Many of the New Jersey's Delaware bayshore marshes have a history of disturbance which includes mosquito control ditching, agricultural manipulations associated with salt hay production, impoundments for waterfowl, and conversion of manipulated marshes back to tidal systems. Though Hurricane Sandy had more immediate and severe affects on much of the Region's lands, it has also afforded us the opportunity to restore the affected areas from those past disturbances and enhance their resilience to more long term changes in environmental conditions, like sea level rise (SLR). Our resiliency project incorporates efforts at two separate refuge sites; improvement of hydrology in the marsh interior scarred by mosquito ditching at the Reeds Beach area of Cape May Court House is the focus of the work at Cape May NWR while modifying a stone breakwater initially built for coastal protection of commercial interests at the turn of the century is the focus of work at Supawna Meadows NWR in Pennsville, NJ. Both aspects of the project aim to help the respective marshes progress on a trajectory toward a more natural marsh system while enabling them to develop into areas that can respond favorably to future environmental changes.

Current Conditions

**Cape May NWR, Reeds Beach**
The Cape May NWR project site is ~75 acres and located in the Reeds Beach area. It consists mostly of low tidal marsh habitat that had historically been heavily ditched for mosquito control.
- Marsh migration restricted by municipal infrastructure
- Impaired tidal flow and drainage
- Suboptimal sediment transport

**Supawna Meadows NWR**
Supawna Meadows NWR is 3,016 acres in area and located along the Delaware River. The habitat type is primarily brackish tidal marsh and is characterized by a low salinity range.
- Dominated by *Phragmites australis*
- Dilapidated stone breakwater, artifact of historical agricultural practices
- Altered tidal regime

Current State of Project Development

Baseline data has been collected at both sites on the tidal spectrum, sediment profiles, water quality, and other critical biotic and abiotic factors. Data was gathered based on MACWA protocols and Marsh Futures to establish a large scale concept of current conditions. Hydrologic, wave attenuation, and sediment budget modelling has been run and analyzed to optimize design of alternatives for both sites. Permits have been submitted and construction is tentatively scheduled for late summer 2017.

Resiliency Goals and Potential Strategies

**Cape May NWR, Reeds Beach**
**Goals**
- Improved hydrology
- Better sediment transport
- Increased accretion rates
- Natural sinuosity for existing channels

**Strategies**
- "Active Marsh Manipulation"
- Small channel excavation

**Supawna Meadows NWR**
**Goals**
- Stabilize marsh platform
- Create more habitat for native species

**Strategies**
- "Breach Management Techniques"
- Removal of stone impeding flow
- Reinforcement of breakwater to protect shoreline

Projected Outcomes

Upon completion of the projects, we anticipate generally healthier marsh ecosystems that will have improved tidal flow. Over time, these areas will be able to more successfully develop into habitat that is more resilient to future severe weather systems and is a dynamic marsh platform that will be able to more efficiently keep pace with SLR.

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