Assessment of protection strategies for estuarine beaches: a case study of Cliffwood Beach, NJ

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Problem:

Estuarine beaches erode at high rates but are often ignored
Many estuarine coastal towns have no federal/state protection projects
Towns often lack scientific expertise or data

Goal:

Establish working relationship with a Raritan beach community
Gather data on beach processes and shoreline change
Help with decisions about threatened infrastructure and habitats

Site: Cliffwood Beach, NJ

Situation:

Longshore currents move beach sand away from park and road

Seawall prevents delivery of new sand

Beach and dune eliminated at east end (Critical Zone)

Overwash and flooding occur; road will soon be undercut

Information needs/methods

Landform heights and volumes and plant species

Pros and cons of shore protection alternatives

Municipal needs and capabilities

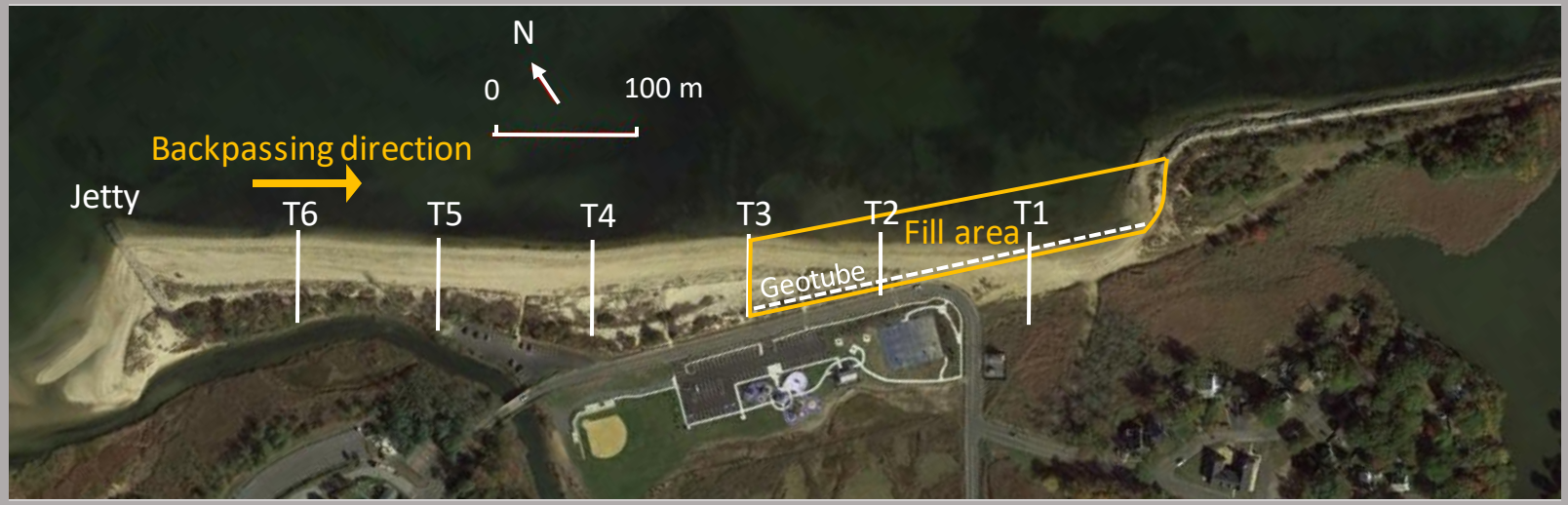
- Initial meeting: Dec. 2017
- Presentation of results: Sept. 2018

Field methods:

6 Representative transects

Bimonthly GPS topographic surveys for topography

Continuous 1x1 m^2 quadrats across shore for vegetation



Suggested management alternatives:

Initial beach nourishment plus backpassing (recycling existing sand)

- Nourishment of 17,480 m^3
- Backpassing of 700 m^3 yr^{-1}

Sand fences, vegetation plantings in dune

- American beach grass seaward of fence; panic grass landward

Bulkhead is alternative as primary protection to protect road

Low-cost buried geotube is alternative as backup to fill

Outcomes

Implications

External funds required for initial fill
Municipal equipment for backpassing
Backpassing makes project sustainable

Practical value for the township

Criteria for obtaining external support
Alternatives using their local resources

Practical value for Rutgers:

MS thesis for Miller
Sampling expertise for Youngster
Advance in Nordstrom research on backpassing and hard cores in dunes
Publication for all participants