15904 – Storm Surge

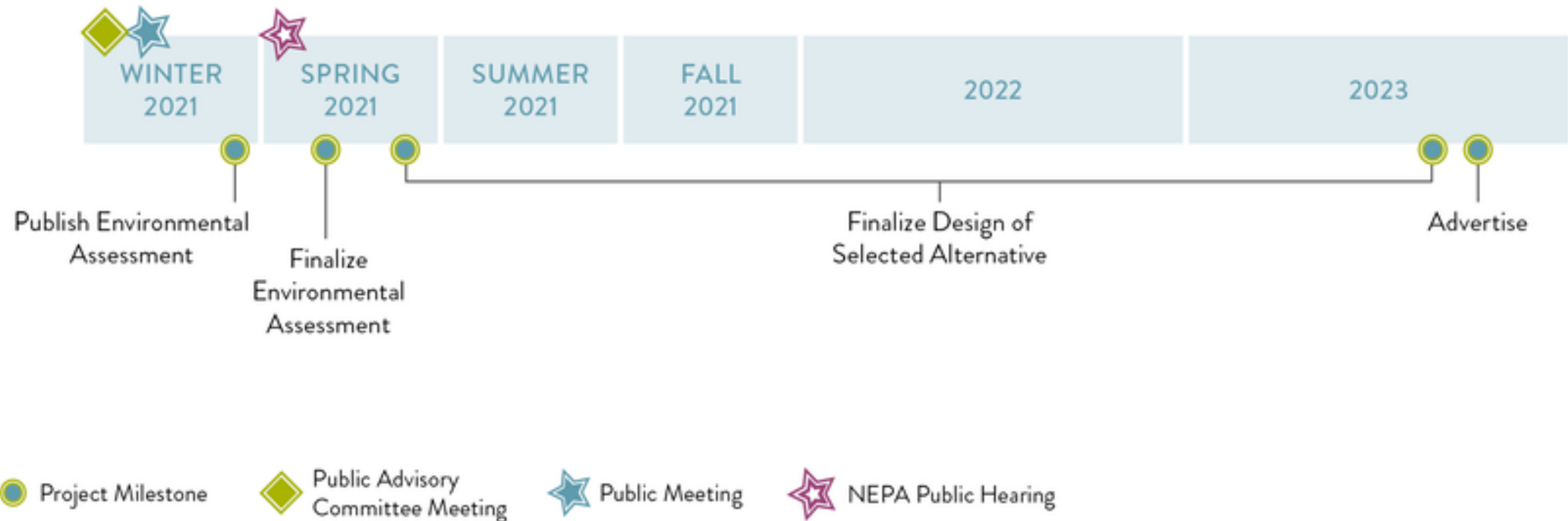


MHHW + 1% Storm Surge Baseline



MHHW + 1% Storm Surge + 4 ft SLR

Seabrook-Hampton 15904 – Next Steps



Three seasons of construction anticipated from 2024 through 2026

Hampton 40797 – Roadway Project Objectives

- Improve safety and mobility for all users with focus on bicycle and pedestrian travel
- Balance mobility and parking needs along corridor
- Incorporate treatments to mitigate storm events and drainage issues
- Minimize project impacts on natural and cultural resources
- Support economic needs of community



NH 1A Coastal Resilience Challenges

- Minimal elevation difference between roadway and tide elevations
 - Outlets may be underwater during certain tides and/or storm events
 - System may not drain as desired
- MS4 Requirements
 - Treatment locations need careful consideration
- Proximity of businesses, homes and environmentally sensitive areas to roadway



Hampton 40797 – Coastal Flooding Challenges

Current mapping shows that 1A is above the Intermediate-High curve projections



MHHW Baseline



MHHW + 2ft SLR



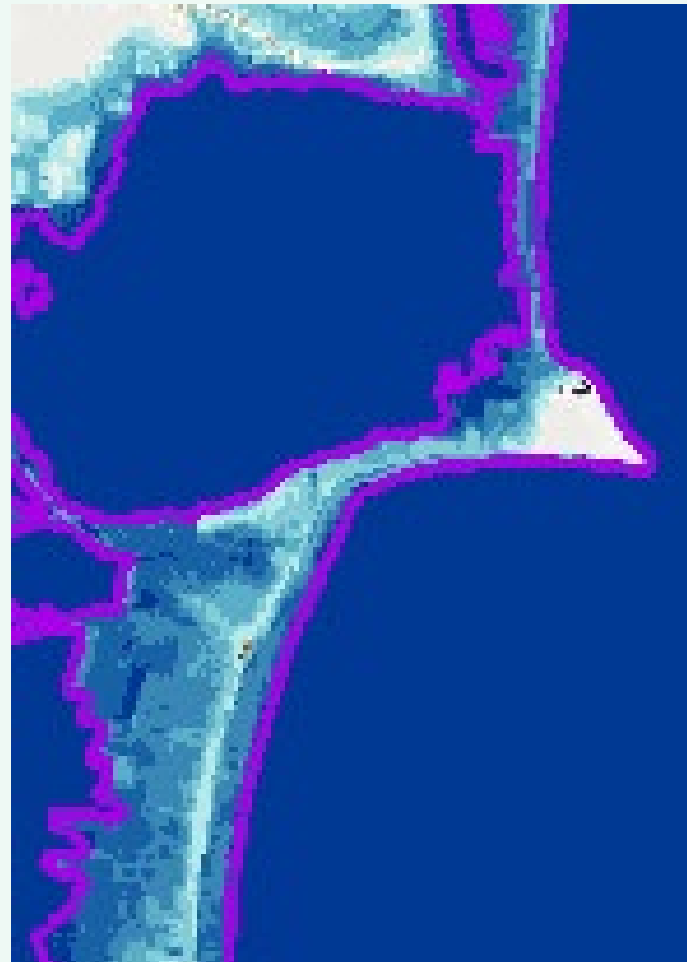
MHHW + 4ft SLR

Hampton 40797 – Coastal Flooding Challenges

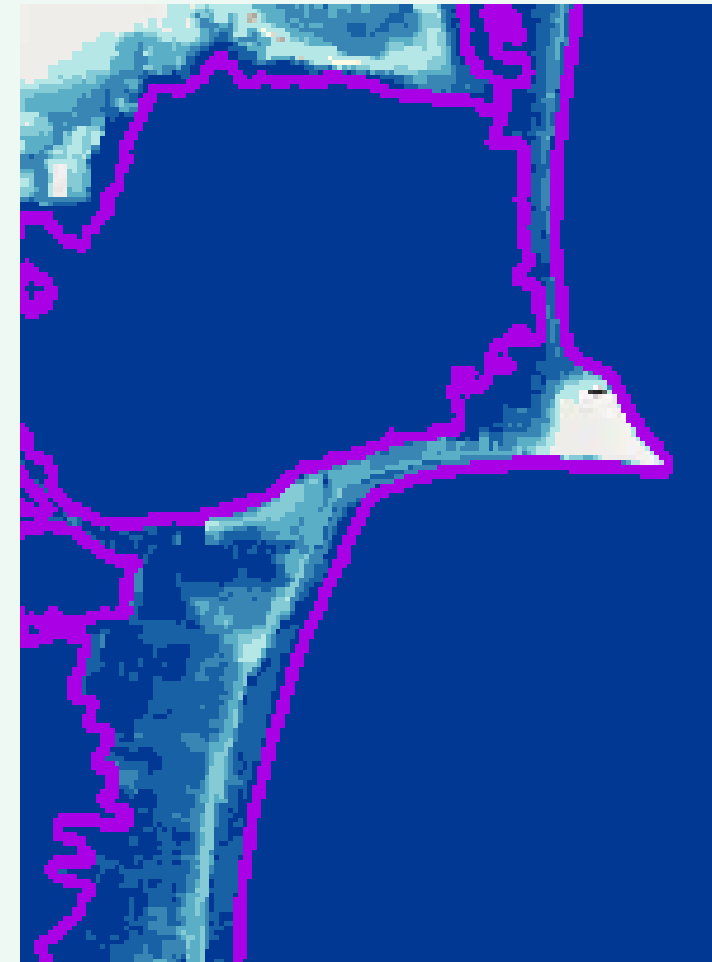
Storms currently wash over seawall



MHHW + 1% Storm Surge Baseline



MHHW + 2ft SLR + 1% Storm Surge



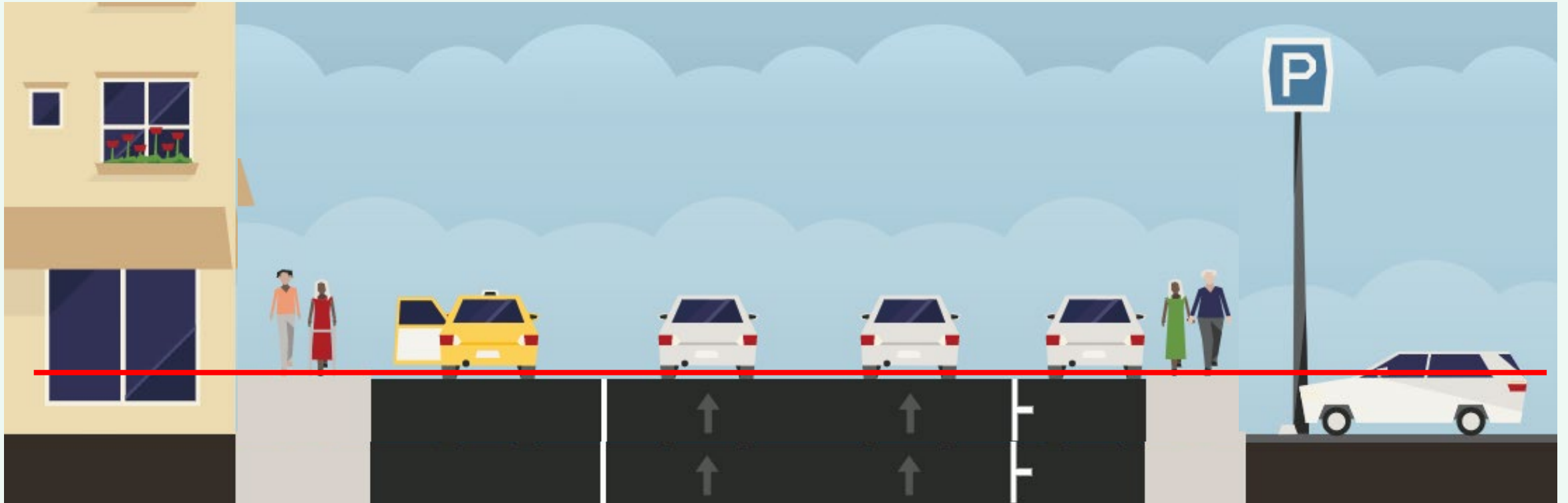
MHHW + 4 ft SLR + 1% Storm Surge

NH 1A Coastal Resilience Challenges

- Adjustments to roadway elevation would:
 - Require significant financial investment
 - Require significant property acquisition
 - Change character of area.
- Need multi-agency coordination to address the topic in coastal communities



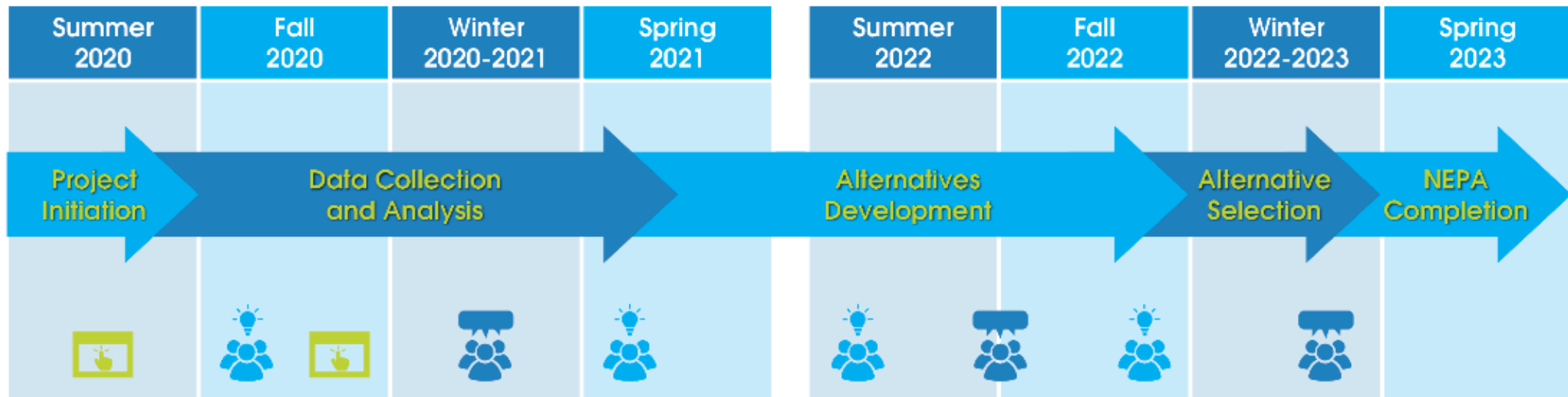
NH 1A Resilience Challenges



Hampton 40797 – Resiliency Approach

- Use 2019 STAP Report as guidance in the development and screening of alternatives
- Design to meet NHDES Coastal Lands and Tidal Waters rules (Env-Wt 600)
- Consider project design life
- Consider criticality of roadway
- Identify areas that may flood under normal tide cycles to see if they can be addressed
- Plan for inundation during storm events
- Ensure that drainage paths exist when water recedes
- Investigate treatments that minimize damage to roadway and allow it to open sooner after storm events.

Hampton 40797 – Next Steps



Survey/Wikimap



PAC Meeting



Public Meeting/Hearing

Thank you!

HAMPTON MASTER PLAN Phase I

Vision and
Coastal Resilience



HAMPTON MASTER PLAN CONTEXT



Previous Comprehensive Update

Phase I: Vision & Coastal

Updated Plan

Chapter Updates

Phase II



What is a Master Plan?

PHASE I



VISION

Shape Hampton's unique
identity & guide future growth



COASTAL RESILIENCE

Build capacity to thrive under a
changing climate



VISION

VISION



Where are we now?



Where are we going?



Where do we **want** to be?



How do we get there?



VISION



VISION



Economic development



Interconnected communities



Village-like town center



Thriving small businesses



Multi-modal transportation



Flood and climate change resilience



Refocus development away from risk zones



Equity

COASTAL RESILIENCE

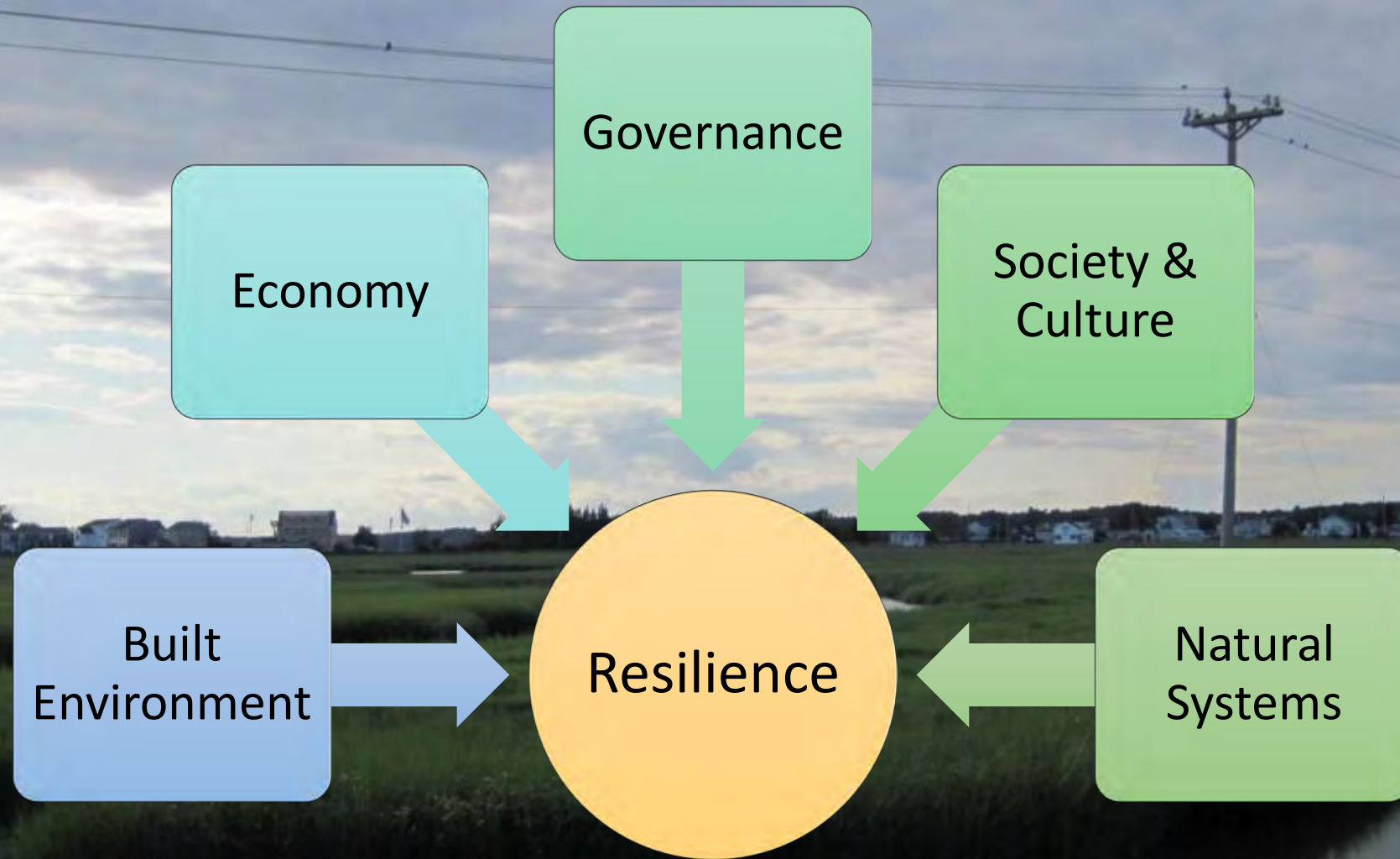




COASTAL RESILIENCE

Capacity of a coastal community to **sustain** achievement of community goals and social, economic, and environmental wellbeing over the **long term** in a **changing climate**

- Bounce back (better) from stresses
- Leap forward in new ways



COASTAL RESILIENCE

COASTAL RESILIENCE

Invest	Invest in Low-Risk Areas <ul style="list-style-type: none">• Build a strong economic base in low-risk areas, enable in-town migration
Protect	Protect Resilient Hubs and Connectors <ul style="list-style-type: none">• Focus protective measures on critical facilities and infrastructure
Live	Live with the Water <ul style="list-style-type: none">• Floodproofing and emergency planning/response
Support	Support Local Business Resiliency <ul style="list-style-type: none">• Economic drivers, community services, anchors for recovery & resilience
Advance	Advance Social Capital <ul style="list-style-type: none">• Community institutions & interpersonal relationships minimize impact on
Enhance	Preserve and Enhance Coastal Habitats <ul style="list-style-type: none">• Dune, beach, & marsh restoration; living shorelines
Elevate	Elevate Public Awareness <ul style="list-style-type: none">• Promote better understanding of risks, challenges, and opportunities



Next Steps

Next Steps



ONLINE SURVEY

[SURVEYMONKEY.COM/R/PLANHAMPTON](https://www.surveymonkey.com/r/planhampton)



FEB 11, 7:00 PM

NEIGHBORHOOD
FOCUS GROUP



MAR 11, 7:00 PM

WORKSHOP TO
REVIEW DRAFT
PRODUCTS



MORE INFO

[TINYURL.COM/PLANHAMPTON](https://tinyurl.com/planhampton)

The background of the slide is an aerial photograph of a coastal region. It shows a dense forest of trees in various shades of green and brown. A prominent body of water, likely a bay or inlet, is visible in the upper right quadrant. Several roads and paths are visible, crisscrossing the landscape. The overall tone of the image is somewhat muted, with a blueish tint.

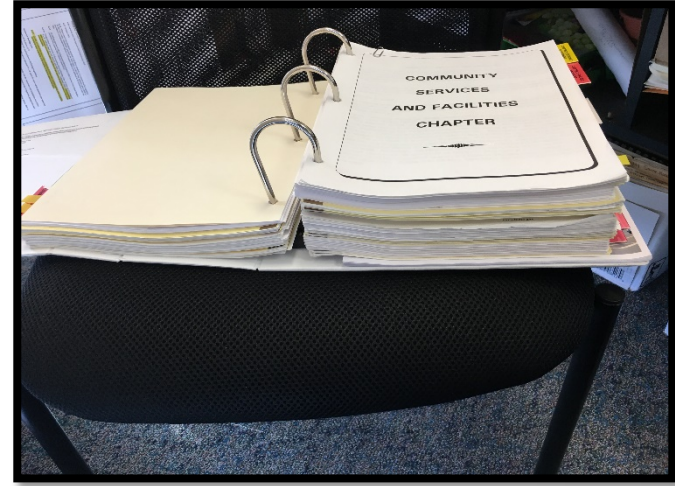
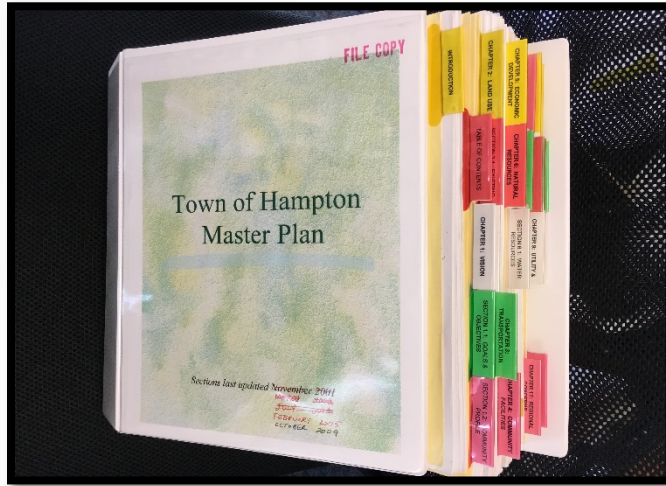
Town of Hampton Comprehensive Master Plan Update

Hampton Beach Area Commission
Coastal Resilience Symposium
February 9, 2021

The Facts

- A Master Plan is required by statute (RSA 674:1 through 674:4).
- RSA 674:1.I states *“It shall be the duty of every planning board...to prepare and amend from time to time a master plan to guide the development of the municipality”,* and further states *that “Every planning board shall from time to time update and amend the adopted master plan with funds appropriated for that purpose by the local legislative body.”*
- RSA 674:3.II states *“Revisions to the plan are recommended every 5 to 10 years.”*
- Our current Master Plan was adopted in 1985, with some subsequent chapter amendments since that time.
- The 1985 Master Plan replaced a 1969 Master Plan (16 years). It has been over 35 years since the last comprehensive update.

The Current Town Master Plan



- Our current Master Plan has become unmanageable and outdated.
- Our updated Master Plan will be a concise document that will serve as a roadmap for the future growth of the Town of Hampton.
- Our completed Master Plan will be a “living document”, which provides citizen-driven direction for the decision-makers of the Town of Hampton.

Elements of a Master Plan

Sections required per RSA 674:2.II

Vision *	Land Use
----------	----------

Sections that may be included per RSA 674:2.III

Transportation	Regional Concern
Community Facilities	Neighborhood Plan
Economic Development	Community Design
Natural Resources	Housing
Natural Hazards	Implementation
Recreation	Energy
Utility and Public Service	Coastal Management *
Cultural / Historical Resources	

* These elements are well underway as "Phase I" of the overall process.

Why Complete a Comprehensive Update?

- All aspects of the current document are very outdated.
- Full consistency and relevance to today's issues is imperative.
- It will serve as an essential tool for meeting the more recent challenges of the community, and is needed to plan for the future of Hampton.
- It will help to preserve, protect and enhance our property values and the quality of life of Hampton residents.
- It will enable the Town to qualify for grants for projects that are otherwise financially beyond what the Town can afford.
- Hampton's residents and stakeholders will have a unique opportunity to help shape what Hampton will look like in 10-20 years. It will be your Master Plan and the means for making great ideas a reality!

The Project

- A comprehensive, integrated Master Plan for the Town of Hampton, which will replace the existing “binder”.
- The elements listed on the previous slide will be incorporated in the updated Master Plan.
- Funds for Phase II were secured through the passage of Article 10 at the March 2020 Town Meeting.
- The planning process is guided by an experienced professional consulting team, under the direction of the Planning Board and its Master Plan Steering Committee.
- Like Phase I, there will be a robust public participation process during Phase II.
- The Phase I deliverables will be integrated during Phase II.
- The updated Master Plan will be permanently available online.

Master Plan Steering Committee

- The Planning Board began holding Master Plan Sessions in June of 2019 with representatives from Town Boards, Committees, SAU 90, and residents. This working group evolved into a formal Master Plan Steering Committee.
- Public attendance and comments are strongly encouraged.
- The Master Plan Steering Committee has been working with the Phase I consultant on the Vision and Coastal Management content, and has actively participated in the following Phase II tasks:
 - Preparation of a Request for Proposals (RFP)
 - Proposal review
 - Proposal scoring process
 - Preparation of questions/comments to assist the interview team

Our Next Steps (Phase II)

- Continue monthly meetings with the Master Plan Steering Committee.
- Consultant selection by the Planning Board – February 2021
- Data collection and analysis – Mid 2021
- Develop and launch an outreach and engagement plan – Mid 2021
- Focus groups – Late 2021
- Work on plan elements – 2021 and 2022
- Create an implementation plan – Mid 2022
- Project completion – December 2022

***More information is available
at the Town of Hampton website
hamptonnh.gov***

Please join us!



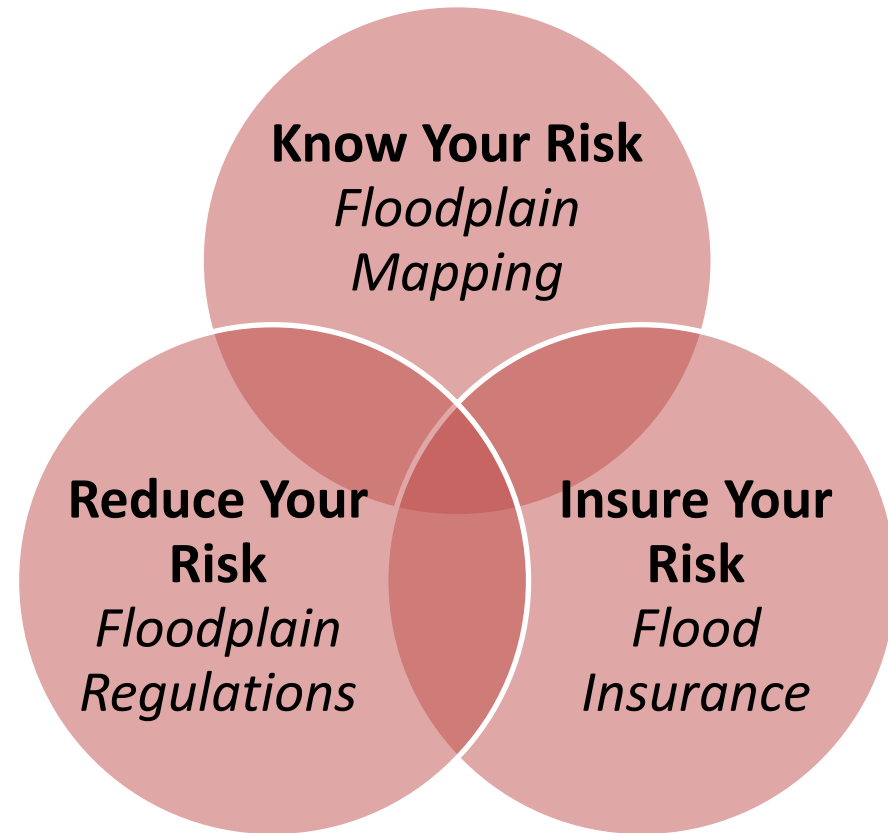
National Flood Insurance Program Update

**Samara Ebinger, CFM
Principal Planner
NH Office of Strategic Initiatives**



The National Flood Insurance Program (NFIP)

- Voluntary partnership between FEMA and participating communities.
- Community agrees to adopt local floodplain regulations and enforce them through a local permitting process.
- NFIP flood insurance is available for purchase, for all property owners and renters in the community.

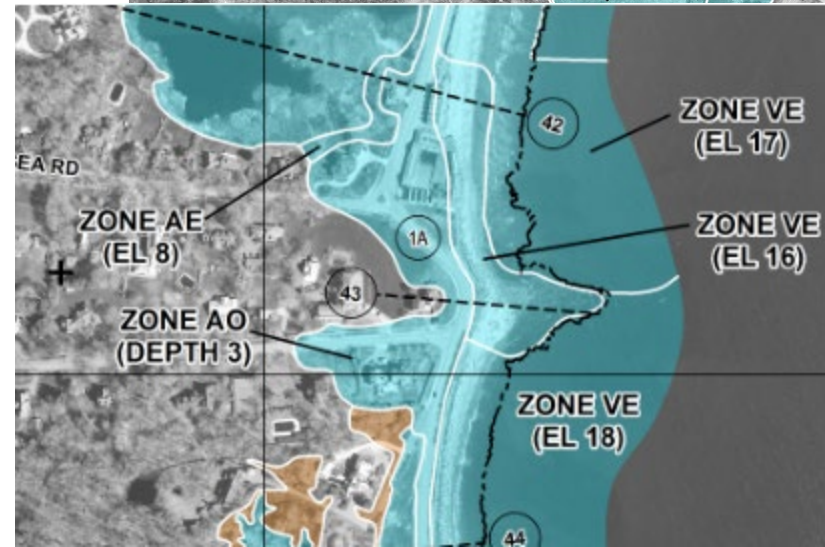
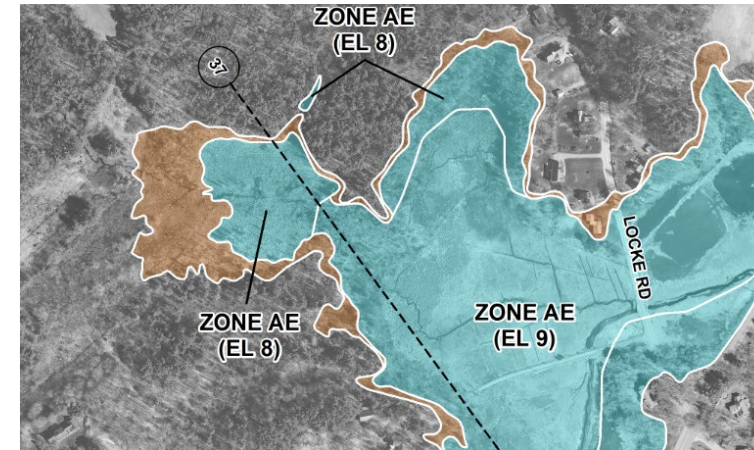


Rockingham County Coastal Mapping Project

- New flood maps became effective 1/29/2021.
 - Changes affect:
 - where and how community floodplain ordinance applies for new development.
 - flood insurance rates and requirements for residents and business owners.
- Exeter
 - Greenland
 - Hampton
 - Hampton Falls
 - Little Boar's Head
 - New Castle
 - Newfields
 - Newmarket
 - Newington
 - North Hampton
 - Portsmouth
 - Rye
 - Seabrook
 - Seabrook Beach
 - Stratham

How are the Maps Changing?

- Flood hazard information on the maps is being updated as a result of:
 - Revised coastal flood hazard analyses
 - More recent/accurate topographic data
 - Vertical datum change
- Total acreage of the Special Flood Hazard Area in Hampton decreased but the acreage of the most hazardous flood zone (Zone VE) increased.





The Community Rating System (CRS)

- A voluntary FEMA program created for NFIP communities that recognizes and encourages floodplain management activities that exceed the NFIP minimum requirements.
- Rewards communities by reducing the flood insurance premiums for policyholders in some areas between 5 and 45%.



CRS Activities - Examples

- Freeboard
- Preserving Open Space in Special Flood Hazard Areas
- More Restrictive Substantial Improvement/Damage Definitions
- Living Shorelines
- Hazard Mitigation Plan updates
- Outreach to residents about flood hazards

Process to Join CRS

- Can take a significant amount of time
 - Outstanding compliance issues must be resolved to move forward with the process.
- In the meantime, look into new ways to make your community more flood-resilient that can provide CRS credit.
- OSI Menu of Higher Floodplain Regulation Standards
 - Includes recommendations for going beyond minimum NFIP requirements included in community regulations
 - Identifies CRS credit points available for each activity

Resources

- [OSI Coastal Mapping Project webpage](#)
- [FEMA Map Service Center](#)
- [NH Flood Hazards Viewer](#)
- [Community Rating System webpage](#)
- NH CRS Users Group
- [OSI Menu of Higher Floodplain Regulation Standards](#)

Samara Ebinger

Principal Planner

NH Office of Strategic Initiatives

603-271-1755

samara.m.ebinger@osi.nh.gov

Improving Resilience of the Hampton-Seabrook Estuary Through a Coordinated Vision

Chris Meaney
USFWS Gulf of Maine Coastal Program
February 9, 2021



Hampton Beach Area Coastal Resilience Symposium

Why the Hampton Seabrook Estuary?

Largest amount of saltmarsh habitat in the state

Important habitats for shorebirds and saltmarsh sparrows; & essential habitat for key fisheries

Communities dependent on the ecosystem for their well being, tourism, and commercial and recreational fishing

Important infrastructure, e.g. evacuation routes and nuclear power

Recreational opportunities

Why Now?

Risks

- Coastal community flooding
- Drowning of saltmarsh
- Dune erosion
- Fragmented habitat
- Critical infrastructure

Opportunities

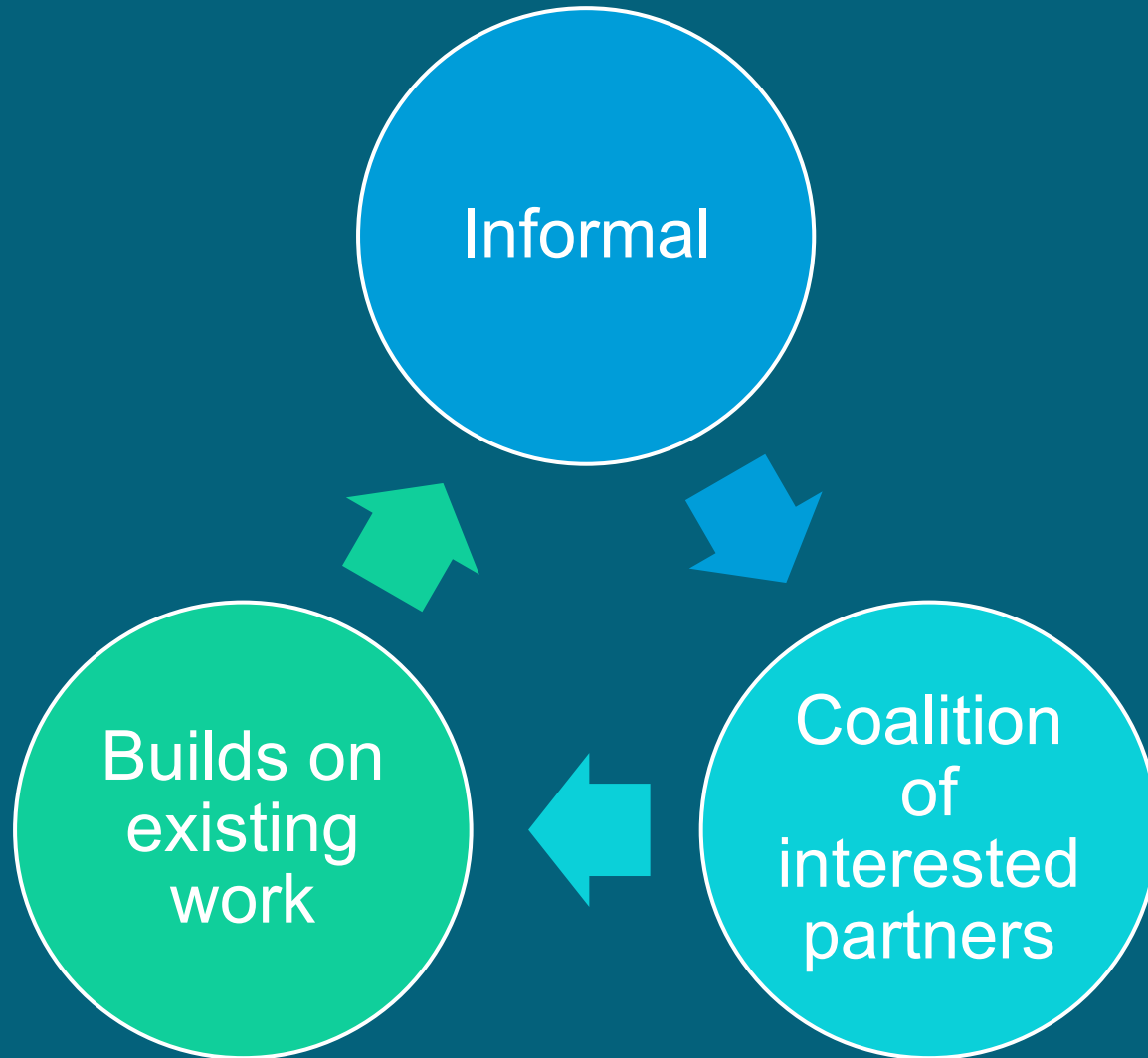
- Landscape scale conservation
- Resilient coastal communities
- Marsh migration
- Improved safety
- Habitat improvement

Momentum

- Motivated stakeholders
- Planning and management
- Funding



The Collaborative





Collaborative Goals



To develop a common vision and clear roles for parties to contribute to the improved resilience of marsh habitat and coastal communities surrounding the Hampton Seabrook Estuary



Coordinated short term investment in saltmarsh monitoring and assessment to help set the stage for long term monitoring, adaptive management, and restorations



Process & Outputs

Virtual meetings

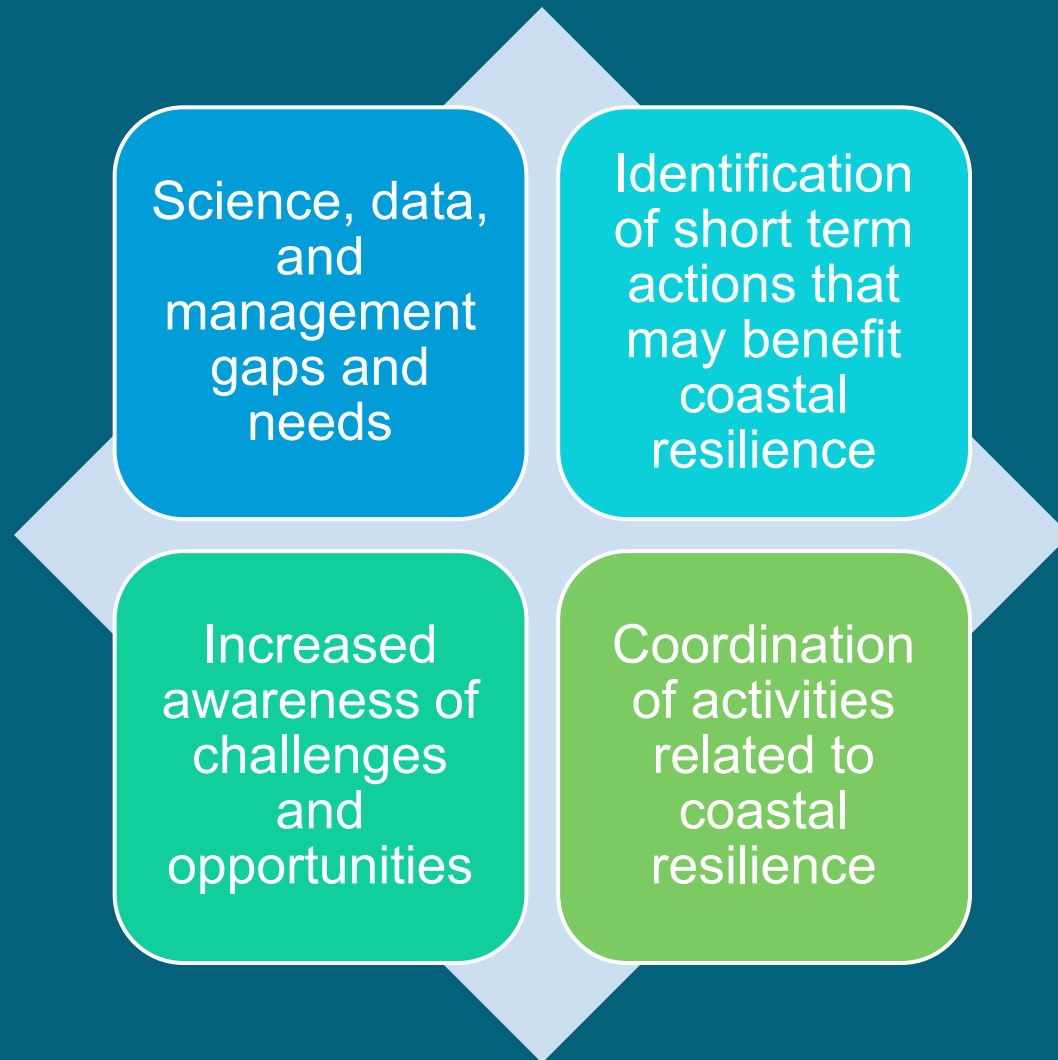
Steering committee

Stakeholder survey

3 Working Webinars: February-March

Hampton Seabrook Estuary Collaboration Informal
Framework & Workplan

How might this effort be helpful to the HBAC Master Plan?



Thank you

Christopher_meaney@fws.gov
(207) 228 - 3822



Hampton Beach Area Coastal Resilience Symposium

HAMPTON HARBOR FEDERAL NAVIGATION PROJECT, SEABROOK AND HAMPTON, NEW HAMPSHIRE

Coral Siligato, P.E.
Navigation Section
Programs and Project Management Division
Date: 9 February 2021



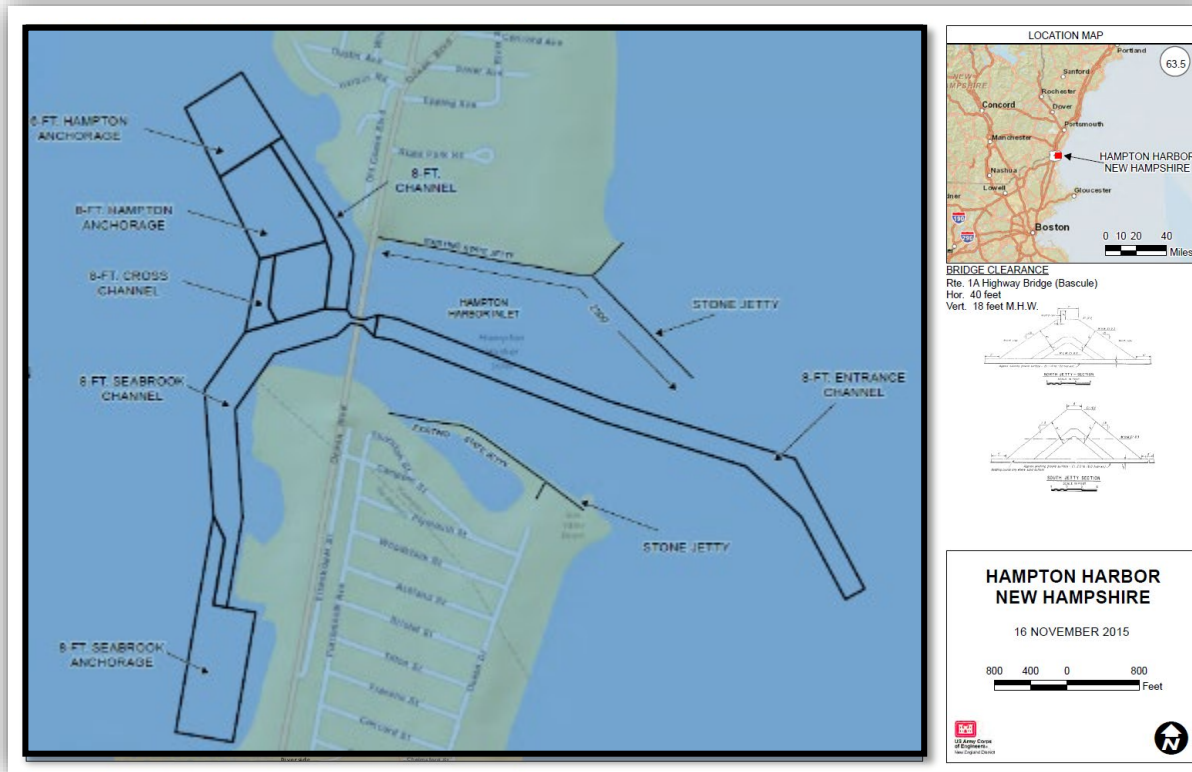
US Army Corps
of Engineers®



AGENDA:

1. FEDERAL NAVIGATION PROJECT (FNP) FEATURES
2. MAINTENANCE HISTORY
3. GENERAL PROTOCOL FOR FEDERAL MAINTENANCE EFFORTS
4. OVERVIEW OF MAINTENANCE DREDGING
5. DREDGE TYPES
6. RECENT MAINTENANCE DREDGING EFFORT
7. UPCOMING STUDY EFFORT

HAMPTON HARBOR FNP FEATURES



The harbor is designed for mixed commercial and recreation boating use with fishing as the principal purpose

CONGRESSIONALLY AUTHORIZED PROJECT FEATURES

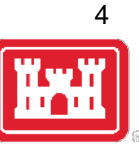
- NORTH JETTY
- SOUTH JETTY
- 8-FT ENTRANCE CHANNEL
- 8-FT ANCHORAGES
- 8-FT CHANNELS
- 6-FT ANCHORAGE

STATE MAINTAINED FEATURES

- 6-FT UPPER ANCHORAGE
- HALF TIDE (SOUTH) STATE JETTY
- NORTH SHORE ARM

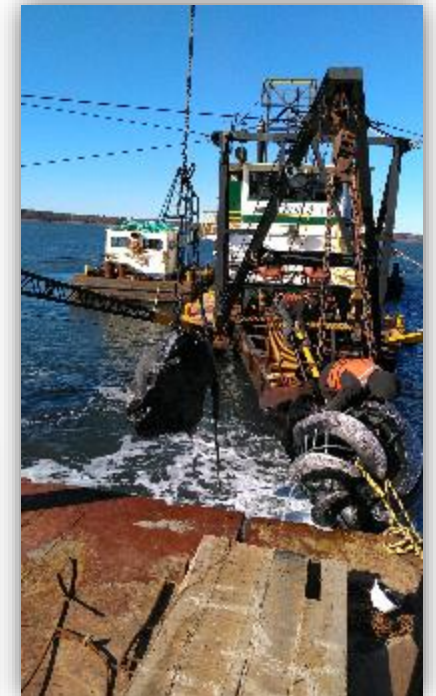
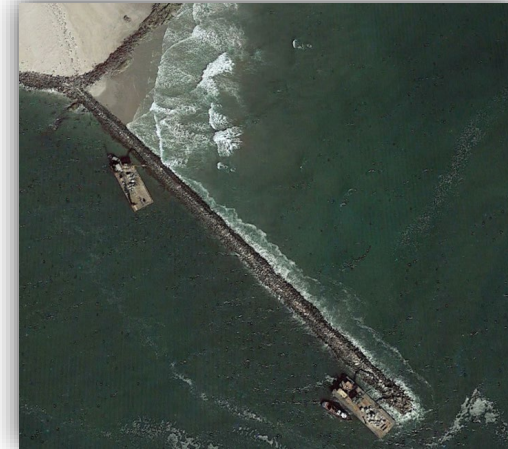


HAMPTON HARBOR FNP MAINTENANCE HISTORY



PROJECT CONSTRUCTION AND MAINTENANCE HISTORY

- NORTH JETTY (CONSTRUCTED 1965, MAINTAINED 1981, 2016 AND UPCOMING IN 2022)
- SOUTH JETTY (CONSTRUCTED 1965, MAINTAINED 1973/1974)
- 8-FT ENTRANCE CHANNEL (IMPROVED 1965, MAINTAINED EVERY 1-4 YEARS FROM 1969 TO 1987, AND ALSO IN 2012/2013 AND 2019)
- INNER HARBOR TO INCLUDE THE 8-FT CHANNELS, SEABROOK ANCHORAGE AND LOWER ANCHORAGE, AND 6-FT HAMPTON ANCHORAGE (IMPROVED 2012/2013, MAINTAINED 2019)





FEDERAL MAINTENANCE PROTOCOL

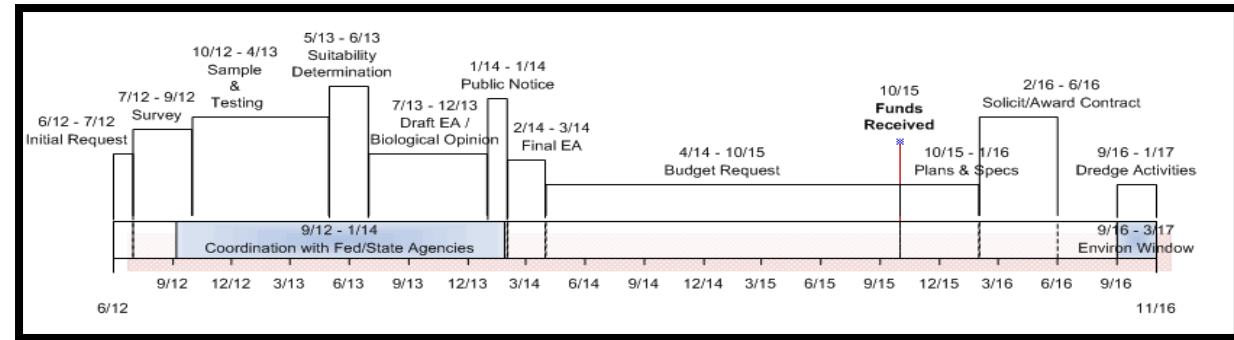
5



Steps for FNP to be planned, funded and constructed:

1. A congressionally authorized feature must be present.
2. Notification of maintenance need from the local users/non-Federal sponsor.
3. Conduct site visits and complete hydrographic/topographic surveys.
4. Identify dredged material placement sites and dredge type(s) to be used.
5. Develop a sampling and testing plan and coordinate with appropriate state and Federal resource agencies prior to conducting the fieldwork.
6. Complete sampling of the sites.
7. Develop a Suitability Determination.
8. Seek appropriate environmental approvals.
9. Environmental Assessment (EA) reviewed by regulatory agencies and public.
10. Incorporate comments and finalize the EA, Findings of No Significant Impact, and 404(b) certification.
11. Develop estimate cost of maintenance project and submit to Congress for consideration.
12. Once funding is received, Plans and Specifications developed for the contract and acquisition strategy completed.
13. Construction is solicited and awarded.
14. Construction begins at next available environmental window.

Example Timeline for Completion of Federal Maintenance Dredging



USACE projects are prioritized nationally. The federal funding process is a minimum of two to five years out from the initial request.



HAMPTON HARBOR MAINTENANCE DREDGING

6



Material type: Sand

Placement Locations: Material is suitable for beneficial reuse as either beach placement or at nearshore sites.

Dredge Types:

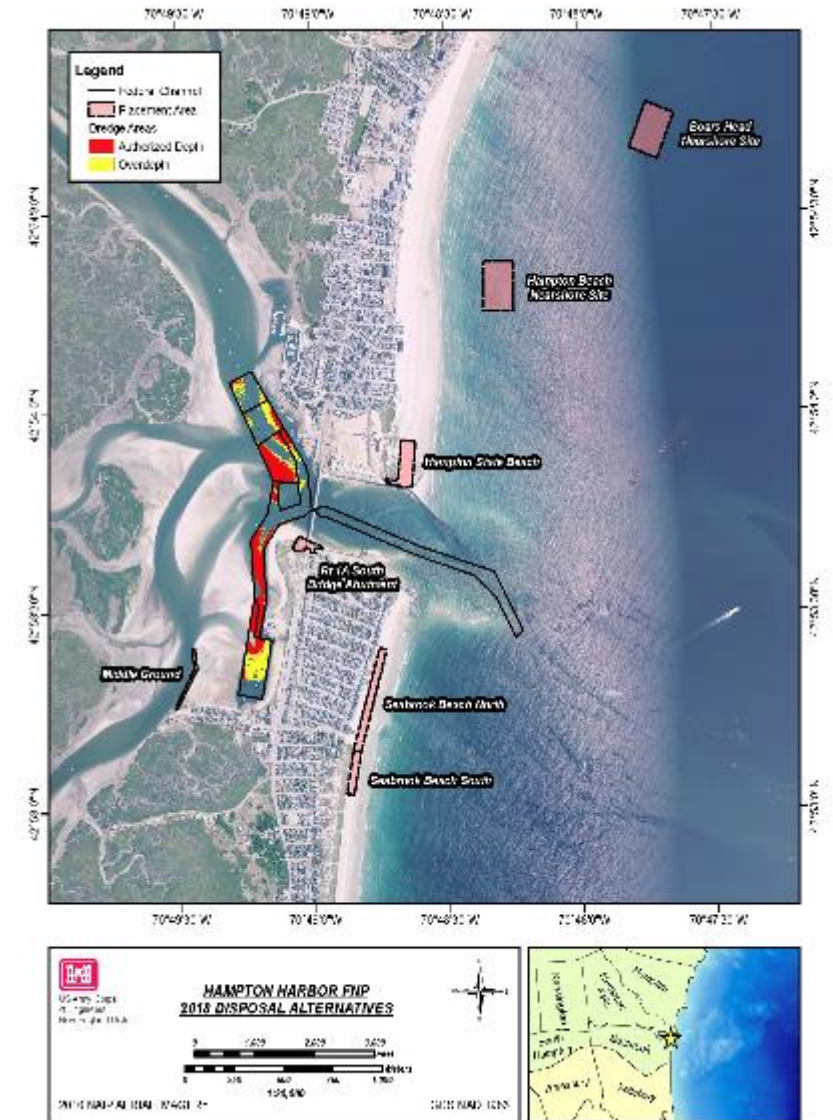
- Hydraulic pipeline cutterhead suction dredge
- Mechanical dredge
- Hopper dredge

Project Limitations: Rt. 1A Bridge vertical and horizontal clearances.

Environmental Constraints:

Beach placement: Piping Plover

Dredging: Winter flounder, anadromous fish, and shellfish resources





HYDRAULIC PIPELINE CUTTERHEAD SUCTION DREDGE

7



Cutterhead



Example Dredge Operation



Booster Pump (optional)



Operator



Laying down pipeline



Pipe outlet and Beach Grading



MECHANICAL DREDGE

8



Scow

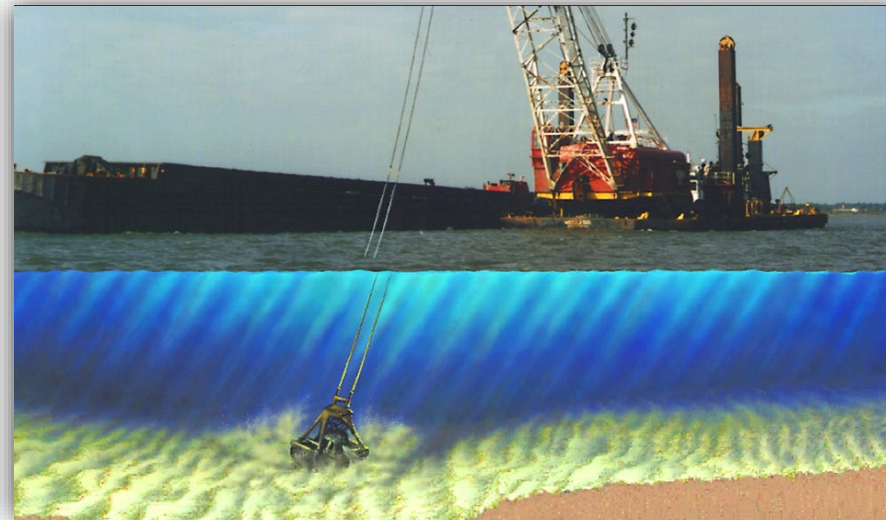
(<https://www.newportbeachindy.com/29182-2/>)



Dredge Bucket



Example Dredge Operation (loading the scow)



Disposal Operations

(<http://hmeconst.com/wp-content/uploads/2017/07/WJMarston-square.jpg>)



HOPPER DREDGE / USACE SPECIAL-PURPOSE DREDGE

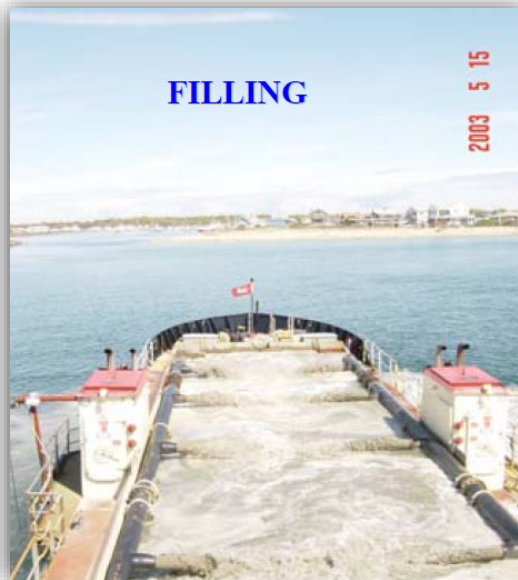
9



Dredge



Operator



Example Dredge Operation



2019 MAINTENANCE DREDGING EFFORT



- Hydraulic pipeline dredging from October-December 2019.
- Approx. 175,000 Cubic Yards
- Placement at Seabrook Beach, Hampton Beach State Park, underneath the Rt. 1A bridge and within the Section 227 composite sheet pile bulkhead.





2019 MAINTENANCE DREDGING EFFORT, CON'T





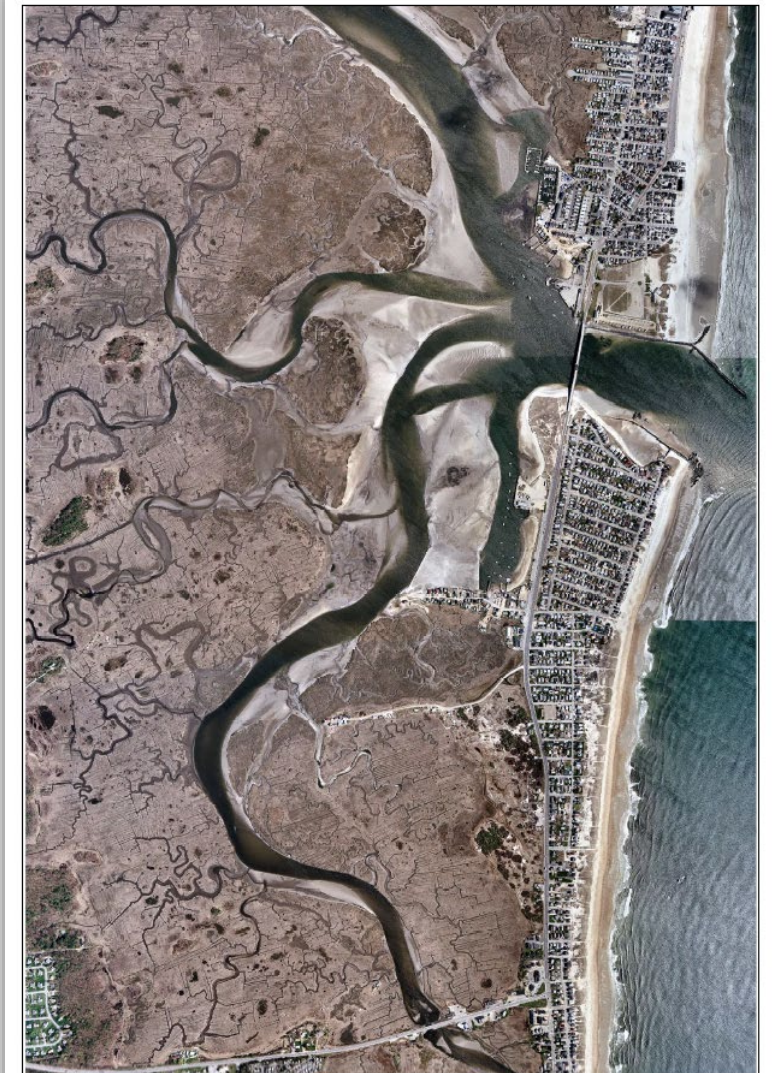
UPCOMING STUDY EFFORT IN THE HARBOR



*USACE to conduct a
Hydrodynamic Model Study
of the rapid shoaling on the
Seabrook side of Hampton
Harbor*



Seabrook Harbor, NH Section 227 Project
Aerial Photo Date November 7, 2004



Seabrook Harbor, NH Section 227 Project
Aerial Photo Date May 12, 2005





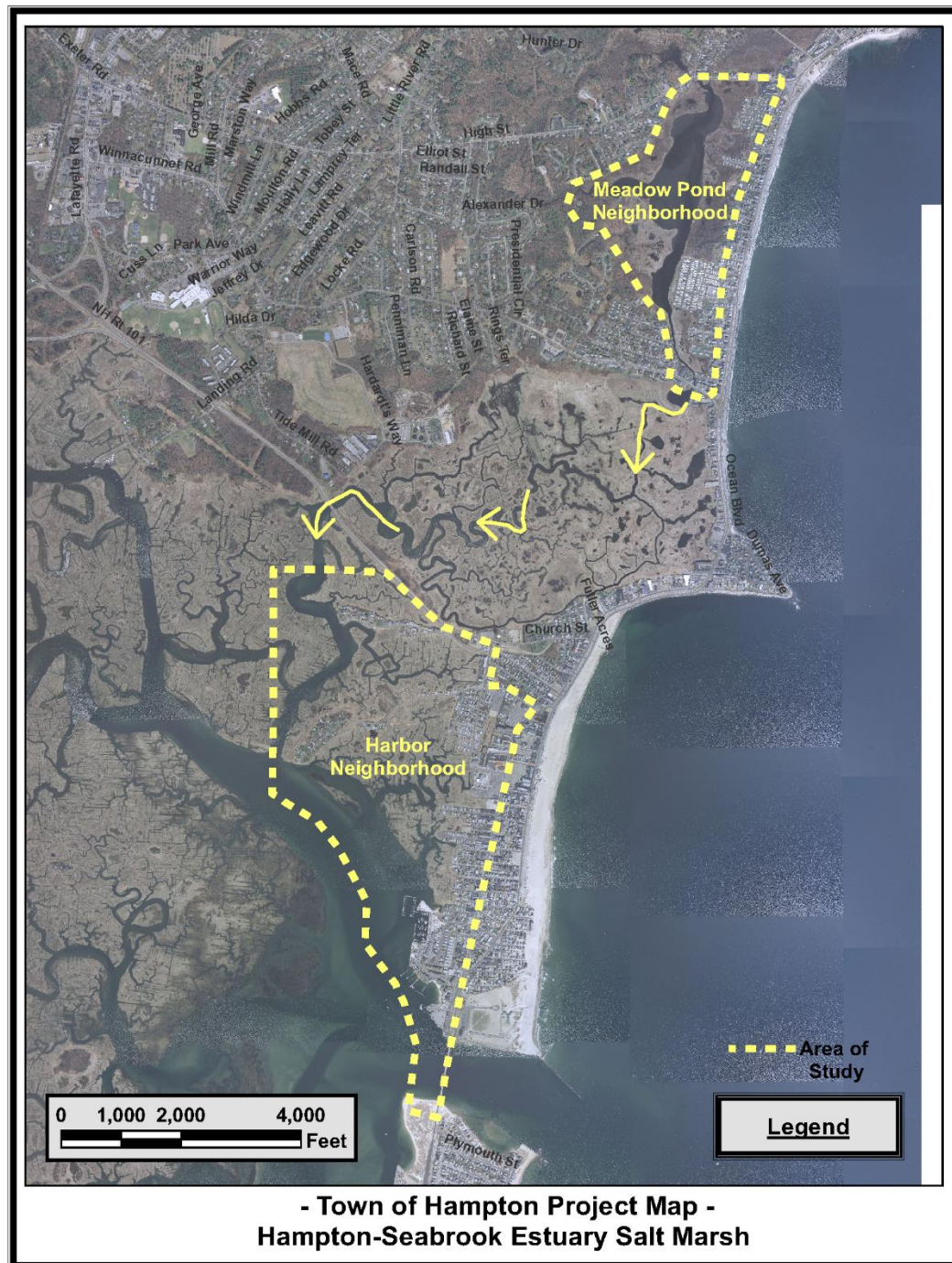
Site Assessment and Preliminary Designs to Mitigate Flooding Hampton, New Hampshire

Presented by

Jennifer Hale, PE, Town of Hampton
Deputy Director - Department of Public Works



Hampton Beach Area Commission Coastal Resilience Symposium | February 9, 2021



Aerial – Meadow Pond



Green/Gentian

Kings Highway

Meadow Pond



2017 – Green Street



2018 – Gention Road



2018 – Gill Street



2018 - Kings Highway

Aerial – Hampton Harbor

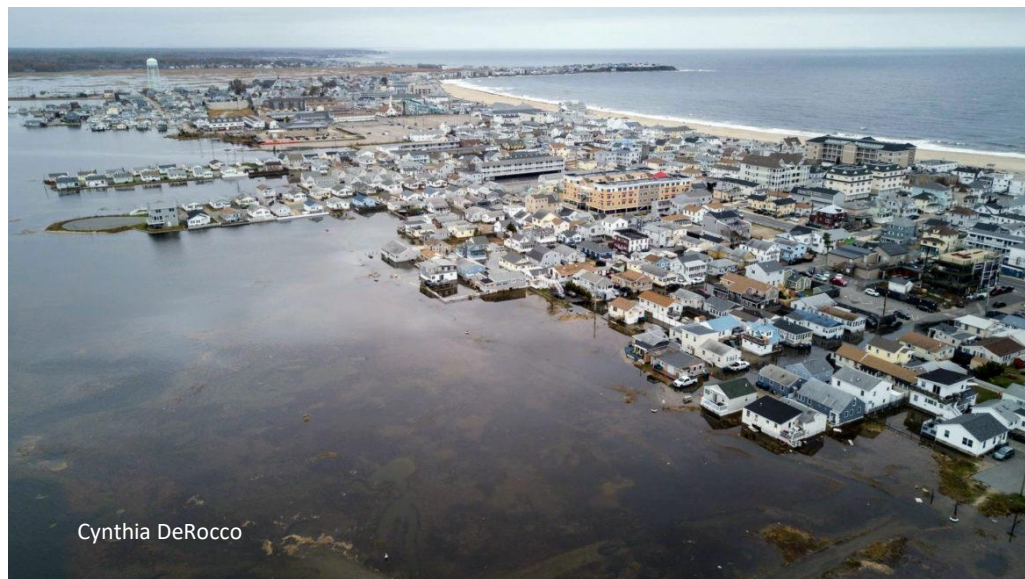




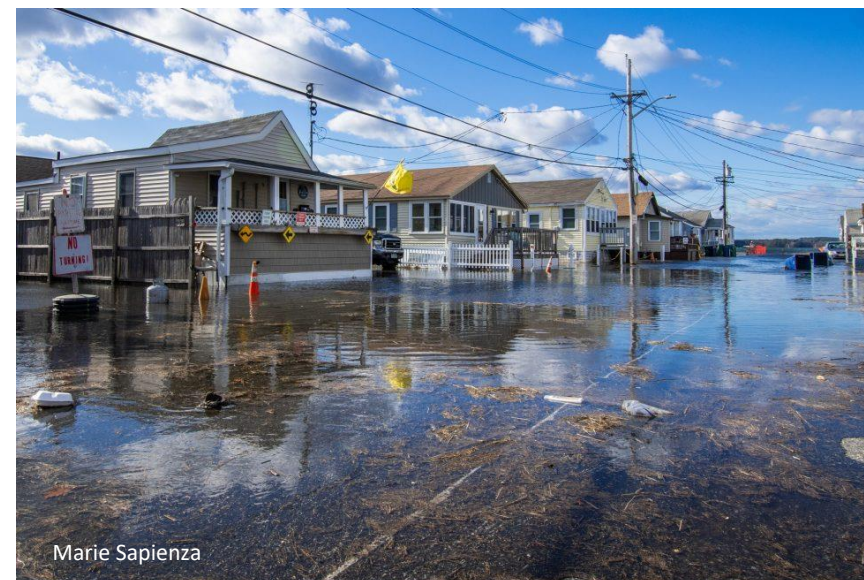
April 2007 – Ashworth Avenue



November 2019 King Tide – Brown Ave



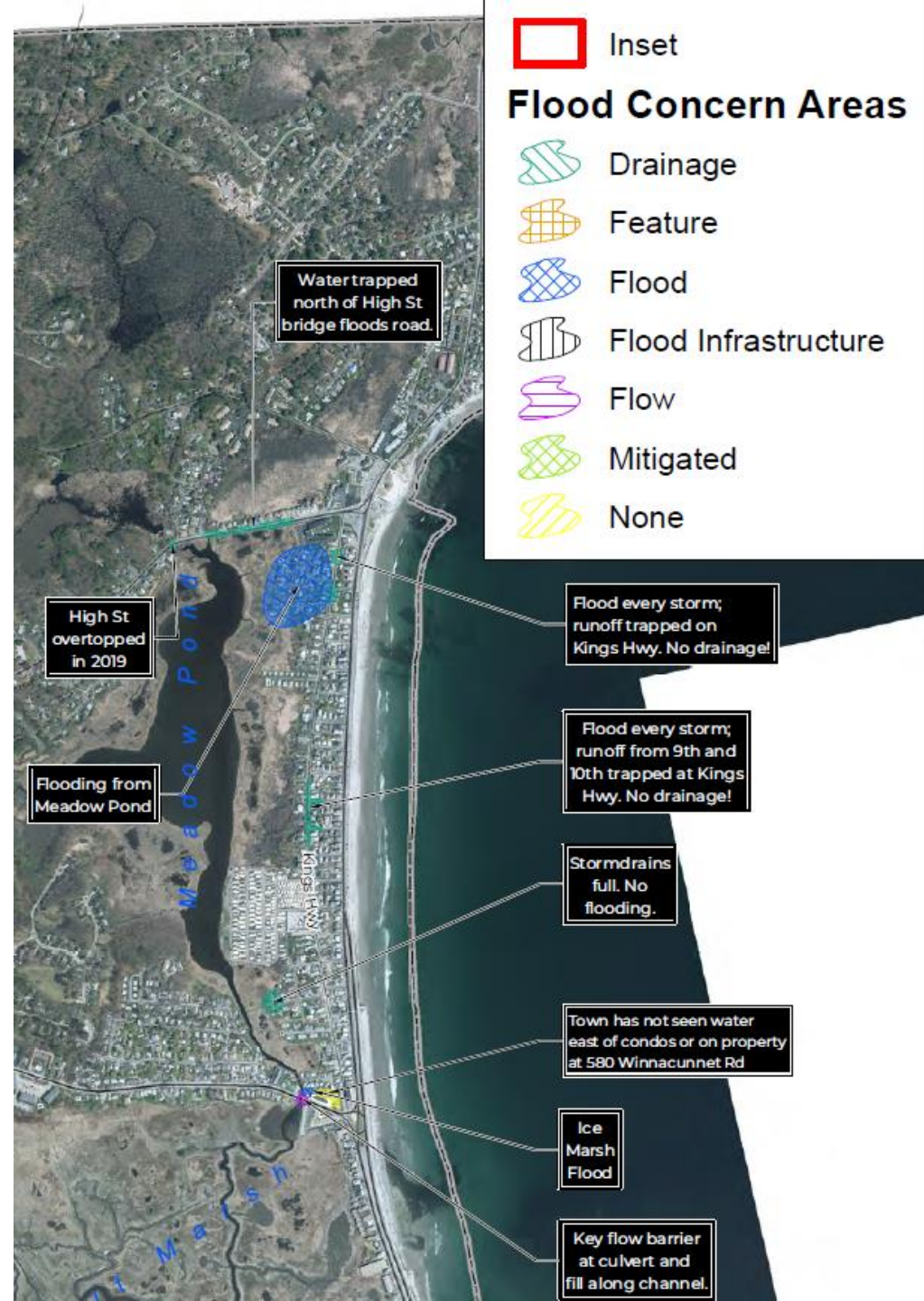
November 2017 – Aerial from Harbor

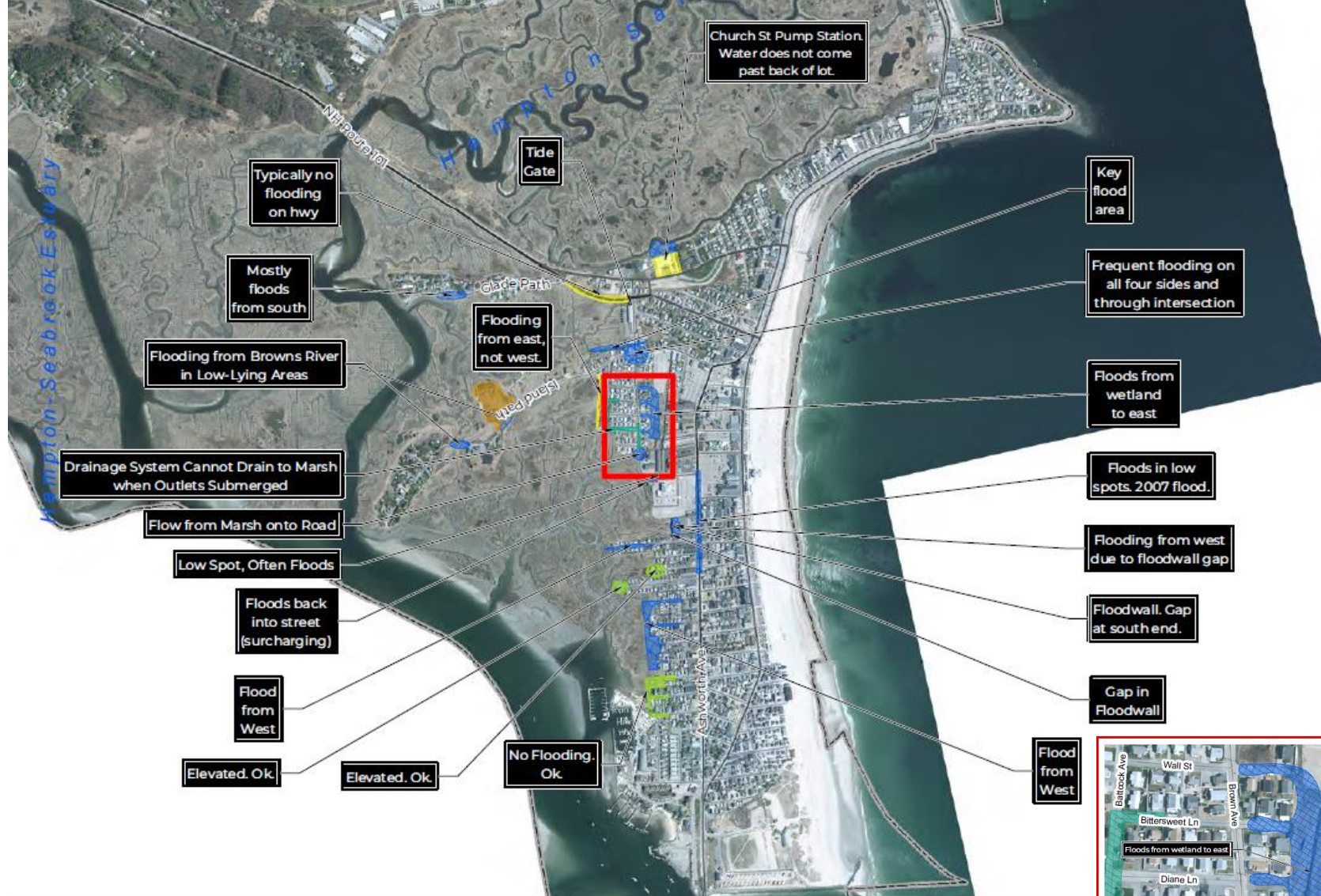


November 2020 King Tide – Harbor side

Stakeholder Input

- Coastal Master Planning
- Meeting with Residents
- Town Officials
- NHDES
- Coastal Hazard Adaptation Team (CHAT)





Flood Concern Areas

Hampton-Seabrook Estuary Flood Study

Flood Concern Areas Identified Through Public Input and Municipal Participation

0 0.05 0.1 0.2 0.3 0.4
MILES

1 in = 0 miles

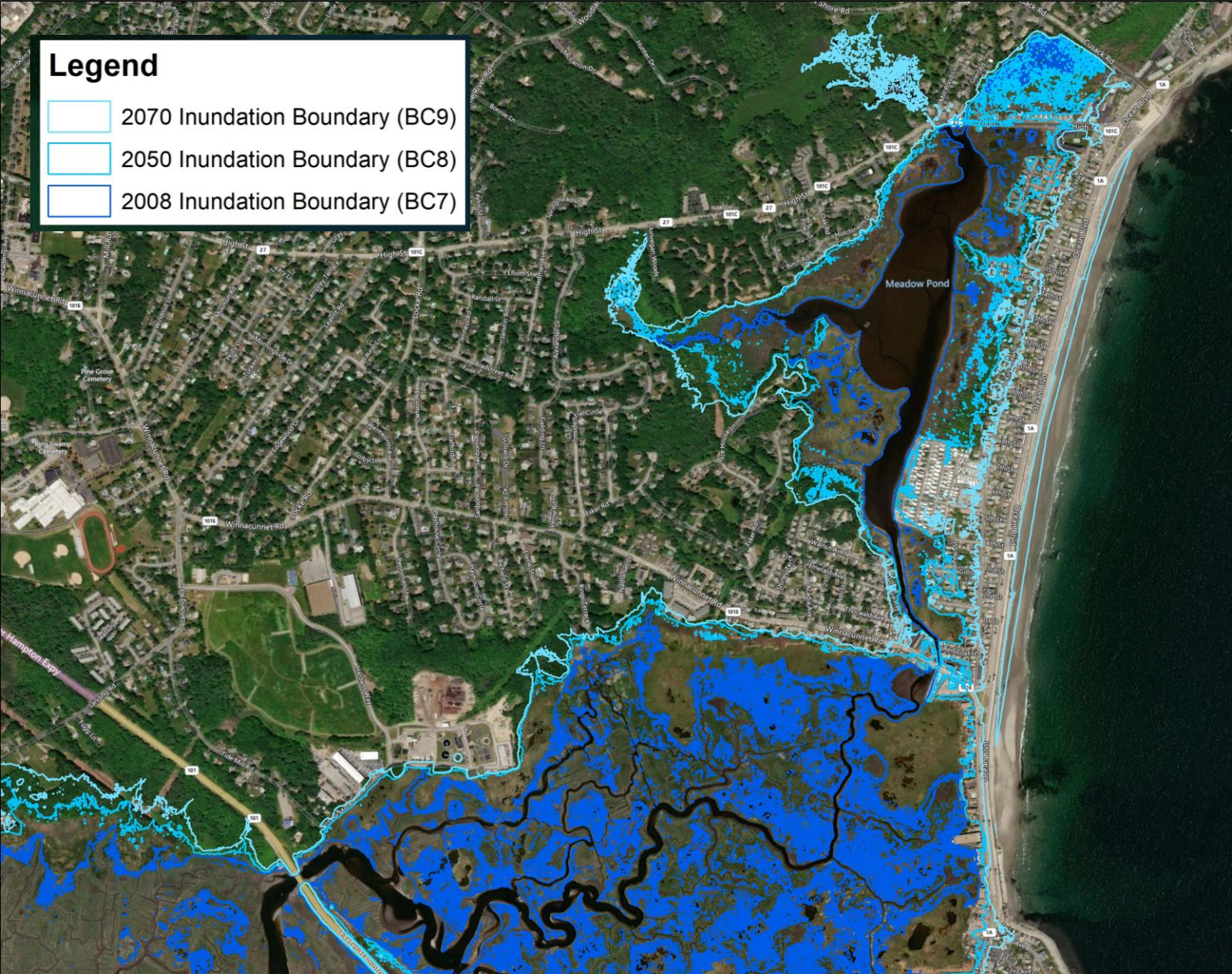
Existing Model Results – October 2019 King Tide



Existing Model Results: Water Depth for 2019 King Tide



Existing Model Results – Spring Tides

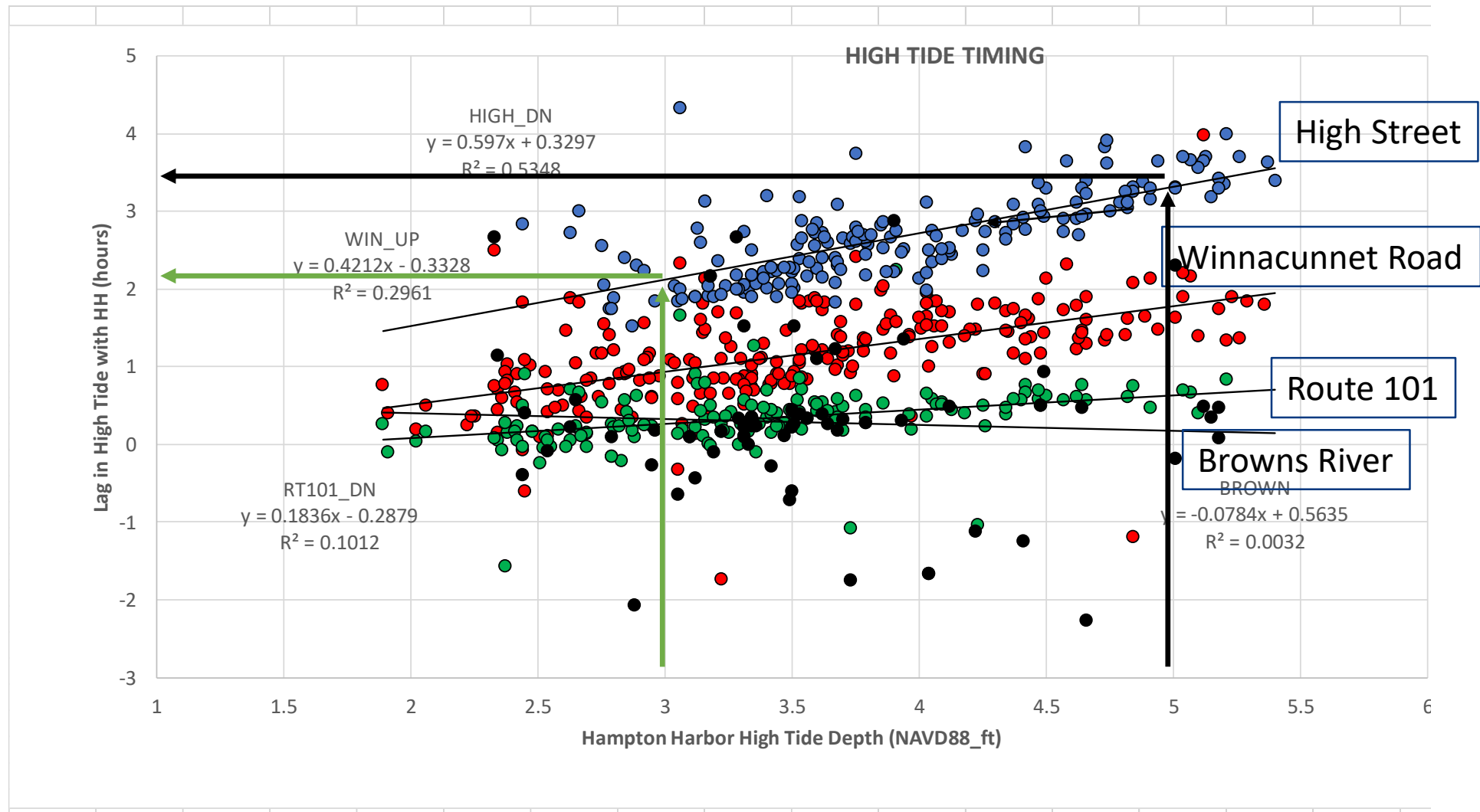


Existing Model Results: Extent of Flooding



Data Collection / UNH Tidal Lag

- High Street: 2-3.5 hours
- Winnacunnet Road: 0.5-2 hours
- Route 101: 0-0.5 hours



Alternatives Analysis Concepts

No Action

do nothing

Avoid

keep out of risk zones

Accommodate

elevate, raise roads, etc.

Resist

build walls, fill, etc.

Relocate

move to higher ground

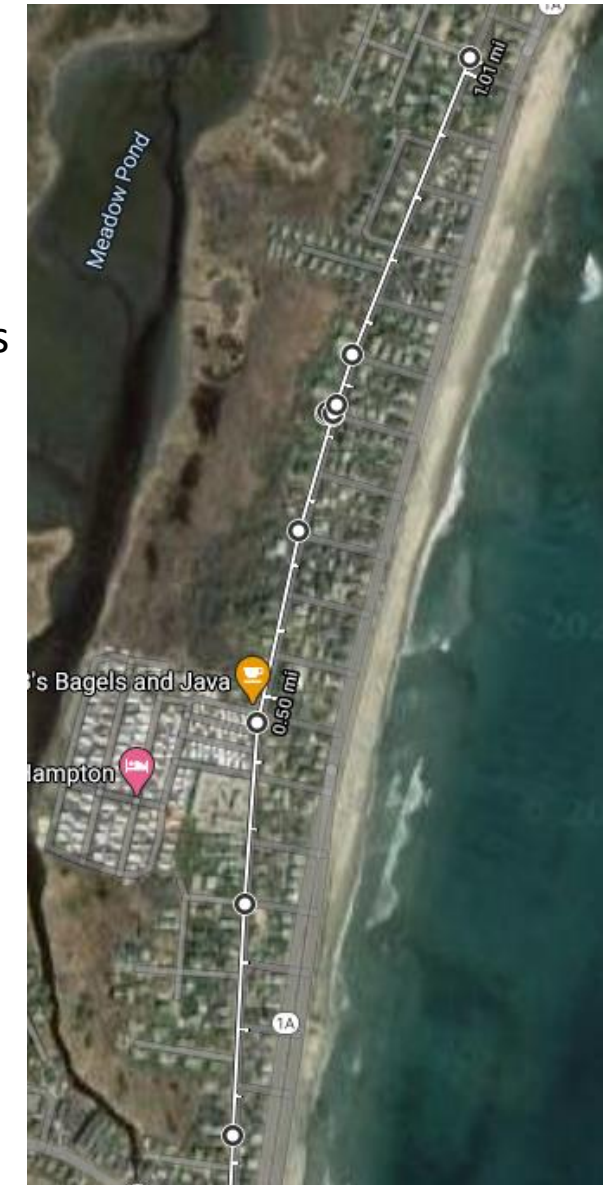


From NH coastal adaptation report and Hampton Coastal Resiliency Master Planning

Flood Mitigation Alternatives Meadow Pond

Alternatives Evaluated

- Replace Winnacunnet Road Culvert
- Meadow Pond Dredging/Phragmites Removal
- Elevate Roads
- Improve Drainage
- Creek Fill Removal
- Ditch Marsh Remediation
- Elevate Flood Prone Houses



Flood Mitigation Alternatives Hampton Harbor



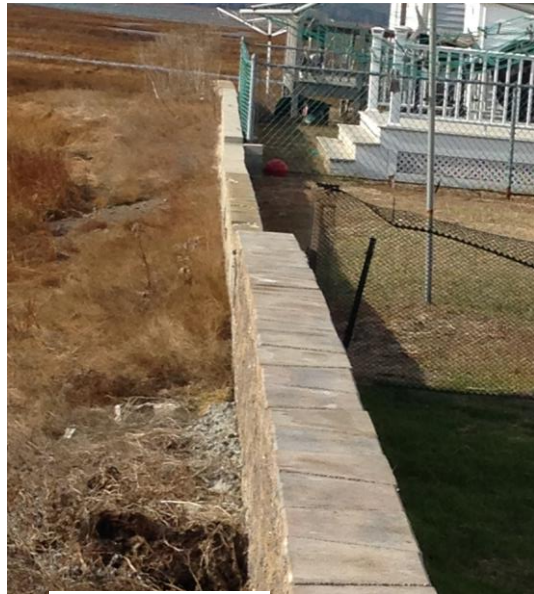
Raising of Structures

Alternatives Evaluated

- Improve Drainage Infrastructure
- Improve/Add Tide Gates and Backflow Valves
- Elevate Roads
- Elevate Structures
- Construct Barriers



Raising of Roads



Barriers



Temporary Walls



Tide Gates/Backflow Preventers

Recommended Alternatives (Not Modeled)

- Managed Retreat
- Regulatory Updates

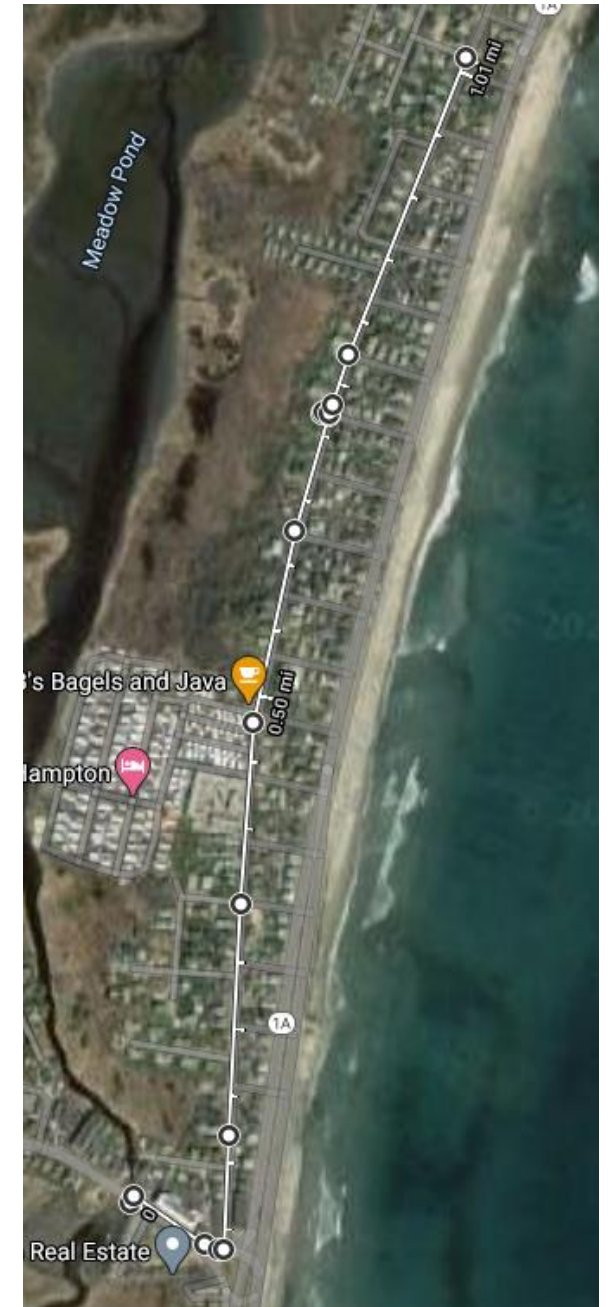
NEW FLOOD REGULATIONS



Next Step

- Publish Final Report and Recommendations
- Complete 50-60% Designs
- Develop Monitoring Plans
- Present Findings and Results

Phase II-
NFWF



Challenges Moving Forward



Communication, Participation, Delays



Votes to Secure Funding vs. Those Eligible



Sea Level Rise



No Immediate Fix



What Happens in the Mean Time?