

# **WELCOME** TO THE ULI COASTAL FORUM

Toronto | May 17, 2023



SPRING MEETING



## **Joanna Eyquem**

Managing Director of  
Climate Resilient  
Infrastructure, Intact  
Centre on Climate  
Adaptation



## **Nathalie Beauvais**

Resiliency Lead,  
Architecture & Planning,  
HDR, Inc.



## **Moderator: Jack Smith**

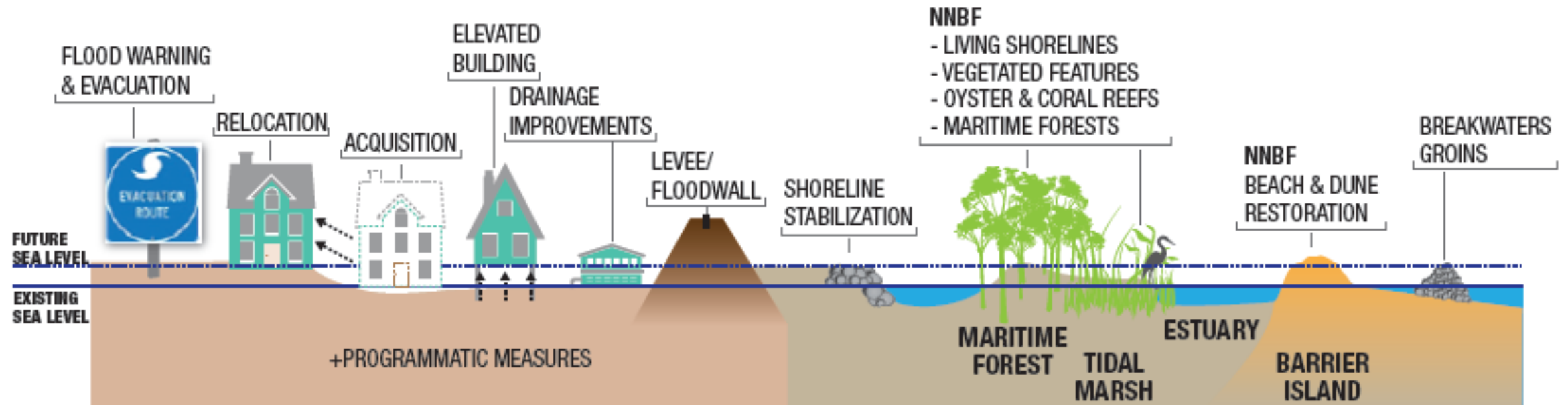
Partner, Nelson Mullins Riley  
& Scarborough LLP

# **Nature-based Solutions and Other Green Development in Underserved Coastal Areas**



# Nature-Based Solutions [Case Studies]

- **Boston Mystic River Watershed**
  - Problem identification – challenges and opportunities
  - Creating partnership
- **Scalability, reproducibility & best practices**



USACE, 2015

# Coastal Flooding Risk | Boston Mystic River Watershed

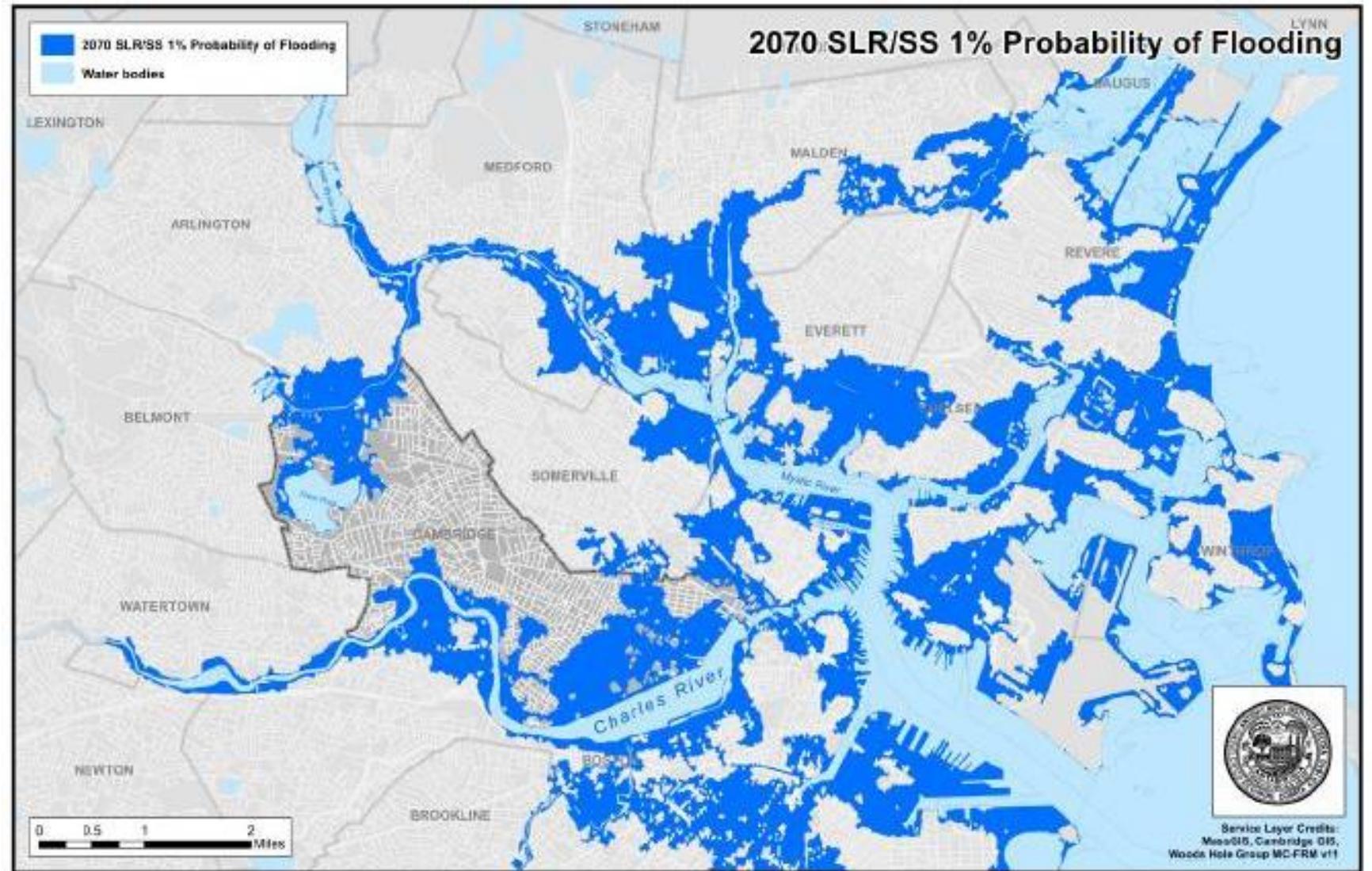
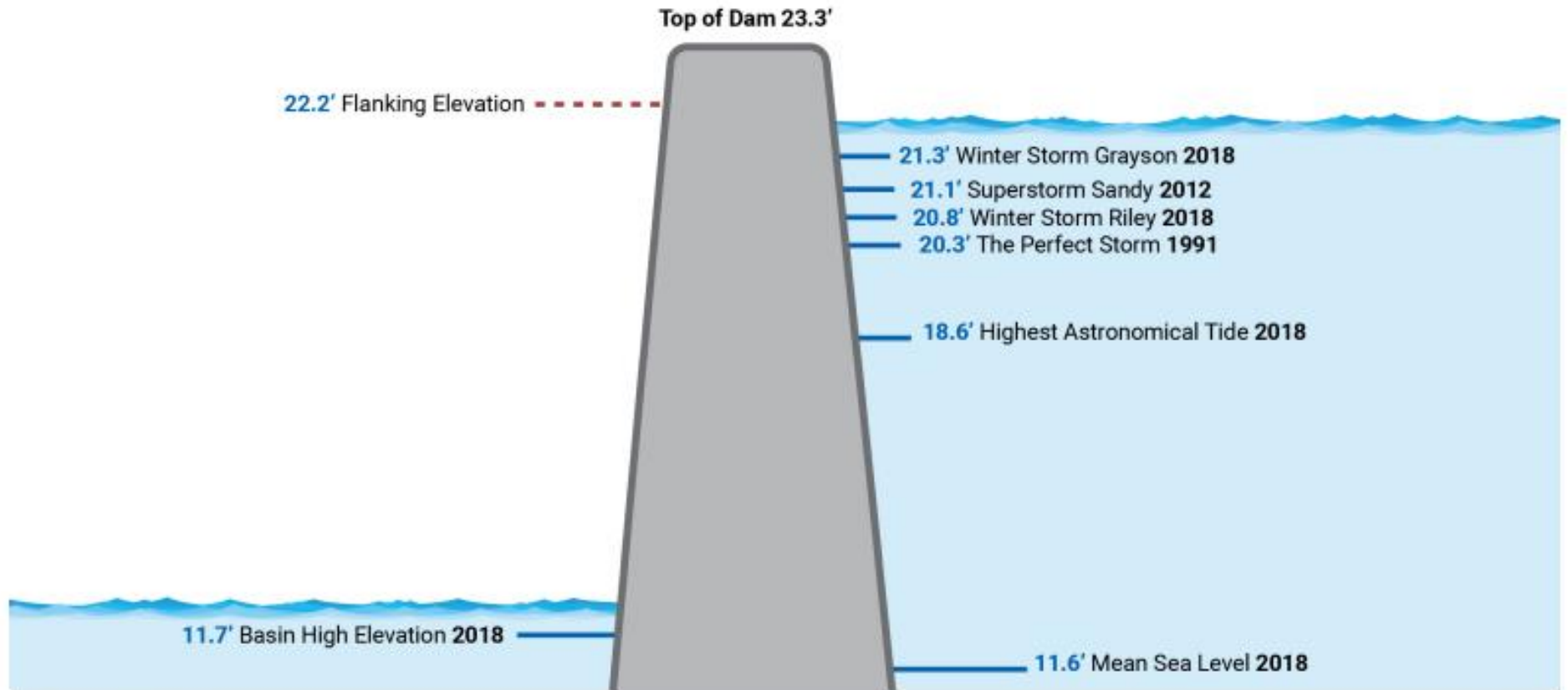


Figure 1 - Regional flood exposure from 2070 1% SLR/SS event (without interventions)



# Coastal Flooding Risk | The Amelia Earhart Dam



**Figure 1.** Boston Harbor is 1 foot higher than it was 100 years ago. Pictured are storm surge elevations from recent storms compared to flanking elevation under existing conditions. *Source: Kleinfelder*

# Coastal Flooding Risk | Resiliency Strategies

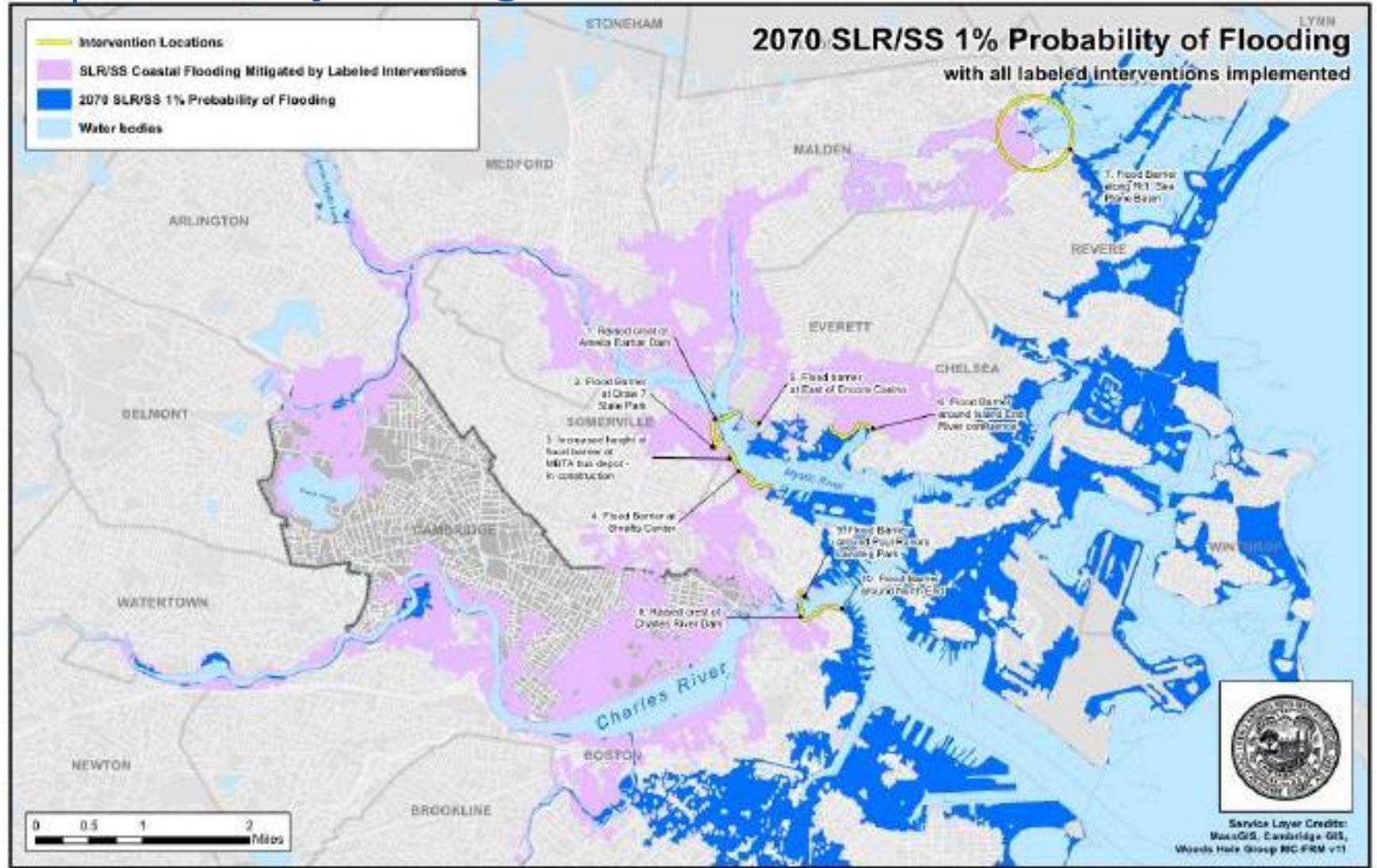


Figure 2 - Regional flood exposure from 2070 1% SLR/SS event (with select regional coastal flood interventions implemented)

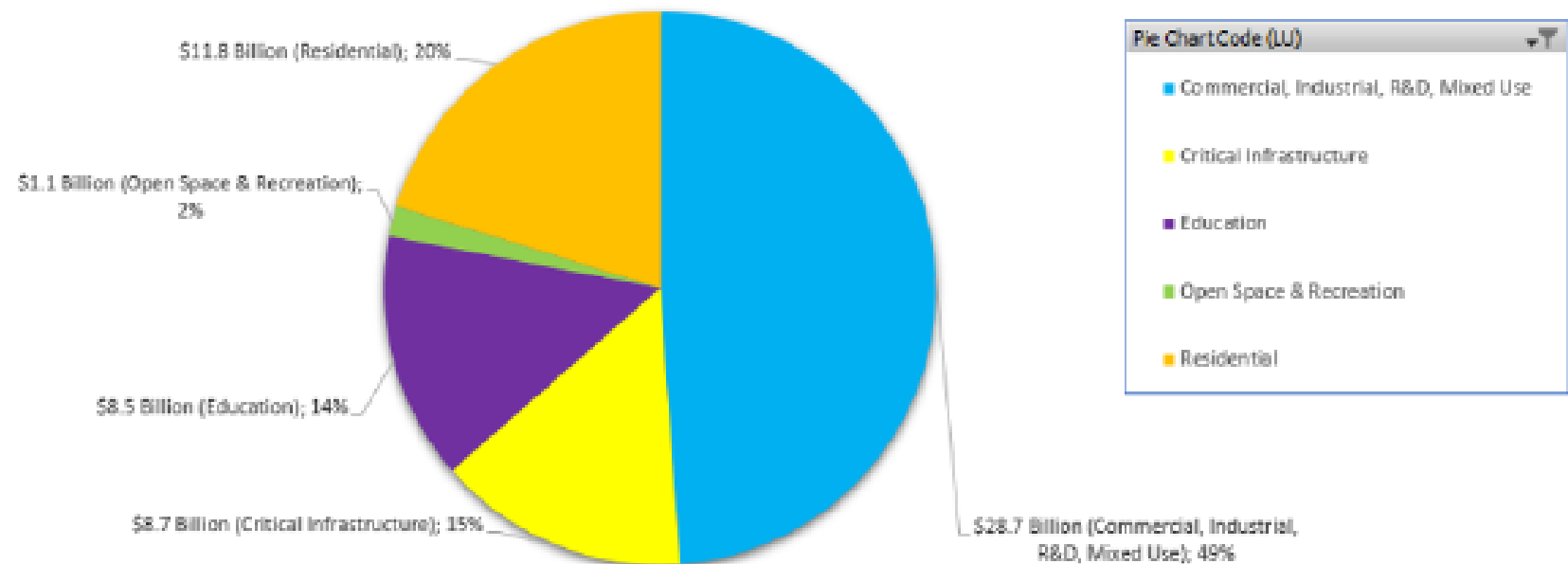
# Coastal Flooding Risk | Cost Benefit

Total Exposed Real Estate Value Mitigated (~\$60 billion) by Coastal Flood Interventions,

Approximate Values by Land Use

in Charles and Mystic River Watersheds

(2070 SLR/SS Coastal Event ~1% or Greater Frequency)



# Coastal Flooding Risk | Cost Benefit

Total Exposed Real Estate Value Mitigated (~\$60 Billion) in Charles River, Mystic River, and North Coastal Watersheds by Sea Level Rise/Storm Surge Interventions, all municipalities (n=15) with value protected  
Approximate Values by Land Use

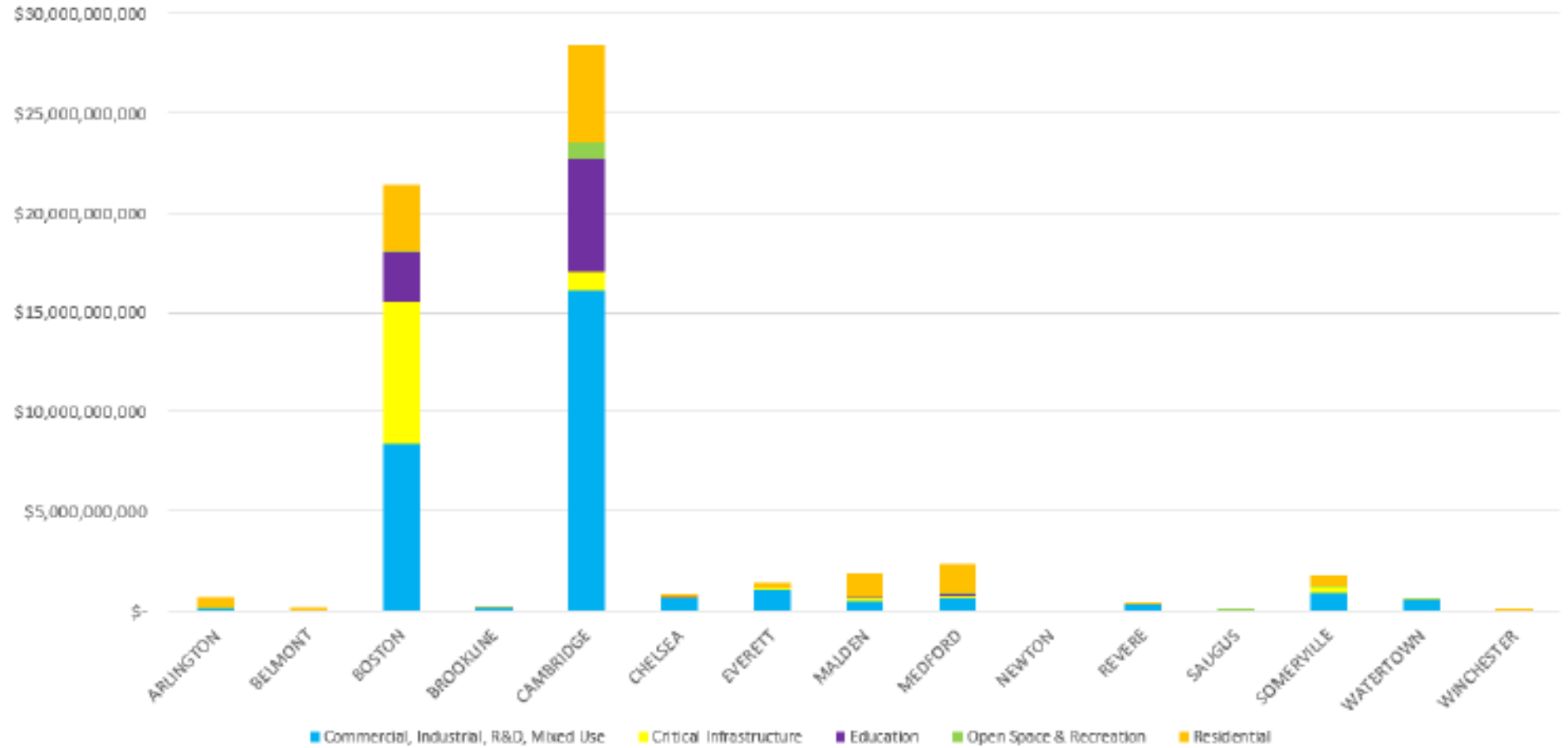


Figure 7 - Exposed Real Estate Value Mitigated by Coastal Flood Interventions per Municipality, Displayed by Land Use (2070 1% SLR/SS Event)



# Coastal Flooding Risk | Equity

*Table 1 - Estimated Exposure of Total Populations and Socially Vulnerable Populations Mitigated by Regional Coastal Flood Interventions (2070 1% SLR/SS Event)*

Municipality	Area Protected from 2070 1% SLR/SS Coastal Flooding by Interventions (Acres) <sup>2</sup>	Municipality Total Population <sup>2</sup> , 2019	Estimated Population Protected from 2070 1% SLR/SS Coastal Flooding <sup>4</sup>	Estimated Population Protected, as % of Total Municipal Population	Demographic breakdown <sup>1</sup> of populations protected by SLR/SS interventions (approximate)				
					Minority (%) <sup>5</sup>	Low Income (%)	English Isolation (%)	Age65+ (%)	No Vehicle (%)
ARLINGTON	240	45,300	2,680	6%	23%	3%	3%	12%	7%
BELMONT	70	26,110	350	1%	28%	3%	3%	20%	3%
BOSTON	950*	649,420	32,430*	5%	29%*	22%*	6%*	9%*	50%*
BROOKLINE	50	59,180	80	<1%	38%	16%	12%	19%	34%
CAMBRIDGE	1,890	116,830	38,010	31%	45%	17%	7%	9%	35%
CHELSEA	350	39,980	3,570	9%	82%	22%	32%	8%	40%
EVERETT	890	46,120	3,400	7%	58%	16%	19%	10%	18%
MALDEN	830	60,980	9,080	15%	54%	16%	16%	12%	19%
MEDFORD	890	57,640	13,810	24%	34%	12%	11%	13%	12%
NEWTON	20	88,410	0	0%	-	-	-	-	-
REVERE	400	52,820	510	1%	37%	12%	10%	14%	14%
SAUGUS	280	28,220	0	0%	-	-	-	-	-
SOMERVILLE	500	80,910	5,830	7%	38%	15%	13%	12%	25%
WATERTOWN	160	35,400	680	2%	18%	6%	3%	16%	12%
WINCHESTER	50	22,740	0	0%	-	-	-	-	-
<b>Grand Total</b>	<b>7,550</b>	<b>1,409,870</b>	<b>108,160</b>						

# Coastal Flooding Risk | Implementation – Nature Based Solutions



<https://mysticriver.org/greenways-blog/2018/3/28/draw-7-park-and-path-extension-boston-somerville>



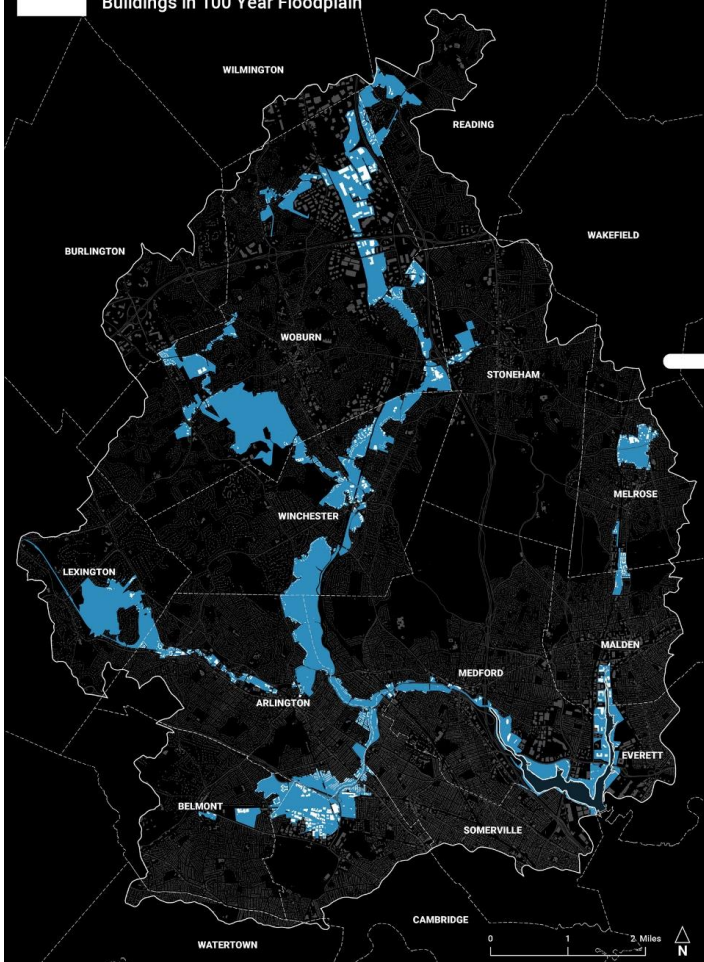
The Dawn Studio  
Climate change  
along the Mystic

Harvard Graduate  
School of Design  
Spring 2020

# PAST

### LEGEND

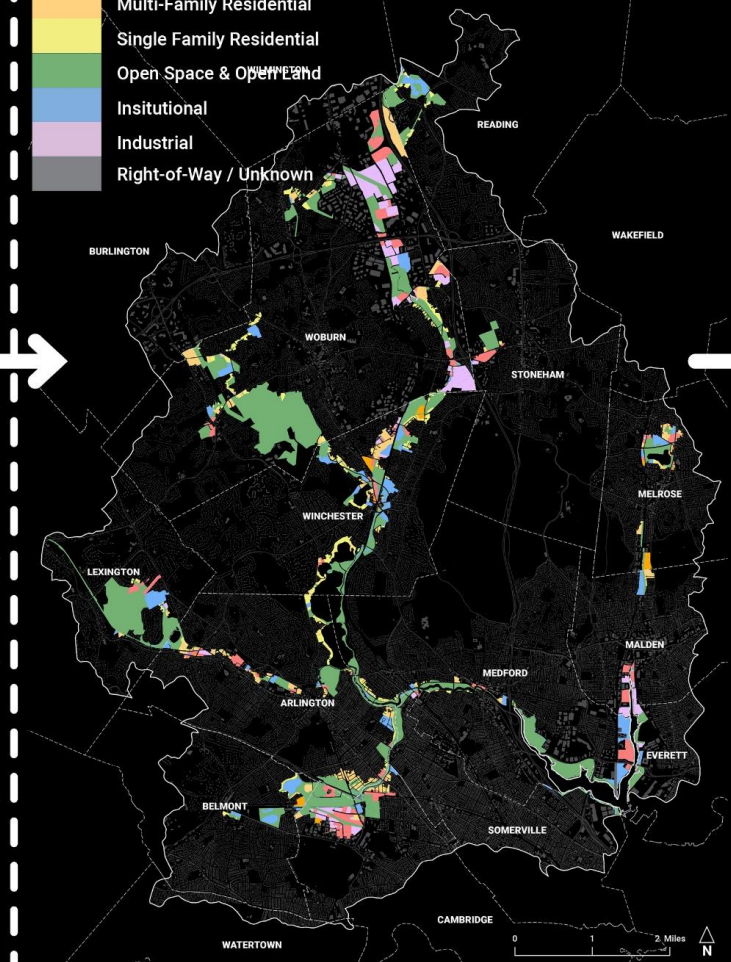
- FEMA 100 Year Floodplain
- Buildings
- Buildings in 100 Year Floodplain



# PRESENT

### LEGEND

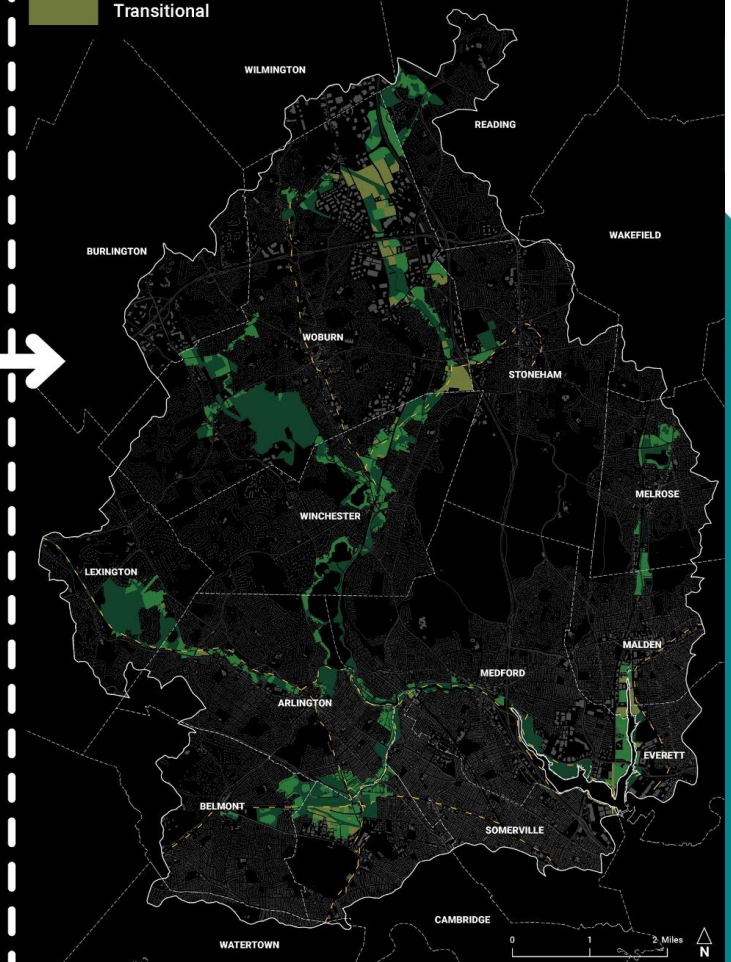
- Commercial
- Mixed Use
- Multi-Family Residential
- Single Family Residential
- Open Space & Open Field
- Insitutional
- Industrial
- Right-of-Way / Unknown



# FUTURE

### LEGEND

- Ecological
- Community
- Transitional



# Delehide Cove Wetlands Restoration & Protection

Texas Parks and Wildlife Department, Galveston Island, Texas, U.S.



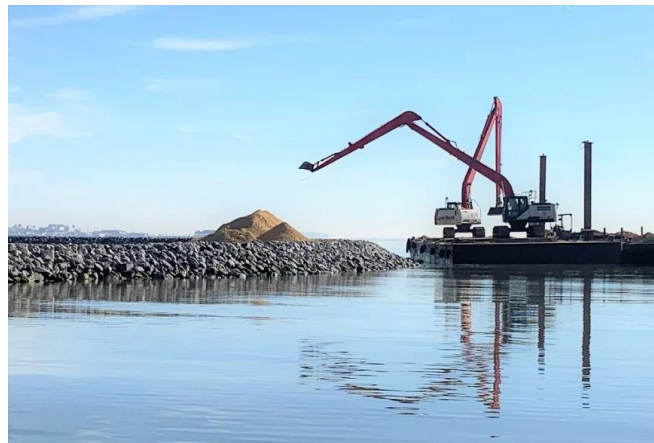
HR



SPRING MEETING

# Rookery Islands: Expanding Important Colonial Bird Nesting Bird Habitat

Galveston Bay Foundation, Texas General Land Office

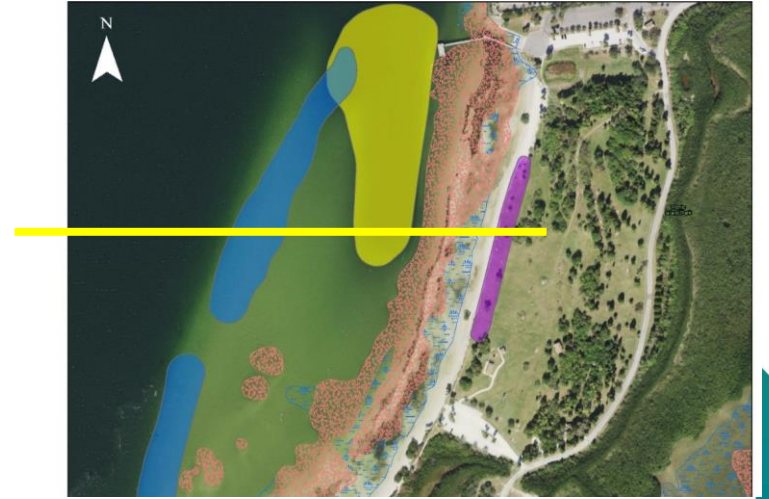
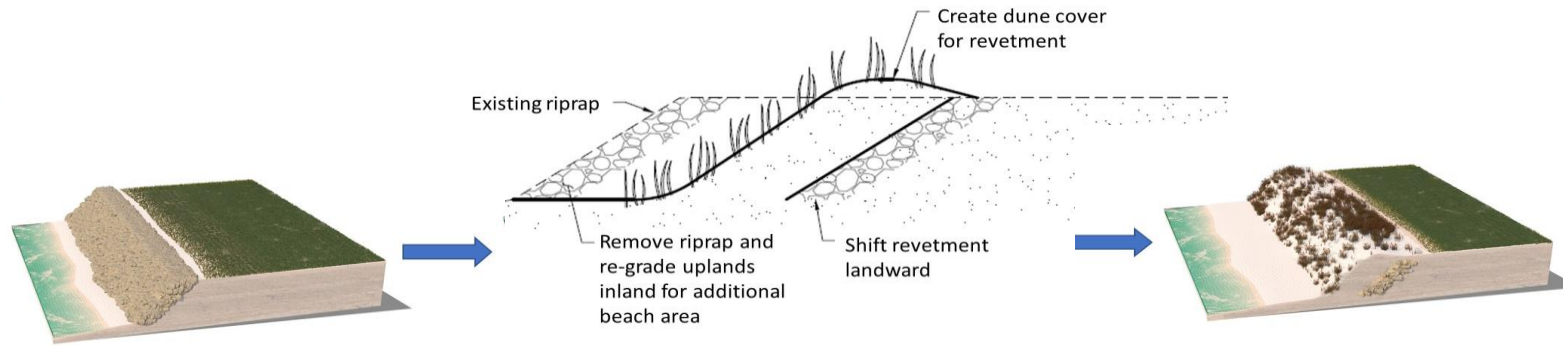


# Beach Nourishment Programs

Florida, Texas.

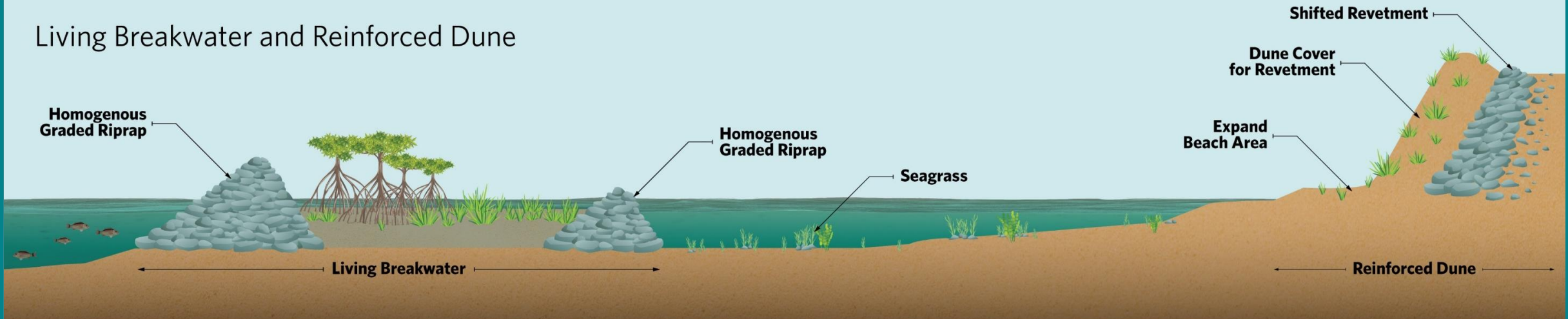


# Key Takeaways: Combined Interventions & New Alliances



PENSACOLA BAY LIVING SHORELINE  
 HDR for the National Oceanic and Atmospheric Administration (NOAA) Escambia County | Pensacola, Florida

## Living Breakwater and Reinforced Dune



← BAY

PARK →



# Q&A





# Closing Remarks

**Jack Smith**

Partner, Nelson Mullins Riley & Scarborough LLP





Thank You



SPRING MEETING