

Restoration actions to enhance salt marsh resilience.

John H. Chafee NWR

Jennifer D. White

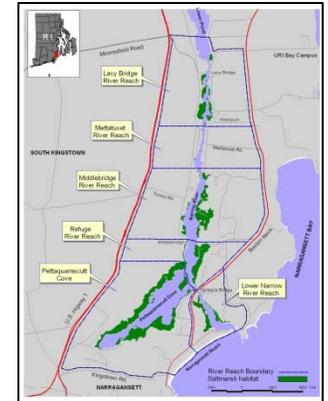
USFWS, Hurricane Sandy Resiliency
Coordinator.

Rhode Island Complex Coastal Restoration



Alternative Actions Considered

- Hardened structures for erosion protection
 - Narrow River Special Area Management Plan, RI Coastal Resources Management Council (RICRMC)
- Dredging location (Sprague Bridge south)
- Purchase land for marsh migration
 - Funding not intended for land acquisition
- No action
- Proposed action – restore estuarine and salt marsh habitat
 - (sediment addition, runnels, living shoreline/erosion control, channel for eelgrass)





Permitting - Historic & Cultural Resources

- State Historic Permitting Office
- USFWS Cultural Resources – Section 106 of Historic Preservation Act
- Narragansett Indian Tribe

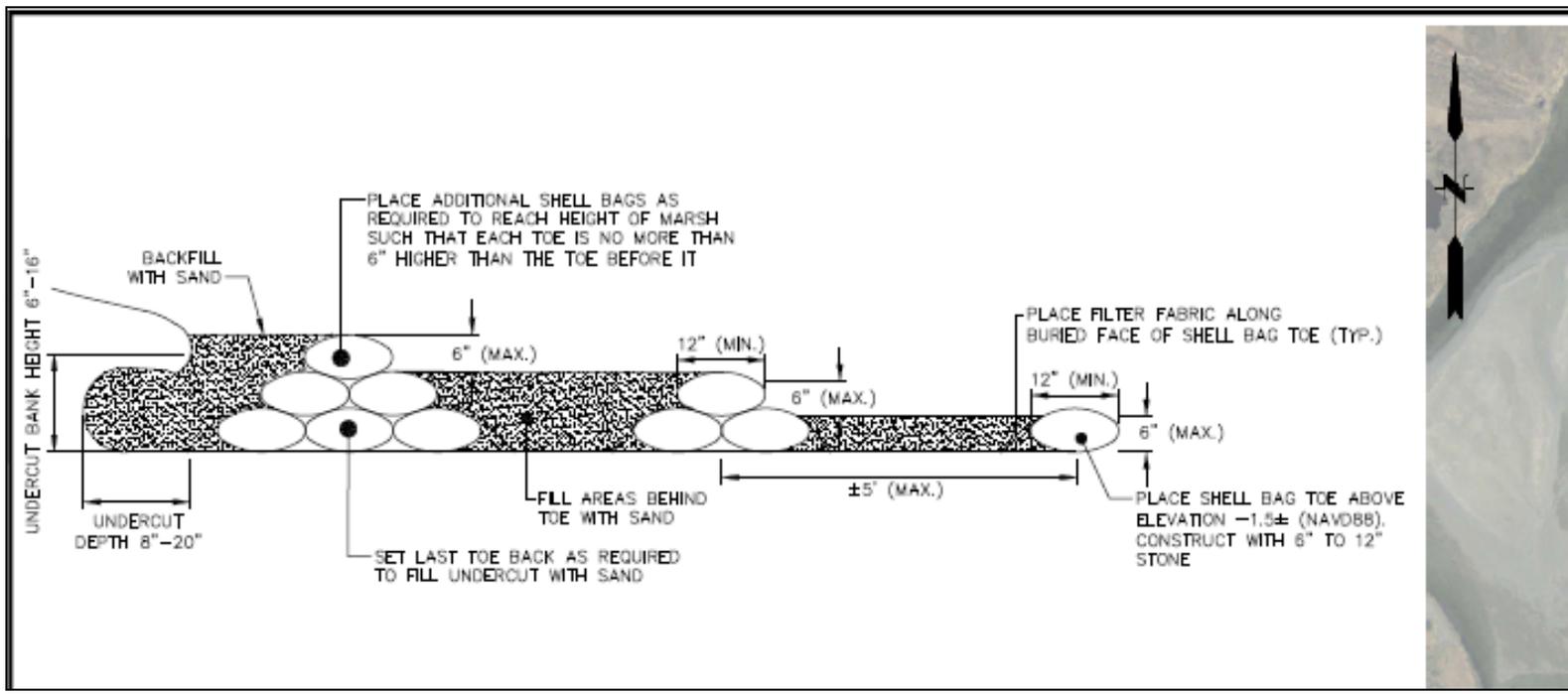
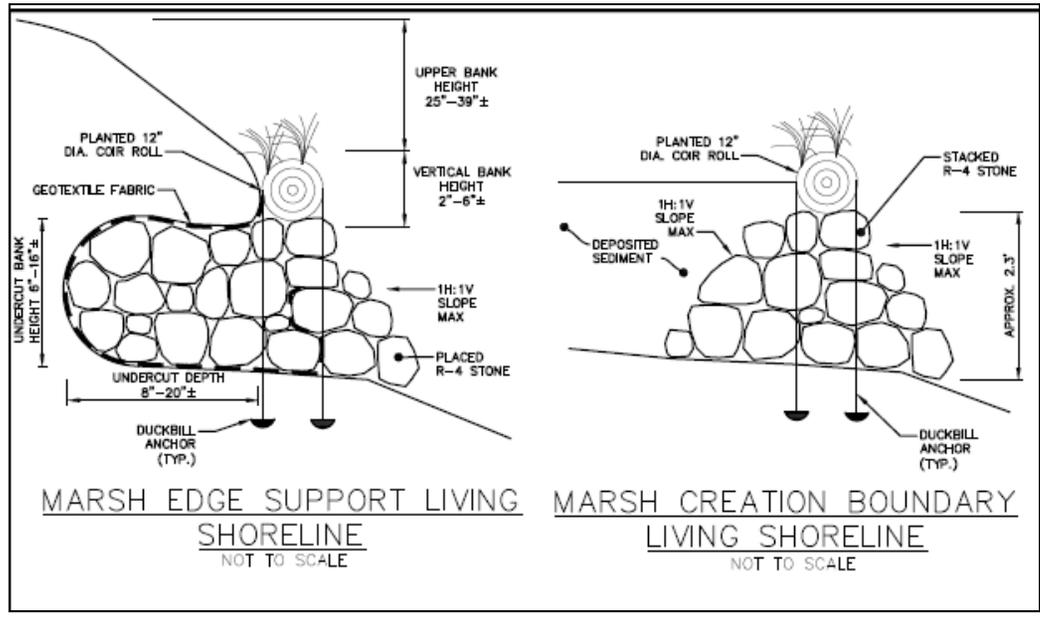
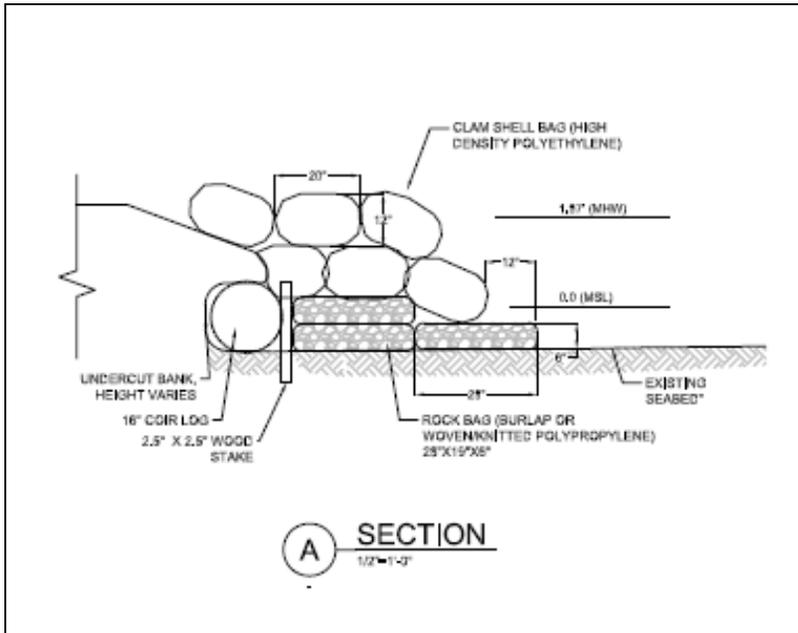




Permitting - Erosion Control

- RI Dept. Environ. Manag. (RIDEM),
- US Army Corps of Engineers (US ACOE),
- RICRMC
 - Narrow River SAMP
 - No sills, no rocks







Permitting - Runnel/ditch excavation

- Permits - RIDEM, RICRMC, US ACOE



April 28, 2015



Sept. 10, 2015



Dredging & Material Placement

- Permits - ACOE, RIDEM
- Additional review EPA, Nat. Marine Fisheries Service





Bulldozer that can read CAD files

<https://vimeo.com/161192389>





Seed Collection



- RICRMC letter of permission to collect from RI marshes
- 17,000 plugs each, *S. alterniflora* and *Distichlis spicata*



Planting - 22,000 cord & spike grass plugs

- Planted around vegetation monitoring points (12" apart)
- Planted if > 6" sand
- *S. alterniflora* protected from browsing



After the first
growing season...



- Drought caused mortality of some high marsh plants (*D. spicata*)



Monitoring

- What kind?
 - Compliance – testing material, review by permitting, overview agencies
 - Implementation – are project components built as designed? Deviations documented.
 - Effectiveness – are restoration project objectives being met?

Monitoring

- Minimum monitoring requirements?
- Department of Interior core metrics
 - Biotic: marsh vegetation community, & nekton
 - Abiotic: elevation change, & water quality (salinity)
- Effectiveness of different treatments
 - Sediment addition, runnel, control



Monitoring

- What monitoring do you wish you were doing but didn't have funding/time for?
 - Above/below ground biomass comparisons by treatment
 - Monosulfide formation in TLD areas



Acknowledgments



NOAA
FISHERIES



**U.S. Army Corps
of Engineers®**

