

31 August 2023

**MEMORANDUM FOR THE RECORD**

**SUBJECT:** Initial Interagency Scoping Meeting – Boston CSRM

**LOCATION:** Webex

**DATE OF MEETING:** 25 January 2023, 1300-1500

**ATTENDEES:**

Richard McGuinness, BPDA  
Delaney Morris, BPDA  
Chris Busch, BPDA  
Mike Johnson, NOAA NMFS  
Audrey Mayer, USFWS  
Tim Timmerman, USEPA  
Ed Reiner, USEPA  
Bob Boeri, MA CZM  
Joanna Yelen, MA CZM  
Tricia Bowie, MA CZM  
Mike Galvin, MA DCR  
Hannah Wagner, COB

Jeff Herzog, USACE  
Todd Randall, USACE  
Christine San Antonio, USACE  
Marc Paiva, USACE  
Grace Moses, USACE  
Paul Morelli, USACE  
Larry Oliver, USACE  
Lisa Winter, USACE  
Keith Hannon, USACE  
Byron Rupp, USACE  
Ksenia Aquaviva, COB  
Catherine McCandless, COB

**REPORT:** Attendees discussed the following items.

- **Purpose of Meeting:** The attendees convened virtually on Webex for an initial interagency coordination meeting to discuss scoping of the Environmental Impact Statement (EIS) for the Boston Coastal Storm Risk Management (CSRM) project. The study team discussed the purpose of the project, initial alternatives, the NEPA process, study schedule, and requested additional relevant information from resource agencies to see if they could identify data gaps or other considerations for the study. The presenters went through each of the five neighborhoods in the study individually to solicit information. The meeting was recorded for internal purposes only.
- **Study Schedule and Scope:** The USACE has a two-year timeframe to publish the draft EIS from the date of publishing the Notice of Intent. The EIS for a study of this scope is limited to 300 pages not including appendices. The study team will make clear in the draft report why certain alternatives are not carried forward.

- **NNBF Alternatives:** Attendees raised concerns about creating or restoring wetlands in Belle Isle Marsh near Logan Airport due to the potential to attract more birds to the area and possibly interfere with flight operations. The USACE has established the Federal Aviation Administration as a cooperating agency on this study and will coordinate with them and Massport in all matters that may impact airport functionality. Similarly, nourishing Carson Beach in South Boston may attract piping plover breeding pairs, a beneficial impact, but this will require additional measures to ensure the birds are protected from humans and predators. Creating this habitat would also require continued maintenance through future beach nourishments. The USACE will continue to coordinate with USFWS, MA DCR, and MA DEP on this alternative.
- **Structural Alternatives:** The study team discussed initial structural measures being considered including floodwalls and a surge barrier at the mouth of the Fort Point Channel. MA CZM raised concerns about changes in flooding patterns, water displacement, and flow velocity from building hard structures. The USACE will continue close coordination with MA CZM to identify policy consistency issues, coordinate appropriate meetings, and ensure alignment with CZM policies as the alternatives are developed. The USACE will also coordinate closely with USFWS should a surge barrier alternative be carried forward as this would have a potential impact on diadromous fish passage for spawning and migration.
- **Additional Considerations:** Regular flooding in the absence of storms is not being considered as part of this study, which is focused on flooding due to coastal storm surge in combination with predicted sea level change. The USACE will coordinate with the other current projects that are taking place within the Boston CSRM study area: the new Charles River Dam study, USCG Station modifications, and the USACE/MA EEA led Boston Metro Area Coastal Watershed Study.

## **CONCLUSION AND FOLLOW-UP ITEMS:**

- The PDT will continue study activities including initial alternatives formulation, the Alternatives Meeting Milestone (February 23, 2023), and characterizing the affected environment through continued interagency coordination and biological and cultural resource surveying in the areas of potential alternatives (July/August 2023).
- The city of Boston will send relevant design information for all waterfront structures in the study area to the USACE PDT members to help characterize the existing conditions and affected environment.
- We requested written comments on this study from agencies and tribes in response to this scoping meeting within 30 days and indicated that any additional

questions or concerns should be brought to the attention of the project manager, Jeff Herzog, or the lead ecologist, Todd Randall, by letter, email, or phone.

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Christine San Antonio, PhD  
Marine Biologist  
New England District  
U.S. Army Corps of Engineers

**The following agencies were invited to the scoping meeting via letter 30 days prior to the meeting:**

**Federal**

National Marine Fisheries Service – Greater Atlantic Regional Fisheries Office  
US Environmental Protection Agency  
US Fish and Wildlife Service  
US Coast Guard Sector Boston  
National Park Service

**Non-Federal**

Massachusetts Coastal Zone Management  
Massachusetts Executive Office of Energy and Environmental Affairs  
Massachusetts Department of Environmental Protection  
Massachusetts Department of Conservation and Recreation  
Massachusetts Historical Commission  
Massachusetts Board of Underwater Archaeological Resources  
Boston Water and Sewer Commission  
Massachusetts Water Resources Authority  
Massachusetts Bay Transportation Authority  
Massachusetts Port Authority  
Massachusetts Department of Transportation

**Tribes**

Mashpee Wampanoag Tribe  
Wampanoag Tribe of Gay Head (Aquinnah)  
Narragansett Tribe

# CITY OF BOSTON COASTAL STORM RISK MANAGEMENT

Todd Randall- Environmental Manager  
Jeff Herzog- Project Manager  
New England District  
Date: 26 January 2023



US Army Corps  
of Engineers®



# AGENDA



- Introductions and Opening Remarks
- Study Authorizations
- Background and Federal Interest
- Study Purpose, Need and Scope
- Environmental & Cultural Coordination
- Problems, Opportunities, Objectives, and Constraints
- Existing Conditions
- Future Without Project Conditions
- Measures Screening
- Plan Formulation and Initial Array of Alternatives by Neighborhood (with discussions following)
- Path to Draft NEPA Document (Tentative Schedule)
- Open Discussion



# AUTHORIZATION AND PURPOSE



The study is authorized by the resolution adopted by the Senate Public Works Committee dated September 12, 1969, authorizes the investigation of options for reducing flood risk along the coastline of Massachusetts and this authorization is applicable to this coastal storm risk management feasibility study.

Section 105(a) of the Water Resources Development Act (WRDA) of 1986, as amended (33 U.S.C. 2215(a)), specifies the cost-sharing requirements.



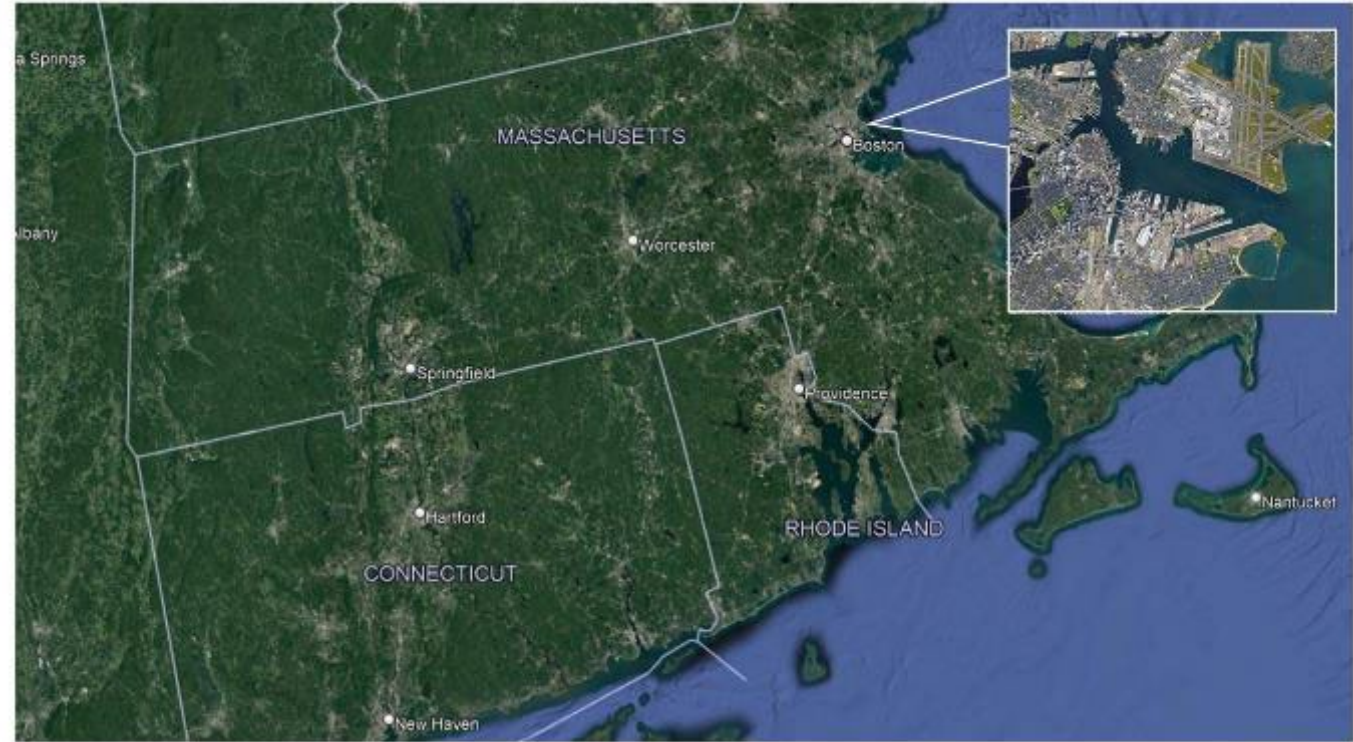
2018 Nor'easter, Boston, MA



# BACKGROUND AND FEDERAL INTEREST



- Non-Federal Sponsor is the City of Boston
- The FCSA was executed on 02 May 2022; Funding received 29 August
- 47 Miles of Coastline; susceptible to extra-tropical events and more frequent events. Coastline is made up of dense urban environment and fill lands constructed in the 18<sup>th</sup> and 19<sup>th</sup> Century. Stakeholders include a mixture of public entities and private property, as well as historic property.
- Boston is the most populous city in Massachusetts with a population of ~635,000; 23<sup>rd</sup> largest City in US.
- The CDC Social Vulnerability Score for the City of Boston is .7861 (2020) indicating a high level of vulnerability considering a scale of 0 (lowest vulnerability) to 1 (highest vulnerability).
- The City of Boston completed Climate Ready Boston in 2022 developing multiple strategies and recommendations for near-term and long-term resilience. The USACE study builds on that effort identifying federal interest for implementation.





# STUDY SCOPE

- The study will be a single purpose coastal storm risk management study
- Alternatives will be formulated and evaluated to meet the study objectives with the goal of managing the impacts of coastal storms on the population, economy and infrastructure in the City of Boston
- The study will include the evaluation of five neighborhoods
- The study will evaluate regional recommendations for implementation where municipal recommendations are not complete, or where regional recommendations maximize opportunities. Regional recommendations will be coordinated with the USACE Metro Coastal Resilience Study Team and its partners at the State of Massachusetts.



Photo from COB CSRM Charette Boston Harbor Tour 18 OCT 22



# STUDY SCOPE

- Five Neighborhoods
  - East Boston
  - Charlestown
  - Downtown and North End
  - South Boston
  - Dorchester (Neponset River)
- Portions of Logan International Airport Property and other MASSPORT Properties





# ENVIRONMENTAL COORDINATION: COOPERATING AGENCIES



- Cooperating and participating agency invitations were sent to the following agencies on Sept. 29, 2022:

| Cooperating Agencies                            | Participating Agencies                                           |
|-------------------------------------------------|------------------------------------------------------------------|
| USEPA – Region 1                                | USFWS                                                            |
| NOAA Fisheries                                  | Massachusetts Executive Office of Energy & Environmental Affairs |
| FEMA                                            | Massachusetts Department of Conservation and Recreation          |
| USCG                                            | Massachusetts Department of Transportation                       |
| National Park Service                           | Massachusetts Department of Environmental Protection             |
| Massachusetts Office Of Coastal Zone Management | Massachusetts Port Authority                                     |
|                                                 | Boston Water and Sewer Commission                                |
|                                                 | Massachusetts Water Resources Agency                             |
|                                                 | Massachusetts Bay Transportation Authority                       |

- Planning Charette: October 18-20, 2022
- Neighborhood Plan Formulation Meetings: Nov 7, Nov 14, Nov 21, Dec 2, Dec 7, 2022
- First Interagency Meeting: January 25, 2023



# ENVIRONMENTAL COORDINATION: NEPA



- Cooperating Agency letters were mailed October 5, 2022. Cooperating Agencies also participated in the Charette 18-20 October and in the 5 neighborhood specific discussion meetings.
- NAE will conduct an Agency Scoping meeting on 25 January 2023 for compliance with Sec. 1001, WRRDA 2014.
- City of Boston is developing a public facing website (USACE will link Project site to COB Site) to serve as the primary website for the Study.
- Public Scoping Meeting and Study introduction meetings will occur virtually between 26 January 2023 and 03 February 2023; a public notice will go out via multiple platforms in advance of the meeting.
- Additional outreach to Neighborhoods through Newsletters, Environmental Reporters, and City Council Neighborhood Representatives will occur between 26 January and 03 February 2023.
- If it is determined that an EIS is moving forward, a Notice of Intent for the EIS will be published and additional public scoping meetings will be noticed and held.



# CULTURAL & HISTORIC COORDINATION: TRIBAL AND SHPO CONSULTATION



- Pursuant to Section 1001 of WRRDA 2014, Cooperating Agency Letters were sent to federal and non-federal Agencies on October 5, 2022.
- Initial correspondence was sent on October 5, 2022, to the Narragansett Indian Tribe, Wampanoag Tribe of Gay Head (Aquinnah), and the Mashpee Wampanoag Tribe inviting them to participate in the Charette 18-20 October 2022; additionally, they will be invited to a scoping meeting 23-27 January 2023 and to request scoping comments pursuant to NEPA.
- Correspondence was also sent to the Massachusetts State Historic Preservation Officer, the Massachusetts Board of Underwater Archaeological Resources, and the Boston Landmarks Commission on Oct. 5, 2022 requesting cooperating agency status and participation in the October 2022 Charette.
- Following the Alternatives Milestone Meeting (AMM) and screening of alternatives, the consultation process pursuant to Section 106 of the NHPA will be formally initiated with all stakeholders.



# PROBLEMS, OPPORTUNITIES, OBJECTIVES, AND CONSTRAINTS



## PROBLEMS

- Critical infrastructure is damaged by the effects of coastal storms.
- The effects of coastal storms limit or inhibit vehicle traffic on critical transportation and evacuation routes.
- Structures (commercial and residential), are damaged by coastal storms
- Coastal storms pose a risk to life, health, and safety of the population in the City of Boston.

## OPPORTUNITIES

- Improve the resilience of the city to the impacts of coastal storms and flooding (Note: the USACE principles of resilience are Prepare, Absorb, Recover, and Adapt)
- Utilize NNBFs and/or restoration of the natural coastal system of defenses to manage coastal storm risk
- Improve floodplain management
- Manage the risk to utilities including water, wastewater, electricity, phone, etc. that are at risk to the effects of coastal storms and are essential for human health and safety.

## OBJECTIVES

- Manage the risk of economic impacts from coastal storms and coastal flooding within the City of Boston for the 50-year period of analysis.
- Manage the coastal storm risk to human life, health, and safety to the population in the City of Boston over the 50-year period of analysis.
- Manage the risk of critical infrastructure impacts from coastal storms and coastal flooding within the City of Boston over the 50-year period of analysis.

## CONSTRAINTS

- Avoid formulation that transfers or exacerbates risk in communities outside the City of Boston for the sake of benefits within the City.
- Formulate alternatives within the jurisdiction of the City of Boston. The City will have to commit to LERRDS and O&M for the recommended plan.
- Avoid adverse impacts and significant delays to maritime navigation and USCG operations within the study area.



# STUDY CONSIDERATIONS



Sea Level Change

Public and Private Real Estate

Future Infil Development

Actions by Other Agencies/Organizations

Navigation and Port-related Operations

Existing/Future Environmental Conditions

Evacuation Corridors

Community Connectedness to the Water

Existing and Future Projects

Flood Pathways

Environmental Justice Communities

Protected Resources



# KEY UNCERTAINTIES



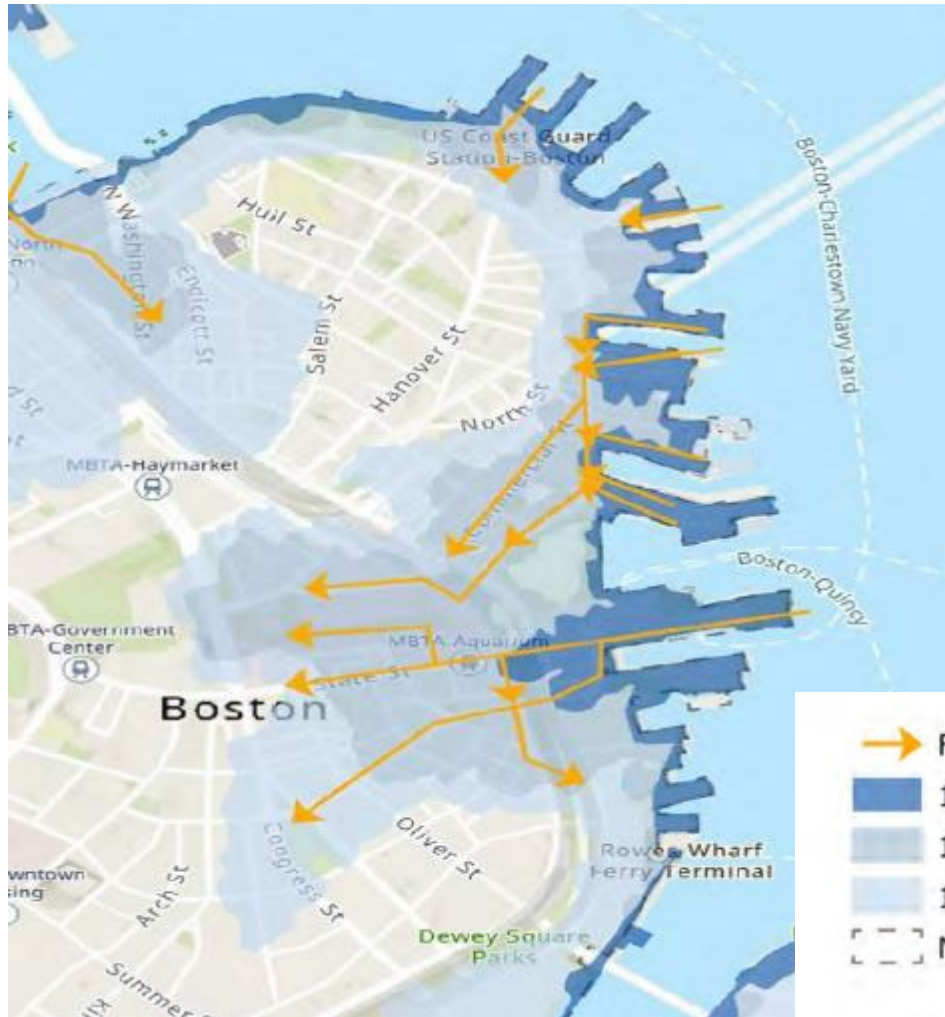
- Sea level change
- Future development in the city (MASSPORT, Port Norfolk, East Boston)
- Actions by Others (ongoing CRB projects at various stages of design and construction)
- Degradation of marsh and other natural features that affect coastal storm risk
- Actions by other surrounding municipalities that may impact coastal storm risk within the city of Boston
- HTRW within the study area (Chelsea Creek, Neponset River, etc.)
- EV (cultural resources) from pre NEPA construction requirements in fill lands
- Key uncertainties within the substrate and pile construction of much of the coastline



# EXISTING CONDITIONS AND FUTURE WITHOUT A FEDERAL PROJECT

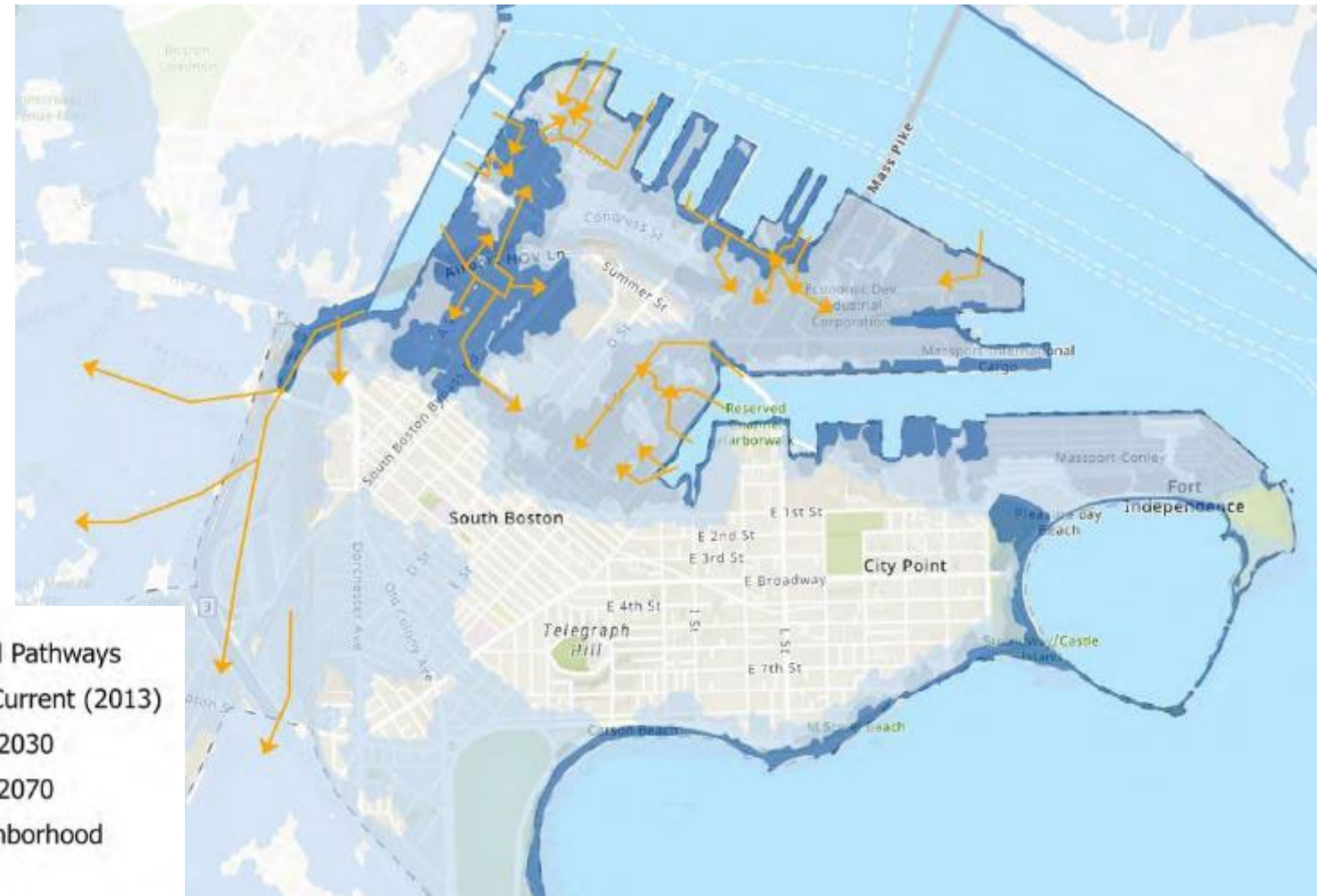


## EXISTING AND FWOP FLOODPLAIN CONDITION DOWNTOWN AND NORTH END



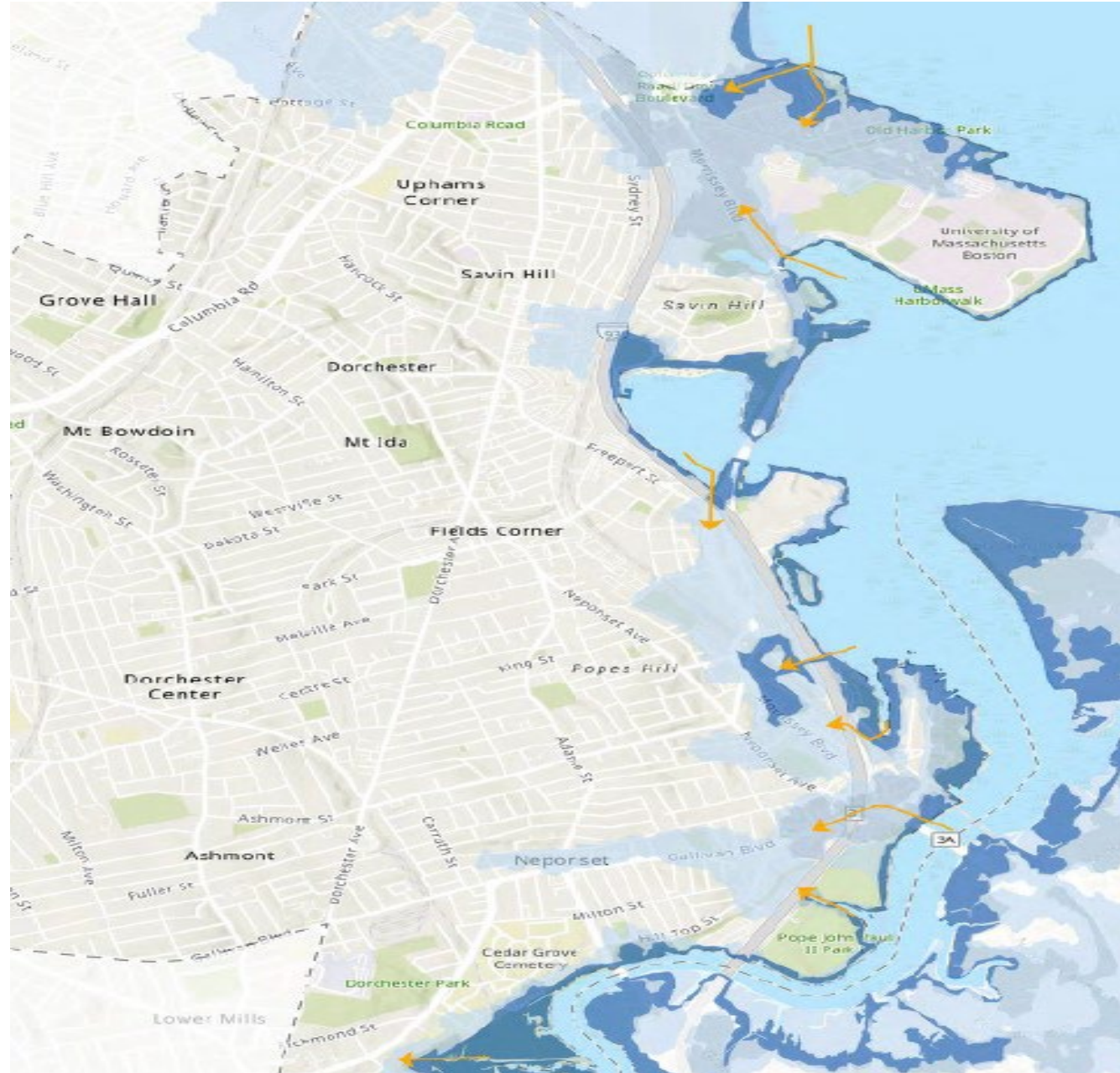
- Flood Pathways
- 1% Current (2013)
- 1% 2030
- 1% 2070
- - - Neighborhood

## EXISTING AND FWOP FLOODPLAIN SOUTH BOSTON





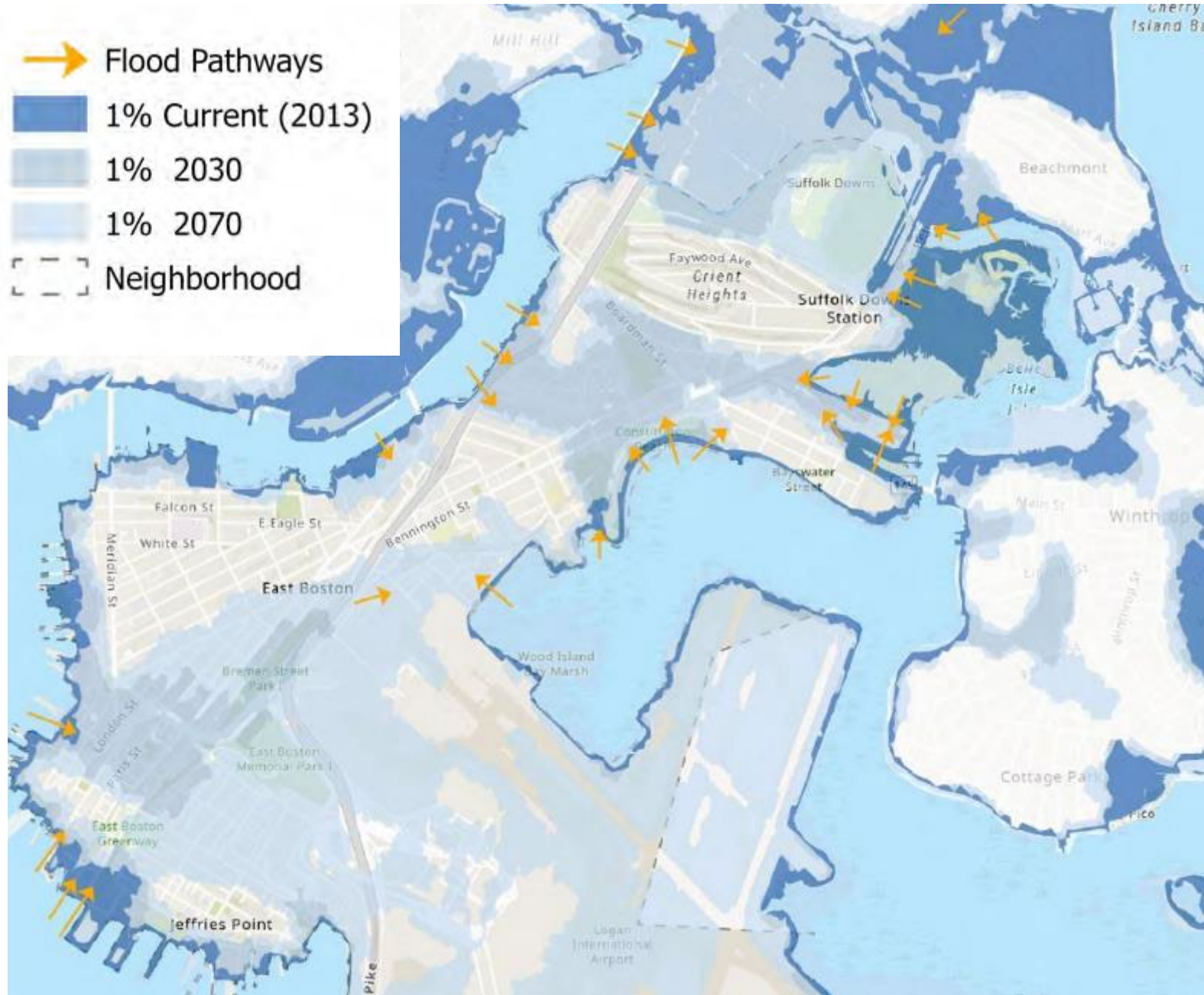
# EXISTING AND FWOP FLOODPLAIN DORCHESTER



- Flood Pathways
- 1% Current (2013)
- 1% 2030
- 1% 2070
- [- - -] Neighborhood

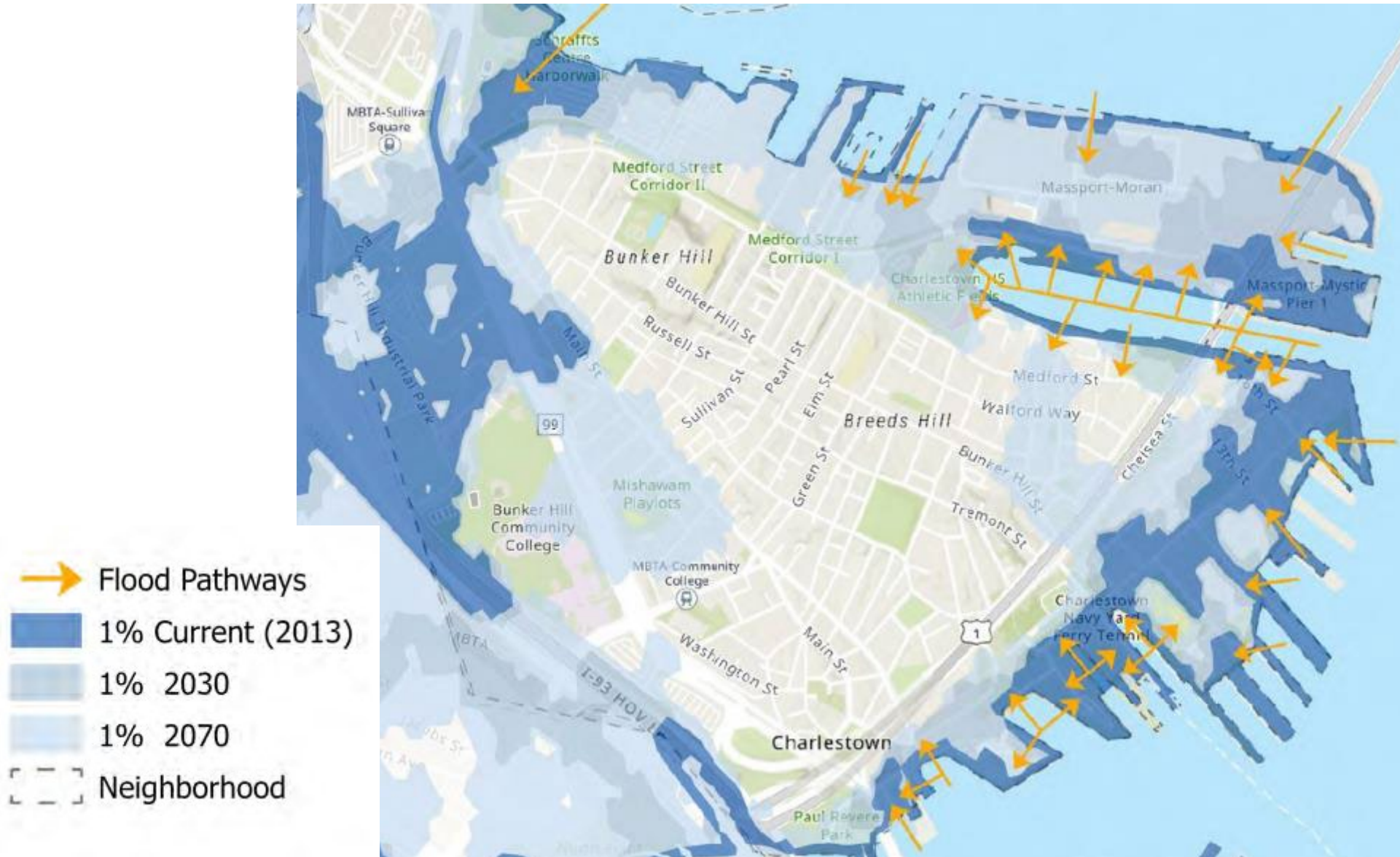


# EXISTING AND FWOP FLOODPLAIN EAST BOSTON



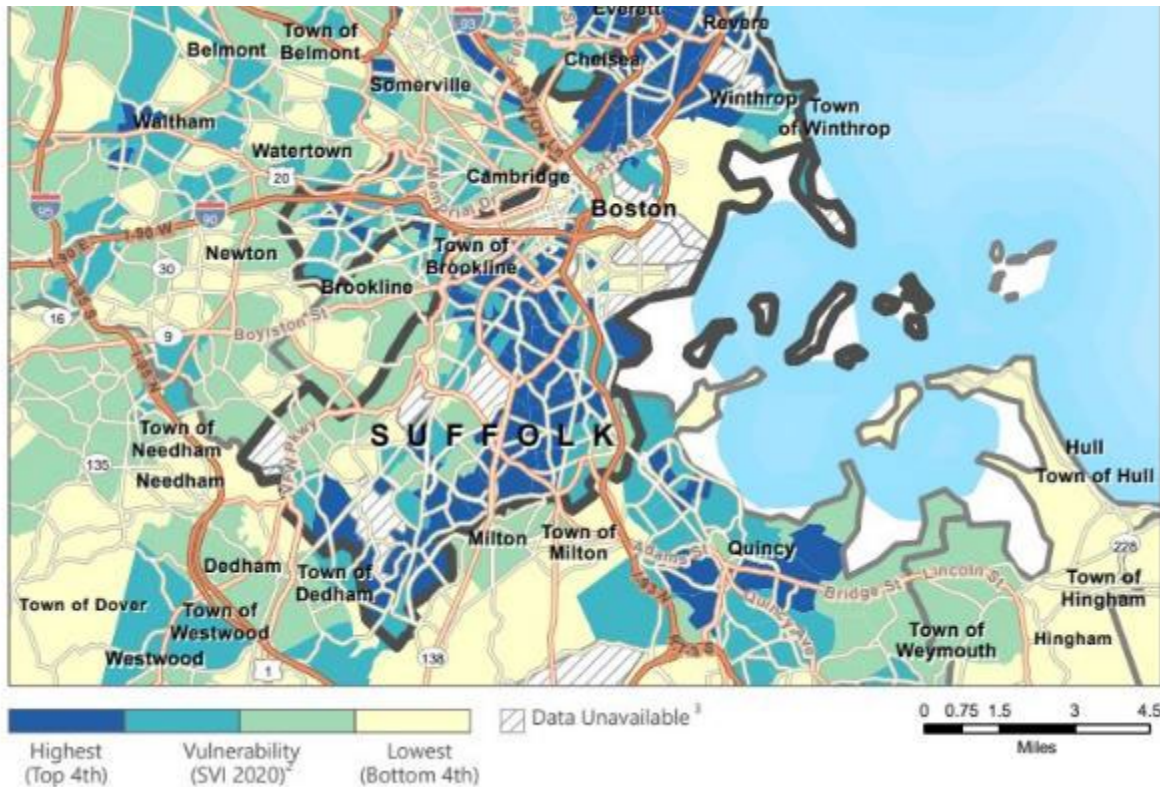


# EXISTING AND FWOP FLOODPLAIN CHARLESTOWN





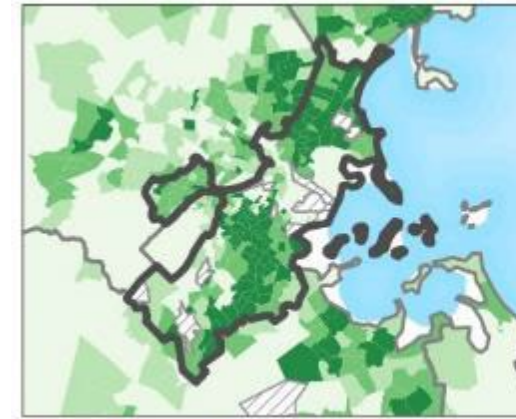
# IDENTIFYING EJ COMMUNITIES IN BOSTON



The CDC's Social Vulnerability Index score (2020) for the City of Boston is 0.7786 which is classified as a high level of vulnerability considering a scale of 0 (lowest vulnerability) to 1 (highest vulnerability)

*Vulnerability is a community's capacity to prepare for and respond to the stress of a hazardous event.*

Socioeconomic Status<sup>5</sup>



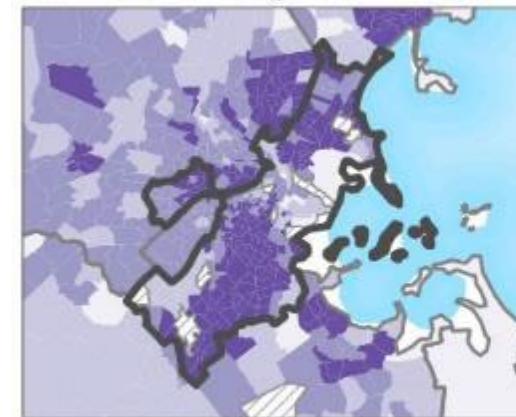
Highest (Top 4th) Vulnerability (SVI 2020)<sup>5</sup> Lowest (Bottom 4th)

Household Characteristics<sup>6</sup>



Highest (Top 4th) Vulnerability (SVI 2020)<sup>6</sup> Lowest (Bottom 4th)

Racial and Ethnic Minority Status<sup>7</sup>



Highest (Top 4th) Vulnerability (SVI 2020)<sup>7</sup> Lowest (Bottom 4th)

Housing Type/Transportation<sup>8</sup>

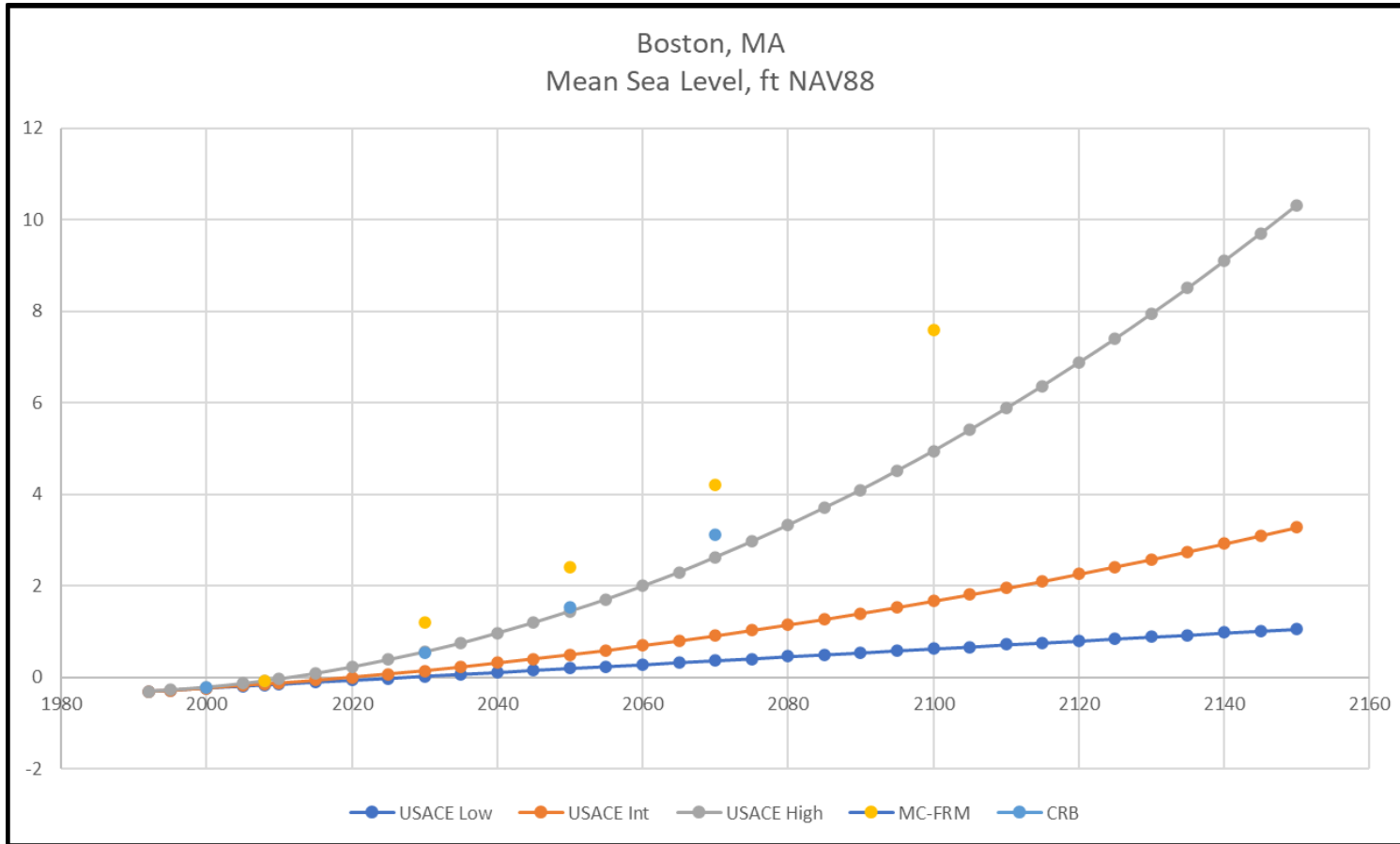


Highest (Top 4th) Vulnerability (SVI 2020)<sup>8</sup> Lowest (Bottom 4th)

(Both figures are from the CDC/ATSDR Social Vulnerability Index 2020)



# SEA LEVEL CHANGE ANALYSIS



- For AMM, the PDT time shifted SLC based on the USACE High Curve.

❖ Utilized High Curve for uncertainty due to adaptability constraints, dense urban population

❑ Further analysis to be done pre-TSP

- MC-FRM 2070= USACE High 2090: ~4.1'
- MC-FRM 2050= USACE High 2070: ~2.5'
- MC-FRM 2030= USACE High 2045: ~1.2'

| 8443970, Boston, MA                                 |       |       |       |
|-----------------------------------------------------|-------|-------|-------|
| NOAA's 2006 Published Rate: 0.00863 feet/yr         |       |       |       |
| All values are expressed in feet relative to NAVD88 |       |       |       |
| Gauge Status: Compliant                             |       |       |       |
| Year                                                | USACE | USACE | USACE |
|                                                     | Low   | Int   | High  |
| 1992                                                | -0.3  | -0.3  | -0.3  |
| 2020                                                | -0.06 | 0.01  | 0.23  |
| 2040                                                | 0.11  | 0.32  | 0.97  |
| 2090                                                | 0.54  | 1.4   | 4.1   |
| 2140                                                | 0.98  | 2.92  | 9.1   |

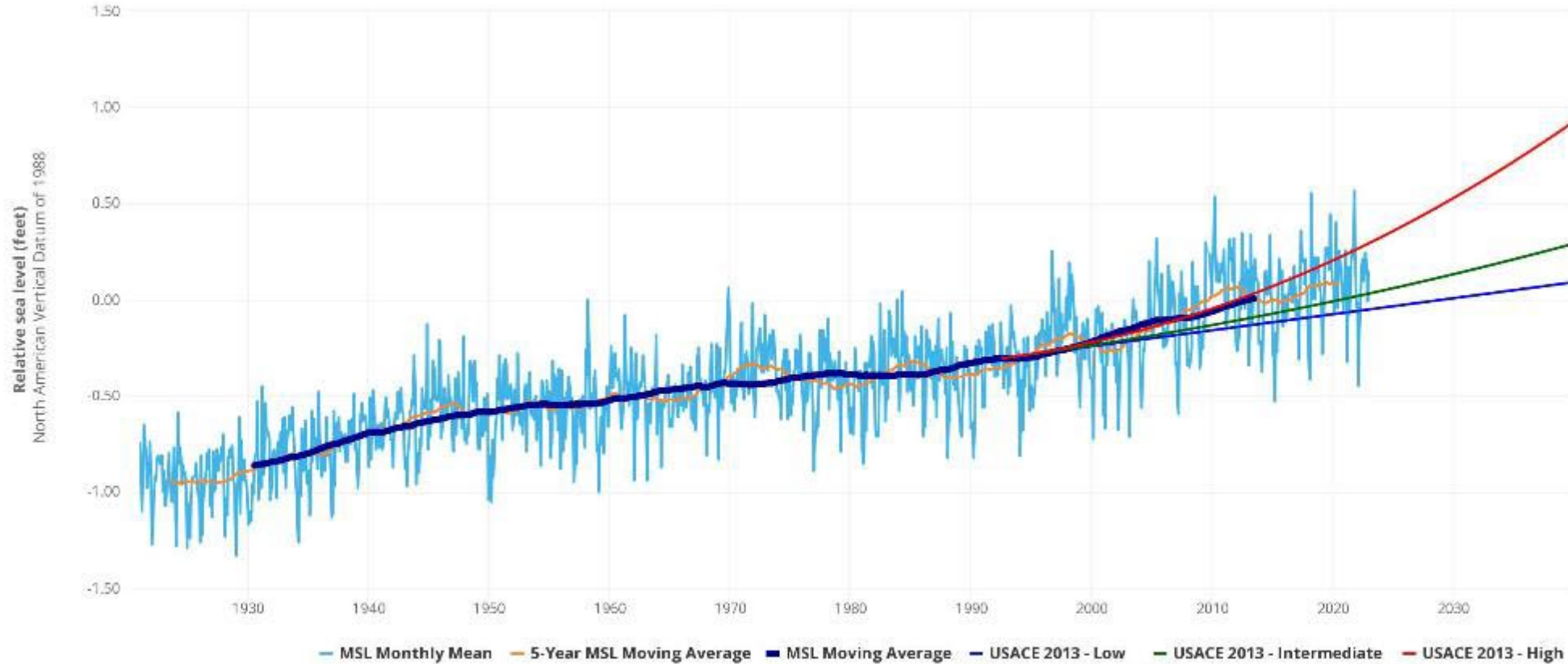


# SEA LEVEL CHANGE PROJECTIONS



Sea Level Data and Projections for Boston, MA (8443970)

Active and compliant tide gauge



USACE Sea Level Change Predictions for Boston, MA (8443970) using the NAVD88 datum.

Timeframe: Jan, 1921 - Jan, 2100 (179 years, 1 months).

Timeframe contains 1223 missing points; the longest gap is 0 years, 2 months.

Rate of Sea Level Change: 0.00833 ft/yr (Regional 2006).



# STRUCTURES AT RISK



AMM-level estimates of FWOP damages to structures and contents:

| Neighborhood | Structure count | AAEQ<br>Low/Intermed SLC | PV<br>Low/Intermed SLC | AAEQ<br>High SLC | PV<br>High SLC    |
|--------------|-----------------|--------------------------|------------------------|------------------|-------------------|
| Charlestown  | 1,760           | \$ 3,990,000             | \$ 113,200,000         | \$ 48,300,000    | \$ 1,370,000,000  |
| Dorchester   | 2,791           | \$ 1,690,000             | \$ 47,900,000          | \$ 45,400,000    | \$ 1,288,000,000  |
| Downtown     | 5,029           | \$ 4,880,000             | \$ 138,400,000         | \$ 109,300,000   | \$ 3,100,000,000  |
| East Boston  | 4,228           | \$ 10,250,000            | \$ 290,700,000         | \$ 106,400,000   | \$ 3,018,000,000  |
| South Boston | 4,505           | \$ 8,330,000             | \$ 236,300,000         | \$ 111,800,000   | \$ 3,171,000,000  |
| <b>TOTAL</b> | 18,313          | \$ 29,140,000            | \$ 826,500,000         | \$ 421,200,000   | \$ 11,947,000,000 |

Data sources and tools used: NSI (updated 2022), WSEs from WHG, NACCS depth-damage functions, non-residential damage functions from April 2009 expert elicitation, Paul Morelli's Python script to estimate AMM-level damages



# MEASURES SCREENING



- The team considered the universe of CSRM measures to determine which measures would contribute to meeting study objectives and would be engineeringly feasible in the study area
- When identifying locations for specific measures, the PDT utilized existing information including:
  - Inundation map data provided by the city from the Woods Hole Group model: MC-FRM
  - Information available to the team from the North Atlantic Coast Comprehensive Study
  - Python Script GIS analysis identifying inundation damage to those structures according to the NSI
  - Project recommendations from the Climate Ready Boston Reports
  - Input from various stakeholders at the Planning Charette (OCT '22) and neighborhood formulation workshops (NOV and DEC '22)
  - Federal and State environmental resource GIS data layers and screening tools (e.g., USFWS: IPaC; NMFS: EFH Mapper & ESA Mapper; Massachusetts: MassMapper & MassGIS)



# STRUCTURAL MEASURES CONSIDERED



| Measure                                  | Measure Type     | Notes                                                                                                                    | Carried Forward? |
|------------------------------------------|------------------|--------------------------------------------------------------------------------------------------------------------------|------------------|
| Breakwaters                              | Structural       | Where beach nourishment is recommended the area is already in a relatively protected area                                | N                |
| Revetment                                | Structural       | In areas where there is existing revetment or sloped bank                                                                | N                |
| Sea Walls                                | Structural       | Seaward of existing seawall or replacing existing seawall                                                                | Y                |
| Floodwalls                               | Structural       | Behind existing seawall “T” and “I” foundations                                                                          | Y                |
| Deployable Floodwalls/Closure Structures | Structural       | Due to the road and traffic infrastructure along the coast; may be necessary to close system                             | Y                |
| Levees                                   | Structural       |                                                                                                                          | Y                |
| Elevated Harbor Walk                     | Structural       | Cost sharing implications; potential betterment; however, there is an existing harbor walk along much of the study area. | Y                |
| Storm Surge Barriers                     | Structural       |                                                                                                                          | N                |
| Beachfill/Dunes                          | Structural/ NNBF |                                                                                                                          | Y                |



# NATURAL AND NATURE-BASED FEATURES CONSIDERED



| Measure                                      | Measure Type        | Notes                                                                                                                                              | Carried Forward? |
|----------------------------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Beachfill/Dunes                              | Structural/<br>NNBF | Possibly in the area of Carson Beach and Moakley Park; other areas (Revere) have performed with little re- nourishment requirements.               | Y                |
| Reef Habitat Restoration/Creation            | NNBF                | Based on previous research in this wave environment, reef habitat is ineffective                                                                   | N                |
| Marsh/Wetland Restoration/Creation           | NNBF                | Could be used for wave attenuation in areas like Wood Island Marsh and Belle Island                                                                | Y                |
| Living Shorelines/<br>Ecological Revetment   | NNBF                | Could be effective in areas along the Neponset River or E. Boston                                                                                  | Y                |
| Submerged Aquatic Vegetation                 | NNBF                | With the extreme tidal swings of 9'; sea level change; wave energy; this measure is unlikely to be successful over the economic period of analysis | N                |
| Drainage Improvements/Water Storage Features | NNBF                | Will be considered where structural measures are proposed that cutoff existing drainage                                                            | Y                |



# NONSTRUCTURAL MEASURES CONSIDERED



| Measure               | Measure Type  | Notes                                                                                                                                                                                 | Carried Forward? |
|-----------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Buyout/Acquisition    | Nonstructural | Not evaluated prior to AMM but will be evaluated prior to TSP                                                                                                                         | Y                |
| Building Retrofit     | Nonstructural | Multiple structures already going through this- includes wet floodproofing first floor and elevating all mechanical and electrical infrastructure above BFE or 2 <sup>nd</sup> floor. | Y                |
| Dry/Wet Floodproofing | Nonstructural |                                                                                                                                                                                       | Y                |
| Structure Relocation  | Nonstructural | Not expected to be as efficient as retrofitting or floodproofing                                                                                                                      | N                |
| Warning Systems       | Nonstructural | Non-Federal Sponsor implemented                                                                                                                                                       | Y                |
| Emergency Planning    | Nonstructural | Non-Federal Sponsor implemented                                                                                                                                                       | Y                |
| Land Use Planning     | Nonstructural | Non-Federal Sponsor implemented. Includes floodplain development restrictions, building code and zoning updates, etc.                                                                 | N                |



# PLAN FORMULATION STRATEGIES



- Evaluate each neighborhood independently, and then evaluate as a system
- Prioritize penetration flood pathways
- Prioritize managing risk to EJ/Socially Vulnerable Communities and reducing risk to human life, health, and safety
- Consider projects and actions by others (including CRB) to develop complete and closed system
- Consider direct and indirect environmental impacts associated with project alternatives
- Phased Approach based on SLC Scenarios
- Maximize net benefits across all four accounts (comprehensive benefits)
- Reasonably maximize net NED benefit



# PLAN FORMULATION BREAKDOWN



Each Neighborhood is uniquely impacted by Coastal Storm Risk. The neighborhoods are demographically diverse, as well as geographically and geologically diverse.

Each Neighborhood was evaluated individually for existing and future condition; as well as, risk management. Once the neighborhoods were evaluated, the study area was evaluated for completeness, effectiveness, efficiency and acceptability.

The City participates in the National Flood Insurance Program and has been a part of the Community Rating System (CRS) since 1992. The City is currently a class level 10 in the CRS.

Neighborhood Breakdown:

Downtown and North End

South Boston

Dorchester

East Boston

Charlestown





# DOWNTOWN AND NORTH END



## Highlights-

- New Charles River Dam is not part of this study.
- Historic Long Wharf and New England Aquarium is inundated by frequent events under existing condition

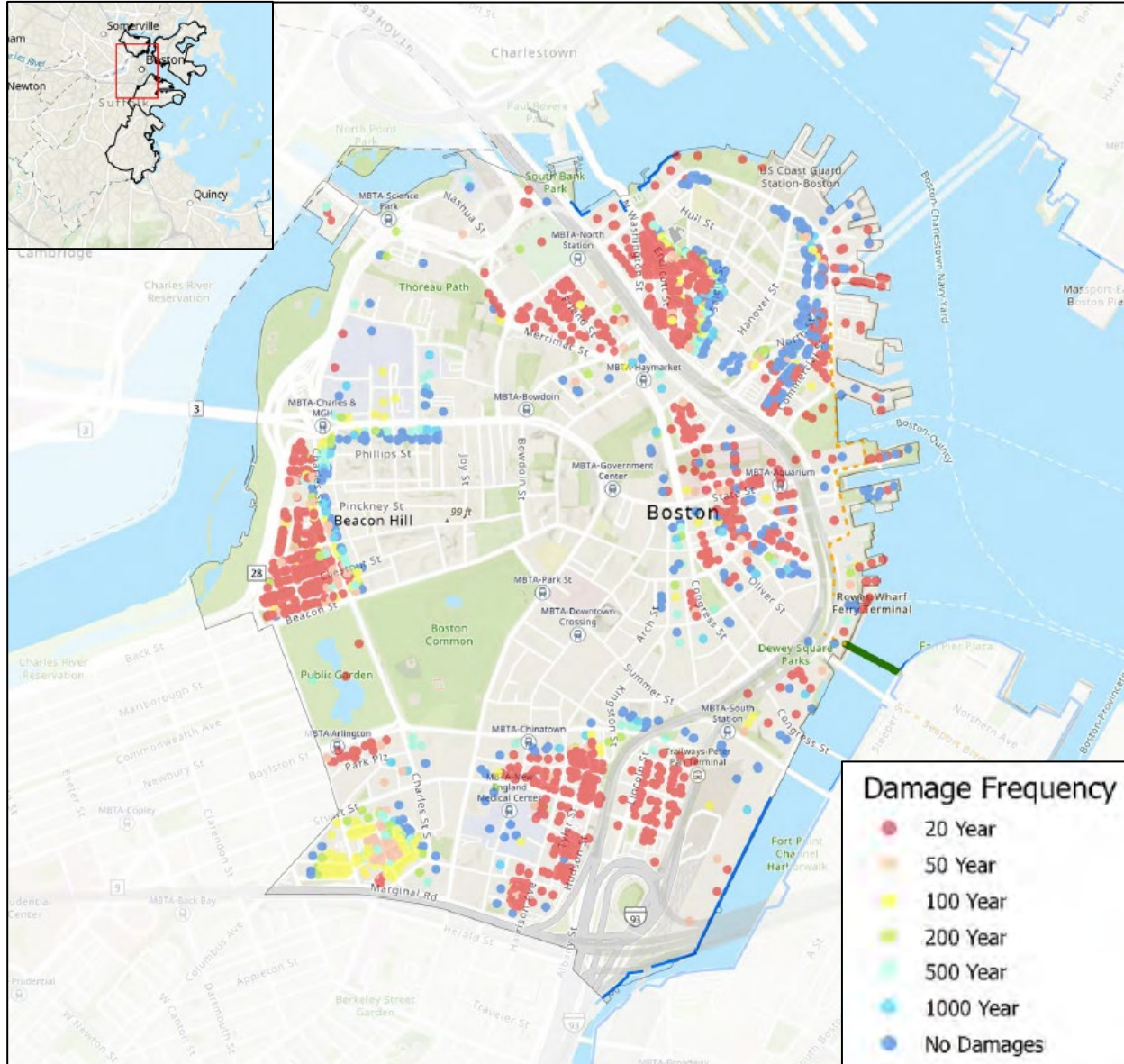
## Coastline is home to-

- USCG Station Boston
- Old North Church
- Long Wharf
- New England Aquarium
- USACE New Charles River Dam
- Harborwalk

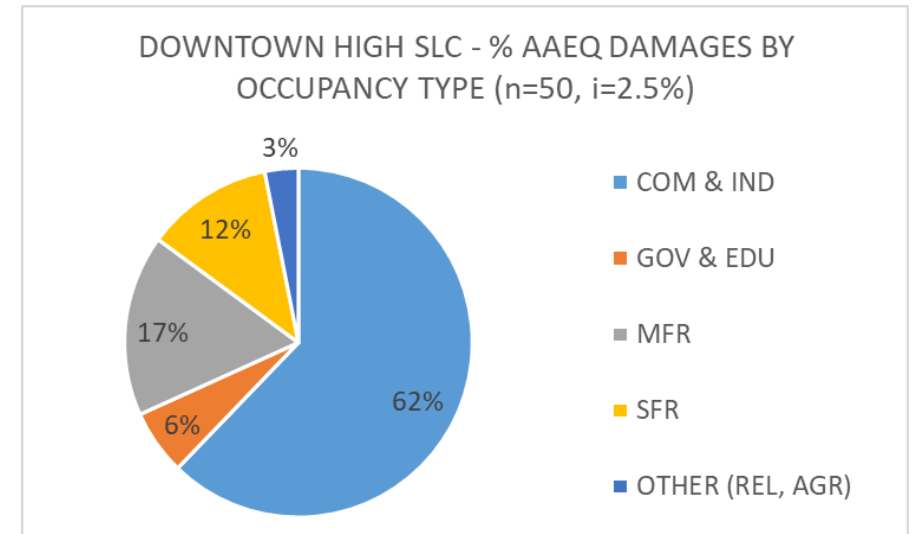




# FWOP DAMAGES HIGH SLC – DOWNTOWN



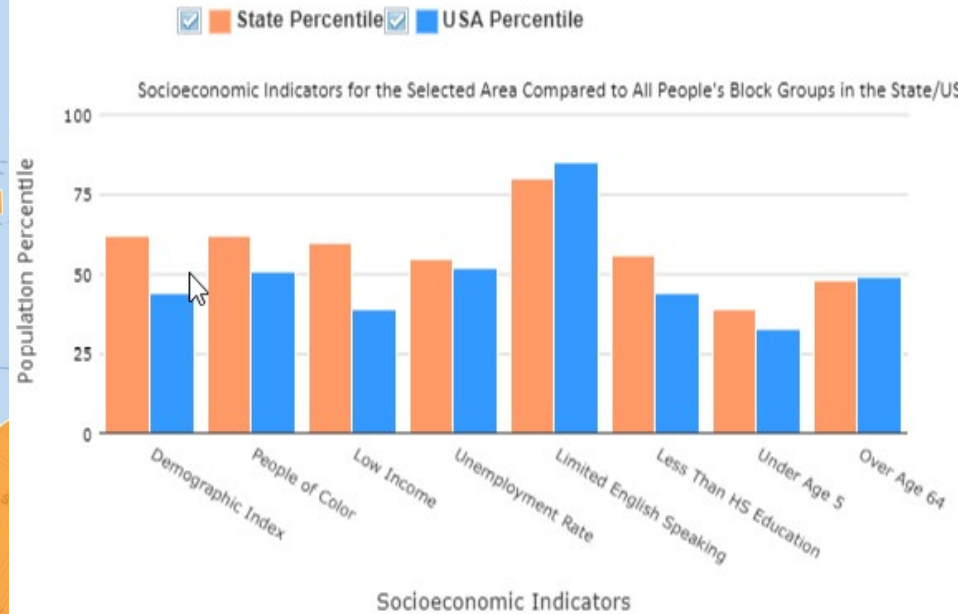
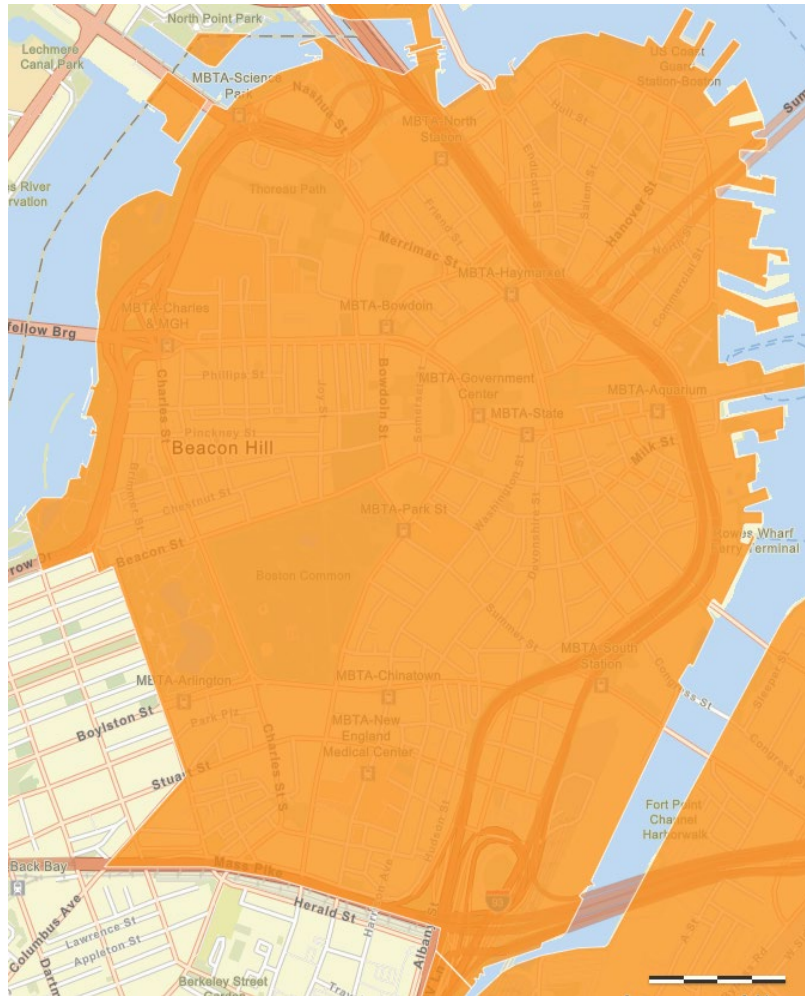
- 5,029 structures in Downtown in 1000-year floodplain based on WHG 2070 SLC (~USACE 2090 high curve)
- 3,999 structures receiving damage over 50-year period of analysis
- ~\$109 million AAEQ; ~\$3.1 billion PV (n=50, i=2.5%, FY23 price level)



Data sources and tools used: NSI (updated 2022), WSEs from WHG, NACCS depth-damage functions, non-residential damage functions from April 2009 expert elicitation, Paul Morelli's Python script to estimate AMM-level damages



# EXISTING CONDITIONS-SOCIOECONOMIC INDICATORS: DOWNTOWN/NORTH END



- Relatively high percentage of households with limited English speaking compared to U.S. (85<sup>th</sup> percentile) and state (80<sup>th</sup> percentile)

Source: EPA's EJScreen Version 2.1  
– Socioeconomic Indicators (2022)



# INITIAL ARRAY OF ALTERNATIVES DOWNTOWN AND NORTH END



| Alternative | Description/Measures                                                                                                  | Notes               |
|-------------|-----------------------------------------------------------------------------------------------------------------------|---------------------|
| 1           | No Action                                                                                                             |                     |
| 2           | Retrofit buildings in 1% AEP floodplain and harden MBTA locations. Harden tunnels, ventilation buildings, MBTA Stops. |                     |
| 3           | Outer Harbor Surge Barrier                                                                                            | NOT CARRIED FORWARD |
| 4           | Inner Harbor Barrier                                                                                                  | NOT CARRIED FORWARD |
| 5           | Flood wall from NCRD to Langone Park and flood wall from Rowes Wharf along east side of Downtown to Fleet Street      |                     |
| 6           | Perimeter sea wall from Langone Park to Rowe's Wharf                                                                  |                     |
| 7           | Combination of ALT 2 with ALT 5. Structural and Nonstructural Elements seaward of flood wall.                         |                     |



# INTERAGENCY CONCERNS AND/OR CONSIDERATIONS?



Downtown/North End discussion points

FEDERAL

STATE



# SOUTH BOSTON



## Highlights-

- Fort Point Channel is significant flood pathway into South Boston under existing and FWOP
- City is already working projects for Moakley Park IVO Carson Beach and may become part of FWOP.

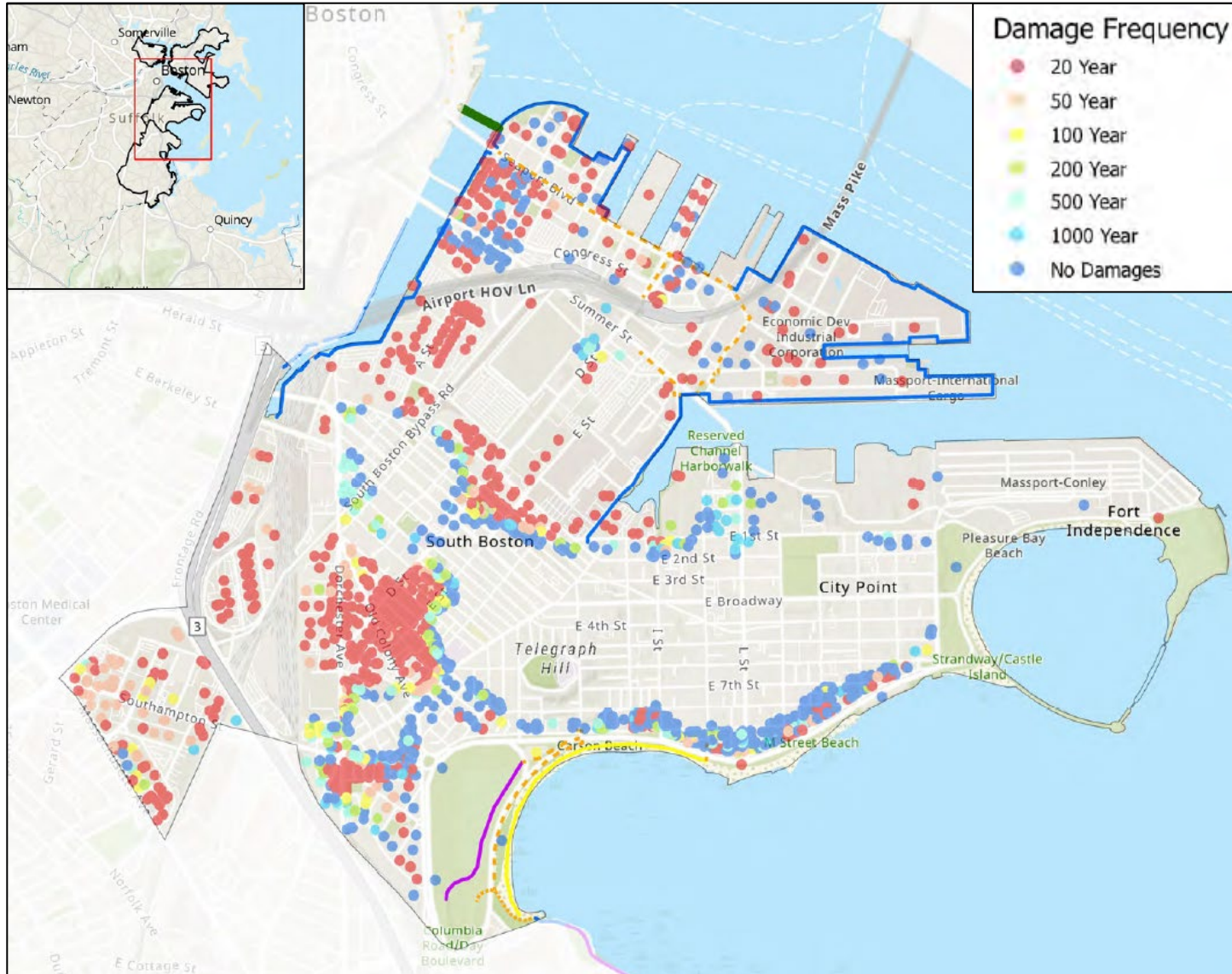
## Coastline is home to-

- Boston Children's Museum
- Joe Moakley Federal Courthouse
- Institute for Contemporary Arts
- Boston Tea Party Ships and Museum
- Seaport Business District
- Joe Moakley Park and Carson Beach



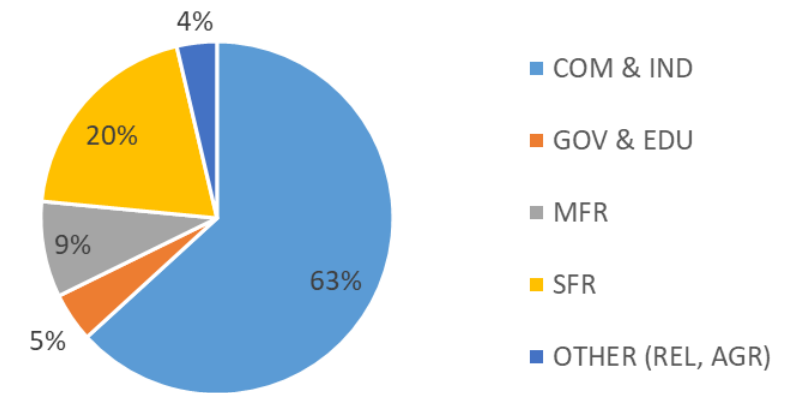


# FWOP DAMAGES HIGH SLC – SOUTH BOSTON



- 4,505 structures in South Boston in 1000-year floodplain based on WHG 2070 SLC (~USACE 2090 high curve)
- 3,198 structures receiving damage over 50-year period of analysis
- ~\$112 million AAEQ; ~\$3.2 billion PV (n=50, i=2.5%, FY23 price level)

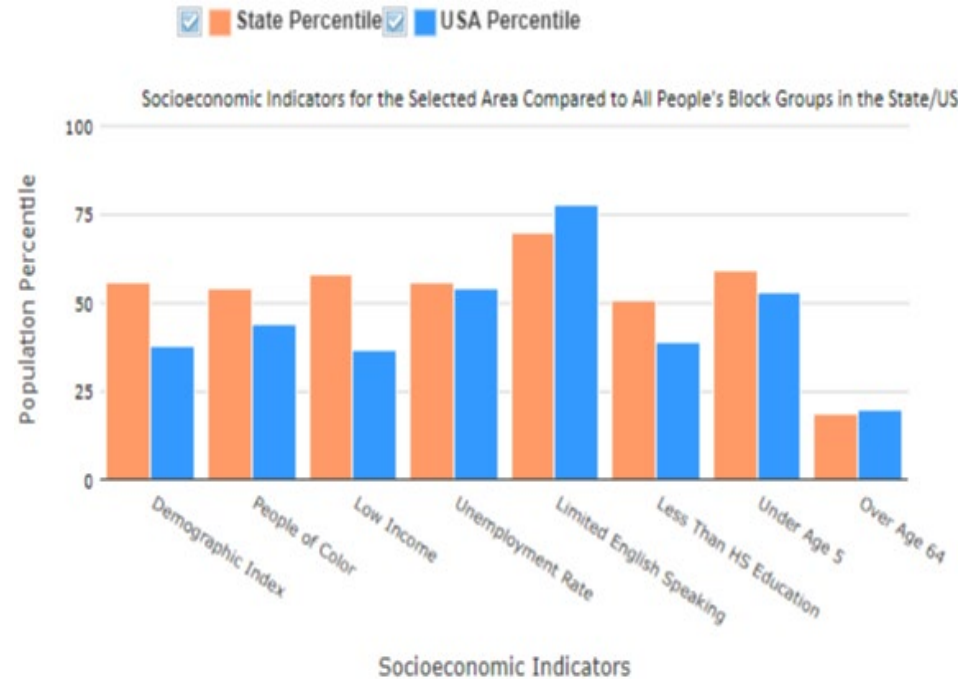
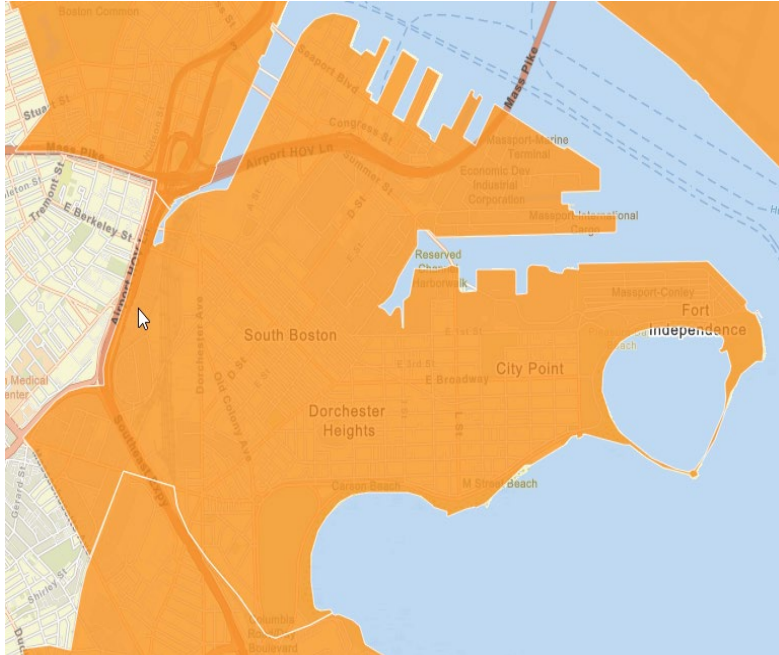
SOUTH BOSTON HIGH SLC - % AAEQ DAMAGES BY OCCUPANCY TYPE (n=50, i=2.5%)



Data sources and tools used: NSI (updated 2022), WSEs from WHG, NACCS depth-damage functions, non-residential damage functions from April 2009 expert elicitation, Paul Morelli's Python script to estimate AMM-level damages



# EXISTING CONDITIONS-SOCIOECONOMIC INDICATORS: SOUTH BOSTON



- Relatively high percentage of households with limited English speaking compared to U.S. (78<sup>th</sup> percentile) and state (70<sup>th</sup> percentile)
- Falls below the national and state 25<sup>th</sup> percentiles in its population of individuals over age 64 (U.S. 20<sup>th</sup> percentile, state 19<sup>th</sup> percentile)

Source: EPA's EJScreen Version 2.1  
– Socioeconomic Indicators (2022)



# FOCUSED ARRAY OF ALTERNATIVES

## S. BOSTON



| Alternative | Description/Measures                                                                                                                                                                                                                                                                 | Notes |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 1           | No Action                                                                                                                                                                                                                                                                            |       |
| 2           | Retrofit buildings in 1% AEP floodplain and harden MBTA locations.<br>Harden tunnels, ventilation buildings, MBTA Stops.                                                                                                                                                             |       |
| 3           | Fort Point Channel Surge Barrier; Floodwall along Seaport Blvd crossing I-90 Tunnel at Northern Ave.; Retrofit structures seaward of Seaport Blvd, Harden tunnels, ventilation buildings, MBTA Stops.; Berm through Moakley Park with 1025 LF floodwall and deployable tie-in.       |       |
| 4           | Fort Point Channel Perimeter floodwall; Floodwall along Seaport Blvd crossing I-90 Tunnel at Northern Ave.; Retrofit structures seaward of Seaport Blvd, Harden tunnels, ventilation buildings, MBTA Stops.; Berm through Moakley Park with 1025 LF floodwall and deployable tie-in. |       |
| 5           | Fort Point Channel Perimeter floodwall; ~24,000LF South Boston Perimeter Solution behind existing seawall and harborwalk IVO Contemporary Arts Inst. and perimeter piers crossing I-90 tunnel in-water; berm through Moakley Park with 1025 LF floodwall and deployable tie-in.      |       |



# INTERAGENCY CONCERNS AND/OR CONSIDERATIONS?



South Boston discussion points

FEDERAL

STATE



# DORCHESTER



## Highlights-

- Dorchester is an EJ Community
- 80% of residents are ESL
- Significant flood pathway into Dorchester is at Neponset River IVO Planet Fitness
- Elevated I-93 creates flood pathways at three underpasses
  - City would like to investigate work with DoT to elevate roads impacted by I-93
- Morrissey Blvd and Castle Isle.  
Drawbridge flood in existing conditions

## Coastline is home to-

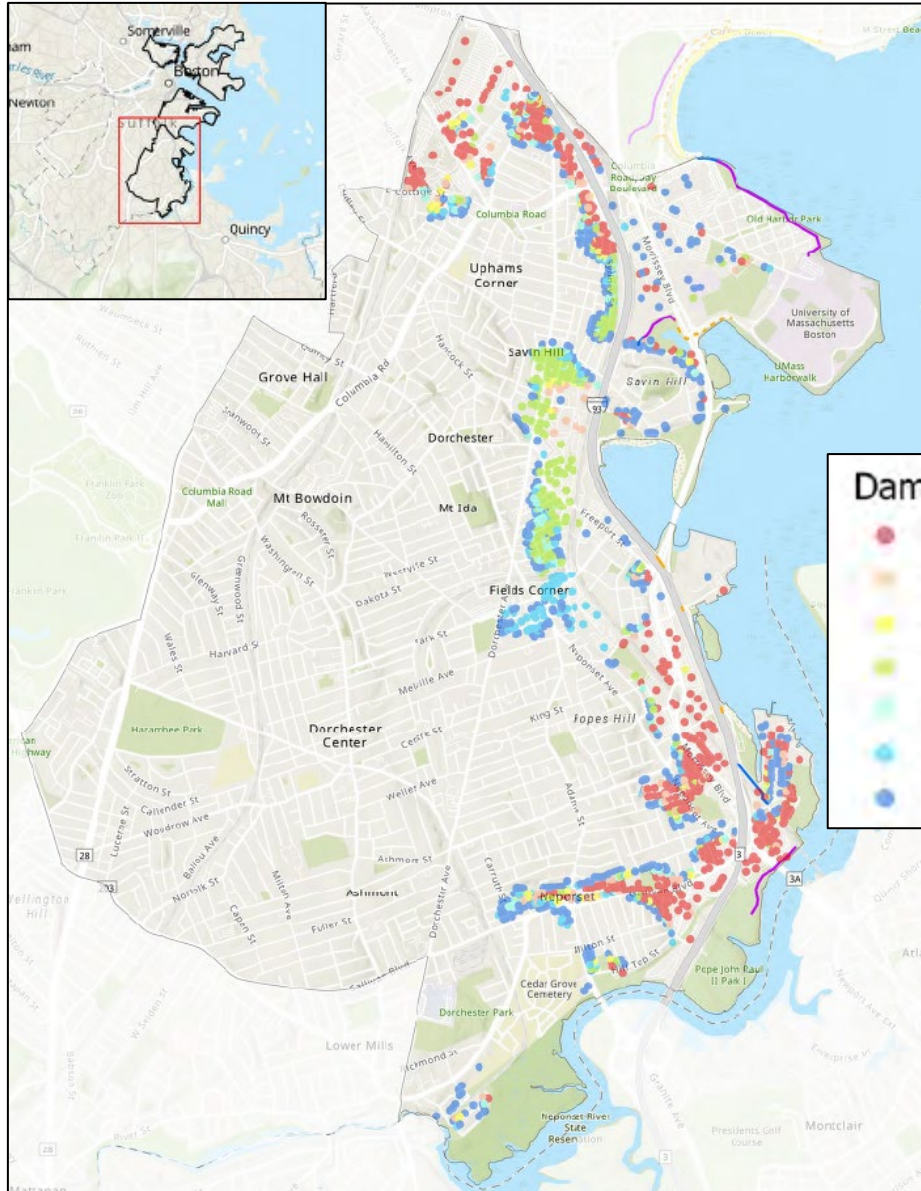
- JFK Library
- U-Mass Boston
- Neponset River Wetlands
- National Grid
- Boston Gas

CUI

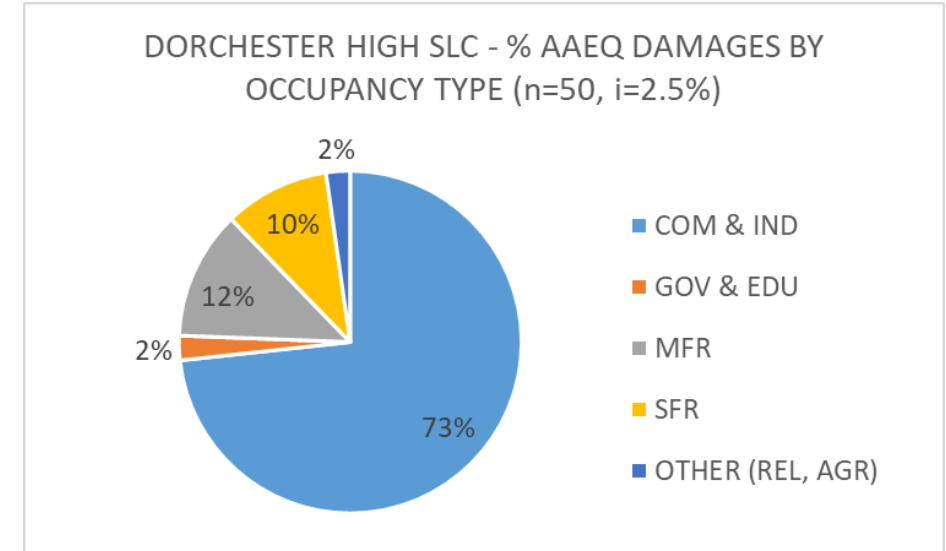




# FWOP DAMAGES HIGH SLC – DORCHESTER



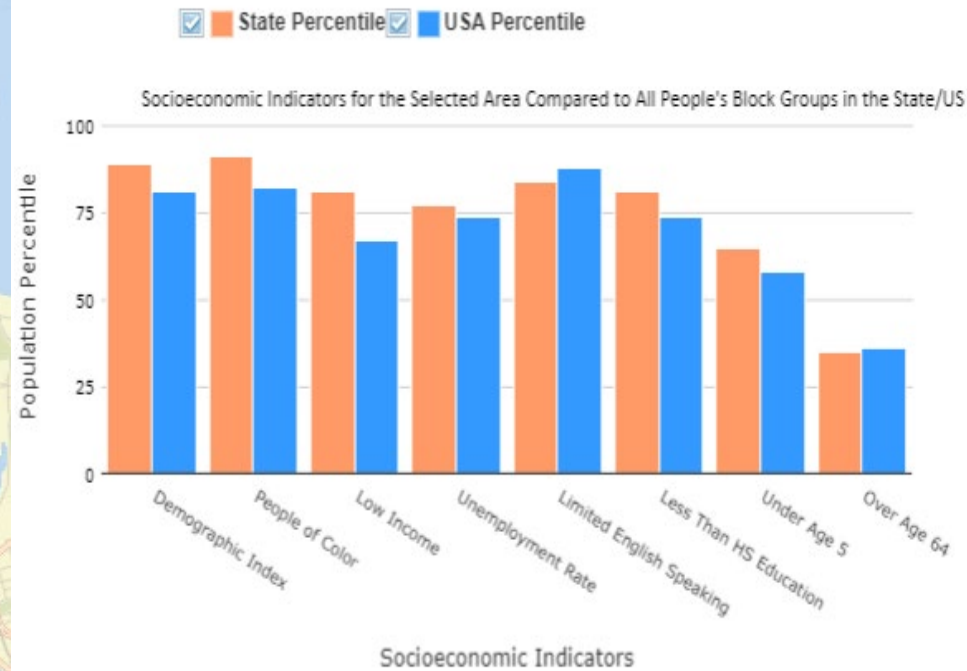
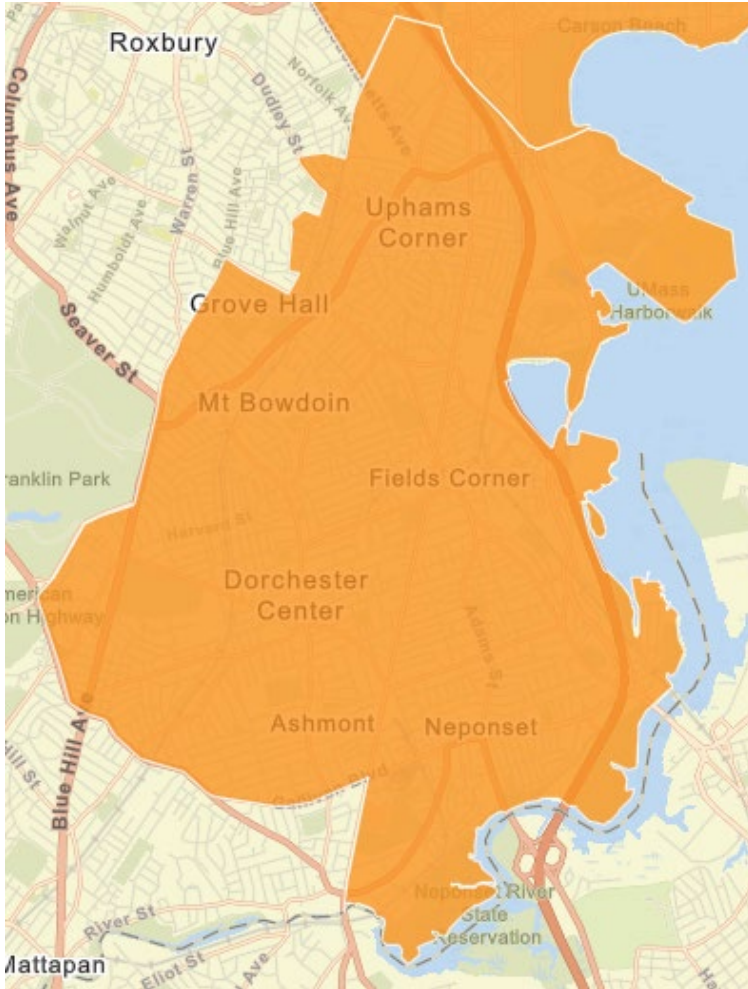
- 2,791 structures in Dorchester in 1000-year floodplain based on WHG 2070 SLC (~USACE 2090 high curve)
- 1,999 structures receiving damage over 50-year period of analysis
- ~\$45 million AAEQ; ~\$1.3 billion PV (n=50, i=2.5%, FY23 price level)



Data sources and tools used: NSI (updated 2022), WSEs from WHG, NACCS depth-damage functions, non-residential damage functions from April 2009 expert elicitation, Paul Morelli's Python script to estimate AMM-level damages



# EXISTING CONDITIONS-SOCIOECONOMIC INDICATORS: DORCHESTER



Source: EPA's EJScreen Version 2.1  
– Socioeconomic Indicators (2022)

- Relatively high percentage of people of color compared to U.S. (82<sup>nd</sup> percentile) and state (91<sup>st</sup> percentile)
- Relatively high percentage of households with limited English speaking compared to U.S. (88<sup>th</sup> percentile) and state (84<sup>th</sup> percentile)
- Unemployment rate, people of color, and low-income population percentiles higher in East Boston and Dorchester than other 3 neighborhoods in study area



# FOCUSED ARRAY OF ALTERNATIVES DORCHESTER



| Alternative | Description/Measures                                                                                                                                                                                                                                                                                                                                                                                                                       | Notes |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 1           | No Action                                                                                                                                                                                                                                                                                                                                                                                                                                  |       |
| 2           | Retrofit buildings in 1% AEP floodplain and harden MBTA locations. Harden tunnels, ventilation buildings, MBTA Stops.                                                                                                                                                                                                                                                                                                                      |       |
| 3           | Buyout of Parcel (Planet Fitness); Create green space or living levee back to Taylor St. and S. East Expressway; 990LF Floodwall at Conley St. rail yard; gate structures to cut-off Conley St./Morrissey Blvd./Victory Rd. underpasses of I-93; Berm around Pattens Cove; Closure Structure across Morrissey Blvd. IVO Bianculli Blvd.; levee around Dorchester Peninsula IVO of JFK Library, UMASS Boston                                |       |
| 4           | Buyout of Parcel (Planet Fitness); Create green space or living levee back to Taylor St. and S. East Expressway; 990LF Floodwall at Conley St. rail yard; gate structures to cut-off Conley St./Morrissey Blvd./Victory Rd. underpasses of I-93; Berm around Pattens Cove; Closure Structure across Morrissey Blvd. IVO Bianculli Blvd.; floodwall behind existing harborwalk around Dorchester Peninsula IVO of JFK Library, UMASS Boston |       |
| 5           | Floodwall along Neponset River from Rail Bridge to Pope John Paul II Park; 990LF Floodwall at Conley St. rail yard; gate structures to cut-off Conley St./Morrissey Blvd./Victory Rd. underpasses of I-93; Berm around Pattens Cove; Closure Structure across Morrissey Blvd. IVO Bianculli Blvd.; levee around Dorchester Peninsula IVO of JFK Library, UMASS Boston                                                                      |       |
| 6           | In any of the above Alternatives, in lieu of closure structures at the underpasses of I-93; elevate Conley, Victory and Morrissey Blvd to cut off flood pathways into Dorchester.                                                                                                                                                                                                                                                          |       |



# INTERAGENCY CONCERNS AND/OR CONSIDERATIONS?



Dorchester discussion points

FEDERAL

STATE



# EAST BOSTON

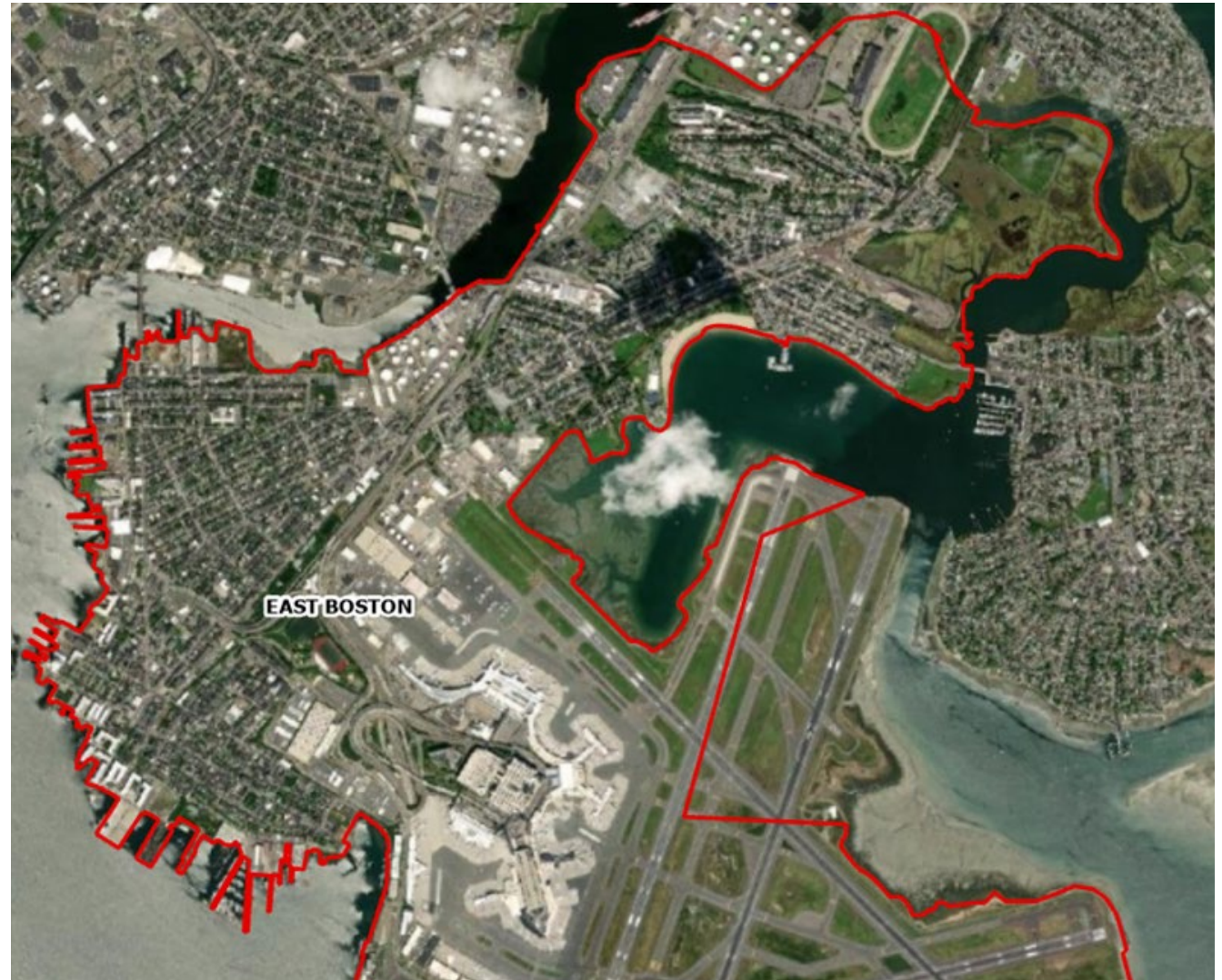


## Highlights-

- East Boston is an EJ Community
- One Grocery Store in the Neighborhood
- Logan Airport is only partially considered in the Study
- Belle Isle Marsh is a collaborative effort with ERDC and EWN®
- Wood Isle and Belle Isle are both urban salt marshes and potential NNB
- Alternatives require tie-in outside of COB with the town of Revere

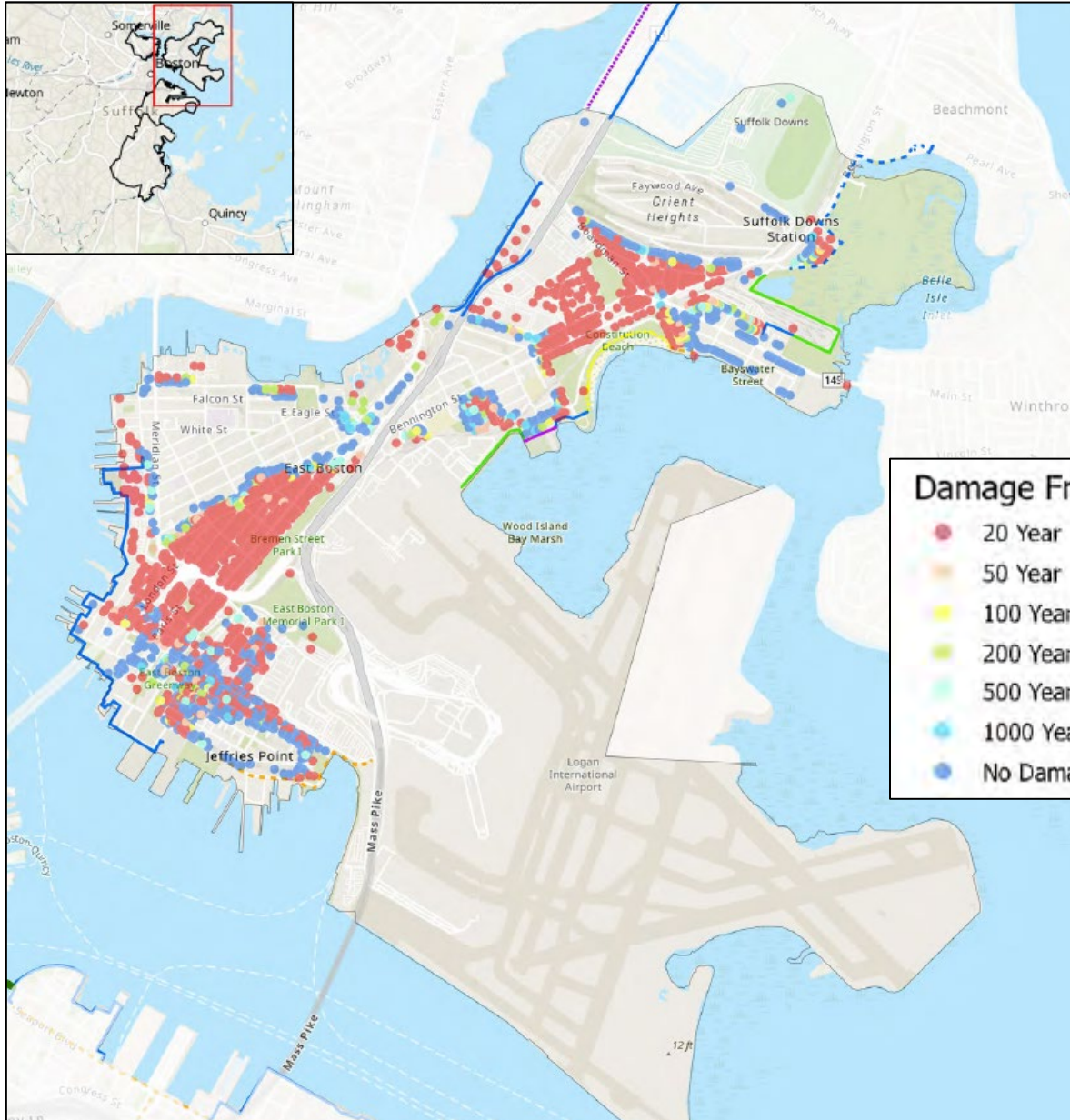
## Coastline is home to-

- Logan International Airport
- Chelsea Creek and Airport Fuel Farm



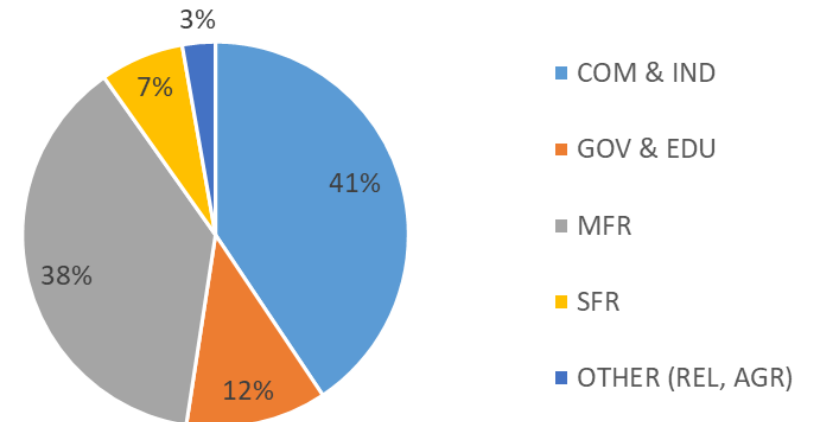


# FWOP DAMAGES HIGH SLC – EAST BOSTON



- 4,228 structures in East Boston in 1000-year floodplain based on WHG 2070 SLC (~USACE 2090 high curve)
- 3,020 structures receiving damage over 50-year period of analysis
- ~\$106 million AAEQ; ~\$3.0 billion PV (n=50, i=2.5%, FY23 price level)

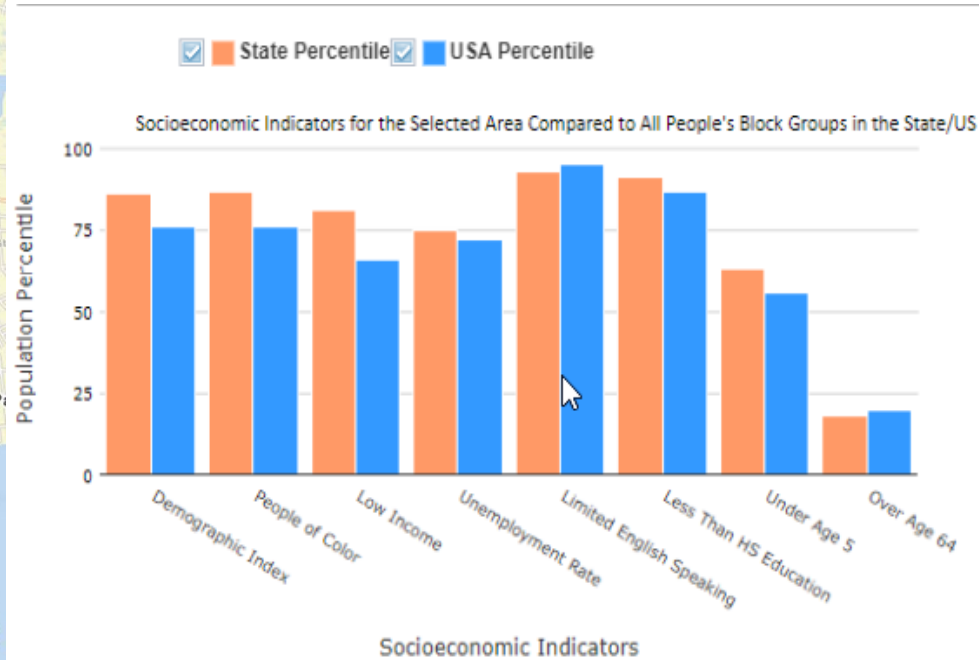
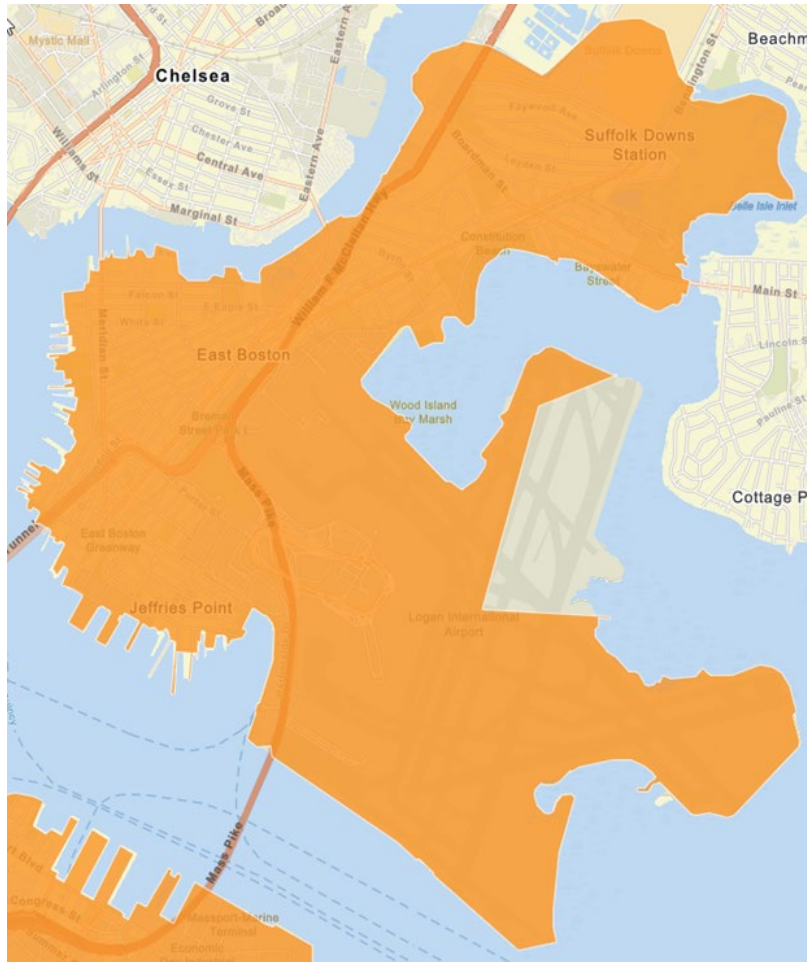
EAST BOSTON HIGH SLC - % AAEQ DAMAGES BY OCCUPANCY TYPE (n=50, i=2.5%)



Data sources and tools used: NSI (updated 2022), WSEs from WHG, NACCS depth-damage functions, non-residential damage functions from April 2009 expert elicitation, Paul Morelli's Python script to estimate AMM-level damages



# EXISTING CONDITIONS - SOCIOECONOMIC INDICATORS: EAST BOSTON



Source: EPA's EJScreen Version 2.1  
– Socioeconomic Indicators (2022)

- High percentage of households with limited English speaking compared to U.S. (95<sup>th</sup> percentile) and state (93<sup>rd</sup> percentile)
- Falls above the national 85<sup>th</sup> percentile in its population of individuals aged 25 or older with less than a high school degree
- Unemployment rate, people of color, and low-income population percentiles higher in East Boston and Dorchester than other 3 neighborhoods in study area



# FOCUSED ARRAY OF ALTERNATIVES E. BOSTON



| Alternative | Description/Measures                                                                                                                                                                                                                                                                                                                                   | Notes |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 1           | No Action                                                                                                                                                                                                                                                                                                                                              |       |
| 2           | Retrofit buildings in 1% AEP floodplain and harden MBTA locations. Harden tunnels, ventilation buildings, MBTA Stops.                                                                                                                                                                                                                                  |       |
| 3           | Living Levee along Wood Isle Marsh and Constitution Beach; Living Levee along Belle Isle Marsh IVO Railyard; Living Levee along Belle Isle Marsh; Intermittent flood Porizo Park at the Airport to Border Street/Shaws Grocery Store; Intermittent flood wall along Chelsea Creek;                                                                     |       |
| 4           | Living Levee along Wood Isle Marsh and Constitution Beach; Living Levee along Belle Isle Marsh IVO Railyard; Living Levee along Belle Isle Marsh; Intermittent flood Porizo Park at the Airport to Border Street/Shaws Grocery Store; Intermittent flood wall along Route 1A set back from Chelsea Creek; Retro Fit eligible structures seaward of LoP |       |
| 5           | In any of the above two locations where a flood wall is able to be replaced with a levee; it is preferred for cost and aesthetics. Where flood walls are necessary, betterment to bury the flood wall to be investigated.                                                                                                                              |       |
| 6           | In any of the above Alternatives, in lieu of a living levee, COB would like to investigate road elevations to serve as levees without degradation to salt marshes.                                                                                                                                                                                     |       |



# INTERAGENCY CONCERNS AND/OR CONSIDERATIONS?



East Boston discussion points

FEDERAL

STATE



# CHARLESTOWN



## Highlights-

- EJ Community abuts Little Mystic Channel
- MBTA Garage requires a LoP that extends beyond COB into Somerville
- Mystic River is part of the Federal Navigation Project
- Schrafft City Center is part of an ongoing COB project and will likely be part of FWOP Condition

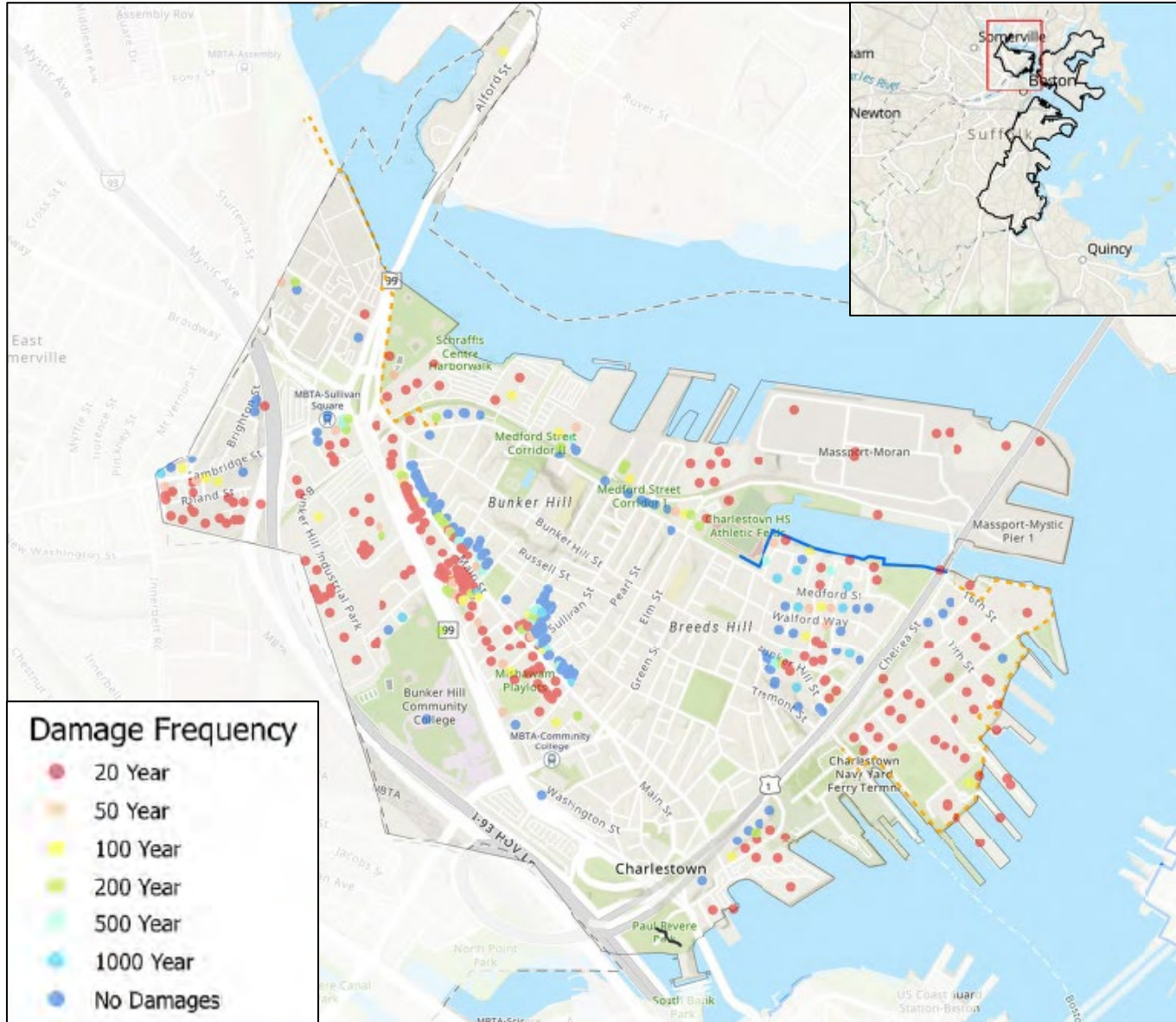
## Coastline is home to-

- Schrafft City Center
- MASSPORT Auto Port
- Charlestown Naval Shipyard
- NCRD



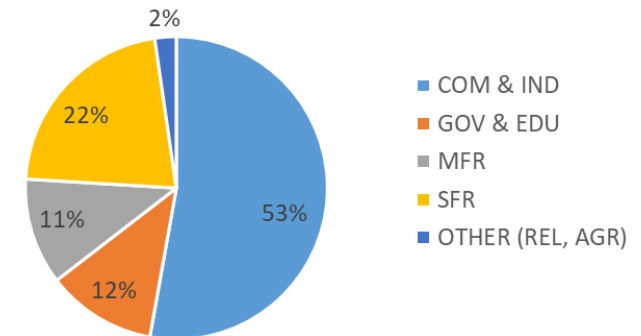


# FWOP DAMAGES, HIGH SLC – CHARLESTOWN



- 1,760 structures in Charlestown in 1000-year floodplain based on WHG 2070 SLC (~USACE 2090 high curve)
- 1,561 structures receiving damage over 50-year period of analysis
- ~\$48 million AAEQ; ~\$1.3 billion PV (n=50, i=2.5%, FY23 price level)

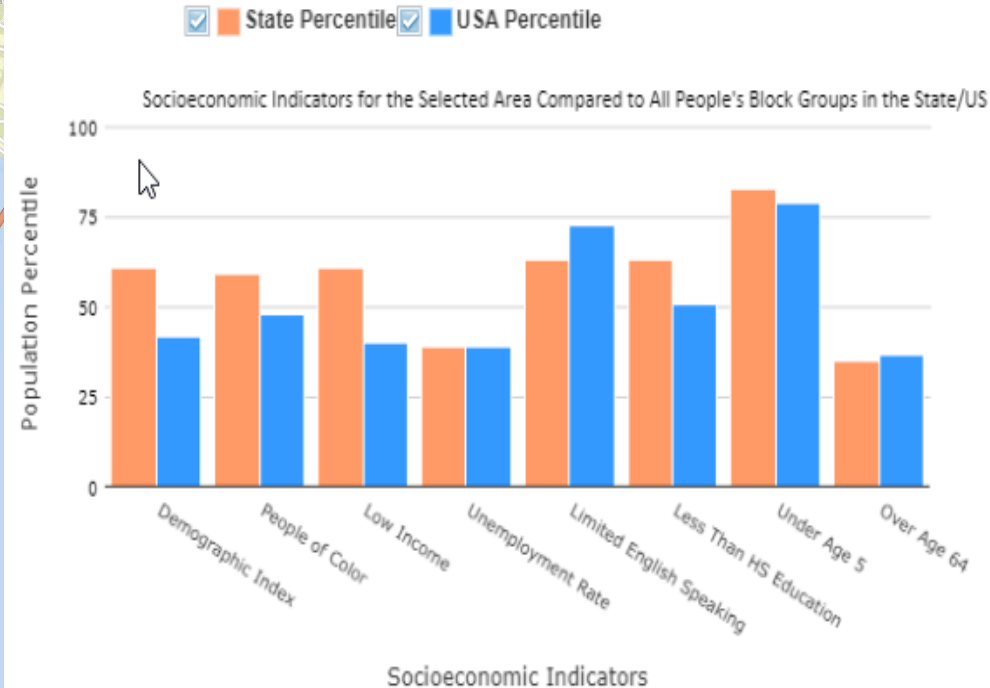
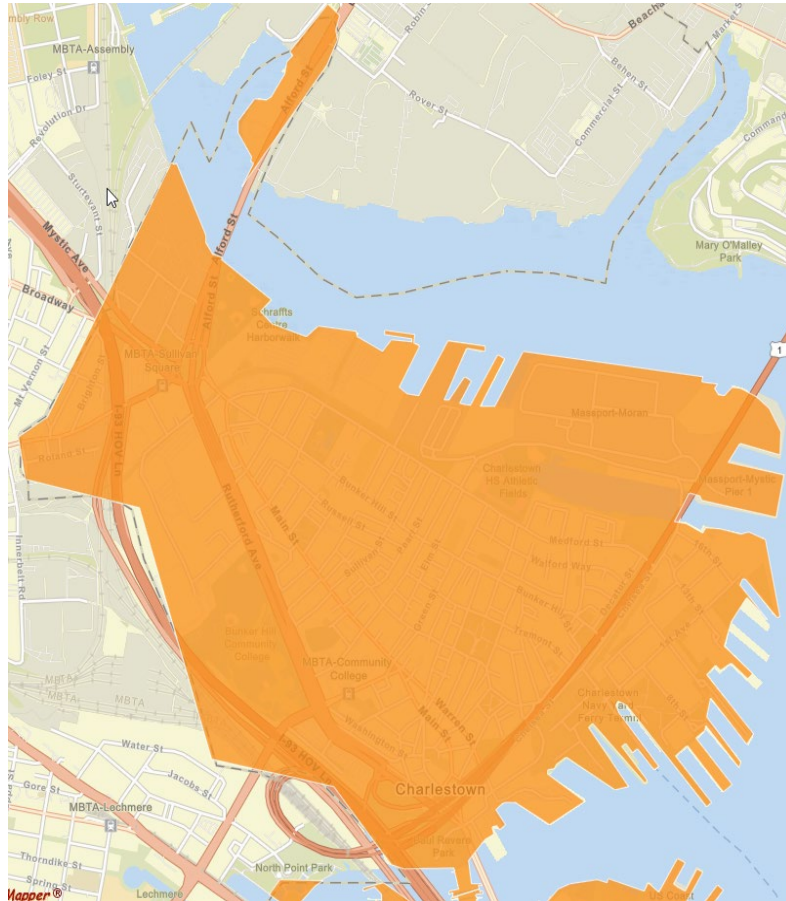
CHARLESTOWN HIGH SLC - % AAEQ DAMAGES BY OCCUPANCY TYPE (n=50, i=2.5%)



Data sources and tools used: NSI (updated 2022), WSEs from WHG, NACCS depth-damage functions, non-residential damage functions from April 2009 expert elicitation, Paul Morelli's Python script to estimate AMM-level damages



# EXISTING CONDITIONS-SOCIOECONOMIC INDICATORS: CHARLESTOWN



- Relatively high percentage of households with individuals under age 5 compared to U.S. (79<sup>th</sup> percentile) and state (83<sup>rd</sup> percentile)
- Percentage of households with limited English-speaking falls just below the 75th percentile nationally

Source: EPA's EJScreen Version 2.1  
– Socioeconomic Indicators (2022)



# FOCUSED ARRAY OF ALTERNATIVES CHARLESTOWN



| Alternative | Description/Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Notes |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 1           | No Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |
| 2           | Retrofit buildings in 1% AEP floodplain and harden MBTA locations. Harden tunnels, ventilation buildings, MBTA Stops.                                                                                                                                                                                                                                                                                                                                                              |       |
| 3           | 330' long, 1' high Berm from NCRD through Paul Revere Park (elevation 11.7' NAVD); Flood walls and deployables for MBTA Garage up to railyard at Somerville; Closure structure for 99 St. Bridge; Barrier along Ryan Playground in front of Schrafft across access road behind fire station; Little Mystic Channel flood barrier along bank for Sec. 8 Housing Development; Perimeter solution behind existing sea wall IVO of Naval Yard around Menino Park to Chelsea St. Bridge |       |
| 4           | 330' long, 1' high Berm from NCRD through Paul Revere Park (elevation 11.7' NAVD); Flood walls and deployables for MBTA Garage up to railyard at Somerville; Closure structure for 99 St. Bridge; Barrier along Ryan Playground in front of Schrafft across access road behind fire station;                                                                                                                                                                                       |       |
| 5           | 330' long, 1' high Berm from NCRD through Paul Revere Park (elevation 11.7' NAVD); Flood walls and deployables for MBTA Garage up to railyard at Somerville; Closure structure for 99 St. Bridge; Barrier along Ryan Playground in front of Schrafft across access road behind fire station; Little Mystic Channel flood barrier along bank for Sec. 8 Housing Development;                                                                                                        |       |



# INTERAGENCY CONCERNS AND/OR CONSIDERATIONS?



Charelstown discussion points

FEDERAL

STATE



# PATH TO DRAFT NEPA DOCUMENT



- Complete the economic structure inventory (July '23)
- Identify and coordinate changes to the existing and future without project condition through survey, research, as-builts, and CAD (July '23)
- Modeling of FWOP condition+ (Nov '23)
- Identify environmental impacts of the FWOP condition (No Action) (Feb '24)
- Evaluate Life Safety, determine qualitative or semi-quantitative analysis (Feb '24)
- Refine structural and nonstructural alternatives based on FWOP model results (Apr '24)
- Refine NNBF measures (Apr '24)
- Modeling of with project alternatives (May '24)
- Evaluate FWP environmental impacts and coordinate with resource agencies on alternatives (Sep '24)
- Publish NOI and public meetings (if EIS) (Sep'24)
- Confirm final array of alternatives (Oct'24)
- Evaluate residual risk, project performance, and SLC adaptation capacity (Nov '24)
- Compare environmental impacts, benefits and costs (Nov '24)
- Identify NED Plan and Maximum Benefit Plan (Nov '24)
- Discuss NED Plan, Max Benefits Plan, and tentatively selected plan (TSP) (Jan '25)
- Release Draft NEPA Document (April '25)



# COMMENTS AND DISCUSSION



Open Discussion notes:

**From:** [Randall, Todd A CIV USARMY CENAE \(USA\)](#)  
**To:** [mike.r.johnson@noaa.gov](#); [Peter B Johnsen - NOAA Federal](#); [Kaitlyn Shaw - NOAA Federal](#); ["Ed Reiner"](#); [Timmermann.Timothy@epa.gov](#); [Mayer, Audrey](#); [Engler, Lisa \(ENV\)](#); [Goldberger, Benjamin \(ENV\)](#); [patricia.bowie@state.ma.us](#); [Robert.Boeri@state.ma.us](#); [Duffey, Sean \(EEA\)](#); [Yelen, Joanna M \(EEA\)](#); [Moran, Gary \(ENV\)](#); [Norberto.T.Perez@uscg.mil](#); [Mansfield, Mia \(ENV\)](#); [Galvin, Mike \(DCR\)](#); [daniel.padien@state.ma.us](#); [Quaine, Cheryl J \(FAA\)](#); [jessica.kenny@state.ma.us](#); [SullivanJP@BWSC.ORG](#); [christopher.markesich@fema.dhs.gov](#); [H LyonsGalante@mbta.com](#); [PDeBruin@massport.com](#); [Michael\\_Creasey@nps.gov](#); [Marc\\_Albert@nps.gov](#); [Kristin\\_Andel@nps.gov](#)  
**Cc:** [San Antonio, Christine M CIV USARMY CENAE \(USA\)](#); [Oliver, Lawrence R CIV USARMY CENAE \(USA\)](#); [Moses, Catherine Grace \(Grace\) CIV USARMY CENAE \(USA\)](#); [Herzog, Jeffrey A CIV USARMY CENAE \(USA\)](#); [Hannah Wagner](#); [Ksenia Acquaviva](#); [Paiva, Marcos A CIV USARMY CENAE \(USA\)](#)  
**Subject:** USACE/City of Boston: Boston Coastal Storm Risk Management (CSRM) study update  
**Date:** Monday, February 5, 2024 12:29:43 PM

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Good afternoon,

We hope this email finds you well.

We are writing to provide you with an update on the status of the US Army Corps of Engineers and the City of Boston's Coastal Storm Risk Management (CSRM) study. We also want to share a new online tool you can use to identify any pertinent ongoing or upcoming efforts within the project area (more detail below).

Since our agency scoping meeting in January 2023, our Headquarters office approved an extension of our previous 3-year timeline for study completion to 6 years due to the size and scope of the project. The current year of project completion is now 2028. During the past, year we've been collecting data within the study area to develop our baseline conditions and to inform the setting of the future without project conditions (no action alternative). Assessments performed include a side scan survey, underwater video, and photographic documentation of subtidal and intertidal habitats in the study area (report anticipated to be complete in the spring of 2024); a structure inventory of the affected environment; cataloging existing and planned City of Boston development projects; and an inventory of subsurface utilities and critical infrastructure. We have also awarded a contract to perform cultural resource surveys of the project area and have initiated the modeling of coastal processes. Additionally, we have begun the process of identifying social vulnerabilities within each neighborhood.

We're using the information gathered to identify the existing condition, as well as a future condition if this project were to not move forward. This future without project conditions/no action alternative will serve as the baseline as we look to formulate strategies and build on the work already done in Climate Ready Boston. We're expecting to complete the existing and future without project condition analyses by July 2024. At that point we'll begin formulating alternatives for the different neighborhoods and evaluating their benefits and impacts.

We will host a second coordination meeting during the next phase of the study (alternative formulation) and will engage in more regular communication as we start to compare and evaluate

alternatives. For updates and information on the study in the meantime, please review the study websites:

Army Corps of Engineers project site: <https://www.nae.usace.army.mil/Missions/Projects-Topics/City-of-Boston-Coastal-Storm-Risk-Management-Project/>

City of Boston project site: <https://www.boston.gov/departments/environment/climate-ready-boston-and-army-corps-partnership>

We have also developed a simple web-based GIS tool (the ArcGIS Online Experience Builder) designed to aid our project partners in providing information on proposed and/or on-going projects that could factor into our development of future without project conditions. The tool, available at the link below, allows partners to upload the geographic location and any other associated data to the website. Instructions on how to enter projects into this tool are attached to this email. We kindly ask that you review the website and provide any information on current and/or future projects that may be missing.

<https://experience.arcgis.com/experience/4d30011a128147558fe4748b14b5619a>

To ensure that this communication has been received and to confirm that we are maintaining the correct points of contact (POC) for each agency, can you please reply to this email and let us know if you receive the update and if you are still a POC for your agency for the City of Boston CSRM study? If you are no longer the correct POC, could you please let us know and provide contact information for an alternate? Many thanks!

For any follow up questions or concerns, please feel free to contact me at 978-318-8518 (todd.a.randall@usace.army.mil) or Dr. Christine San Antonio at 978-318-8621 (Christine.sanantonio@usace.army.mil).

Thank you,  
Todd Randall & Christine San Antonio

TODD RANDALL  
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US Army Corps of Engineers  
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Cell 978-580-3255  
todd.a.randall@usace.army.mil



# CITY OF BOSTON CSRM FINAL ARRAY

## RESOURCE AGENCY MEETING

### Project Team:

**Jeff Herzog - PM/Planner**

**Lisa Winter - Lead Engineer**

**Naomi Fraenkel - Lead Economist**

**Todd Randall - Lead Environmental**

**Ryan Constantine - Lead Cultural**

**Kate Roosa - Lead PM, CoB**

December 2025

Todd Randall, ecologist

Christine San Antonio, biologist



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# Study Objective Refined

- ***Economic Resilience: (Prepare)*** Manage coastal storm impacts to transportation infrastructure like roads, bridges and tunnels; ***(Absorb)*** manage flood risk to homes, businesses, academic institutions, and transportation systems; ***(Recover)*** while minimizing disruption to economic activity (business, working waterfront, maritime navigation) across Boston's coastal neighborhoods over the 50-year period of economic analysis.
- ***Social and Community Resilience: (Prepare)*** Manage impacts of coastal storms to public health and safety (evacuation routes, evacuation shelters); manage coastal storm impacts to community services (shelter, food-security) ; ***(Absorb)*** preserve neighborhood identity and cultural resources ***(Recover)*** Improve community resilience returning to residences after the storm, across Boston's coastal neighborhoods over the 50-year period of economic analysis.
- ***Environmental Resilience:*** manage impacts of coastal storms without and with project to coastal and natural resources (e.g., near shore marine environment, urban salt marsh, waterfront green spaces) while managing pollution and debris impacts from storm events, ensuring sustainable storm risk management solutions across Boston's coastal neighborhoods over the 50-year period of economic analysis.



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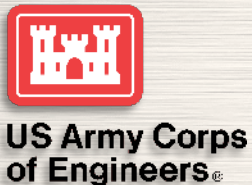
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# Formulation Strategies

- Formulate by neighborhoods and then connect the system
- Formulate to integrate system with larger City of Boston Resilience Plan
- Formulate alternatives using the USACE Resilience cycle: Prepare, Absorb, Respond, (Adapt)
- Formulate plans that consider federal objectives of economic, socioeconomic, and environmental benefits to identify the plan that maximizes the three.
- Formulate plans that take advantage of existing expertise and efforts in the region.



# Nonstructural Measures and Alternatives



- Vertical Structures on piers and piles are not being recommended for nonstructural treatment due to uplift concerns on the foundation structures. If we adapt the vertical structure, we must adapt the foundational structure. They will be considered residual risk.
- Port Norfolk is separable: There is no structural measure being recommended. Nonstructural can be included or separated out based on “pause” directive from USACE.
- Charlestown Navy Yard nonstructural adaptation requires complex design due to Historical nature of structures and Navy Yard. In the absence of a structural solution, the Navy Yard will likely be considered residual risk.
- Based on the above; **NS measures will be evaluated as part of Structural solutions but not as a standalone Alternative in the final array.**



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# Neighborhood Approach

- Five Neighborhoods
  - East Boston
  - Charlestown
  - Downtown and North End
  - South Boston
  - Dorchester (Neponset River)



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# List of Measure Types

## Measures

- Upland Vertical Wall (UV)
- Shallow Foundation Wall (SF)
- Outboard Solution (OB)

## Combinations

- SF/OB
- SF/UV



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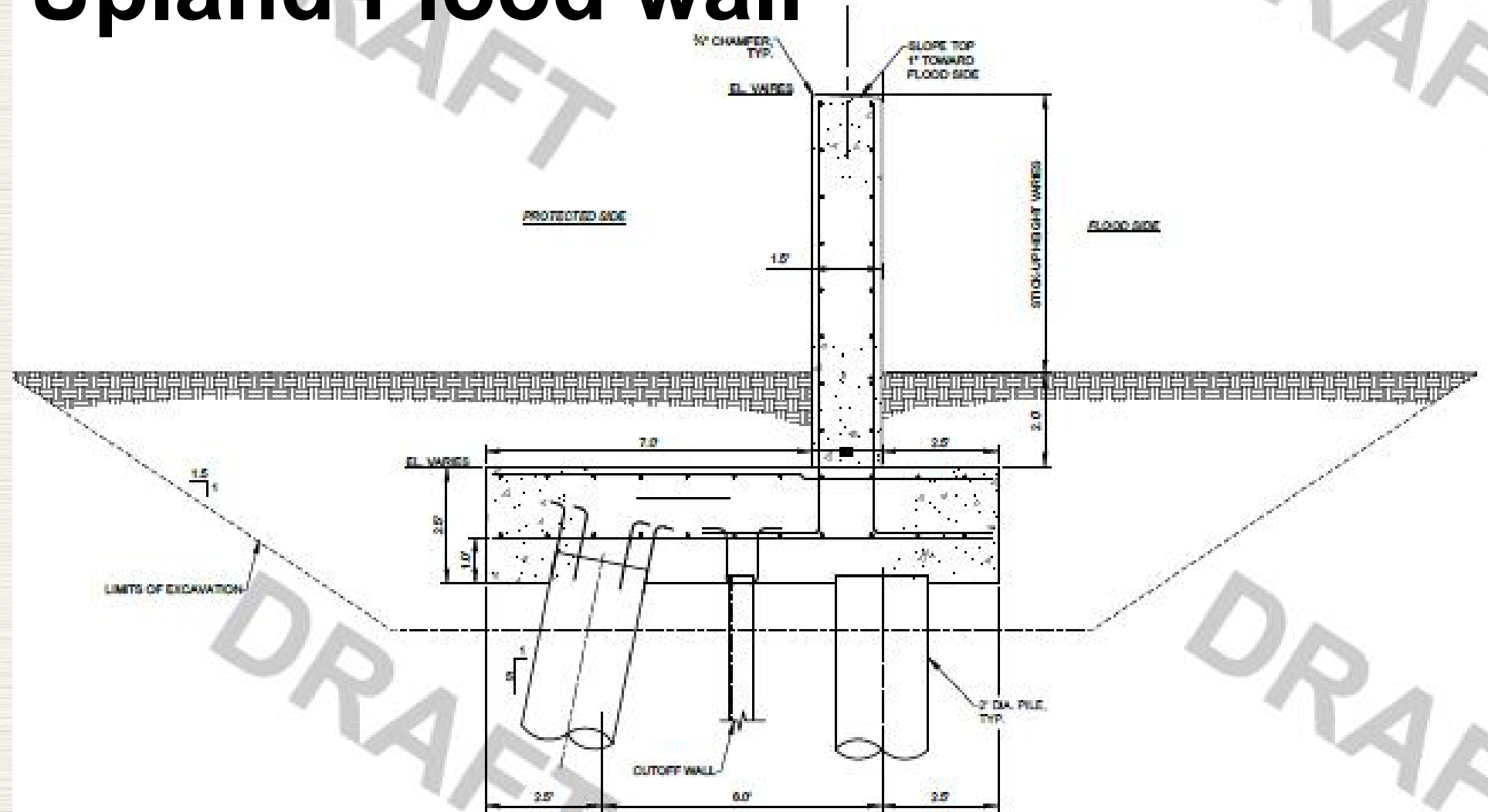


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# Upland Flood wall



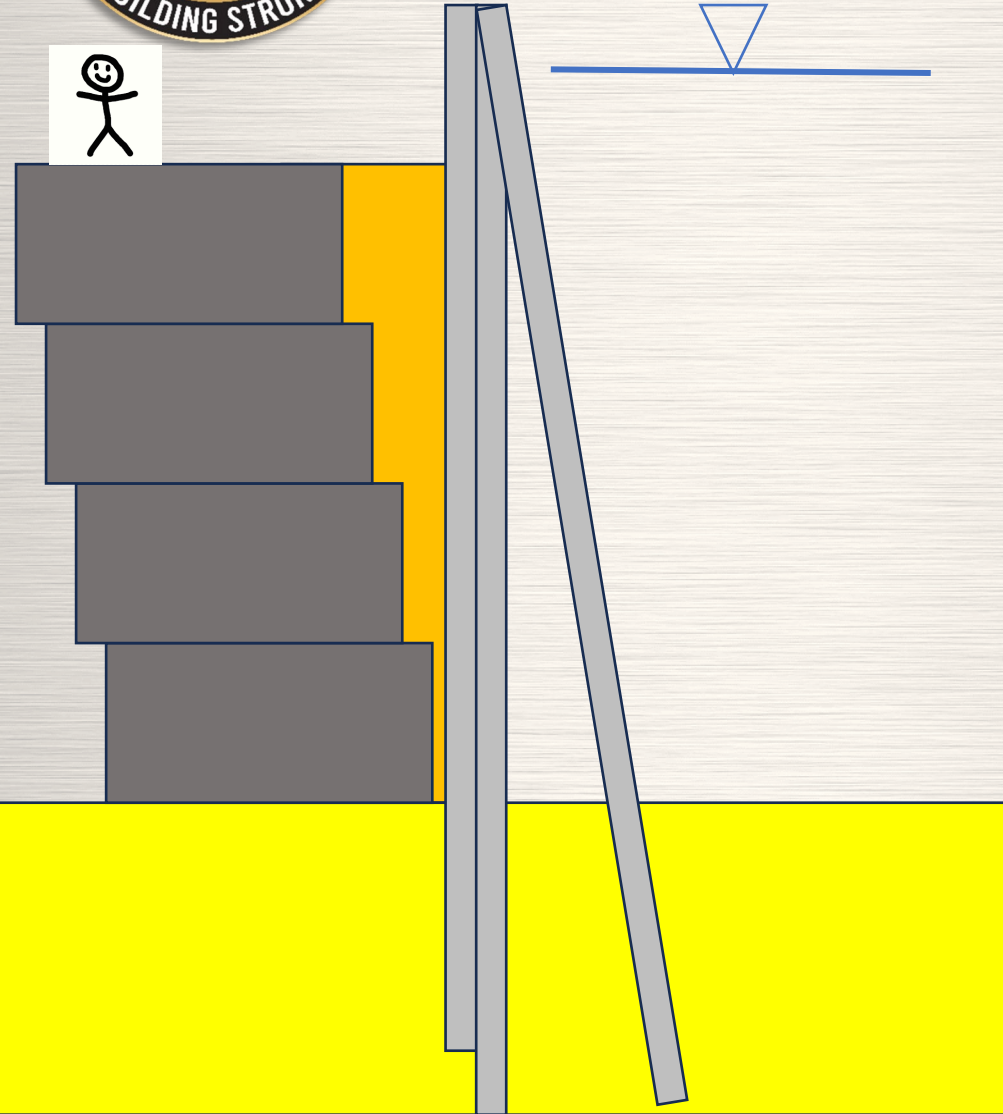
A1 TYPICAL WALL SECTION  
SCALE: 1" = 3'



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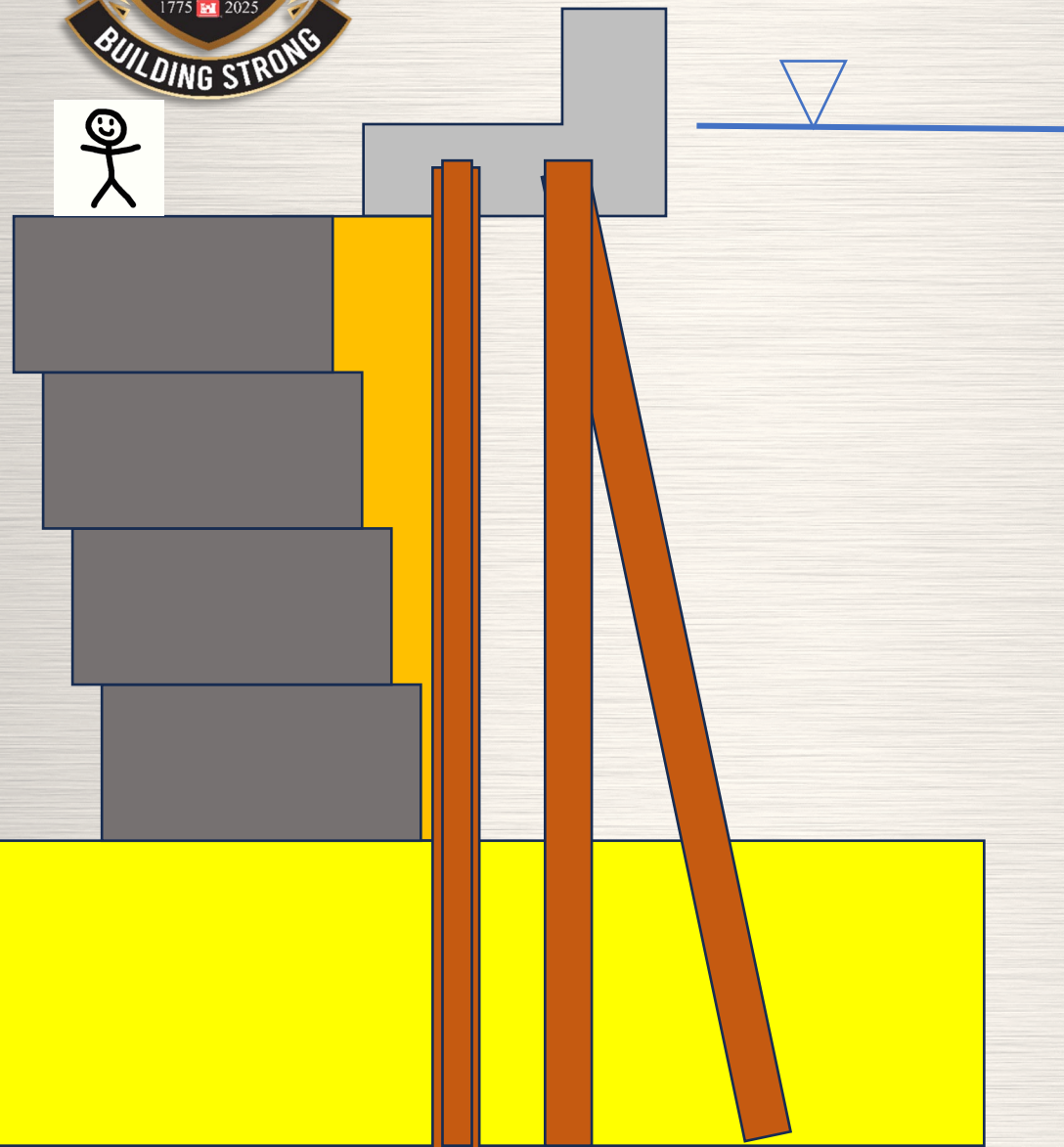
# Concrete Seawall with King Piles



- Pros:
  - Adequate Cutoff
  - Limited Footprint
  - Cement type may have significant corrosion resistance and splash zone resistance.
  - All precast materials, quickly installed.
  - May use concrete sheet piles for additional capacity.
- Cons:
  - Long precast piles must be barged in or spliced.
  - Driving outboard batter piles may conflict with nearby buildings.



# Raised Pier/Combo Wall



- Pros:
  - Adequate Cutoff
  - Adequate Lateral Capacity
  - Adequate Lateral Deflection
  - Outboard batter pile supports static loads (but less support for flood and wave loads)
  - Less fill than Norfolk option.
- Cons:
  - High Static Uplift and Wave Uplift
  - All piles exposed to splash zone. Properly designed concrete piles may be used to reduce corrosion.
  - Driving outboard batter piles may conflict with nearby buildings.



# Final Array of Alternative Plans East Boston Measures-

10

- 1) Chelsea Creek preference from Mass DoT, City, and NAE is to use the RoW at coastal edge. Route 1A Median alignment presents challenges.
- 2) Screened Belle Isle Marsh @Bennington St. due to flood pathways through Revere. Replaced with Gate @ Suffolk Downs Station.
- 3) Constitution Beach is setback to Blue Line.
- 4) Jeffries Point is looking at a grade change to Tomahawk Dr. or Raised Harborwalk.
- 5) Lewis Street Carlton Wharf. Partial existing Project
- 6) Lo Presti Park requires cutoff for floodpath between high-ground. May elevate features in park in lieu of perimeter.
- 7) Border Street Alignment requires high-ground tie-ins for completeness



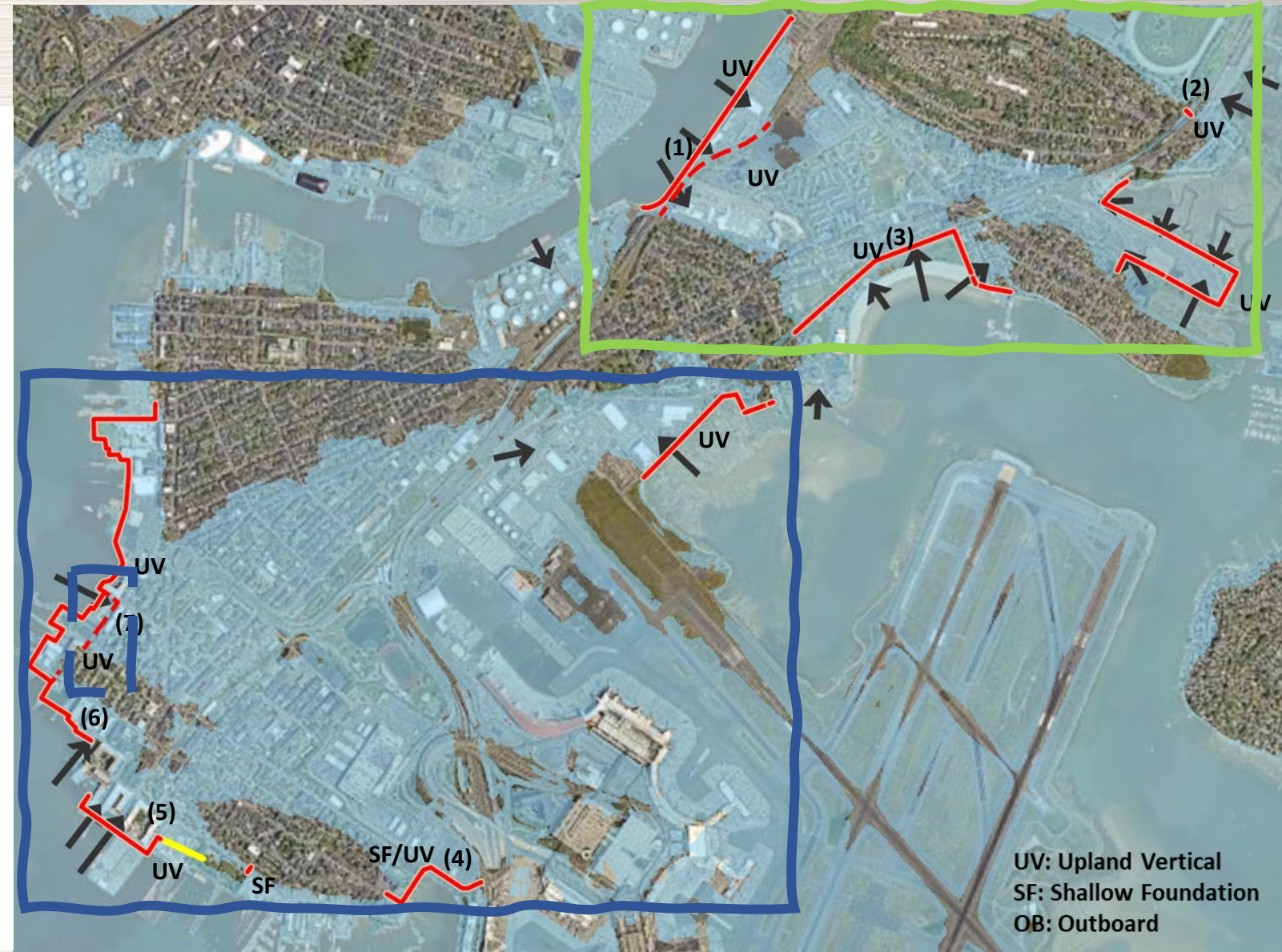


# Final Array of Alternative Plans East Boston-

11

- EB1: Upland Vertical Barrier along Railway RoW at Coastal Edge of Chelsea Creek; Closure Structure at Suffolk Downs Station; Orient Heights Railyard Upland Vertical Structure; Constitution Beach.
- EB 1(A): Replace Upland Vertical Barrier at Coastal Edge with Inland barrier along Route 1A with or without NS along Chelsea Creek.
- EB2: Wood Island Marsh Upland Vertical Feature with closure IVO Wood Island Station; Border Street Upland Vertical Feature; Lo Pristi Park; Lewiston Carlton Wharf; Jeffries Point/Tomahawk Drive
- EB2(A): Cut Border Street distance and avoid full outboard perimeter solution in favor of tying into high ground vicinity of Maverick Street.
- EB3: Combination of EB1&2\*
- EB 4: Eagle Hill Nonstructural.
- EB5: All of the Above.

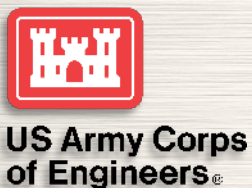
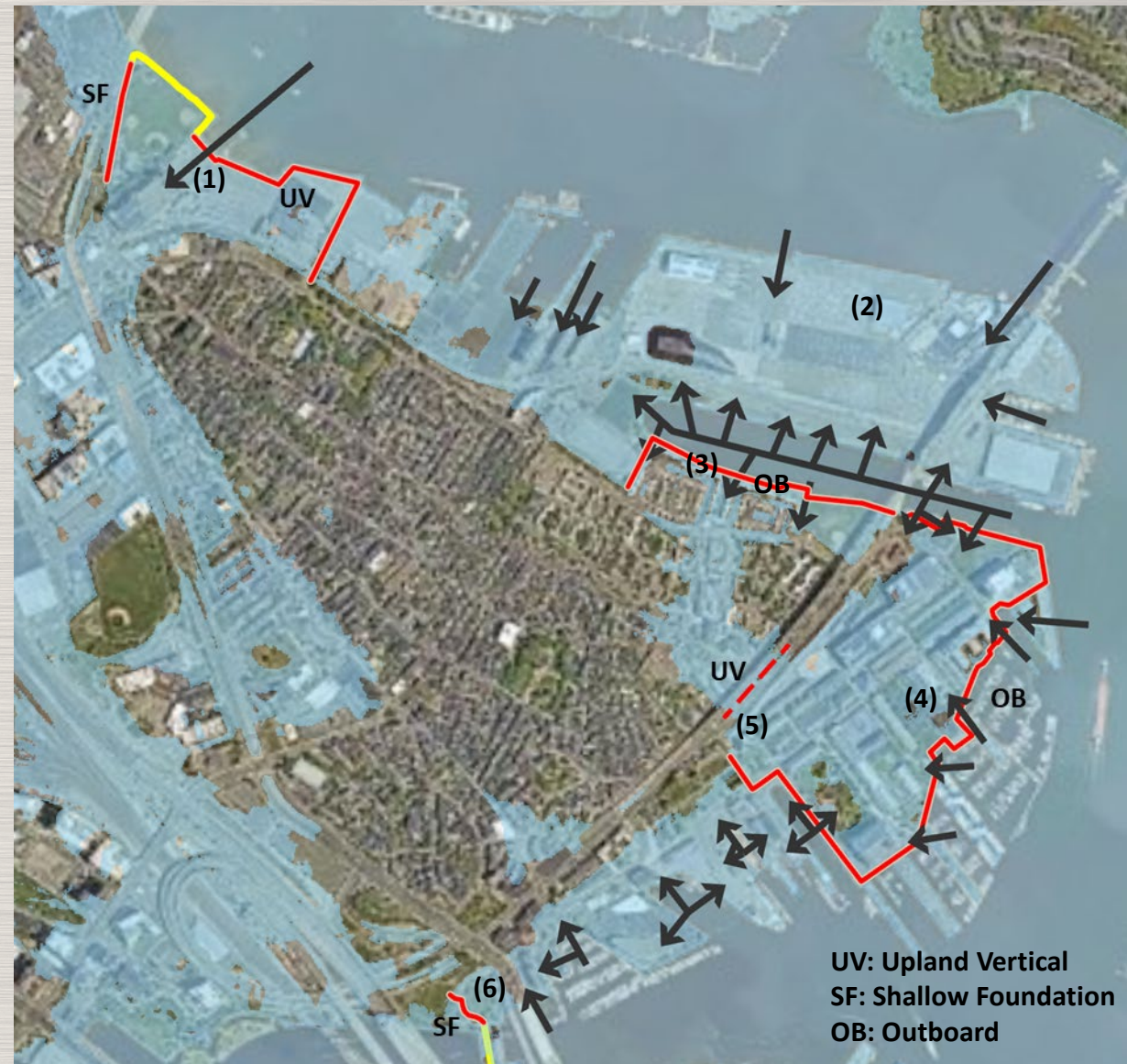
\*Run optimization of 1(A) and 2(A) before Running EB3 to eliminate additional runs.





# Final Array of Alternative Plans Charlestown Measures-

- 1) Ryan Playground existing city project. Alford Street/Rutherford Ave shallow foundation. Medford St. Existing Harborwalk Alignment.
- 2) Massport Autoport Residual Risk. Waiting for additional information on potential Wind Farm testing facility; screened Perimeter Solution to date.
- 3) Little Mystic Channel outboard solution due to proximity to residential condos. Socially vulnerable, affordable housing community.
- 4) Outboard solution manages risk to Historic Charlestown Navy Yard and Residences. Some Residual Risk remains.
- 5) Alternative to OB solution closes floodpath at Chelsea St. and Vine with a wall and closure. Navy Yard is residual risk.
- 6) Paul Revere Park changes grade within edge of park abutting New Charles River Dam. Adaptable if and when Dam is modified in the future.





# Final Array of Alternative Plans Charlestown-

13

**CH1:** Ryan Playground/Rutherford Avenue Shallow Foundation; 425 Medford Upland Vertical (Harborwalk)

**CH2:** Little Mystic tie into Chelsea St. Bridge; NS Little Mystic Community Center; Flood Wall at Chelsea St. and Vine Street with Closure.

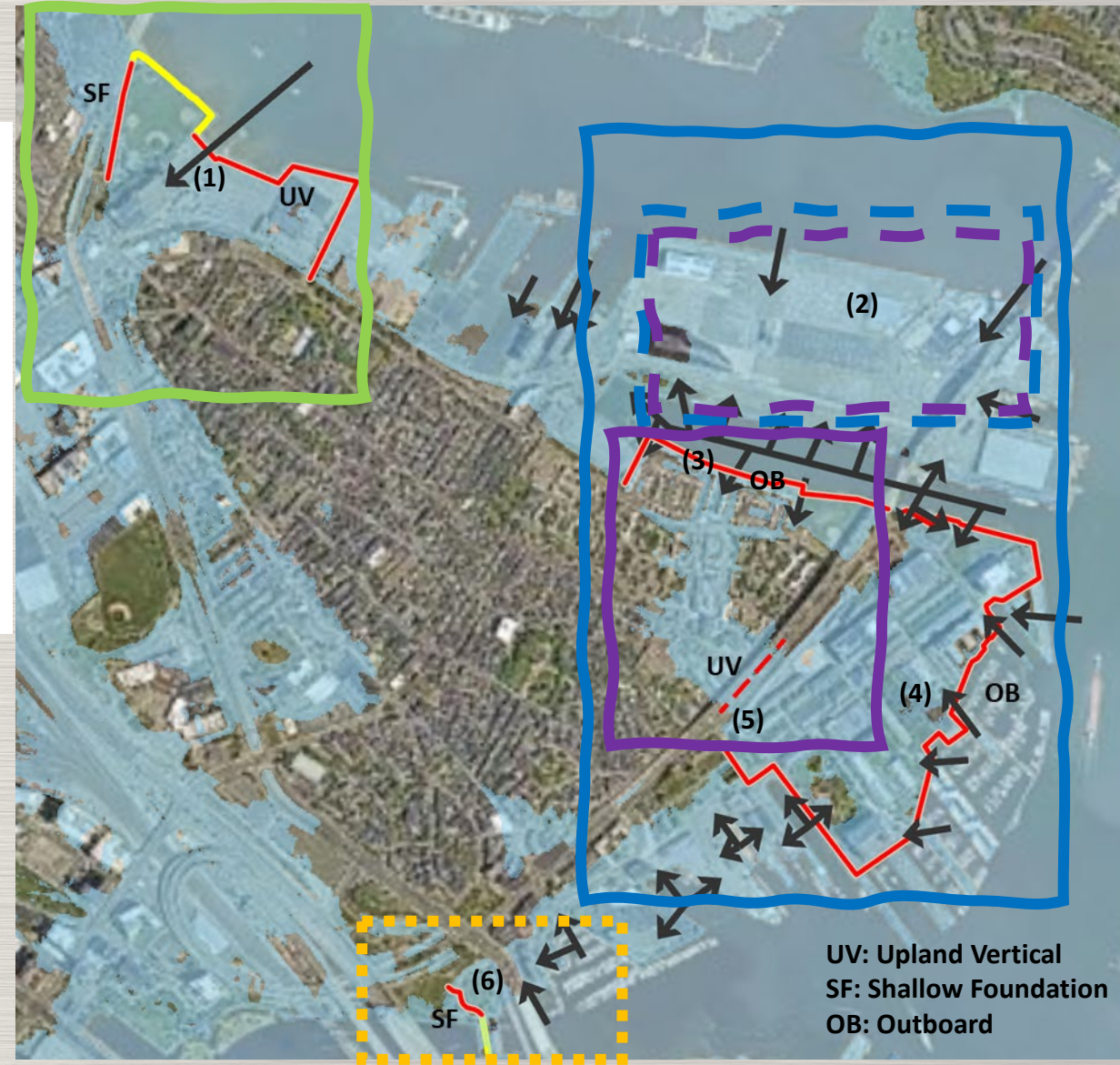
**CH2(A):** NS in Autoport

**CH3:** Little Mystic; NS Little Mystic Community Center; NS Autoport; Perimeter around Coastal Edge.

**CH3(A):** No NS Autoport

**CH4:** Combination. Optimize CH2 and CH2(A); as well as Compare CH2 and CH3 before combination.

Necessary for NCRD Alternative in Downtown Neighborhood (Larger System Tie-in)



UV: Upland Vertical  
SF: Shallow Foundation  
OB: Outboard



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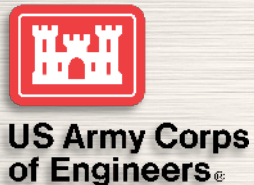
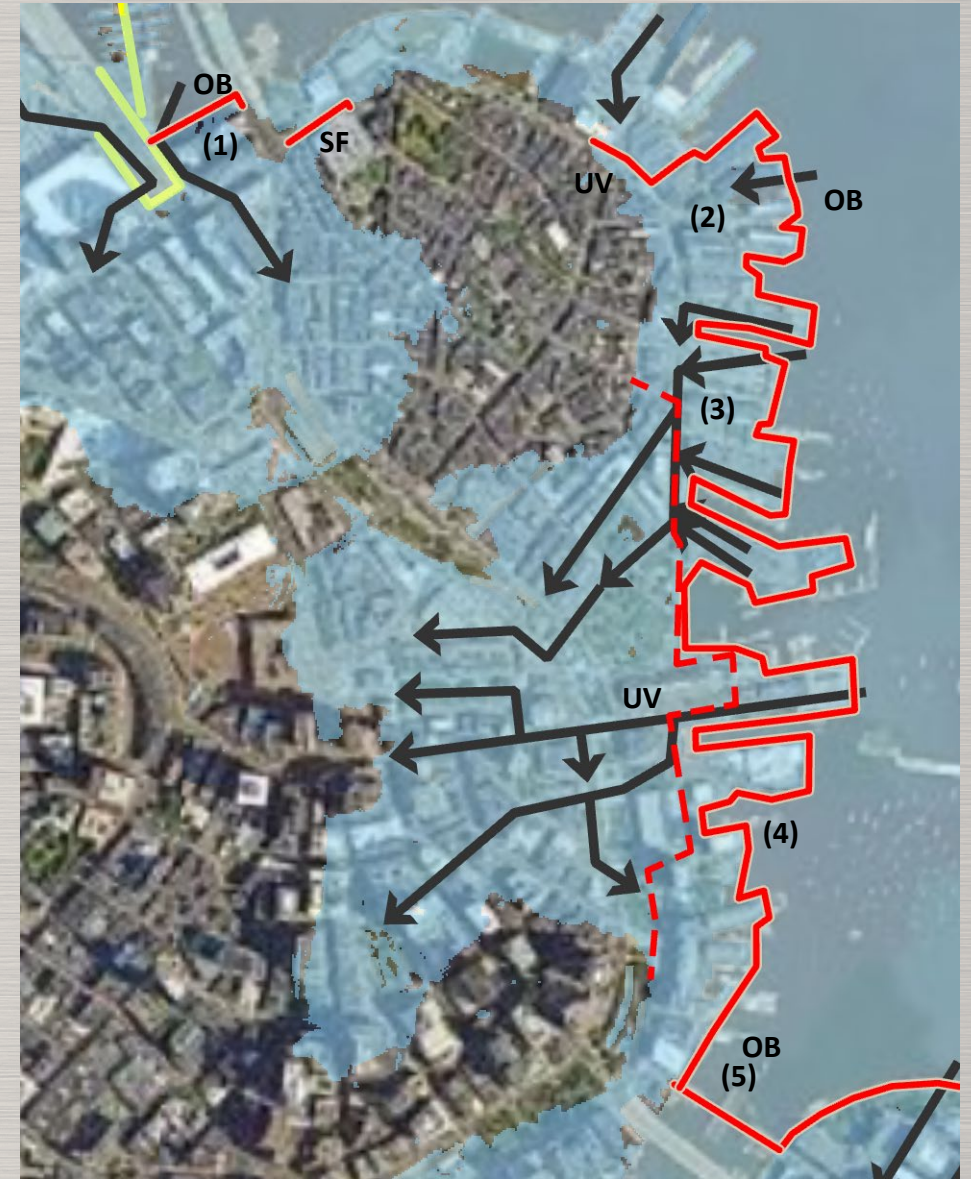




# Final Array of Alternative Plans Downtown/North End-

14

- 1) Ties into NCRD; does not modify existing Dam and would leave residual risk above 11.7' NAVD88 at Dam itself. Tie-in structure will support higher elevation to manage risk and adaptability.
- 2) City prefers perimeter alignment
- 3) Without perimeter alignment; seaward structures are likely residual risk due to uplift risk in the future. Piers are not resilient to uplift and would require tie-down. See WTC Boston, 300-tie-downs.
- 4) Wharf District and NE Aquarium prefer perimeter alignment around campus. Nonstructural would be extremely complex.
- 5) Ties into Surge Barrier at Fort Point Channel to the south.





# Final Array of Alternative Plans Downtown/North End-

DT1: North Washington Street Bridge and TD Gardens and Charlestown Paul Revere Park Measure.

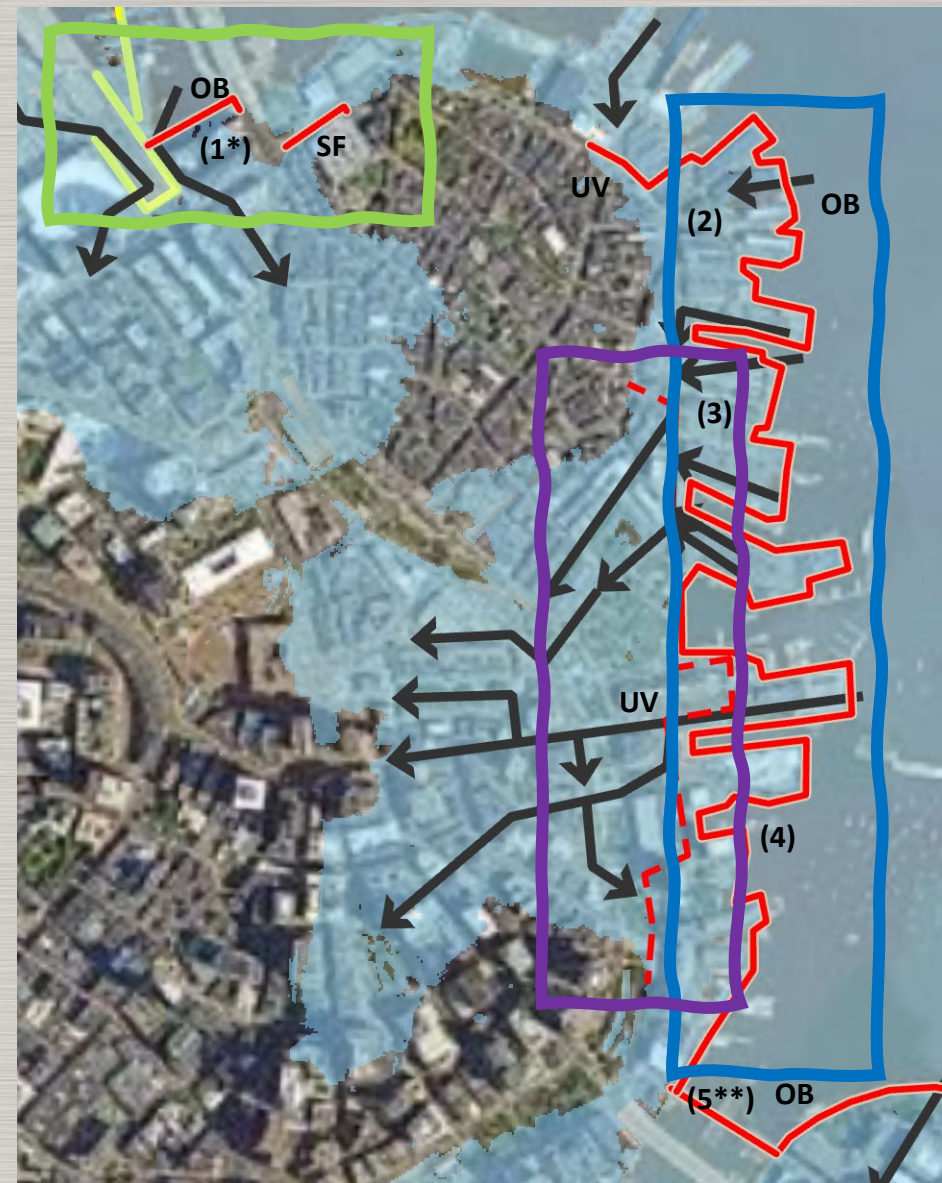
DT2: Inner Alignment

DT3: Full Perimeter

DT4: Combination Alternative; evaluate DT2 and DT3 before evaluating combination.

\*Requires Paul Revere Park in Charlestown Measure for effectiveness

\*\*Surge Barrier for both DT and South Boston



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# Final Array of Alternative Plans South Boston Measures-

16

- 1) Surge Barrier, likely combined with Boston Water Sewer Commission Stormwater Plan (Betterment or LPP). Surge Barrier may still require perimeter channel structures, depending on operations, activation requirements and sizing of Surge Barrier.
- 2) Outboard around Fan Pier Park due to upland complexity and uncertainty. No need to wrap WTC Boston; structure is resilient including pier tie-downs for uplift.
- 3) City prefers perimeter alignment across Ray Flynn Marine Industrial Park and up Reserve Channel.
- 4) Requires parapet walls to keep I-90 tunnel entrance and highway dry during storm.
- 5) Moakley Park connects to Dorchester area plans.



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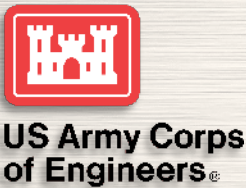


# Final Array of Alternative Plans South Boston

SB1: South Boston Inland D Street Alignment  
SB2: South Boston Full Perimeter (City Preferred)

[Dashed line] = Difference between SB1 and SB2

\*Requires Tie-In for Dorchester Moakley Park  
\*\*Surge Barrier for both DT and South Boston





# Final Array of Alternative Plans Dorchester Measures-

18

1) Tie into natural high ground around stadium at Moakley Park.

2) Shallow Foundation across the full stretch of Harbor Point Community.

3) Shallow Foundation around Patten's Cove. Grade Change at intersection of Bianculli and Morrissey BLVD into shallow foundation.

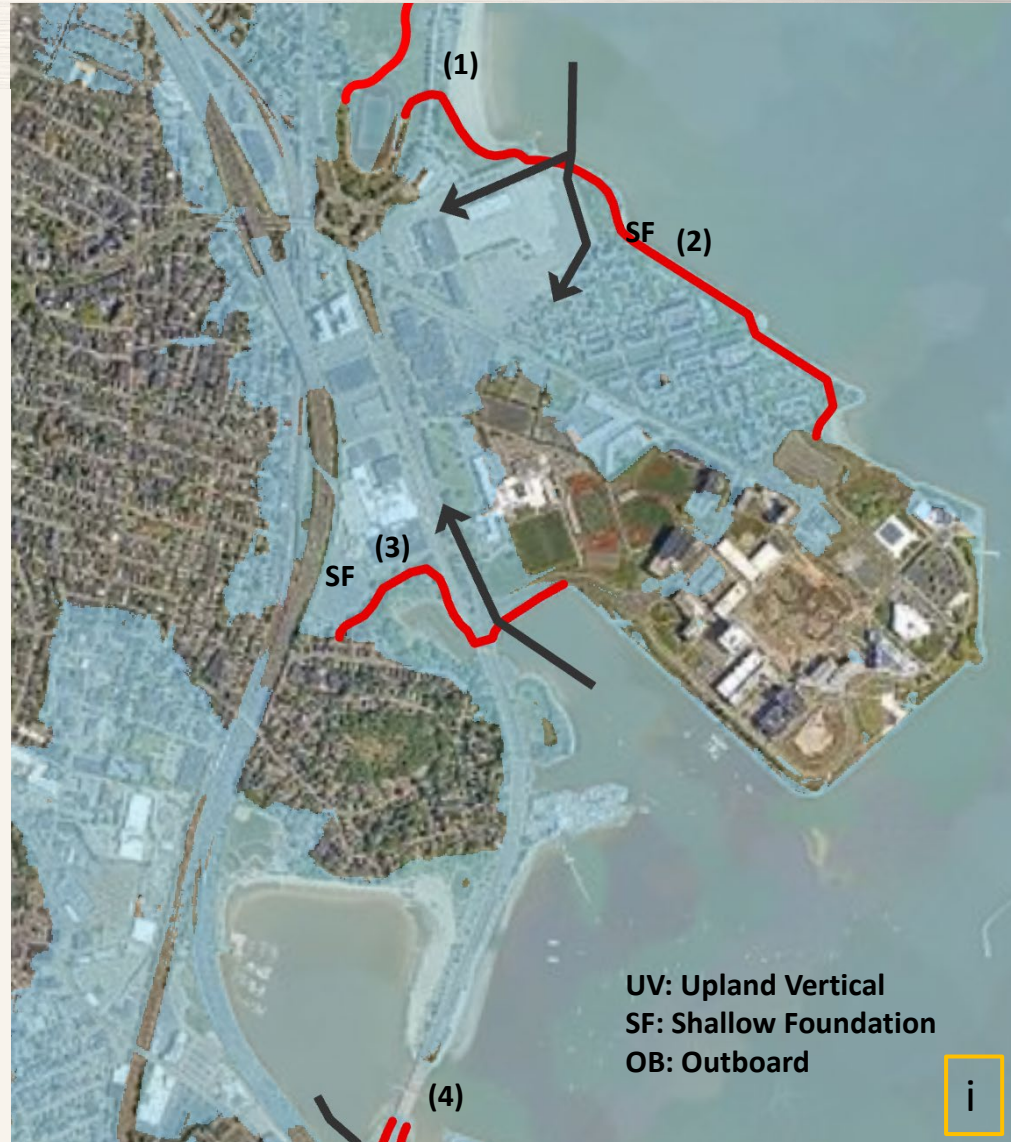
4) Vertical wall at Morrissey BLVD Bridge. Adaptable for MassDot to replace bridge.

5) Modify Victory Rd. Off-ramp

6) Tenean Beach and Conley St. Change grade of Conley with shallow foundation.

7) Close Pine Neck Creek pathway

8) Use existing park layout and Harborwalk with SF





# Final Array of Alternative Plans Dorchester-

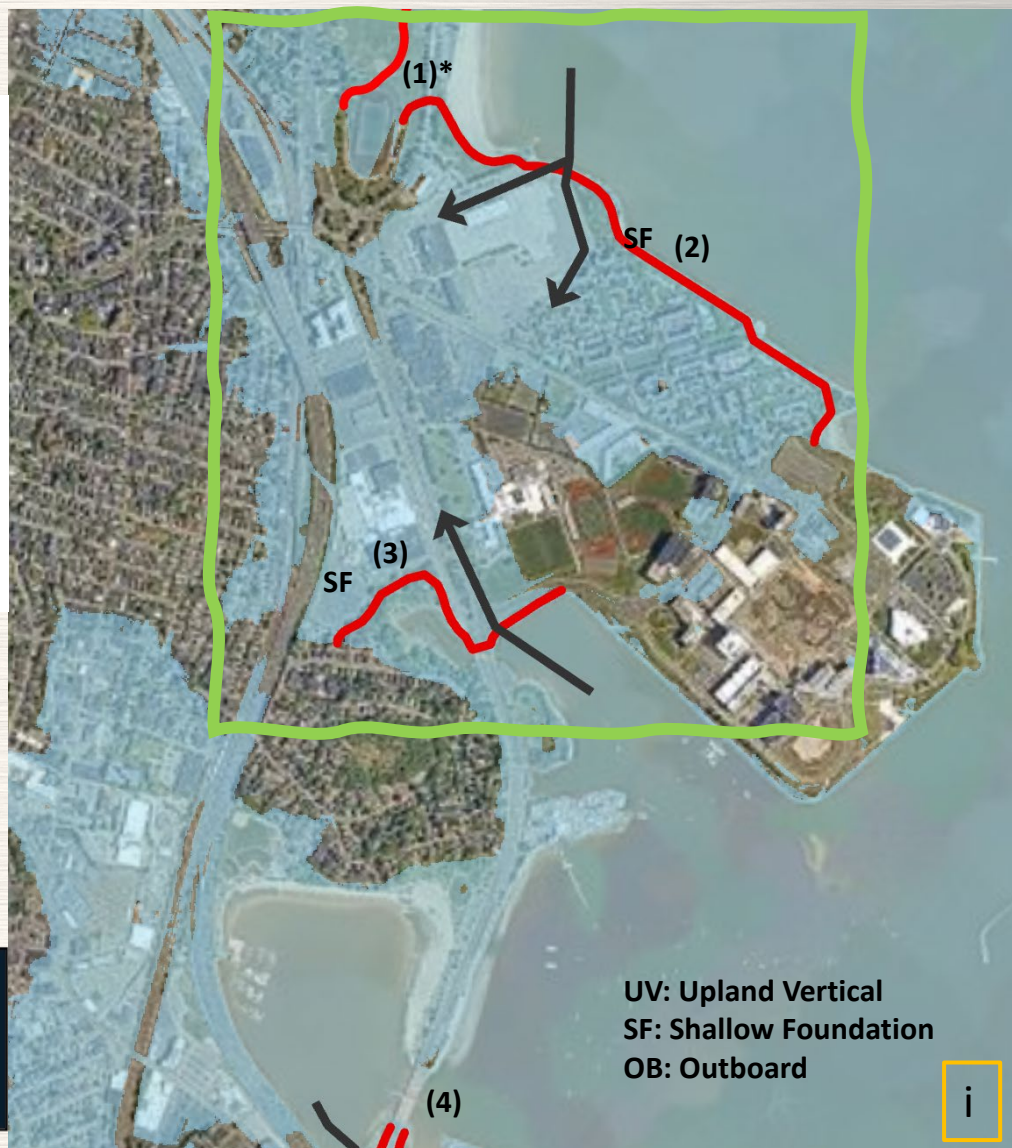
**DOR1\***: Harbor Point Community and Moakley Park (Requires tie-in at South Boston Moakley Park)

**DOR2**: Morrissey BLVD Bridge to Tenean Beach

**DOR3**: Neponset River

**DOR4**: Any Combination of DOR1-3

\* Moakley Park measure is also directly tied to the South Boston Plan at the Northern Moakley Park Connection Measure.



UV: Upland Vertical  
SF: Shallow Foundation  
OB: Outboard



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# Protected Species – USFWS

|                   |    | Charlestown | Downtown | South Boston | Dorchester | East Boston |
|-------------------|----|-------------|----------|--------------|------------|-------------|
| Roseate Tern      | E  | X           | X        | X            | X          | X           |
| Piping Plover     | T  |             |          |              | X          |             |
| TCB               | PE | X           | X        | X            | X          | X           |
| Monarch Butterfly | PT | X           | X        | X            | X          | X           |

- No Critical Habitats
- No Rufa Red Knot or NLEB identified in the project areas

## Expected Determinations:

- No effect for TCB, monarch butterfly
- NLAA for roseate tern, plover





# Protected Species – NMFS

|                            |   | Life Stages     | Notes                              |
|----------------------------|---|-----------------|------------------------------------|
| <b>Atlantic Sturgeon*</b>  | T | subadult, adult | migrating, foraging                |
| <b>Shortnose Sturgeon*</b> | E | adult           | migrating, foraging                |
| <b>NARW</b>                | E | juvenile, adult | migrating, foraging, overwintering |
| <b>Fin Whale</b>           | E | juvenile, adult | foraging, overwintering            |
| <b>Green Turtle</b>        | T | juvenile, adult | migrating, foraging                |
| <b>Loggerhead</b>          | T | juvenile, adult | migrating, foraging                |
| <b>Leatherback</b>         | E | juvenile, adult | migrating, foraging                |
| <b>Kemp's Ridley</b>       | E | juvenile, adult | migrating, foraging                |

\*Only Atlantic and shortnose sturgeon have potential to overlap with the Mystic River and Chelsea Creek alignments in Charlestown and East Boston, respectively



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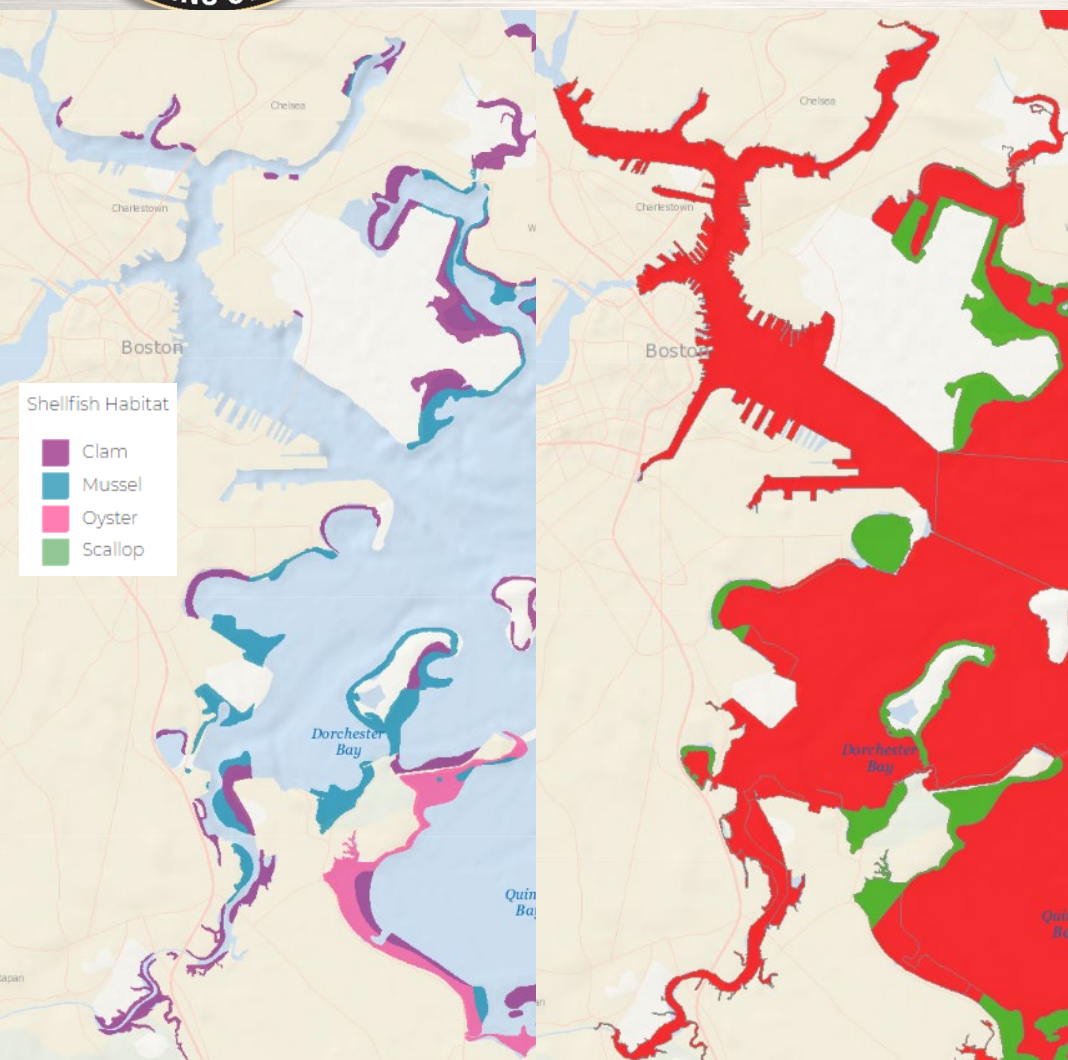
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**Expecting NLAA determinations for listed species**



# Fisheries/Wildlife Resources



|                | Alewife | Blueback Herring | Rainbow Smelt | American Eel | White Perch | Atlantic Tomcod | Sea Lamprey | Shortnose Sturgeon | Atlantic Sturgeon | American Shad | Fall Run        | Spring Run       |
|----------------|---------|------------------|---------------|--------------|-------------|-----------------|-------------|--------------------|-------------------|---------------|-----------------|------------------|
| Chelsea Creek  | N       | N                | Y             | Y            | N           | N               | N           | N                  | N                 | N             | 15 Sep – 31 Oct | 1 Mar – 30 June  |
| Mystic River   | Y       | Y                | N             | Y            | Y           | Y               | N           | N                  | N                 | Y             | 1 Sep – 15 Nov  | 15 Feb – 15 July |
| Charles River  | Y       | Y                | Y             | Y            | Y           | Y               | N           | N                  | N                 | Y             | 1 Sep – 15 Nov  | 15 Feb – 15 July |
| Inner Harbor   | Y       | Y                | Y             | Y            | Y           | Y               | N           | N                  | N                 | Y             | 1 Sep – 15 Nov  | 15 Feb – 15 July |
| Neponset River | Y       | Y                | Y             | Y            | Y           | Y               | N           | N                  | N                 | Y             | 1 Sep – 15 Nov  | 15 Feb – 15 July |

- No eelgrass, limited macroalgae
- Benthic resources documented in USACE survey, limited resources within action areas
- No lobsters documented; limited potential habitat in action areas
- Upland vegetation primarily landscaped urban trees/shrubs



# Essential Fish Habitat

| Species                                                 | Egg | Larvae | Juvenile    | Adult              |
|---------------------------------------------------------|-----|--------|-------------|--------------------|
| American plaice ( <i>Hippoglossoides platessoides</i> ) | X   | X      | X           | X                  |
| Atlantic Butterfish ( <i>Peprilus triacanthus</i> )     | X   | X      |             | X                  |
| Atlantic cod ( <i>Gadus morhua</i> )                    | X   | X      | X           | X                  |
| Atlantic herring ( <i>Clupea harengus</i> )             |     | X      | X           | X                  |
| Atlantic Mackerel ( <i>Scomber scombrus</i> )           | X   | X      | X           | X                  |
| Atlantic Surf clam ( <i>Spisula solidissima</i> )       |     |        | X           | X                  |
| Atlantic wolffish ( <i>Anarhichas lupus</i> )           | X   | X      | X           | X                  |
| Black Sea Bass ( <i>Centropristis striata</i> )         |     |        |             | X                  |
| Bluefin tuna ( <i>Thunnus thynnus</i> )                 |     |        |             | X (D, EB, SB only) |
| Bluefish ( <i>Pomatomus saltatrix</i> )                 |     |        | X           | X                  |
| Haddock ( <i>Melanogrammus aeglefinus</i> )             |     |        | X (SB only) |                    |
| Little skate ( <i>Leucoraja erinacea</i> )              |     |        | X           | X                  |
| Longfin Inshore Squid ( <i>Doryteuthis pealeii</i> )    |     |        | X           | X                  |
| Northern Shortfin Squid ( <i>Illex illecebrosus</i> )   |     |        |             | X                  |

| Species                                                       | Egg         | Larvae | Juvenile       | Adult          |
|---------------------------------------------------------------|-------------|--------|----------------|----------------|
| Ocean pout ( <i>Macrozoarces americanus</i> )                 | X (SB only) |        | X              | X              |
| Pollock ( <i>Pollachius virens</i> )                          | X           | X      | X              |                |
| Red hake ( <i>Urophycis chuss</i> )                           | X           | X      | X              | X              |
| Scup ( <i>Stenotomus chrysops</i> )                           |             |        | X              | X (SB only)    |
| Silver hake ( <i>Merluccius bilinearis</i> )                  | X           | X      |                | X              |
| Spiny dogfish ( <i>Squalus acanthias</i> )                    |             |        |                | X              |
| Summer Flounder ( <i>Paralichthys dentatus</i> )              |             |        |                | X              |
| Thorny skate ( <i>Amblyraja radiata</i> )                     |             |        | X              |                |
| White hake ( <i>Urophycis tenuis</i> )                        | X           | X      | X              | X              |
| White shark ( <i>Carcharodon carcharias</i> )                 |             |        | X (D, SB only) | X (D, SB only) |
| Windowpane flounder ( <i>Scophthalmus aquosus</i> )           | X           | X      | X              | X              |
| <b>Winter flounder (<i>Pseudopleuronectes americanus</i>)</b> | X           | X      | X              | X              |
| Winter skate ( <i>Leucoraja ocellata</i> )                    |             |        | X              | X              |
| Yellowtail flounder ( <i>Limanda ferruginea</i> )             | X           | X      | X              | X              |



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\*Juvenile Cod HAPC mapped but not within action areas



# Environmental Coordination

|              | Agency        | Notes                                                                                                                                                    |
|--------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NEPA</b>  | All           | Integrated Feasibility Report and Environmental Impact Statement; NEPA Scoping in March 2026; targeting draft release/public comment period in July 2026 |
| <b>ESA</b>   | USFWS & NMFS  | No effect, NLAA determinations expected                                                                                                                  |
| <b>FWCA</b>  | USFWS or NMFS | Determine Service for FWCA; seek PAL                                                                                                                     |
| <b>MSFCA</b> | NMFS          | EFH, HAPC mapped; no significant impacts expected for most; potential mitigation subtidal habitat lost due to alignment footprints                       |
| <b>CWA</b>   | MA DEP        | 404(b)(1) eval; 401 WQC will be sought                                                                                                                   |
| <b>CZMA</b>  | MA EEA        | Consistency determination being developed; conversations ongoing                                                                                         |
| <b>CAA</b>   | EPA           | MA in attainment for all NAAQS                                                                                                                           |
| <b>NHPA</b>  | SHPO/Tribes   | Coordination ongoing; significant cultural resources                                                                                                     |

\*Also supporting COB with MEPA application and Chapter 91 license



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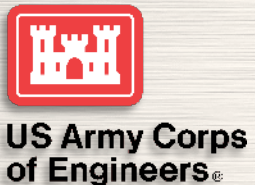




# Questions/Comments/Discussions



- Missing resources
- Accurate impact assessments & initial effects determinations
- FWCA – Planning Aid Letter
- Recommendations?



**From:** [San Antonio, Christine M CIV USARMY CENAE \(USA\)](#)  
**To:** [Galvin, Mike \(DCR\)](#); [Frew, Katelyn \(FWE\)](#); [Daniel.padien@mass.gov](mailto:Daniel.padien@mass.gov); [Wong, David W \(DEP\)](#); [Hoenig, Amy \(FWE\)](#)  
**Cc:** [Randall, Todd A CIV USARMY CENAE \(USA\)](#)  
**Subject:** USACE Boston CSRM Check-In  
**Date:** Thursday, December 4, 2025 8:05:00 AM

---

Good morning,

Hope you all are doing well! It's been a while since we've engaged with you on the [USACE/City of Boston Coastal Storm Risk Management Study](#). Now that we're narrowing in on our final array of alternatives, we were wondering if you have any availability in the coming weeks (Dec/Jan) for a check-in conversation. We'll provide a brief project update and want to discuss resources with you to make sure we're on track. We'll have more formal conversations to come and are mostly just looking to re-engage with the right folks as we aim to have a draft report release later in 2026. We're looking forward to re-connecting.

Thanks!

**Christine San Antonio, PhD (she/her)**

Marine Biologist

New England District

U.S. Army Corps of Engineers

[Christine.sanantonio@usace.army.mil](mailto:Christine.sanantonio@usace.army.mil)

(978) 318-8621

**From:** [Mayer, Audrey](#)  
**To:** [San Antonio, Christine M CIV USARMY CENAE \(USA\)](#)  
**Cc:** [Randall, Todd A CIV USARMY CENAE \(USA\)](#)  
**Subject:** [Non-DoD Source] Re: [EXTERNAL] USACE Boston CSRM Check-In  
**Date:** Tuesday, December 16, 2025 11:03:48 AM

---

Hi Christine,

Unfortunately, I have no staff time I can spare right now to produce a Planning Aid Letter, with or without additional funds. Ordinarily I could use the funding to hire additional help but with our hiring freeze that's not likely to happen.

Audrey

---

**From:** San Antonio, Christine M CIV USARMY CENAE (USA) <Christine.SanAntonio@usace.army.mil>  
**Sent:** Monday, December 15, 2025 1:42 PM  
**To:** Mayer, Audrey <audrey\_mayer@fws.gov>  
**Cc:** Randall, Todd A CIV USARMY CENAE (USA) <Todd.A.Randall@usace.army.mil>  
**Subject:** RE: [EXTERNAL] USACE Boston CSRM Check-In

Hi Audrey,

Thank you for the meeting earlier today on the Boston CSRM study – it was great to finally meet you!

Attached are the slides we shared during the call. We will be able to provide more detailed information on the alignments and precise areas of impact once when we get closer to draft release. As discussed, we will engage with MA NHESP to discuss plover presence in Dorchester and whether roseate terns are actually feeding in any of the project areas.

I've also attached some fact sheets that provide some reference info on the New Charles River Dam Planning Assistance to States study and how it compares to the other Boston studies. The fact sheets are a little outdated, but all three studies are moving forward.

One thing I forgot to bring up on the call was FWCA. Given the magnitude of the study, USACE is requesting a Planning Aid Letter from the Service so we can document our FWCA coordination. Will you need any funding to support that effort?

Thanks again and have a great holiday!

**Christine San Antonio, PhD (she/her)**

Marine Biologist

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(978) 318-8621

---

**From:** San Antonio, Christine M CIV USARMY CENAE (USA)

**Sent:** Thursday, December 4, 2025 11:39 AM

**To:** 'Mayer, Audrey' <[audrey\\_mayer@fws.gov](mailto:audrey_mayer@fws.gov)>; Simmons, David <[david\\_simmons@fws.gov](mailto:david_simmons@fws.gov)>

**Cc:** Randall, Todd A CIV USARMY CENAE (USA) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>

**Subject:** RE: [EXTERNAL] USACE Boston CSRM Check-In

No worries! I will reschedule for 10-11am instead.

**Christine San Antonio, PhD (she/her)**

Marine Biologist

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(978) 318-8621

---

**From:** Mayer, Audrey <[audrey\\_mayer@fws.gov](mailto:audrey_mayer@fws.gov)>

**Sent:** Thursday, December 4, 2025 11:36 AM

**To:** San Antonio, Christine M CIV USARMY CENAE (USA) <[Christine.SanAntonio@usace.army.mil](mailto:Christine.SanAntonio@usace.army.mil)>; Simmons, David <[david\\_simmons@fws.gov](mailto:david_simmons@fws.gov)>

**Cc:** Randall, Todd A CIV USARMY CENAE (USA) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>

**Subject:** [Non-DoD Source] Re: [EXTERNAL] USACE Boston CSRM Check-In

Hi Christine,

Sorry, on Monday Dec 15 I am available 10-11am, noon-2pm, and 3-5pm..... had to decline the 11am invite.

Audrey

---

**From:** San Antonio, Christine M CIV USARMY CENAE (USA) <[Christine.SanAntonio@usace.army.mil](mailto:Christine.SanAntonio@usace.army.mil)>

**Sent:** Thursday, December 4, 2025 7:59 AM

**To:** Mayer, Audrey <[audrey\\_mayer@fws.gov](mailto:audrey_mayer@fws.gov)>; Simmons, David <[david\\_simmons@fws.gov](mailto:david_simmons@fws.gov)>

**Cc:** Randall, Todd A CIV USARMY CENAE (USA) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>

**Subject:** [EXTERNAL] USACE Boston CSRM Check-In

|                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.</b></p> |
|--------------------------------------------------------------------------------------------------------------------------------------------|

Hello Audrey and David,

Hope you are doing well! It's been a while since we've engaged with you on the [USACE/City of Boston Coastal Storm Risk Management Study](#). Now that we're narrowing in on our final array of alternatives, we were wondering if you have any availability in the coming weeks (Dec/Jan) for a check-in conversation. We'll provide a brief project update and want to discuss resources with you to make sure we're on track. We'll have more formal conversations to come and are mostly just looking to re-engage with the right folks as we aim to have a draft report release later in 2026. We're looking forward to re-connecting. Please invite others from your group as appropriate.

Thanks!

**Christine San Antonio, PhD (she/her)**

Marine Biologist

New England District

U.S. Army Corps of Engineers

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(978) 318-8621

**From:** [Hoenig, Amy \(FWE\)](#)  
**To:** [San Antonio, Christine M CIV USARMY CENAE \(USA\)](#); [Randall, Todd A CIV USARMY CENAE \(USA\)](#)  
**Subject:** [Non-DoD Source] RE: USACE Boston CSRM Check-In  
**Date:** Friday, January 23, 2026 7:57:15 PM  
**Attachments:** [image001.png](#)

---

Good afternoon, Christine & Todd –

Thank you for the project overview and updates. Below please find an image depicting the current delineation of Priority Habitat and Estimated Habitat for state-listed species. The Priority Habitats depicted below include multiple avian species, although, Roseate Tern is not one of the subject species. Based on the information currently available, we do not have sufficient information for Roseate Tern within the Boston area that meets our regulatory mapping criteria.

Sites that are proximate to or within mapped habitat:

East Boston (Bell Isle Marsh area)

East Boston (area of 282 – 170 Border St)

South Boston (Carson Beach area)

Preliminary feedback: Structures within wetland resource areas (e.g., coastal beach, coastal dune, coastal bank) that are located within mapped habitat for coastal (beach/dune) nesting avian species may necessitate nourishment to offset their impact. The East Boston structures may necessitate a Time-of-Year restriction or other protection measures; however, nourishment is not anticipated at this time. For Carson Beach, I cannot fully determine the location of the structure or if the structure is fully within the upland area; thus, it is unknown whether nourishment, TOY restrictions, or other protection measures would be applicable.

Please continue to consult with the Division on the sites located within Priority Habitat keeping in mind that maps will be available later this year (Fall 2026).



Sincerely,

**Amy Hoenig**

Senior Endangered Species Review Biologist  
Natural Heritage & Endangered Species Program  
Massachusetts Division of Fisheries & Wildlife  
1 Rabbit Hill Road, Westborough, MA 01581  
p: (508) 389-6364 | e: [Amy.Hoenig@mass.gov](mailto:Amy.Hoenig@mass.gov)  
[mass.gov/masswildlife](http://mass.gov/masswildlife) | [facebook.com/masswildlife](https://facebook.com/masswildlife)

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**From:** San Antonio, Christine M CIV USARMY CENAE (USA) <Christine.SanAntonio@usace.army.mil>

**Sent:** Wednesday, January 14, 2026 2:25 PM

**To:** Hoenig, Amy (FWE) <Amy.Hoenig@mass.gov>; Galvin, Mike (DCR) <mike.galvin@mass.gov>;  
Frew, Katelyn (FWE) <Kate.Frew@mass.gov>; Wong, David W (DEP) <david.w.wong@mass.gov>;  
Padien, Daniel (DEP) <Daniel.Padien@mass.gov>

**Cc:** Randall, Todd A CIV USARMY CENAE (USA) <Todd.A.Randall@usace.army.mil>

**Subject:** RE: USACE Boston CSRM Check-In

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Good afternoon,

Thank you all again for attending the call to discuss the Boston CSRM study. We realize it was a lot of information, much of which is still fairly high level, but we appreciate the opportunity to reconnect and make sure we're on the right track.

A couple notes from the call:

- NHESP noted potential overlap with mapped areas for rare species in Belle Isle Marsh and Carson Beach (potentially other areas). Species maps are currently being updated (by end of 2026), which may include an expansion for the saltmarsh sparrow.
- MA DEP asked about any dredging activity. There may be minor dredging associated with creating the foundation for some of the outboard solutions. Although expected to be minimal, we do not yet know how much material will be removed. We may need a combined application for 401 and should engage with other regional experts. USACE will follow up with DEP.
- MA DMF may request a TOY restriction or possible mitigation for shellfish should the project overlap and impact any notable resources.
- MA DEP suggested that it may be possible to parse out portions of the project that are easily licensable under Chapter 91, which may be helpful to the city.
- Shape files of alternative footprints along with the temporary easement boundary (20') will be provided to agencies once ready.
- **USACE requests NHESP share any data on roseate tern presence and foraging in any of the five neighborhoods.**

Please feel free to reach out to Todd or me at any time with questions about the project. We will be in touch over the next few months as we work to finalize our report.

Thanks again!

**Christine San Antonio, PhD (she/her)**

Marine Biologist

New England District

U.S. Army Corps of Engineers

[Christine.sanantonio@usace.army.mil](mailto:Christine.sanantonio@usace.army.mil)

(978) 318-8621

---

**From:** Hoenig, Amy (FWE) <[Amy.Hoenig@mass.gov](mailto:Amy.Hoenig@mass.gov)>  
**Sent:** Monday, December 8, 2025 9:01 AM  
**To:** Galvin, Mike (DCR) <[mike.galvin@mass.gov](mailto:mike.galvin@mass.gov)>; Frew, Katelyn (FWE) <[Kate.Frew@mass.gov](mailto:Kate.Frew@mass.gov)>; Wong, David W (DEP) <[david.w.wong@mass.gov](mailto:david.w.wong@mass.gov)>; San Antonio, Christine M CIV USARMY CENAE (USA) <[Christine.SanAntonio@usace.army.mil](mailto:Christine.SanAntonio@usace.army.mil)>; Padien, Daniel (DEP) <[Daniel.Padien@mass.gov](mailto:Daniel.Padien@mass.gov)>  
**Cc:** Randall, Todd A CIV USARMY CENAE (USA) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>  
**Subject:** [Non-DoD Source] RE: USACE Boston CSRM Check-In

Good morning,

Based on the dates refined in this email thread, I'm available January 14<sup>th</sup> (10am-3pm) and January 21<sup>st</sup> (9am-5pm).

Thank you,

**Amy Hoenig**

Senior Endangered Species Review Biologist  
Natural Heritage & Endangered Species Program  
Massachusetts Division of Fisheries & Wildlife  
1 Rabbit Hill Road, Westborough, MA 01581  
p: (508) 389-6364 | e: [Amy.Hoenig@mass.gov](mailto:Amy.Hoenig@mass.gov)  
[mass.gov/masswildlife](https://mass.gov/masswildlife) | [facebook.com/masswildlife](https://facebook.com/masswildlife)

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**From:** Galvin, Mike (DCR) <[mike.galvin@mass.gov](mailto:mike.galvin@mass.gov)>  
**Sent:** Thursday, December 4, 2025 2:29 PM  
**To:** Frew, Katelyn (FWE) <[Kate.Frew@mass.gov](mailto:Kate.Frew@mass.gov)>; Wong, David W (DEP) <[david.w.wong@mass.gov](mailto:david.w.wong@mass.gov)>; San Antonio, Christine M CIV USARMY CENAE (USA) <[christine.sanantonio@usace.army.mil](mailto:christine.sanantonio@usace.army.mil)>; Padien, Daniel (DEP) <[Daniel.Padien@mass.gov](mailto:Daniel.Padien@mass.gov)>; Hoenig, Amy (FWE) <[Amy.Hoenig@mass.gov](mailto:Amy.Hoenig@mass.gov)>  
**Cc:** Randall, Todd A CIV USARMY CENAE (USA) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>  
**Subject:** RE: USACE Boston CSRM Check-In

Of these dates provided, I am available January 14, 2026 between 9am and 3pm, and anytime on January 21.

Mike Galvin  
DCR  
WaterResources and Flood Control Engineering  
[Mike.Galvin@mass.gov](mailto:Mike.Galvin@mass.gov)

---

**From:** Frew, Katelyn (FWE) <[Kate.Frew@mass.gov](mailto:Kate.Frew@mass.gov)>  
**Sent:** Thursday, December 4, 2025 10:03 AM  
**To:** Wong, David W (DEP) <[david.w.wong@mass.gov](mailto:david.w.wong@mass.gov)>; San Antonio, Christine M CIV USARMY CENAE (USA) <[christine.sanantonio@usace.army.mil](mailto:christine.sanantonio@usace.army.mil)>; Galvin, Mike (DCR) <[mike.galvin@mass.gov](mailto:mike.galvin@mass.gov)>; Padien, Daniel (DEP) <[Daniel.Padien@mass.gov](mailto:Daniel.Padien@mass.gov)>; Hoenig, Amy (FWE) <[Amy.Hoenig@mass.gov](mailto:Amy.Hoenig@mass.gov)>  
**Cc:** Randall, Todd A CIV USARMY CENAE (USA) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>  
**Subject:** RE: USACE Boston CSRM Check-In

Hi Christine,  
Of the dates provided by David, I'm available:  
The afternoon of December 17<sup>th</sup>  
January 2026: 7, 9, 14, 21  
Best,  
Kate

---

**From:** Wong, David W (DEP) <[david.w.wong@mass.gov](mailto:david.w.wong@mass.gov)>  
**Sent:** Thursday, December 4, 2025 9:26 AM  
**To:** San Antonio, Christine M CIV USARMY CENAE (USA) <[christine.sanantonio@usace.army.mil](mailto:christine.sanantonio@usace.army.mil)>; Galvin, Mike (DCR) <[mike.galvin@mass.gov](mailto:mike.galvin@mass.gov)>; Frew, Katelyn (FWE) <[Kate.Frew@mass.gov](mailto:Kate.Frew@mass.gov)>; Padien, Daniel (DEP) <[Daniel.Padien@mass.gov](mailto:Daniel.Padien@mass.gov)>; Hoenig, Amy (FWE) <[Amy.Hoenig@mass.gov](mailto:Amy.Hoenig@mass.gov)>  
**Cc:** Randall, Todd A CIV USARMY CENAE (USA) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>  
**Subject:** RE: USACE Boston CSRM Check-In

Hi Christine,

Thanks for your updated information on this exciting project. In terms of your suggested conversation time, I am available the following dates:

December 2025: 12, 17, and 31  
January 2026: 2, 7, 9, 14, 21, 30

You have a good day and see you soon!

Sincerely,

David

David WH Wong, Ph.D.  
401 Water Quality Certification Program  
Bureau of Water Resources  
Massachusetts Department of Environmental Protection  
Phone: 617-874-7155  
[David.W.Wong@mass.gov](mailto:David.W.Wong@mass.gov)

---

**From:** San Antonio, Christine M CIV USARMY CENAE (USA) <[Christine.SanAntonio@usace.army.mil](mailto:Christine.SanAntonio@usace.army.mil)>  
**Sent:** Thursday, December 4, 2025 8:06 AM  
**To:** Galvin, Mike (DCR) <[mike.galvin@mass.gov](mailto:mike.galvin@mass.gov)>; Frew, Katelyn (FWE) <[Kate.Frew@mass.gov](mailto:Kate.Frew@mass.gov)>;  
Padien, Daniel (DEP) <[Daniel.Padien@mass.gov](mailto:Daniel.Padien@mass.gov)>; Wong, David W (DEP) <[david.w.wong@mass.gov](mailto:david.w.wong@mass.gov)>;  
Hoenig, Amy (FWE) <[Amy.Hoenig@mass.gov](mailto:Amy.Hoenig@mass.gov)>  
**Cc:** Randall, Todd A CIV USARMY CENAE (USA) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>  
**Subject:** USACE Boston CSRM Check-In

**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Good morning,

Hope you all are doing well! It's been a while since we've engaged with you on the [USACE/City of Boston Coastal Storm Risk Management Study](#). Now that we're narrowing in on our final array of alternatives, we were wondering if you have any availability in the coming weeks (Dec/Jan) for a check-in conversation. We'll provide a brief project update and want to discuss resources with you to make sure we're on track. We'll have more formal conversations to come and are mostly just looking to re-engage with the right folks as we aim to have a draft report release later in 2026. We're looking forward to re-connecting.

Thanks!

**Christine San Antonio, PhD (she/her)**  
Marine Biologist  
New England District  
U.S. Army Corps of Engineers  
[Christine.sanantonio@usace.army.mil](mailto:Christine.sanantonio@usace.army.mil)  
(978) 318-8621

**From:** [Christopher Boelke - NOAA Federal](#)  
**To:** [San Antonio, Christine M CIV USARMY CENAE \(USA\)](#)  
**Cc:** [Randall, Todd A CIV USARMY CENAE \(USA\)](#)  
**Subject:** Re: [Non-DoD Source] Re: Sorry dude!  
**Date:** Monday, January 12, 2026 2:31:23 PM

---

Thanks, Christine. We would be able to provide a FWCA planning aid letter/technical assistance, but not clear that we will have capacity for a broader FWCA 2b Report/investigation. Please keep me in the loop as this continues to move forward.

Chris

On Mon, Jan 12, 2026 at 2:12 PM San Antonio, Christine M CIV USARMY CENAE (USA) <[Christine.SanAntonio@usace.army.mil](mailto:Christine.SanAntonio@usace.army.mil)> wrote:

Hi Chris,

No, we have not yet sent an official request. Now that we've chatted informally about it, that will be our next step (once it's clear what that looks like). We'll be in touch soon with an official request.

Thanks,

**Christine San Antonio, PhD (she/her)**

Marine Biologist

New England District

U.S. Army Corps of Engineers

[Christine.sanantonio@usace.army.mil](mailto:Christine.sanantonio@usace.army.mil)

(978) 318-8621

---

**From:** Christopher Boelke - NOAA Federal <[christopher.boelke@noaa.gov](mailto:christopher.boelke@noaa.gov)>  
**Sent:** Monday, January 12, 2026 11:56 AM  
**To:** San Antonio, Christine M CIV USARMY CENAE (USA) <[Christine.SanAntonio@usace.army.mil](mailto:Christine.SanAntonio@usace.army.mil)>  
**Cc:** Randall, Todd A CIV USARMY CENAE (USA) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>  
**Subject:** Re: [Non-DoD Source] Re: Sorry dude!

Thanks, Christine and Todd. Good information here. Did you send a request to us already, or is that the next step?

Chris

On Fri, Jan 9, 2026 at 11:23 AM San Antonio, Christine M CIV USARMY CENAE (USA) <[Christine.SanAntonio@usace.army.mil](mailto:Christine.SanAntonio@usace.army.mil)> wrote:

Hi Chris,

Thanks again for the conversation yesterday. I spoke with Chris Chabot and he was able to provide the some examples of a PAL, CAR, and back and forth correspondence on comments. I've also attached the MOU we were looking at yesterday as additional reference.

Looking forward to continuing our coordination (with or without Todd! )

Cheers,

**Christine San Antonio, PhD (she/her)**

Marine Biologist

New England District

U.S. Army Corps of Engineers

[Christine.sanantonio@usace.army.mil](mailto:Christine.sanantonio@usace.army.mil)

(978) 318-8621

---

**From:** Randall, Todd A CIV USARMY CENAE (USA) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>

**Sent:** Friday, January 9, 2026 11:02 AM

**To:** Christopher Boelke - NOAA Federal <[christopher.boelke@noaa.gov](mailto:christopher.boelke@noaa.gov)>

**Cc:** San Antonio, Christine M CIV USARMY CENAE (USA)

<[Christine.SanAntonio@usace.army.mil](mailto:Christine.SanAntonio@usace.army.mil)>

**Subject:** RE: [Non-DoD Source] Re: Sorry dude!

OK, great. All good at home – I recently replaced the pellet feeding motor in our pellet stove at home, but apparently new motor feeds too fast, so stove kept dropping in pellets at an uncontrollable rate and tripping the “too hot” sensor – Kymm thought she might burn down the house and wanted me to check. Freaking aftermarket parts... ha!

Cool on letter – thanks!

In my mind I thought y’all can just highlight the following at a minimum:

- Anadromous fish runs in Charles River and Mystic River – tell us to please consider these when contemplating barrier solutions
- Something in regard to cod habitat and making sure the outboard solutions (i.e., seawalls) take into account the hard bottom habitat they prefer – and possible mitigation if converting habitat is unavoidable
- Silt producing activities associated with seawall installation (if you think there is flounder value in the shallow subtidal areas that currently exist adjacent to all the seawalls in Boston Harbor ) should be minimized to the extent practicable

I know you know we already know to do the above - this letter is kind of a box checking exercise. With our maintenance project stuff, it is easy to get out of the requirement to have a Planning aid Letter. But for large Investigations (i.e., building new shit) we really need to document (for the world to see) that we asked NMFS and USFWS about the project (in the light of FWCA) and that you gave us advice to follow. I wouldn’t overcomplicate the effort – just tell us not to do stupid things.

I’m around all day (for real – wink!) or we can chat again down the road if you want to chew on the above

tx

TODD

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**From:** Christopher Boelke - NOAA Federal <[christopher.boelke@noaa.gov](mailto:christopher.boelke@noaa.gov)>  
**Sent:** Friday, January 9, 2026 10:34 AM  
**To:** Randall, Todd A CIV USARMY CENAE (USA) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>  
**Subject:** [Non-DoD Source] Re: Sorry dude!

no problem - hope you have everything sorted out. Yes, good discussion with Christine. I'm looking into the FWCA planning aid letter/reports and see how we have handled this in other regions. We have never written a 2(b) FWCA report that I am aware of in our region. Christine was also going to talk to you and Chris about next steps.

Chris

On Fri, Jan 9, 2026 at 9:59 AM Randall, Todd A CIV USARMY CENAE (USA) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)> wrote:

Hey Chris,

Sorry about missing meeting yesterday – had a fireplace issue at home yesterday and had to run out. All good though.

Did you have a conversation with Christine?

Sorry again!

TODD

**From:** [San Antonio, Christine M CIV USARMY CENAE \(USA\)](#)  
**To:** [Alexa Cacacie - NOAA Federal](#)  
**Cc:** [Chris Boelke \(Christopher.Boelke@noaa.gov\)](#); [Randall, Todd A CIV USARMY CENAE \(USA\)](#)  
**Subject:** RE: [Non-DoD Source] Re: USACE Boston CSRM Check-In  
**Date:** Monday, December 15, 2025 3:02:00 PM  
**Attachments:** [Boston CSRM Final Array Agency Update DEC 2025.pdf](#)

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Hey Alexa,

Thanks again for meeting with us to discuss the Boston CSRM study. I've attached the slides shared during the call for your reference.

As discussed, in the next few months we'll be able to home in on the precise area of impacts to the subtidal from the different neighborhood outboard alignments (surge barrier, walls with backfill, pile supports) we'll also engage with MA DMF to see what additional data they have on fisheries/EFH in the project areas.

Let us know what you find out about a planning aid letter for the fish and wildlife coordination act. And of course, reach out if you have additional questions. We'll be in touch in the next few months as we get closer to a draft release.

Thanks again and have a great holiday!

**Christine San Antonio, PhD (she/her)**

Marine Biologist

New England District

U.S. Army Corps of Engineers

[Christine.sanantonio@usace.army.mil](mailto:Christine.sanantonio@usace.army.mil)

(978) 318-8621

---

**From:** Alexa Cacacie - NOAA Federal <[alexa.cacacie@noaa.gov](mailto:alexa.cacacie@noaa.gov)>  
**Sent:** Thursday, December 4, 2025 9:27 AM  
**To:** San Antonio, Christine M CIV USARMY CENAE (USA) <[Christine.SanAntonio@usace.army.mil](mailto:Christine.SanAntonio@usace.army.mil)>  
**Cc:** Chris Boelke (Christopher.Boelke@noaa.gov) <[christopher.boelke@noaa.gov](mailto:christopher.boelke@noaa.gov)>; Randall, Todd A CIV USARMY CENAE (USA) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>  
**Subject:** [Non-DoD Source] Re: USACE Boston CSRM Check-In

Hi Christine,

Thank you for touching base about this. I'm happy to meet and discuss any updates you may have and answer any questions I can. My availability is as follows:

12/9: after 1pm

12/10: anytime

12/11: 1-4pm

12/12: 8-11am

or anytime 12/15-12/17. Please let me know if any of these times work for you. If not, I'm happy to extend January availability.

Stay warm!

Alexa

On Thu, Dec 4, 2025 at 8:02 AM San Antonio, Christine M CIV USARMY CENAE (USA) <[Christine.SanAntonio@usace.army.mil](mailto:Christine.SanAntonio@usace.army.mil)> wrote:

Good morning,

Hope you are doing well! It's been a while since we've engaged with you on the [USACE/City of Boston Coastal Storm Risk Management Study](#). Now that we're narrowing in on our final array of alternatives, we were wondering if you have any availability in the coming weeks (Dec/Jan) for a check-in conversation. We'll provide a brief project update and want to discuss resources with you to make sure we're on track. We'll have more formal conversations to come and are mostly just looking to re-engage with the right folks as we aim to have a draft report release later in 2026. We're looking forward to re-connecting. Please invite others from your group as appropriate.

Thanks!

**Christine San Antonio, PhD (she/her)**

Marine Biologist

New England District

U.S. Army Corps of Engineers

[Christine.sanantonio@usace.army.mil](mailto:Christine.sanantonio@usace.army.mil)

(978) 318-8621

--

**Alexa Cacacie**

*Fishery Resource Management Specialist, GARFO*

NOAA Fisheries | U.S. Department of Commerce

Office: (978) 281-9294

[www.fisheries.noaa.gov](http://www.fisheries.noaa.gov)



**From:** [Christine Vaccaro - NOAA Federal](#)  
**To:** [San Antonio, Christine M CIV USARMY CENAE \(USA\)](#)  
**Cc:** [roosevelt.mesa@noaa.gov](mailto:roosevelt.mesa@noaa.gov); [Randall, Todd A CIV USARMY CENAE \(USA\)](#); [Christopher.Boelke](#); [Peter B Johnsen - NOAA Federal](#)  
**Subject:** Re: [Non-DoD Source] Re: USACE Boston CSRM Check-In  
**Date:** Wednesday, December 10, 2025 1:38:12 PM

---

Thanks for jogging my memory on this one!

Yes, please coordinate with Roosevelt on this one! He can take a look at what you have so far and provide any additional information that you might need at this point.

-Chris

Chris Vaccaro  
Protected Species ESA Consultation Branch Chief  
*Supervisory Fisheries Biologist,*  
*Greater Atlantic Regional Office*  
NOAA Fisheries | U.S. Department of Commerce  
Office (978) 281-9167  
Mobile (978) 675-5097  
[www.fisheries.noaa.gov](http://www.fisheries.noaa.gov)



For additional ESA Section 7 information and Critical Habitat guidance, please see:  
[www.greateratlantic.fisheries.noaa.gov/protected/section7](http://www.greateratlantic.fisheries.noaa.gov/protected/section7)

On Wed, Dec 10, 2025 at 1:31 PM San Antonio, Christine M CIV USARMY CENAE (USA) <[Christine.SanAntonio@usace.army.mil](mailto:Christine.SanAntonio@usace.army.mil)> wrote:

Hi Chris,

Thank you for the response. My apologies, as it has been a long time since we've engaged and it seems in the past we were actually corresponding with Peter Johnsen, who I've now cc'd. I've also attached the cooperating agency response letter from NMFS for general reference. We have been in touch with the NMFS Habitat Division and have a meeting set for next Monday to discuss project updates.

If a meeting isn't doable at the moment, we could share a pdf with Peter and/or Roosevelt of our final array of alternatives with the rough footprints for each neighborhood. We have a good handle on resources in the area and just wanted to touch base to ensure we're all on the same page and not missing anything.

Thank you,

**Christine San Antonio, PhD (she/her)**

Marine Biologist

New England District

U.S. Army Corps of Engineers

[Christine.sanantonio@usace.army.mil](mailto:Christine.sanantonio@usace.army.mil)

(978) 318-8621

---

**From:** Christine Vaccaro - NOAA Federal <[christine.vaccaro@noaa.gov](mailto:christine.vaccaro@noaa.gov)>

**Sent:** Wednesday, December 10, 2025 12:05 PM

**To:** San Antonio, Christine M CIV USARMY CENAE (USA) <[Christine.SanAntonio@usace.army.mil](mailto:Christine.SanAntonio@usace.army.mil)>

**Cc:** [roosevelt.mesa@noaa.gov](mailto:roosevelt.mesa@noaa.gov); Randall, Todd A CIV USARMY CENAE (USA)

<[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>; Christopher.Boelke <[christopher.boelke@noaa.gov](mailto:christopher.boelke@noaa.gov)>

**Subject:** [Non-DoD Source] Re: USACE Boston CSRM Check-In

Hi Christine,

This looks like the first we've been made aware of this. Have you also contacted our Habitat Division? I've cc-ed Chris Boelke here.

Because we continue to catch up post-shutdown and have had to re-prioritize a lot of projects, it would be easiest if you send any specific documents you want review on to us directly. Generally speaking, our website (linked below) has quite a bit of information about resources in your study area, but we can provide further detail if needed on specific elements.

If you have specific information for review, Roosevelt can certainly provide feedback.

Cheers,

Chris

Chris Vaccaro

Protected Species ESA Consultation Branch Chief

*Supervisory Fisheries Biologist,*

*Greater Atlantic Regional Office*

NOAA Fisheries | U.S. Department of Commerce

Office (978) 281-9167

Mobile (978) 675-5097

[www.fisheries.noaa.gov](http://www.fisheries.noaa.gov)



For additional ESA Section 7 information and Critical Habitat guidance, please see:

[www.greateratlantic.fisheries.noaa.gov/protected/section7](http://www.greateratlantic.fisheries.noaa.gov/protected/section7)

On Thu, Dec 4, 2025 at 8:02 AM San Antonio, Christine M CIV USARMY CENAE (USA) <[Christine.SanAntonio@usace.army.mil](mailto:Christine.SanAntonio@usace.army.mil)> wrote:

Good morning,

Hope you are doing well! It's been a while since we've engaged with you on the USACE/City of Boston Coastal Storm Risk Management Study. Now that we're narrowing in on our final array of alternatives, we were wondering if you have any availability in the coming weeks (Dec/Jan) for a check-in conversation. We'll provide a brief project update and want to discuss resources with you to make sure we're on track. We'll have more formal conversations to come and are mostly just looking to re-engage with the right folks as we aim to have a draft report release later in 2026. We're looking forward to re-connecting. Please invite others from your group as appropriate.

Thanks!

**Christine San Antonio, PhD (she/her)**

Marine Biologist

New England District

U.S. Army Corps of Engineers

[Christine.sanantonio@usace.army.mil](mailto:Christine.sanantonio@usace.army.mil)

(978) 318-8621

**From:** [San Antonio, Christine M CIV USARMY CENAE \(USA\)](#)  
**To:** ["Yelen, Joanna M \(EEA\)";](#) [Bowie, Patricia \(EEA\);](#) [Brizius, Alison \(EEA\)](#)  
**Cc:** [Randall, Todd A CIV USARMY CENAE \(USA\)](#)  
**Subject:** RE: USACE Boston CSRM Check-In  
**Date:** Thursday, January 22, 2026 2:14:00 PM  
**Attachments:** [Boston CSRM Final Array Agency Update Jan 2026.pdf](#)

---

Good afternoon all,

Thank you for joining the call earlier today to discuss the Boston CSRM study. We appreciate the discussion and comments. I've attached the slides shared during the meeting. Please reach out at any time with any additional questions. We will be in touch soon as the study progresses.

Thanks again!

**Christine San Antonio, PhD (she/her)**

Marine Biologist

New England District

U.S. Army Corps of Engineers

[Christine.sanantonio@usace.army.mil](mailto:Christine.sanantonio@usace.army.mil)

(978) 318-8621

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**From:** Yelen, Joanna M (EEA) <Joanna.M.Yelen@mass.gov>  
**Sent:** Thursday, January 8, 2026 3:00 PM  
**To:** San Antonio, Christine M CIV USARMY CENAE (USA) <Christine.SanAntonio@usace.army.mil>; Bowie, Patricia (EEA) <patricia.bowie@mass.gov>; Brizius, Alison (EEA) <Alison.Brizius@mass.gov>  
**Cc:** Randall, Todd A CIV USARMY CENAE (USA) <Todd.A.Randall@usace.army.mil>  
**Subject:** [Non-DoD Source] RE: USACE Boston CSRM Check-In

Hi Christine,

I hope you are well! Thursday, January 22<sup>nd</sup> at 11 AM works for CZM. Do you intend to include the Boston team on the call?

Thanks,

Joanna

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**From:** San Antonio, Christine M CIV USARMY CENAE (USA) <[Christine.SanAntonio@usace.army.mil](mailto:Christine.SanAntonio@usace.army.mil)>  
**Sent:** Tuesday, January 6, 2026 3:28 PM  
**To:** Bowie, Patricia (EEA) <[patricia.bowie@mass.gov](mailto:patricia.bowie@mass.gov)>; Brizius, Alison (EEA) <[Alison.Brizius@mass.gov](mailto:Alison.Brizius@mass.gov)>; Yelen, Joanna M (EEA) <[Joanna.M.Yelen@mass.gov](mailto:Joanna.M.Yelen@mass.gov)>  
**Cc:** Randall, Todd A CIV USARMY CENAE (USA) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>  
**Subject:** RE: USACE Boston CSRM Check-In

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Hi all,

Happy New Year! I hope everyone had some time to relax (or at least enjoy!) the holidays.

Here's an update on our availability for a Boston CSRM check-in meeting:

Tuesday 1/20 9-11am; 1-3pm

Thursday 1/22 9-12pm; 2-3pm

Friday 1/23 9-12pm (9-10am would be preferred)

Let me know if any of these times work for a call.

Thanks,

**Christine San Antonio, PhD (she/her)**

Marine Biologist

New England District

U.S. Army Corps of Engineers

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**From:** San Antonio, Christine M CIV USARMY CENAE (USA)

**Sent:** Tuesday, December 16, 2025 3:56 PM

**To:** Bowie, Patricia (EEA) <[patricia.bowie@mass.gov](mailto:patricia.bowie@mass.gov)>; Brizius, Alison (EEA)

<[Alison.Brizius@mass.gov](mailto:Alison.Brizius@mass.gov)>; Yelen, Joanna M (EEA) <[Joanna.M.Yelen@mass.gov](mailto:Joanna.M.Yelen@mass.gov)>

**Cc:** Randall, Todd A CIV USARMY CENAE (USA) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>

**Subject:** RE: USACE Boston CSRM Check-In

Thanks Tricia! We could do anytime on these dates:

Monday 1/5

Tuesday 1/20

Thursday 1/22

Friday 1/23

If none of these dates work, we can do later in the month as well. Is there a good time that will work on your end?

Cheers,

**Christine San Antonio, PhD (she/her)**

Marine Biologist

New England District

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**From:** Bowie, Patricia (EEA) <[patricia.bowie@mass.gov](mailto:patricia.bowie@mass.gov)>

**Sent:** Tuesday, December 16, 2025 3:44 PM

**To:** San Antonio, Christine M CIV USARMY CENAE (USA) <[Christine.SanAntonio@usace.army.mil](mailto:Christine.SanAntonio@usace.army.mil)>; Brizius, Alison (EEA) <[Alison.Brizius@mass.gov](mailto:Alison.Brizius@mass.gov)>; Yelen, Joanna M (EEA) <[Joanna.M.Yelen@mass.gov](mailto:Joanna.M.Yelen@mass.gov)>

**Cc:** Randall, Todd A CIV USARMY CENAE (USA) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>

**Subject:** [Non-DoD Source] Re: USACE Boston CSRM Check-In

Hi Christine,

Thanks for circling back to this. Do you have any potential dates that you're looking to hold the meeting?

Tricia

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**From:** San Antonio, Christine M CIV USARMY CENAE (USA) <[Christine.SanAntonio@usace.army.mil](mailto:Christine.SanAntonio@usace.army.mil)>

**Sent:** Tuesday, December 16, 2025 3:19 PM

**To:** Brizius, Alison (EEA) <[Alison.Brizius@mass.gov](mailto:Alison.Brizius@mass.gov)>; Yelen, Joanna M (EEA) <[Joanna.M.Yelen@mass.gov](mailto:Joanna.M.Yelen@mass.gov)>; Bowie, Patricia (EEA) <[patricia.bowie@mass.gov](mailto:patricia.bowie@mass.gov)>

**Cc:** Randall, Todd A CIV USARMY CENAE (USA) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>

**Subject:** RE: USACE Boston CSRM Check-In

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Hello all,

I wanted to follow up on this. Would you all be able to join us for a brief call sometime in January to discuss the Boston CSRM study and our path forward with CZM?

Thank you!

**Christine San Antonio, PhD (she/her)**

Marine Biologist

New England District

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**From:** San Antonio, Christine M CIV USARMY CENAE (USA)

**Sent:** Thursday, December 4, 2025 8:04 AM

**To:** Brizius, Alison (EEA) <[alison.brizius@mass.gov](mailto:alison.brizius@mass.gov)>; Yelen, Joanna M (EEA)

<[joanna.m.yelen@mass.gov](mailto:joanna.m.yelen@mass.gov)>; Bowie, Patricia (EEA) <[patricia.bowie@mass.gov](mailto:patricia.bowie@mass.gov)>

**Cc:** Randall, Todd A CIV USARMY CENAE (USA) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>

**Subject:** USACE Boston CSRM Check-In

Good morning,

Hope you all are doing well! It's been a while since we've engaged with you on the [USACE/City of Boston Coastal Storm Risk Management Study](#). Now that we're narrowing in on our final array of alternatives, we were wondering if you have any availability in the coming weeks (Dec/Jan) for a check-in conversation. We'll provide a brief project update and want to discuss resources with you to make sure we're on track. We'll have more formal conversations to come and are mostly just looking to re-engage with the right folks as we aim to have a draft report release later in 2026. We're looking forward to re-connecting. Please invite others from your group as appropriate.

Thanks!

**Christine San Antonio, PhD (she/her)**

Marine Biologist

New England District

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**From:** [San Antonio, Christine M CIV USARMY CENAE \(USA\)](#)  
**To:** ["Galvin, Mike \(DCR\)"](#)  
**Cc:** [Randall, Todd A CIV USARMY CENAE \(USA\)](#)  
**Subject:** RE: USACE Boston CSRM Study  
**Date:** Monday, February 9, 2026 2:37:00 PM

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Hi Mike,

I knew I forgot something from our conversation. All the alignments except for the one in Paul Revere Park are being designed to a minimum elevation of 14' (there are some areas subject to wave action where the target elevation falls between 14' and 16'). Fourteen feet is equivalent to the stillwater elevation under the 100-year 2090 USACE high sea level change scenario, which is what the study is formulating to. I hope that helps.

Thanks,

**Christine San Antonio, PhD (she/her)**

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**From:** Galvin, Mike (DCR) <mike.galvin@mass.gov>  
**Sent:** Monday, February 9, 2026 1:44 PM  
**To:** San Antonio, Christine M CIV USARMY CENAE (USA) <Christine.SanAntonio@usace.army.mil>  
**Cc:** Randall, Todd A CIV USARMY CENAE (USA) <Todd.A.Randall@usace.army.mil>  
**Subject:** [Non-DoD Source] RE: USACE Boston CSRM Study

I just saw your second response about relying on the NCRD PAS study. So, if you could just confirm the elevation of the Harbor and the planned wall on the south side of the dam that would be helpful.

Mike Galvin

DCR

WaterResources and Flood Control Engineering

[Mike.Galvin@mass.gov](mailto:Mike.Galvin@mass.gov)

---

**From:** Galvin, Mike (DCR)

**Sent:** Monday, February 9, 2026 12:21 PM

**To:** 'San Antonio, Christine M CIV USARMY CENAE (USA)' <[Christine.SanAntonio@usace.army.mil](mailto:Christine.SanAntonio@usace.army.mil)>

**Cc:** Randall, Todd A CIV USARMY CENAE (USA) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>

**Subject:** RE: USACE Boston CSRM Study

Thanks,

Can you confirm the elevation you are planning for the south side? Did your study analyze the impact from the flow pathway into the Charles River?

Mike Galvin

DCR

WaterResources and Flood Control Engineering

[Mike.Galvin@mass.gov](mailto:Mike.Galvin@mass.gov)

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**From:** San Antonio, Christine M CIV USARMY CENAE (USA) <[Christine.SanAntonio@usace.army.mil](mailto:Christine.SanAntonio@usace.army.mil)>

**Sent:** Monday, February 9, 2026 12:00 PM

**To:** Galvin, Mike (DCR) <[mike.galvin@mass.gov](mailto:mike.galvin@mass.gov)>

**Cc:** Randall, Todd A CIV USARMY CENAE (USA) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>

**Subject:** USACE Boston CSRM Study

**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hi Mike,

Our engineers were able to provide the attached plans of the proposed Boston CSRM alignments that are on either side of the NCRD. They noted that they did not have definitive property lines for the dam itself but were able to use GIS property data (the dash/dot lines on the plans) to denote boundaries. The assumption being anything outside of those lines (on the dam side) would be dam property.

In Paul Revere Park, the work is within Commonwealth of MA property, and on the Lovejoy Wharf side, the work is right on the border of what is presumably NCRD and Commonwealth of MA property. Note, the pink box on the plans is a landside wall segment to tie in the water-side floodwall at the wharf upland.

Thank you,

**Christine San Antonio, PhD (she/her)**

Marine Biologist

New England District

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**From:** [San Antonio, Christine M CIV USARMY CENAE \(USA\)](#)  
**To:** [Timmermann, Timothy](#); [Pryor.Margherita@epa.gov](#); [Colarusso, Phil](#); [Wolf, Steven](#); [Audrey\\_Mayer@FWS.gov](#); [Roosevelt Mesa - NOAA Affiliate](#); [Alexa Cacacie - NOAA Federal](#); [Christopher Boelke - NOAA Federal](#); [Brizius, Alison \(EEA\)](#); [Yelen, Joanna M \(EEA\)](#); [Bowie, Patricia \(EEA\)](#); [Galvin, Mike \(DCR\)](#); [sarah.j.white@mass.gov](#); [Hoenig, Amy \(FWE\)](#); [Frew, Katelyn \(FWE\)](#); [Daniel.padien@mass.gov](#); [Wong, David W \(DEP\)](#)  
**Cc:** [Randall, Todd A CIV USARMY CENAE \(USA\)](#)  
**Subject:** Boston CSRM Study - Follow-up  
**Date:** Thursday, February 5, 2026 3:41:00 PM

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Good afternoon all,

Please see below for follow-up responses to your questions regarding the Boston CSRM study. In lieu of sending shape files, please visit our project's GIS dashboard where you can view the proposed alternatives and toggle on flooding with different layers as desired.

<https://www.arcgis.com/apps/dashboards/2f7681f64c8f436b8cdfa0a5544f8add>

Please reach out if you have additional questions/concerns.

Thank you!

**1. Do we have redundancies in place for any of our proposed measures?**

We are doing multi-level risk analysis throughout the study, starting at a high level and refining to minute detail as we progress with development of our preferred plan. Redundancies will be placed where identified being needed. A final risk assessment would be done in the design phase to ensure accuracy.

**2. None of our alternatives address Logan Airport correct?**

Yes, Massport requested not to be included in our study. However, much airport property is included in our formulation. Our alignments will tie in at the edges of the airport, but no measures are being specifically formulated for the airport. The coastal runways are also on high ground, and our modeling did not identify immediate risk.

**3. Were riverine inputs included in the modeling used when designing the alternatives?**

Rivers and tributaries were included in the model mesh as surge is able to propagate into those areas. The models used were primarily driven by coastal forcing (storm surge and waves) and riverine input was found to be less influential. A steady state sensitivity test was performed on the Neponset River and coastal influence was found to dominate with riverine input having little impact.

**4. Is the Chelsea Creek tank farm on its own to address flooding?**

Yes, the tank farm on Chelsea St is on its own. The area was identified as only fringe flooding and is not a major flood pathway that could impact larger areas inland. The tanks have additional secondary containment berms on site that add protection.

**5. What was decided regarding the tunnels?**

We will not be constructing any closure structures at tunnel openings. For most of the project area, the tunnel openings are behind our lines of protection. In South Boston, we have proposed raising a parapet wall around the area where tunnels surface to prevent water from entering.

**6. Do you have a map/figure of hospitals/schools/safety buildings in each neighborhood overlapped with the flooding/alignments?**

Please view the project ArcGIS dashboard and toggle on the desired layers with the flooding and alignments visible.

<https://www.arcgis.com/apps/dashboards/2f7681f64c8f436b8cdfa0a5544f8add>

**7. Why is the berm/regrade in Paul Revere Park only to 11.7'?**

The New Charles River Dam is the limiting elevation at this time at 11.7'. Because construction in a park area would be more accessible/easier to conduct, the decision was made to construct to 11.7' to match the controlling elevation (NCRD) with the potential for future work in that area should the elevation of the dam increase in the future. Whereas, on the other side of the dam, construction would be much more challenging and it makes sense to have a single construction event that addresses the high formulation instead of constructing there twice.

**8. Are the structures adaptable?**

They are adaptable for performance over a 100-year planning horizon. Alignments in dense areas were designed to a higher sea level curve scenario so construction would hopefully not be needed again in the future. In less dense areas, designs were done to a lower SLC scenario but will be building the foundation to allow adaptation in the future.

**Christine San Antonio, PhD (she/her)**

Marine Biologist

New England District

U.S. Army Corps of Engineers

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**From:** [San Antonio, Christine M CIV USARMY CENAE \(USA\)](#)  
**To:** [Timmermann, Timothy](#); [Pryor, Margherita](#); [Colarusso, Phil](#); [Wolf, Steven](#); [Audrey.Mayer@FWS.gov](#); [Roosevelt Mesa - NOAA Affiliate](#); [Alexa Cacacie - NOAA Federal](#); [Christopher Boelke - NOAA Federal](#); [Brizius, Alison \(EEA\)](#); [Yelen, Joanna M \(EEA\)](#); [Bowie, Patricia \(EEA\)](#); [Galvin, Mike \(DCR\)](#); [sarah.j.white@mass.gov](#); [Hoenig, Amy \(FWE\)](#); [Frew, Katelyn \(FWE\)](#); [Daniel.padien@mass.gov](#); [Wong, David W \(DEP\)](#)  
**Cc:** [Randall, Todd A CIV USARMY CENAE \(USA\)](#); [Constantine, Ryan N CIV USARMY CENAN \(USA\)](#); [Herzog, Jeffrey A CIV USARMY CENAE \(USA\)](#); [Kathryn Roosa](#)  
**Subject:** Boston CSRM Study - NEPA Scoping Meetings  
**Date:** Tuesday, March 17, 2026 8:22:00 AM

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Dear Agency Partners,

The U.S. Army Corps of Engineers (USACE), New England District, would like to notify you of upcoming National Environmental Policy Act (NEPA) scoping meetings for the Boston Coastal Storm Risk Management Feasibility Study (Study). The Study is assessing the feasibility of implementing coastal storm risk management (CSRM) alternatives to address flooding across Boston's five coastal neighborhoods: East Boston, Charlestown, Downtown/North End, South Boston, and Dorchester. The non-federal sponsor for the study is the City of Boston.

The purpose of the Study is to investigate the feasibility of managing coastal storm risk and associated sea level change (SLC) along 47 miles of the Boston Harbor coastline. The project area is at risk of flooding from harbor water during coastal storms, extreme tides, and future SLC. Flooding along the harbor could cause extensive damage to public infrastructure and private property; risk to community safety and deterioration of public health; degradation of the natural environment; and adverse changes to the social and economic character of Boston Harbor communities. The risk is expected to increase over time as sea levels change in the Harbor. CSRM alternatives, including a No Action Alternative, were identified for each of the five neighborhoods separately but with the intent that they will form a comprehensive system of protection for the Study area.

To reach all Boston communities that may be affected by this study, in-person NEPA scoping meetings have been scheduled for the following dates, times, and locations. We will send a follow-up should any of the details change prior to these meetings.

**Monday March 23, 2026**

- 2:00 – 3:30 PM; 26 Court St, Boston, MA – Level 3, Rm. 326 (Resource Agencies)

**Tuesday March 24, 2026**

- 6:00 – 7:30 PM; Paris Street Community Center, 112 Paris St, East Boston, MA

**Wednesday March 25, 2026**

- 1:00 – 2:30 PM; 26 Court St, Boston, MA – Level 3, Rm. 326 (Resource Agencies)
- \*6:00 – 7:30 PM; 26 Court St, Boston, MA – Level 1, Rm. 114

\*Hybrid Meeting

**Thursday March 26, 2026**

- 10:00 – 11:30 AM; 26 Court St, Boston, MA – Level 3, Rm. 328 (Resource Agencies)

At these meetings, the USACE and City of Boston will provide an informational overview of the Study including the planning process, the current array of alternatives for each neighborhood, and considerations with respect to NEPA, related environmental laws and regulations, and the National Historic Preservation Act. The USACE invites all affected federal, state, and local agencies, affected Native American Tribes, and other interested parties, and the public to attend the scoping meetings, to comment on the scope of this Study, and to provide input into the potential significant impacts associated with the alternatives.

The current Study schedule anticipates the release of the Draft Integrated Feasibility Report/NEPA document in July 2026, with a corresponding 45-day public review and comment period. Additional information on the Study and schedule can be viewed at the Study websites: <https://www.nae.usace.army.mil/Missions/Projects-Topics/City-of-Boston-Coastal-Storm-Risk-Management-Project/> and <https://www.boston.gov/departments/climate-resilience/climate-ready-boston-and-army-corps-partnership>.

The USACE looks forward to coordinating with you further on this project. Please reach out to us at the contact information below or to Chris Chabot, Environmental Branch Chief, at [christopher.l.chabot@usace.army.mil](mailto:christopher.l.chabot@usace.army.mil) or (978) 318-8347, with any questions about the project.

Thank you,

Todd Randall  
Marine Ecologist  
[Todd.a.randall@usace.army.mil](mailto:Todd.a.randall@usace.army.mil)  
(978) 318-8518

Christine San Antonio, PhD  
Marine Biologist  
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