REBUILD BY DESIGN
MEADOWLANDS

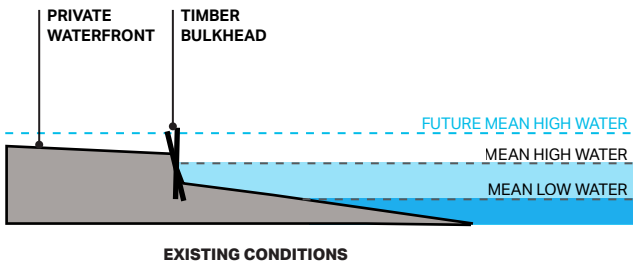
LIVING SHORELINES ON TIDAL RIVERS

AN APPROACH TO ENHANCE ECOLOGY + PROVIDE COMMUNITY ACCESS TO THE WATER

CULTIVATE ECOLOGY + ENERGIZE COMMUNITY

Transforming shorelines to support a more vibrant ecological habitat is an important goal of Rebuild by Design Meadowlands and the State of New Jersey. This document describes an approach to living shoreline design on the tidally-influenced rivers as they apply to the Rebuild by Design Meadowlands Riverfront Park case study.

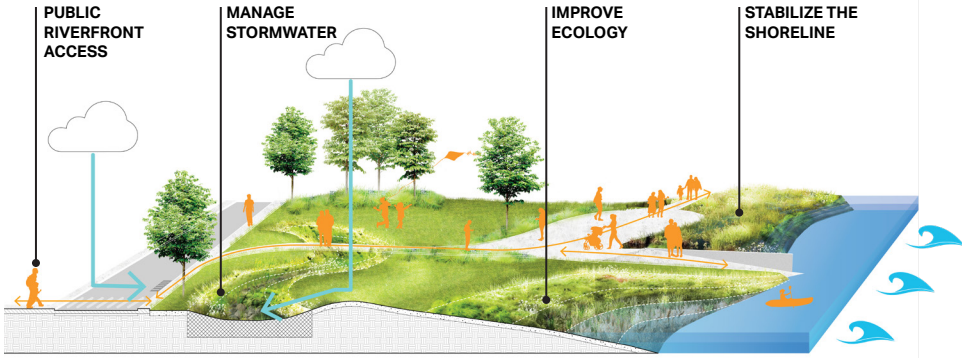
TYPICAL CHALLENGES AND GOALS



EXISTING CONDITIONS

TYPICAL DESIGN GOALS

Living shoreline projects can be part of a holistic public waterfront or park design. Common goals include stabilizing the shoreline, improving ecology, managing stormwater, and providing public access and recreational opportunities.



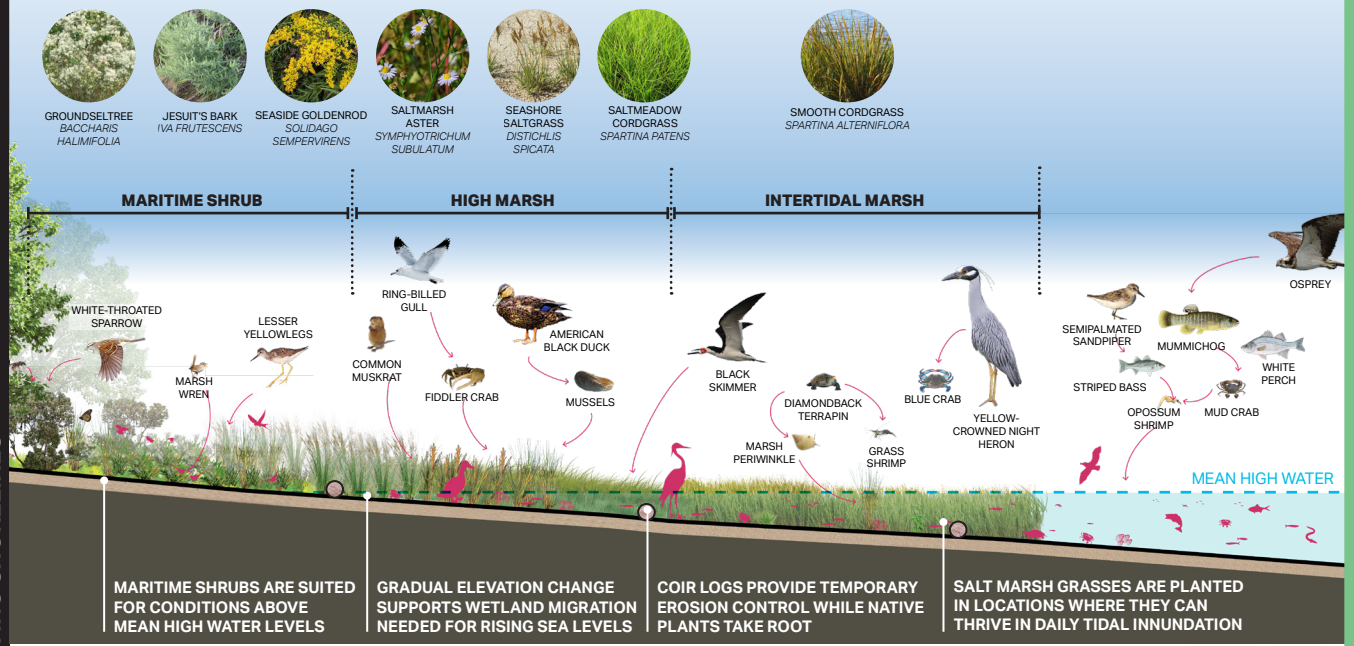
TYPICAL SHORELINE CONDITIONS

The Hackensack is a tidally influenced river with large mudflats extending approximately 200' from the water's edge and relatively low-intensity wave action. This is an ideal condition for living shorelines. For example, designing the shoreline using biodegradable coir logs, subtle elevation changes and tidal wetland plants at appropriate elevations can cultivate a biodiverse intertidal habitat that is resilient in future rising seas.

TYPICAL PLANTING PALETTE

Tidal wetlands are comprised of multiple ecological zones based on elevation and tidal range. The intertidal marsh is the zone between average high and low tides. Native grass tolerant of brackish water and tidal inundation is planted in the intertidal zone. The high marsh zone is beween the intertidal marsh and the maritime shrub zone, and is periodically inundated during higher high tides and storms. The maritime shrub zone has plants that tolerate occasional inundation with brackish water.

DESIGNING LIVING SHORELINES



For more information please visit:
www.nj.gov/dep/floodresilience/rbd-meadowlands.htm
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www.renewjerseystronger.org

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

RIVERFRONT PARK CASE STUDY

NEW ACCESSIBLE WATERFRONT PARK

FUTURE SEA LEVEL RISE

WATERFRONT ACCESS

RIPARIAN ECOLOGY

PROJECT OVERVIEW

A new public park on the Hackensack River, in Little Ferry, NJ, was designed based on community input.
The design will create public access on the river, provide community event space, improve biodiversity, provide environmental education, restore the shoreline with tidal marsh and provide an accessible kayak launch and gathering areas. Native upland plants with deep roots filter rain runoff and wetland plants transform the shoreline.
The park design itself is inspired by the ebbs and flows of the Hackensack River tidal cycles and the fluid nature of the river itself. Unique features provide education and celebrate the ecological and cultural context. Brick plaques tell of historic crossings of the river and the origin of the brick industry. Interpretive posts show flora and fauna from ecozones within the park. A concrete paving design maps the Hackensack River watershed and tributaries for a tactile experience of the interconnected waterways.

PARK COMPONENTS

2.0 acres of new accessible parkland

0.3 miles of walking paths

0.1 acre of seating areas

75 new trees

0.5 acre of native planting

0.5 acre of tidal wetland planting

TRANSFORMING THE SHORELINE

The Riverfront Park location includes a portion of land which was likely tidal marsh until it was in-filled in the late 1960s. The condition of the shoreline is largely in disrepair, and ranges from naturalized revetment, to timber bulkheads and a private boat launch and dock. The design proposes to transform the hardened shoreline through various bio-engineering strategies such as coir logs and vegetated geolifts. With sea level rise anticipated from between 2.4 and 3.5 feet over the next 50 years, the park design accounts for occasional inundation and supports future wetland migration. Tidal wetland and grading design creates shelf-like areas to encourage water levels to stay in certain areas based on the tides. The site elevations and planting are intended to accommodate these changes to provide wetland habitat in 2022 and in the 50+ years following.

ADDITIONAL INFORMATION

This project is one component of the efforts the NJDEP is facilitating to assist communities in building resilience. For more information, check out the following resources:

PROJECT VIDEO - REBUILD BY DESIGN MEADOWLANDS
www.youtube.com/watch?v=Q3X5U4CTIxo

OFFICIAL WEBSITE - REBUILD BY DESIGN MEADOWLANDS
www.nj.gov/dep/floodresilience/rbd-meadowlands.htm

CLIMATE AND FLOOD RESILIENCE
www.nj.gov/dep/cfr/

STORMWATER INFRASTRUCTURE TOOLKIT
www.nj.gov/dep/floodresilience/toolkit.html

AIRPORT APPROPRIATE PLANTS

With Teterboro airport less than 10,000 feet (less than 2 miles) away, plant species were reviewed to ensure FAA and PANYNJ guidelines were met.