Metropolitan Coastal Watershed Study

Study Lead and Federal Sponsor: USACE New England District, North Atlantic Division

Non-Federal Sponsor: Executive Office of Energy and Environmental Affairs

Engagement Facilitator (in early project phase): Metropolitan Area Planning Council

US Army Corps of Engineers
New England District

Agenda

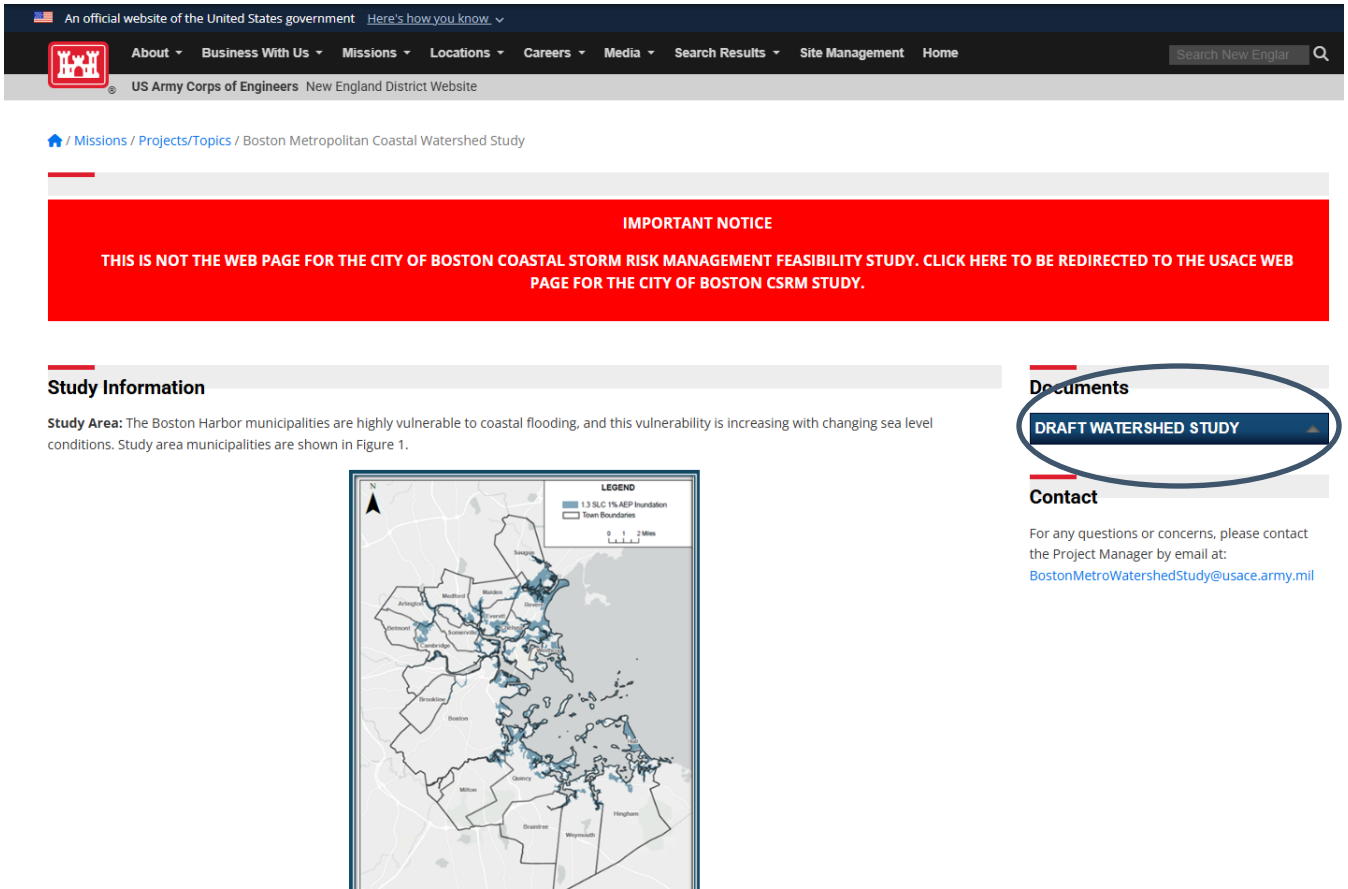
- **Metropolitan Coastal Watershed Study**
  - Context, Study Area, Timeline
  - Relation to other studies
- **Overview of Study Components and Findings**
  - Segment 1: Shared Vision Milestone and Stakeholder Engagement
  - Segment 2: Recommendations Milestone
  - Segment 3: Report Milestone
- **Key Takeaways**
- **Q&A**

Draft Watershed Study

Draft Report: Boston Metropolitan Coastal Watershed Study
Comments Due: ~~October 19, 2026~~ (UPDATED: Due Nov. 23)

Email:
BostonMetroWatershedStudy@usace.army.mil

Mail:
U.S. Army Corps of Engineers, New England District
Attn: Plan Formulation Section, Heidi Graf
696 Virginia Road, Concord, MA 01742



Background

- **2020 Water Resources Development Act authorization:**
  - Funding agreement between USACE and EEA to conduct a planning study to address climate resiliency at the watershed scale
  - Kicked-off in 2021
  - Originally scoped as a 3-year planning study

- **Purpose:**
  - Increase regional collaboration
  - Assess regional risks and adaptation strategies
  - Support regional project prioritization

- **Coordinated with other resilience planning efforts**

Concurrent planning efforts

USACE – Metropolitan Coastal Watershed Study

2021 ----------Paused---------- 2026

Draft Report (Sept.)

CZM – ResilientCoasts

2023 2025 2026

Final Plan

Implementation/TA Projects

USACE – City of Boston CSRM Feasibility Study

2022 2026

Draft Report (July)

USACE Studies

Metropolitan Coastal Watershed Study

- 19 Coastal and Inland Communities (Winthrop to Hull)
- Planning level information on risks and strategies
- May support regional collaboration

Boston Coastal Storm Risk Management (CSRM) Feasibility Study

- City of Boston
- Feasibility study of potential projects to reduce risks, detailed information and cost/benefit analyses
- May result in funding and implementation

Metropolitan Coastal Watershed Study

Segment 1: Shared Vision Milestone

Completed: June 2023

- Conduct stakeholder engagement
  - 4 Workgroup Meetings
  - 8 Interviews
  - 4 Focus Groups
- Develop a shared vision statement

Segment 2: Recommendations Milestone

Completed: May 2026

- Assess risks and evaluate strategies
- Develop draft recommendations to guide future actions

ResilientCoasts initiative (2023-2025); *USACE study paused during much of this time to ensure alignment.*

3 waves of ResilientCoasts engagement (6 public meetings)

Segment 3: Report Milestone

Due by Dec 2026

- Prepare Draft Report
- Conduct targeted outreach with Coastal Resilience Districts
- Conduct USACE, EEA, and public reviews
- Finalize and approve Report

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Initial Stakeholder Engagement

(Dec. 2022 – Mar. 2024)

- Facilitated by EEA and MAPC

4 Regional Work Group Meetings

- **Federal:** EPA, Department of Agriculture (NRCS), Department of Commerce (NMFS), Department of the Interior (USFWS), NPS, FEMA, USGS, HUD
- **State:** DCR, MassDOT, MWRA, MEMA, MBTA, DEP
- **Coastal municipalities** in the study area
- **Watershed organizations**: CRWA, MyRWA, NepRWA
- **Nonprofits and advocacy:** Greenroots, Boston Harbor Now, Harborkeepers
- **Tribal Government:** Mashpee Wampanoag Tribe, Wampanoag(Aquinnah), Narraganset
- **Independent Public Authority**: Massport, BWSC

8 Interviews and 4 Focus Groups

Follow-up conversations with Working Group members, inland communities, and academia

Feedback on:

- Current & proposed projects & plans
- Relevant data, information & reports
- Problems, opportunities, objectives, & constraints in the study area

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Stakeholder Engagement Overview



Dec. 2022 – Mar. 2024
Facilitated by MAPC and EEA

- 4 Workgroup Meetings
  - 8 Interviews
  - 4 Focus Groups

2023 – 2025
ResilientCoasts Engagement
Facilitated by EEA
- *3 waves: 6 public meetings*

August 2026
Facilitated by EEA

- Targeted outreach with Coastal Resilience Districts and public comment opportunity

Initial Stakeholder Engagement

- Relevant data and studies?
- Problems, opportunities, objectives & constraints?



Shared Vision Statement

Communities adjacent to Boston Harbor have strong historic, cultural, economic, environmental, and recreational connections to the area. As coastal storm flood risk increases with sea level change, the region's built and natural assets are at risk including:

- residences
- businesses
- critical facilities and infrastructure
- historic and archaeological resources
- open space and recreation
- natural resources (e.g., beaches, dunes, and salt marshes)

The Commonwealth of Massachusetts and other stakeholders in the coastal Boston Metropolitan area envision a future where the region can collaboratively build on existing efforts to manage flood risks and foster resilience of natural resources and habitats in and around Boston Harbor. This study, as a strategic framework, will inform future decision-making on the technical and financial resources necessary to build an equitable and resilient future in the face of a changing environment.

ResilientCoasts Integration



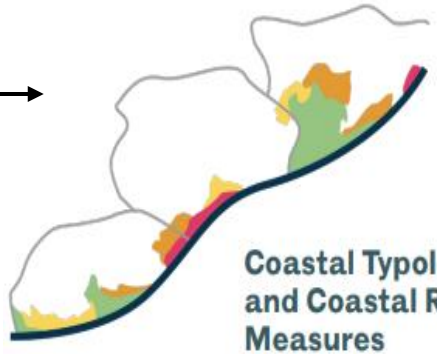
Coastal Resilience Districts

To inform regional collaboration.



Near-term Adaptation Areas

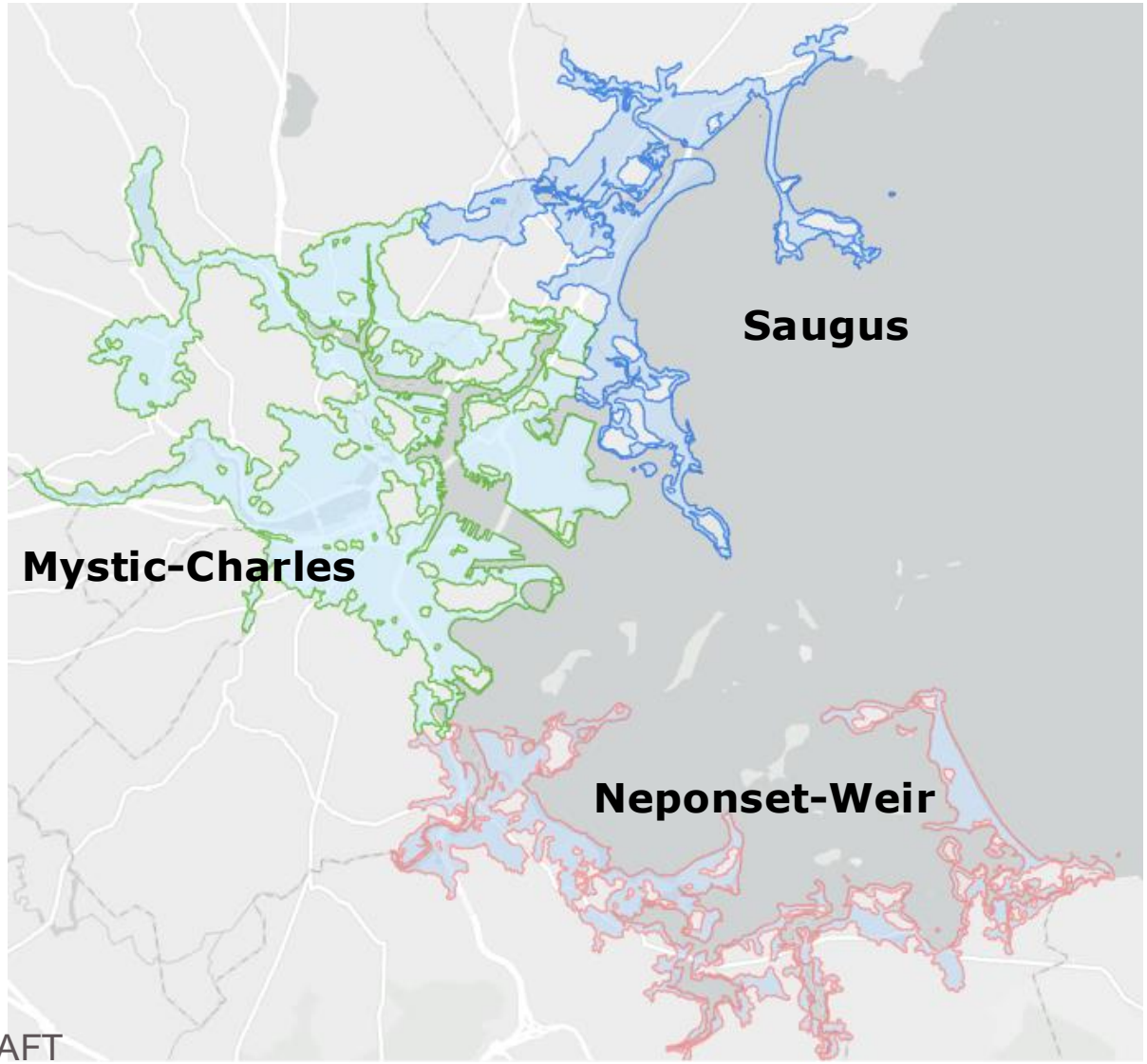
To inform where to prioritize taking action.



Coastal Typologies and Coastal Resilience Measures

To inform how to take action to increase coastal resilience.

Coastal Resilience Districts



ResilientCoasts Coastal Resilience Districts (CRDs)

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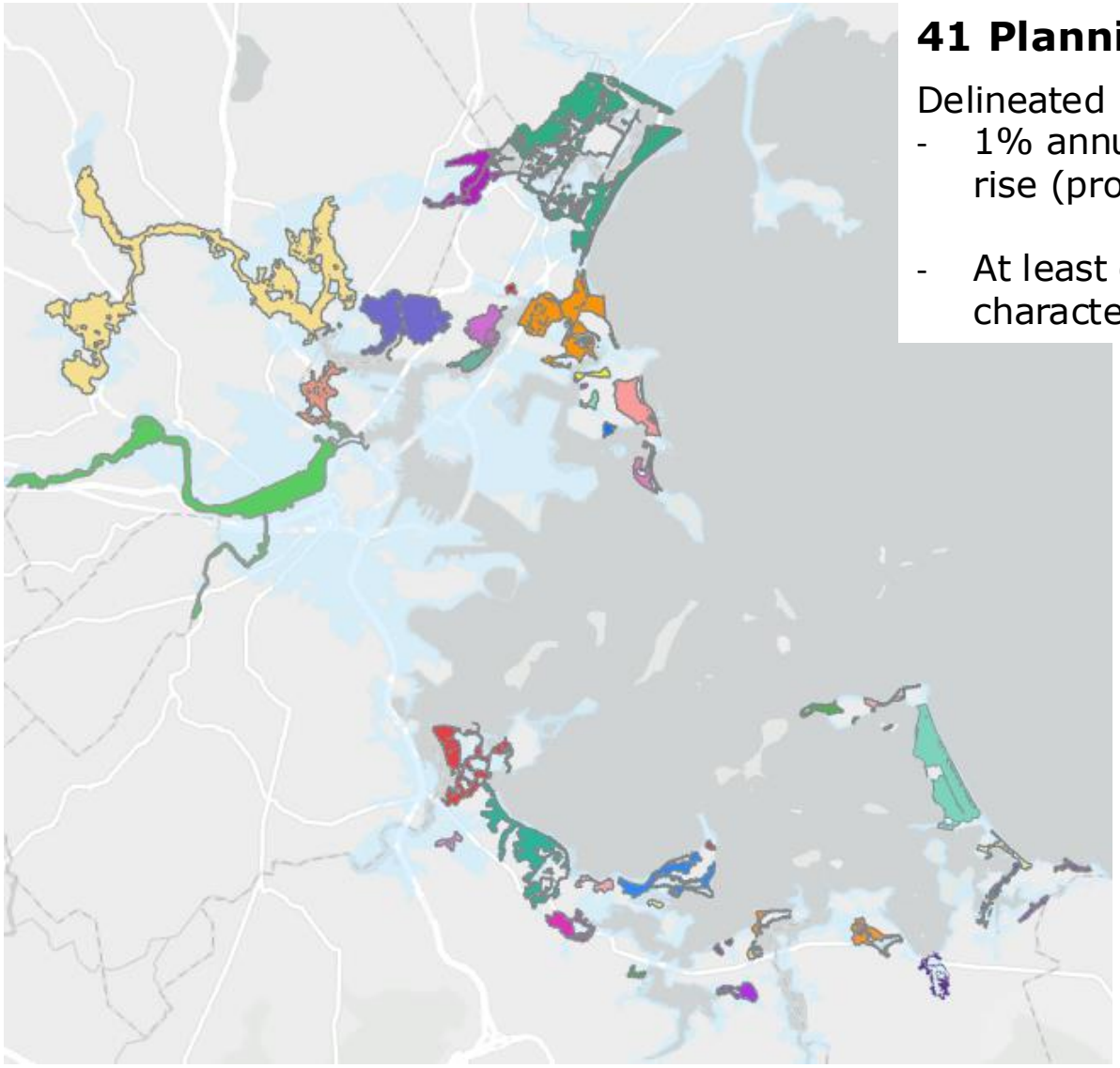
USACE Planning Units

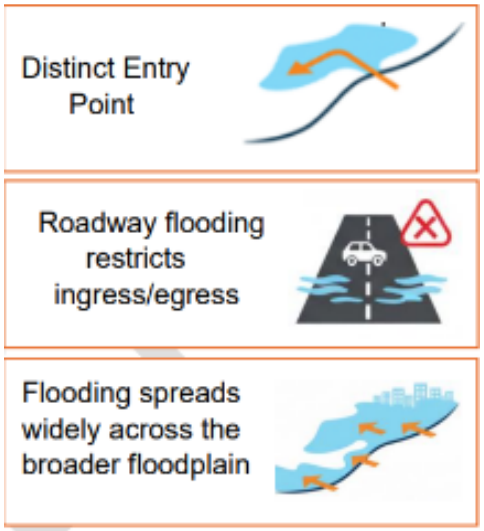


41 Planning Units in 3 CRDs

Delineated by:

- 1% annual chance flood with 1.3' sea level rise (projected 2030s, MC-FRM)

- At least one of the following flooding characteristics:



Not included:

- Fringe flooding
- Long-term flood risk

Flooding Characteristics

Distinct Entry Point





Roadway flooding restricts ingress/egress



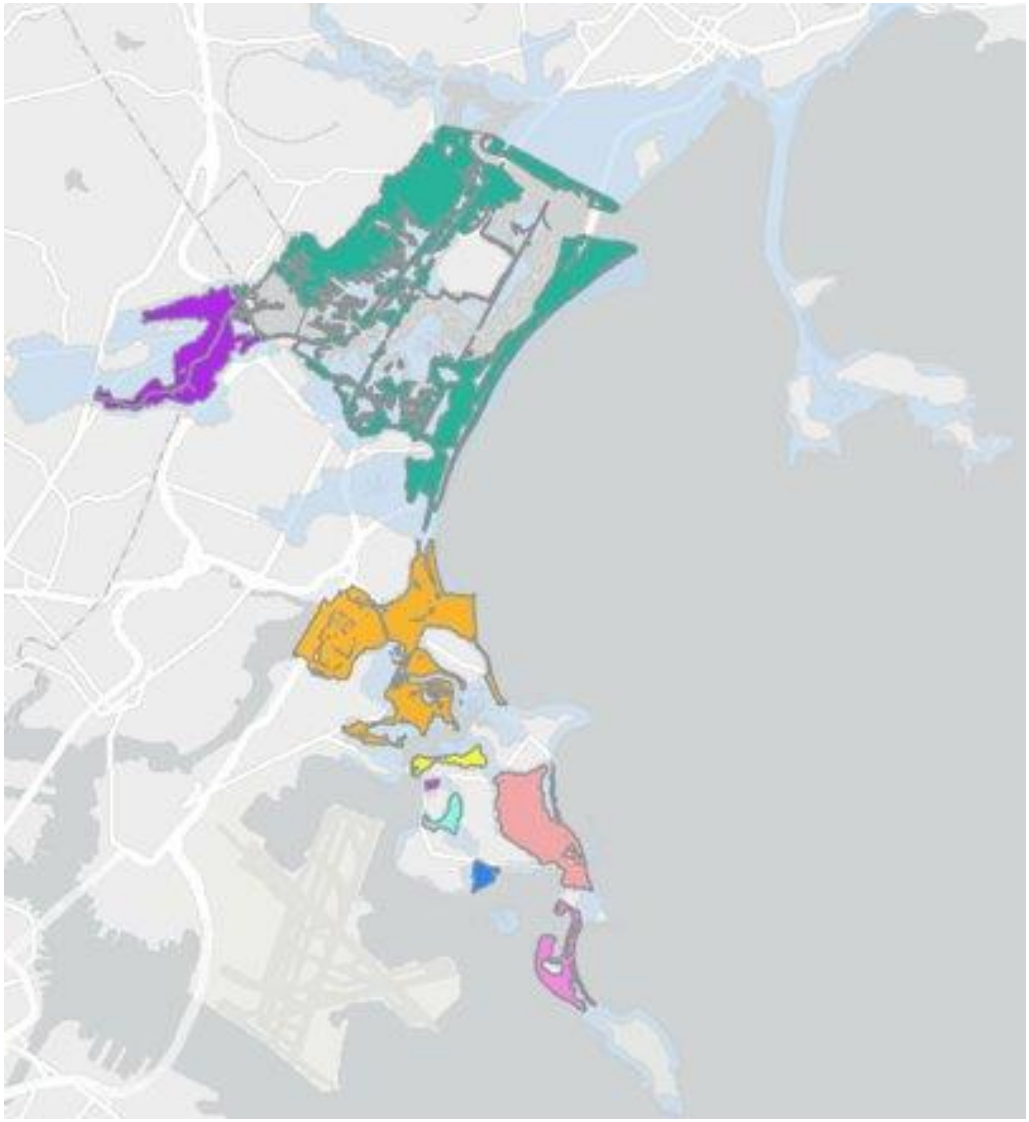


Flooding spreads widely across the broader floodplain





Saugus Planning Units



9 Planning Units

- 1 – Revere, Saugus
- 1 – Revere, Malden, Everett
- 1 – Revere, East Boston
- 6 – Winthrop

- Blue shaded area is Coastal Resilience District boundary
- Different colored polygons represent distinct Planning Units
- Nahant outside study area

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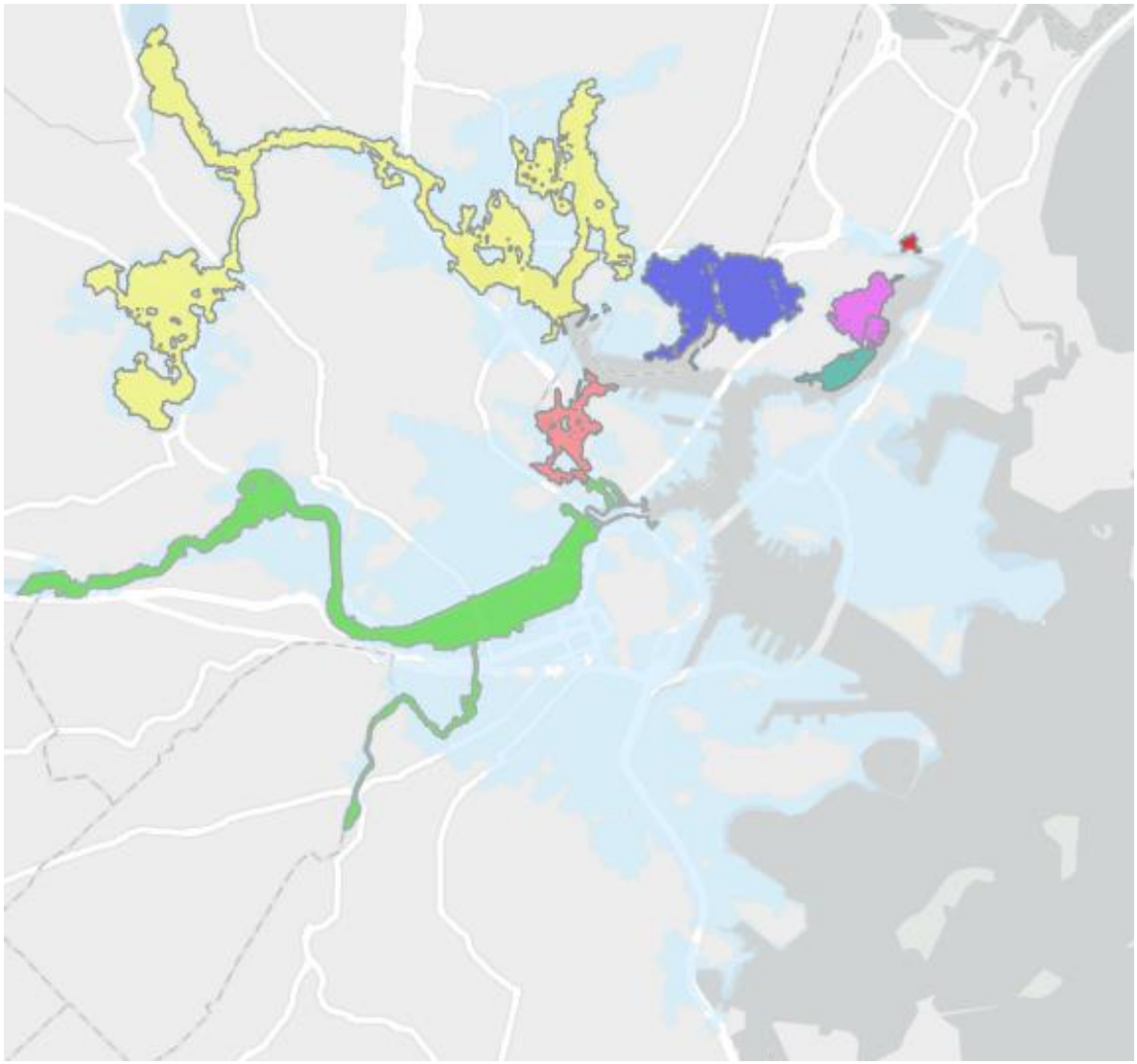
Mystic-Charles Planning Units



7 Planning Units

- 1 – Revere
- 2 – Chelsea
- 1 – Chelsea & Everett
- 1 – Everett, Somerville, Malden, Medford, Arlington, Belmont, Cambridge
- 1 – Boston, Somerville, Cambridge
- 1 – Boston, Cambridge, Brookline

- Blue shaded area is Coastal Resilience District boundary
- Different colored polygons represent distinct Planning Units

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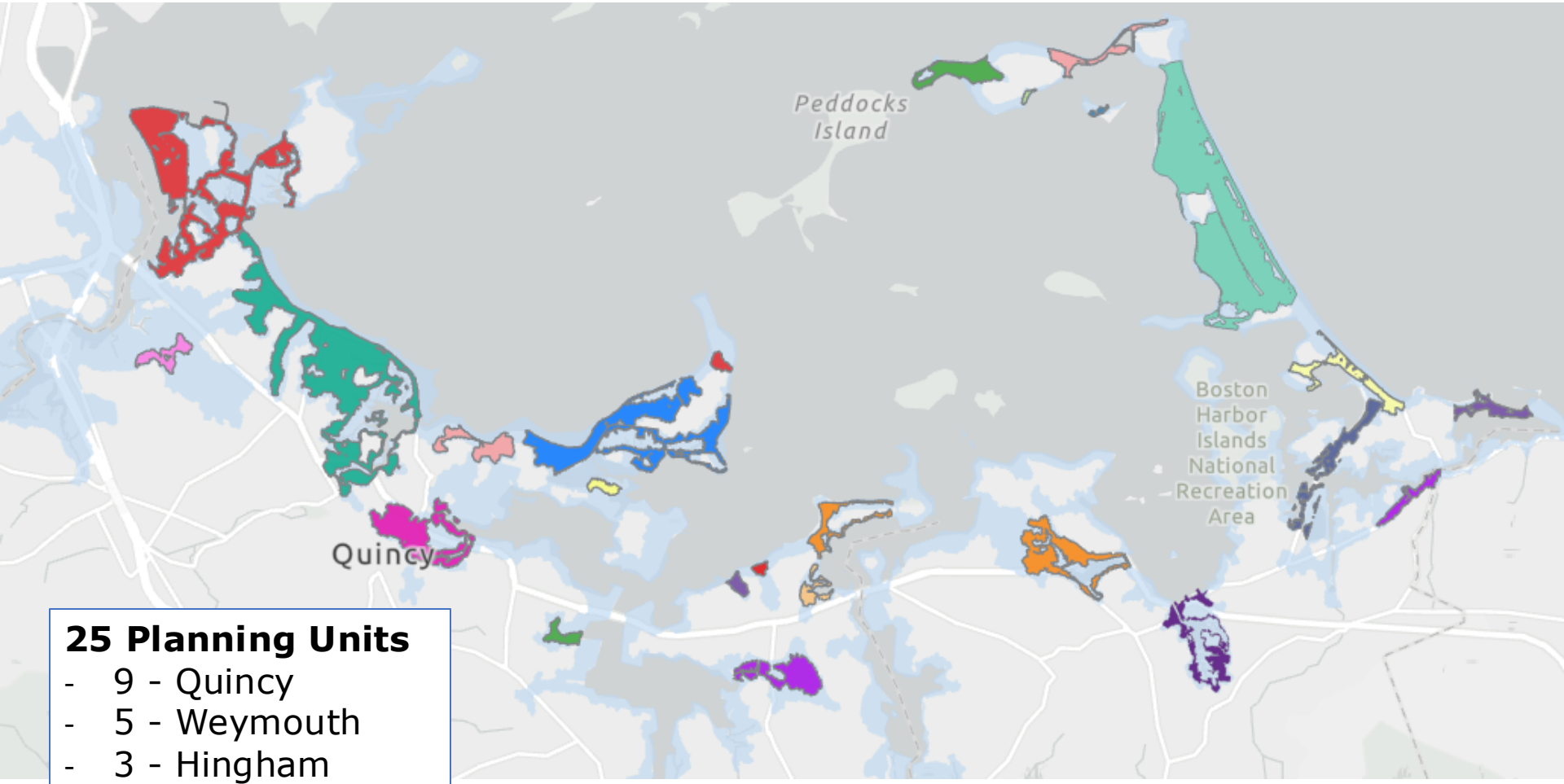
Neponset-Weir Planning Units



25 Planning Units

- 9 - Quincy
- 5 - Weymouth
- 3 - Hingham
- 7 - Hull
- 1 - Hingham/Hull

- Blue shaded area is Coastal Resilience District boundary
- Different colored polygons represent distinct Planning Units

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Segment 2 – Recommendations Milestone

Methodology Overview: Planning Units were evaluated on coastal flooding risks and potential impacts, and opportunities for structural and non-structural measures

Risk Analysis

Standardizing information on potential damages, populations at risk, and critical assets allowing the study team to compare risk consistently across all planning units

"Keep Water Out"

Evaluate structural measures

Structural measures (gray and green) that are intended to reduce flooding by altering the flow of floodwater

"Live With Water"

Evaluate non-structural measures

Building level adaptations that reduce consequences without altering flow. Includes elevation, dry/wet floodproofing, buy-outs, and relocation

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Segment 2 – Methodology Update

Draft Report:

- Relative ranking of planning unit value for specific metric
- Ranked descending order with highest metric value = relative rank of 1

Update:

- High/Medium/Low tiers
  - High tier : ≥ 75th
  - Medium: < 75th percentile and > 25th
  - Low: ≤25th percentile

Methodology Update – Saugus Example (Risk)

Planning Unit Name #	Population	EAD Rounded
1 - Revere Saugus River	7,245	31,900,000
2 - Revere Town Line Brook	2,484	6,190,000
7 - Revere East Boston	4647	27,800,000
8 - Morton Street	502	2,951,000
9 - Pleasant Street	109	20,000
10 - Brook Park	219	276,000
11 - Shore Drive	3098	7,300,000
12 - Pico Beach	143	132,000
13 - Point Shirley	1022	530,000

POPULATION TIERS
Low: 25th Percentile ≤ 219.00
Medium: > 219 and < 3,098
High: 75th Percentile ≥ 3,098.00

EAD TIERS
Low: 25th Percentile ≤ 276,000
Medium: > 276,000 and < 7,300,000
High: 75th Percentile ≥ 7,300,000

	Population (Night)	
PLANNING UNIT # - NAME	Relative Ranking	Tiered Ranking
1 - Revere Saugus River	**1**	**High**
7 - Revere East Boston	2	**High**
11 - Winthrop Lewis Lake	3	**High**
2 - Revere Town Line Brook	4	Medium
13 - Winthrop Point Shirley	5	Medium
8 - Winthrop Belle Isle Inlet	6	Medium
10 - Winthrop Ingleside Park	7	Low
12 - Winthrop Pico Beach	8	Low
9 - Winthrop Pleasant Street	9	Low

	EAD	
PLANNING UNIT # - NAME	Relative Ranking	Tiered Ranking
1 - Revere Saugus River	**1**	**High**
7 - Revere East Boston	2	**High**
11 - Winthrop Lewis Lake	3	**High**
2 - Revere Town Line Brook	4	Medium
8 - Winthrop Belle Isle Inlet	5	Medium
13 - Winthrop Point Shirley	6	Medium
10 - Winthrop Ingleside Park	7	Low
12 - Winthrop Pico Beach	8	Low
9 - Winthrop Pleasant Street	9	Low

Saugus

Saugus CRD Risk Analysis		EAD Tiered Ranking		
		Low	Medium	High
Population Tiered Ranking	High	None	None	PU 1 – Revere Saugus River PU 7- Revere East Boston PU 11 – Winthrop Lewis Lake
	Medium	None	PU 2 – Revere Town Line Brook PU 8 – Winthrop Belle Isle Inlet PU 13 – Winthrop Point Shirley	None
	Low	PU 9 – Winthrop Pleasant St PU 10 – Winthrop Ingleside Park PU 12 – Winthrop Pico Beach	None	None

Saugus CRD Live Keep Water Out Theme		Intervention Profile Tiered Ranking		
		Low	Medium	High
Opportunities to Reduce Risk Tiered Ranking	High	PU 1 – Revere Saugus River PU 7 – Revere East Boston	PU 11 – Winthrop Lewis Lake	None
	Medium	PU 13 – Winthrop Point Shirely	PU 8 – Winthrop Belle Isle Inlet	PU 2 – Revere Town Line Brook
	Low	None	PU 12 – Winthrop Pico Beach	PU 9 – Winthrop Pleasant St PU 10 – Winthrop Ingleside Park

Saugus CRD Live With Water Theme		Commercial-Industrial-Public Tiered Ranking		
		Low	Medium	High
Elevation (Residential) Tiered Ranking	High	PU 13 – Winthrop Point Shirley	None	PU 1 – Revere Saugus River PU 7- Revere East Boston
	Medium	None	PU 2 – Revere Town Line Brook PU 8 – Winthrop Belle Isle Inlet	PU 11 – Winthrop Lewis Lake
	Low	PU 9 – Winthrop Pleasant St PU 12 – Winthrop Pico Beach	PU 10 – Winthrop Ingleside Park	None

Mystic-Charles

Mystic-Charles CRD Risk Analysis		EAD Tiered Ranking		
		Low	Medium	High
Population Tiered Ranking	High	None	**PU 3 – Mystic-Malden Rivers**	**PU 4 – Everett Chelsea Island End River**
	Medium	None	PU 6 – Revere Mill Creek PU 15 – Somerville Boston Cambridge	**PU 5 – Chelsea Eastern Ave**
	Low	PU 14 – Chelsea Marginal St PU 16 – Charles River	None	None

Mystic-Charles CRD Keep Water Out Water		Intervention Profile Tiered Ranking		
		Low	Medium	High
Opportunities to Reduce Risk Tiered Ranking	High	PU 15 – Somerville Boston Cambridge PU 16 – Charles River	**None**	**PU 3 – Mystic-Malden Rivers** **PU 4 – Everett Chelsea Island End River** **PU 5 – Chelsea Eastern Ave** **PU 14 – Chelsea Marginal St**
	Medium	None	None	
	Low	None	None	PU 6 – Revere Mill Creek

Mystic-Charles CRD Live with Water		Commercial-Industrial-Public Tiered Ranking		
		Low	Medium	High
Elevation (Residential) Tiered Ranking	High	None	**PU 15 – Somerville Boston Cambridge**	**PU 3 – Mystic-Malden Rivers**
	Medium	PU 6 – Revere Mill Creek	PU 5 – Chelsea Eastern Ave	**PU 4 – Everett Chelsea Island End River**
	Low	PU 16 – Charles River	PU 14 – Chelsea Marginal St	None

Neponset-Weir

Neponset-Weir CRD Risk Analysis		EAD Tiered Ranking		
		Low	Medium	High
Population Tiered Ranking	High	None	PU 21 – Quincy Norton Rd PU 36 – Hull Nantasket South	PU 17 – Quincy Squantum PU 19 – Quincy Wollaston PU 20 – Quincy Town River PU 23 – Quincy Sea St PU 37 – Hull Nantasket North
	Medium	PU 18 – Quincy Harriet Ave PU 22 – Quincy Brockton Ave	PU 24 – Quincy Island Ave PU 26 – Weymouth Rocky Beach PU 28 – Weymouth Pearl St PU 30 – Weymouth Fort Point PU 31 – Weymouth Broad Cove PU 34 – Hingham Rockland St PU 39 – Hull Stony Beach	PU 35 – Hull Gun Rock PU 41 – Hull Pemberton Point
	Low	PU 25 – Quincy Fore River PU 27 – Weymouth Wessagusset Beach PU 29 – Weymouth Neck St PU 34- Hingham-Hull Weir River PU 39 – Hull Hog Island	PU 32 – Hingham Harbor PU 40 – Hull James Ave	None

Neponset-Weir

Neponset-Weir CRD Keep Water Out Theme		Intervention Profile Tiered Ranking		
		Low	Medium	High
Opportunity to Reduce Risk Tiered Ranking	High	PU 17 – Quincy Squantum PU 21 – Quincy Norton St PU 23 – Quincy Sea Street PU 30 – Weymouth Fort Point PU 36 – Hull Nantasket South PU 37 – Hull Nantasket North PU 39 – Hull Stony Beach	PU 19 – Quincy Wollaston PU 32 – Hingham Harbor PU 41 – Hull Pemberton Point	PU 20 – Quincy Town River PU 24 – Quincy Island Ave PU 26 – Weymouth Rocky Beach
	Medium	None	None	None
	Low	PU 31 – Hingham Broad Cove PU 35 – Hull Gun Rock	PU 33 – Hingham-Hull Weir River PU 34 – Hingham Rockland St PU 38 – Hull Hog Island PU 40 – Hull James Ave	PU 18 – Quincy Harriet Ave PU 22 – Quincy Brockton Ave PU 25 – Quincy Fore River PU 27 – Weymouth Wessagusset Beach PU 28 – Weymouth Pearl St PU 29 – Weymouth Neck Street

Neponset-Weir

Neponset-Weir CRD Live with Water Theme		Commercial-Industrial-Public Tiered Ranking		
		Low	Medium	High
Residential Elevation Tiered Ranking	High	PU 35 – Hull Gun Rock	PU 21 – Quincy Norton Rd PU 23 – Quincy Sea St	PU 19 – Quincy Wollaston PU 36 – Hull Nantasket South PU 37 – Hull Nantasket North PU 41 – Hull Pemberton Point
	Medium	PU 18 – Quincy Harriet Ave PU 22 – Quincy Brockton Ave PU 26 – Weymouth Rocky Beach PU 39 – Hull Stony Beach PU 40 – Hull James Ave	PU 30 – Weymouth Fort Point PU 34 – Hingham Rockland St	PU 17 – Quincy Squantum PU 20 – Quincy Town River
	Low	PU 24 – Quincy Island Ave PU 25 – Quincy Fore River PU 27 – Weymouth Wessagusset Beach PU 29 – Weymouth Neck St PU 38 – Hull Hog Island	PU 28 – Weymouth Pearl St PU 33 – Hingham-Hull Weir River	PU 31 – Hingham Broad Cove PU 32 – Hingham Harbor

Draft Findings and Recommendations Framework

- Recommendations represent a screening-level categorization of planning units that could be areas for prioritization based on high risk and high opportunities to implement measures

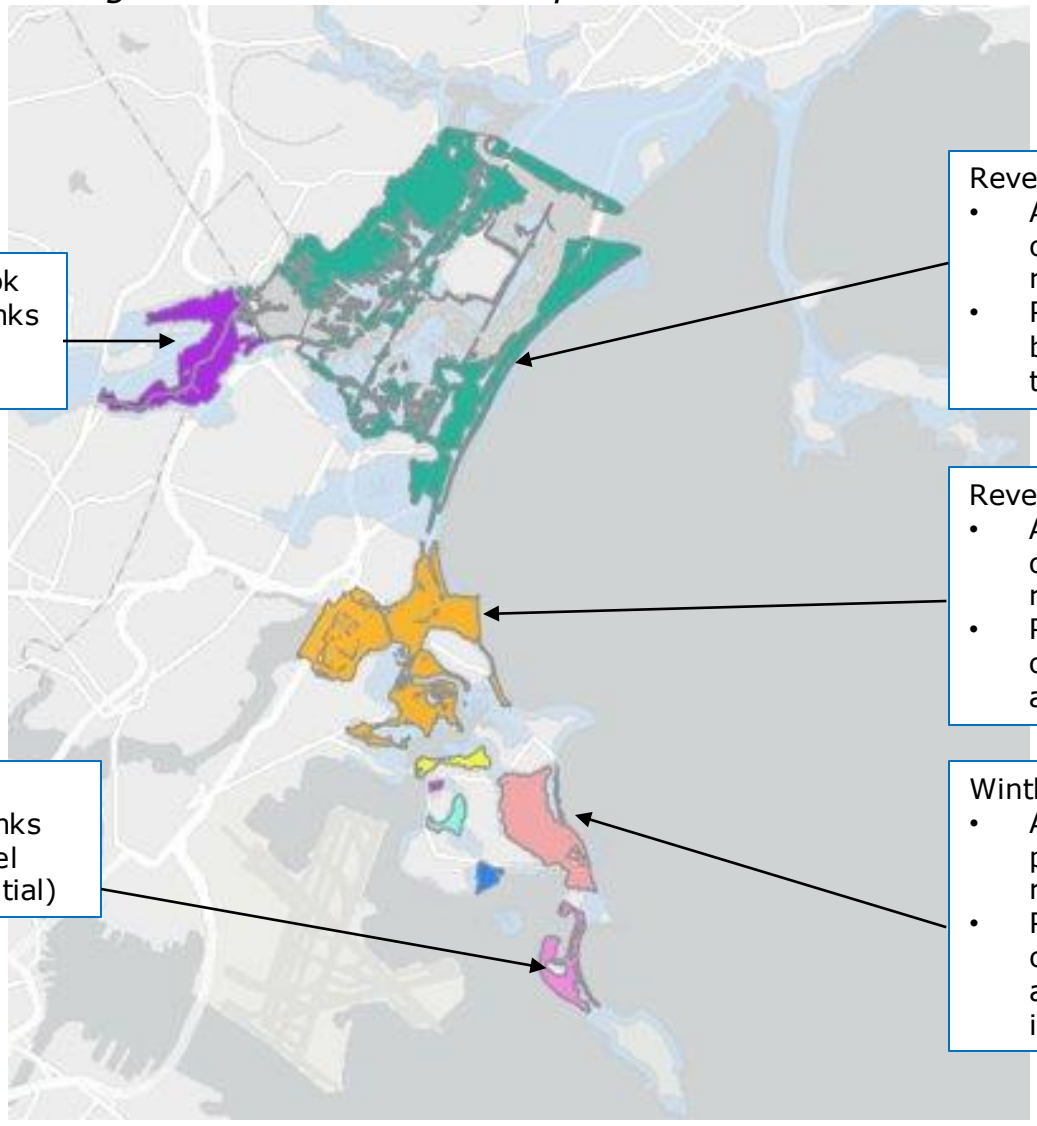
Ranking Category	Intervention(s) Effective for:
Group A: Risk Assessment	Reducing risk in areas with high concentrations of people and property
Group B: Structural Opportunities	Reducing risk through structural measures (green or gray)
Group C: Regional Infrastructure	Protecting critical regional infrastructure or blocking multi-municipal flood pathway
Group D: Non-structural Residential Opportunities	Adapting residential buildings through elevation
Group E: Non-structural Commercial/Industrial/Public Opportunities	Adapting commercial, industrial and public properties through floodproofing

Saugus - Draft Recommendations

Recommendation Category	Draft Recommendations (PU)	
Group A: Risk Assessment *Criteria: High Tier Ranking in Population and EAD*	PU 1 - Revere Saugus River PU 7 - Revere East Boston PU 11 - Winthrop Lewis Lake	No Change
Group B: Structural Opportunities *Criteria: High Tier Ranking in Population and EAD*	No Planning units are identified under the group decision criteria. However, PU 11 ranked with a High Tier for Opportunities to Reduce Risk and Medium for Intervention Profile; and PU2 ranked with a Medium Opportunities to Reduce Risk and High for Intervention Profile.	Slight change-included PU 11
Group C: Regional Infrastructure *Criteria: High Tier Ranking in Regional Infrastructure*	PU 1 - Revere Saugus River PU 2 - Revere Town Line Brook PU 7 - Revere East Boston	No Change
Group D: Nonstructural Opportunities, Residential *Criteria: High Tier Ranking in Elevation (Residential)*	PU 1 - Revere Saugus River PU 7 - Revere East Boston PU 13-Winthrop Point Shirley	No Change
Group E: Nonstructural Opportunities Commercial-Industrial-Public	PU 1 - Revere Saugus River PU 7 - Revere East Boston PU 11 - Winthrop Lewis Lake	No change

Draft Planning Unit Recommendations - Saugus

Planning Units ranking most favorable for adaptation interventions



Revere Town Line Brook
- C - Planning Unit ranks high for regional impact

Revere Saugus River
- A, C, D E - High concentration of people and property with regional impact
- Planning Unit ranks high for building level adaptations (all types)

Revere-East Boston
- A, C, D, E - High concentration of people and property with regional impact
- Planning Unit ranks high for opportunities for building level adaptations (all types)

Winthrop Point Shirley
- D - Planning Unit ranks high for building level adaptations (residential)

Winthrop Lewis Lake
- A, B, E - High concentration of people and property but no regional impact
- Planning Unit ranks high for opportunities for building level adaptations (commercial, industrial, public)

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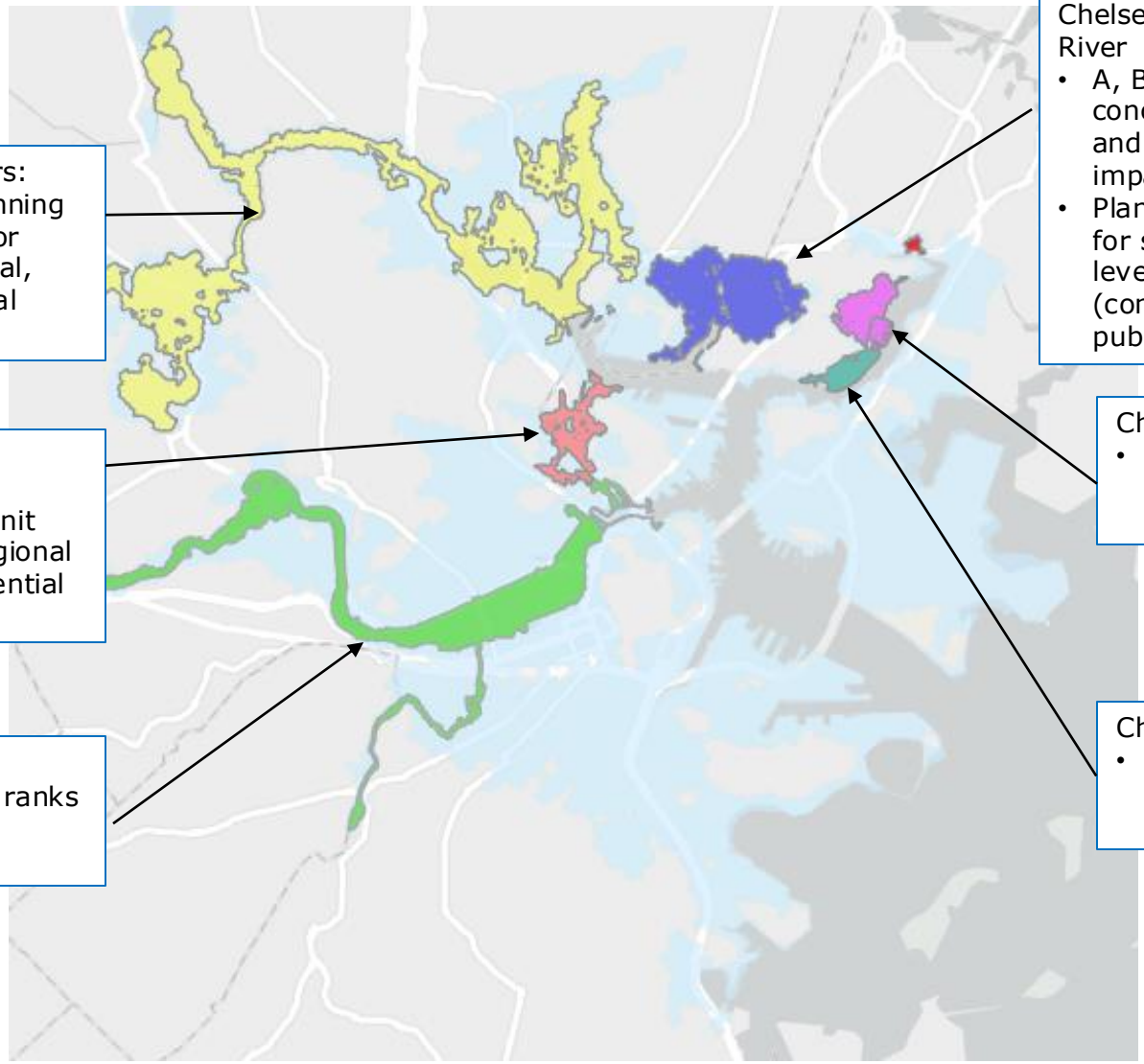
Mystic-Charles Draft Recommendations

Recommendation Category	Draft Recommendations (PU)	
Group A: Risk Assessment *Criteria: High Tier Ranking in Population and EAD*	PU 4 – Everett Chelsea Island End River	Drop PU 3 and 5
Group B: Structural Opportunities *Criteria: High Tier Ranking in Population and EAD*	PU 3 – Mystic-Malden Rivers PU 4 – Everett Chelsea Island End River PU 5 – Chelsea Eastern Ave PU 14 – Chelsea Marginal St	No Change
Group C: Regional Infrastructure *Criteria: High Tier Ranking in Regional Infrastructure*	PU 3 - Mystic-Malden Rivers PU 4 - Everett Chelsea Island End River PU 15 - Somerville Boston Cambridge PU 16 - Charles River	No Change
Group D: Nonstructural Opportunities, Residential *Criteria: High Tier Ranking in Elevation (Residential)*	PU 3 – Mystic-Malden Rivers PU 15 – Somerville Boston Cambridge	Drop PU 5
Group E: Nonstructural Opportunities Commercial-Industrial-Public *Criteria: High Tier Ranking in Commercial Industrial Public*	PU 3 – Mystic-Malden Rivers PU 4 – Everett Chelsea Island End River	Drop PU 15

Draft Planning Unit Recommendations



Mystic-Malden Rivers:
- B, C, D, & E -Planning Unit ranks high for structural, regional, and non-structural opportunities

Somerville-Boston-Cambridge:
- C, D - Planning Unit ranks high for regional impact and residential adaptations

Charles River:
- C - Planning Unit ranks high for regional impact

Chelsea/Everett Island End River
- A, B, C, E - High concentration of people and property with regional impact.
- Planning Unit ranks high for structural and building level adaptations (commercial, industrial, public)

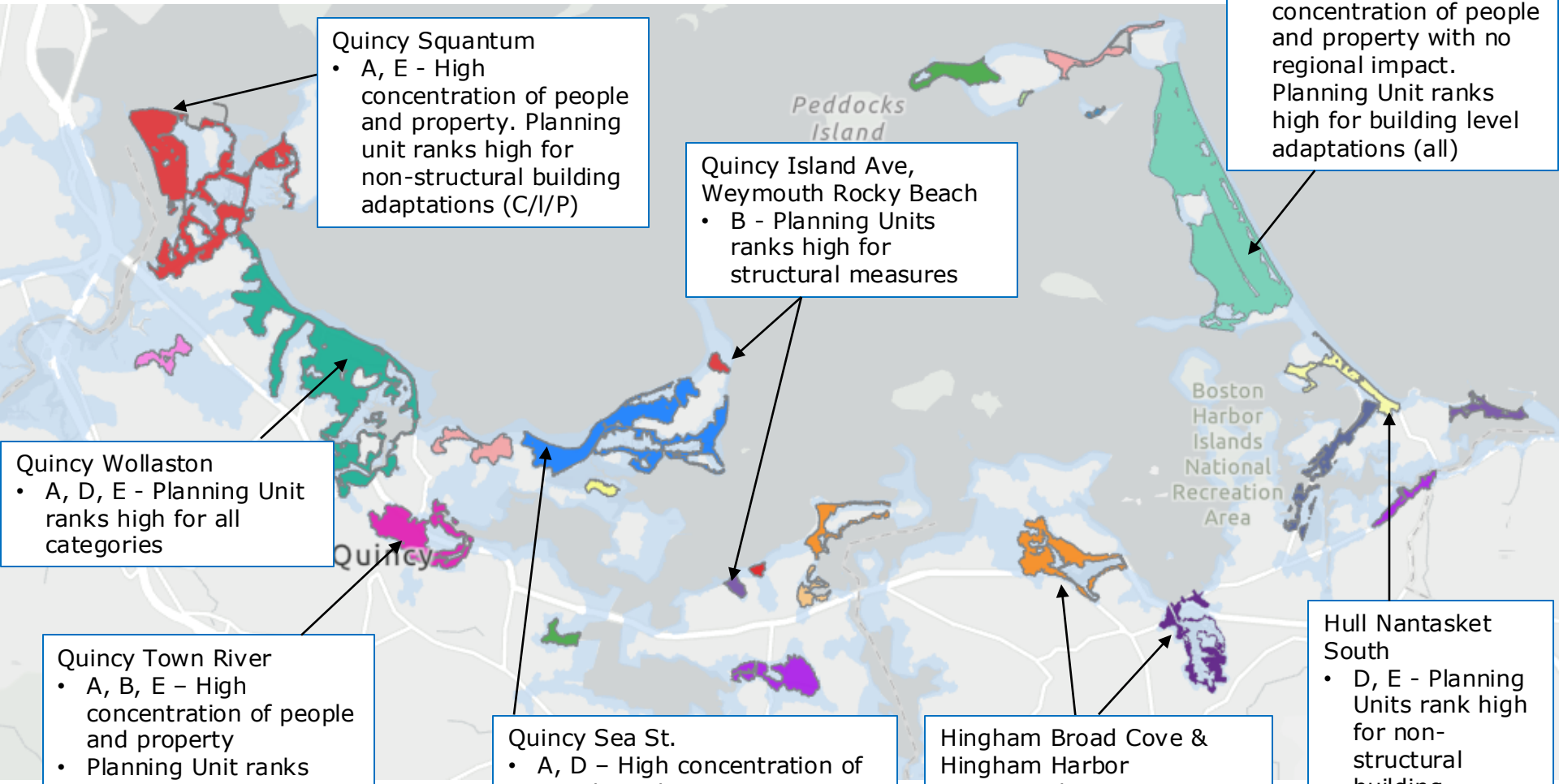
Chelsea Eastern Ave
- B - Planning Unit ranks high for structural opportunities

Chelsea Marginal Street
- B - Planning Unit ranks high for structural measures

Neponset-Weir Draft Recommendations

Recommendation Category	Draft Recommendations (PU)	
Group A: Risk Assessment *Criteria: High Tier Ranking in Population and EAD*	PU 17 – Quincy Squantum PU 19 - Quincy Wollaston PU 20 – Quincy Town River PU 23 – Quincy Sea Street PU 37 - Hull Nantasket North	Addition of PUs 17, 20, 23
Group B: Structural Opportunities *Criteria: High Tier Ranking in Population and EAD*	PU 20 - Quincy Town River PU 24 – Quincy Island Ave PU 26 – Weymouth Rocky Beach	Dropped PUs 19, 32 and 41 Addition of PUs 24, 26
Group C: Regional Infrastructure *Criteria: High Tier Ranking in Regional Infrastructure*	No PUs were identified with a rank of 1 (do not meet both Regional Infrastructure strategies).	No Change
Group D: Nonstructural Opportunities, Residential *Criteria: High Tier Ranking in Elevation (Residential)*	PU 19 - Quincy Wollaston PU 21 – Quincy Norton Rd PU 23 - Quincy Sea St PU 35 – Hull Gun Rock PU 36 – Hull Nantasket South PU 37 - Hull Nantasket North PU 41 – Hull Pemberton Point	Addition of PUs 21, 35, 36 & 41
Group E: Nonstructural Opportunities Commercial-Industrial-Public *Criteria: High Tier Ranking in Commercial Industrial Public*	PU 17 – Quincy Squantum PU 19 - Quincy Wollaston PU 20 - Quincy Town River PU 31 – Hingham Broad Cove PU 32 – Hingham Harbor PU 36 – Hull Nantasket South PU 37 - Hull Nantasket North PU 41 – Hull Pemberton Point	Addition of PUs 17, 31, 32, 36 & 41

Draft Planning Unit Recommendations



Quincy Squantum
- A, E - High concentration of people and property. Planning unit ranks high for non-structural building adaptations (C/I/P)

Quincy Island Ave, Weymouth Rocky Beach
- B - Planning Units ranks high for structural measures

Hull Nantasket North
- A, D, E - High concentration of people and property with no regional impact. Planning Unit ranks high for building level adaptations (all)

Quincy Wollaston
- A, D, E - Planning Unit ranks high for all categories

Quincy Town River
- A, B, E – High concentration of people and property
- Planning Unit ranks high for structural measures and building level adaptations (C/I/P)

Quincy Sea St.
- A, D – High concentration of people and property.
- Planning Unit ranks high for building level adaptations (residential)

Hingham Broad Cove & Hingham Harbor
- D, E - Planning Units rank high for non-structural building adaptations (all)

Hull Nantasket South
- D, E - Planning Units rank high for non-structural building adaptations (all)

Key Takeaways

- **Potential uses**
  - Planning-level study provides additional sources of information (e.g. damage calculations, Planning Unit areas)
  - Support municipal planning and collaboration within Coastal Resilience Districts (early stages of project identification)

- **Caveats**
  - Study focuses on physical risk and economic damages
  - Does not identify locations within Planning Units for potential intervention nor recommend specific strategies
  - Methodology based on desktop analyses
  - Results should not be interpreted as a direct recommendation for modification or prioritization for investment, only as a screening tool to compare across the region

Next Steps and Q&A

October 2026

- 30-day public review period closing ~~October 19th~~ (UPDATED: Due Nov. 23)
  - Email: BostonMetroWatershedStudy@usace.army.mil
  - Writing:
    U.S. Army Corps of Engineers, New England District
    Attn: Plan Formulation Section, Heidi Graf
    696 Virginia Road, Concord, MA 01742

November/December 2026

- USACE addresses comments, prepares Final Watershed Report
- USACE/EEA complete backcheck

Report should be finalized by Dec. 2026 / early 2027

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