

# Applying Engineering With Nature® to Enhance Urban Marsh Resiliency, Biodiversity, and Habitat

## BELLE ISLE COLLABORATIVE MEETING July 11, 2024 FACT SHEET



Belle Isle Marsh, Boston MA



**Above:** The City of Boston and U.S. Army Corps of Engineers Coastal Storm Risk Management (CSR) Team presenting on the current status of the CSR for Boston.

**Below:** Belle Isle Project Team presenting on the recent resiliency work at Belle Isle Marsh.



Cross-organization small group discussions

### Background

Natural infrastructure in coastal areas provides critical functions to increase coastal resiliency, manage flood risks and enhance ecosystem services. Threats from sea level rise, increasingly severe weather events, and urban densification intensify pressures on coastal environments and communities. New approaches are needed to enhance coastal resiliency and natural infrastructure functionality, while broadening social, economic, and environmental benefits. The Belle Isle Marsh presents a unique opportunity to apply leading Engineering with Nature® (EWN) practices to achieve these goals.

As part of a recently initiated EWN research task (ERT), a collaborative meeting was conducted on July 11, 2024 to continue discussions and collaboration around Nature Based Solutions (NBS) in and around Belle Isle, understand EWN opportunities, and discuss linkage with City of Boston's Coastal Storm Risk Management (CSR) goals. The meeting brought together stakeholders to discuss the 'state of the science' of past, present, and planned research and planning in the Belle Isle Marsh.

### Workshop outcomes:

- The Stakeholders aligned on a clear recognition that action is needed soon to combat challenges posed by sea-level rise and urbanization.
- The **vision** is a collective effort to enhance the urban marsh, balancing ecological restoration with flood protection in constrained environments.
- **Permitting** and Area of Critical Concern **management constraints** remain the primary barriers in the planning and implementation of EWN to Belle Isle Marsh. There is a need for permitting pathways for climate adaptation using data. Changes in policy and construction status quo are anticipated. It will take **collaboration** across all levels to address policy and regulatory challenges.



Confidential



**Catherine Pedemonti** / Mystic River Watershed Association & **Kannan Thiruvengadam**/ Friends of Belle Isle Marsh, Introduction and Context

**Lisa Winter** / USACE, NAD & **Todd Randall** / USACE, NAD & **Cat McCandless** / City of Boston “Coastal Storm Risk Management Regional Study”

**Andrew McQueen** / USACE & **Sara Copp Franz** / Ramboll “Engineering With Nature® Nature-Based Solutions and Resiliency Updates”

**Conor Ofsthun** /Woods Hole Group, “Belle Isle Marsh & Resilient Project Updates”

**Cat McCandless** / City of Boston , “Resilient Bennington Street & Fredericks Park Project Update”

### Collaborative Meeting participants

- City of Boston
- City of Winthrop
- City of Revere
- Friends of Belle Isle Marsh
- Massachusetts Bay Transportation Authority
- Mystic River Watershed Association
- Ramboll Americas Engineering Solutions
- The Nature Conservancy
- Tufts University
- USACE Engineering, Research, and Development Center
- USACE New England District
- Woods Hole Group

### For more information

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<https://ewn.erdcdren.mil/?p=8219>

### Workshop outcomes continued:

- Existing **case studies** such as Seven Mile Island or Tyndall AFB can serve as an experimental hub highlighting successful implementation and revealing gaps and opportunities for improvement.
- There are major **opportunities** in the cross-agency alignment for implementing EWN in the Coastal Storm Risk Management Plan including guidance on Natural and Nature-Based Feature implementation; guidance and influence on thin layer placement and other controversial resiliency solutions; detailed evaluation of initial environmental impacts versus the long-term benefits of EWN; and federal influence and decision-making.
- **Managed retreat** and leveraging elevations of existing natural habitat elevation can be used as a way to create more space for NBS in developed areas.
- **Phased implementation** of resiliency projects paired with adaptive management and sequencing will help implement innovative EWN solutions into urban marsh environments in a timely manner.
- **EWN solutions** such as vegetated levees that provide physical protection as well as opportunities for marsh migration should be considered in urban marsh environments.
- Stakeholders are considering a slow build-up strategy using earthen berms for flood protection, potentially enhanced over time by local residents.

### What's next?

- Timely data sharing
- Regular collaborative meetings
- Alignment on land acquisition opportunities
- Management plan updates
- Alignment on phased and sequenced work
- Joint pilot projects for innovative and tough-to-permit EWN solutions

