

# Problem Statement

## *Repetitive Erosion Pressure*

Chronic vs Episodic Erosion

## *Management Options*

1. Beach Nourishment
  1. Timing, cost
2. Shoal Management
  1. Opportunistic, longevity
3. Groins
  1. Cost, downdrift considerations
4. Breakwaters
5. Emergency Measures



# Problem Statement

## *Emergency Beach Protection*

2007 Condition



# Project Approach

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## *General Approach*

Focus on framework of pilot program, management of installed structure, and monitoring plan to demonstrate success

Program should be structured as beneficial alternative to other emergency measures

## *Site-specific Considerations*

1. Top and toe elevation of structure
2. Design Beach Condition
3. Distance seaward of structures and golf course infrastructure
4. Expectations for exposure/burial
5. Endangered species concerns
6. Public use of the beach
7. Coordination/Partnership with other IOP efforts

# Project Goals

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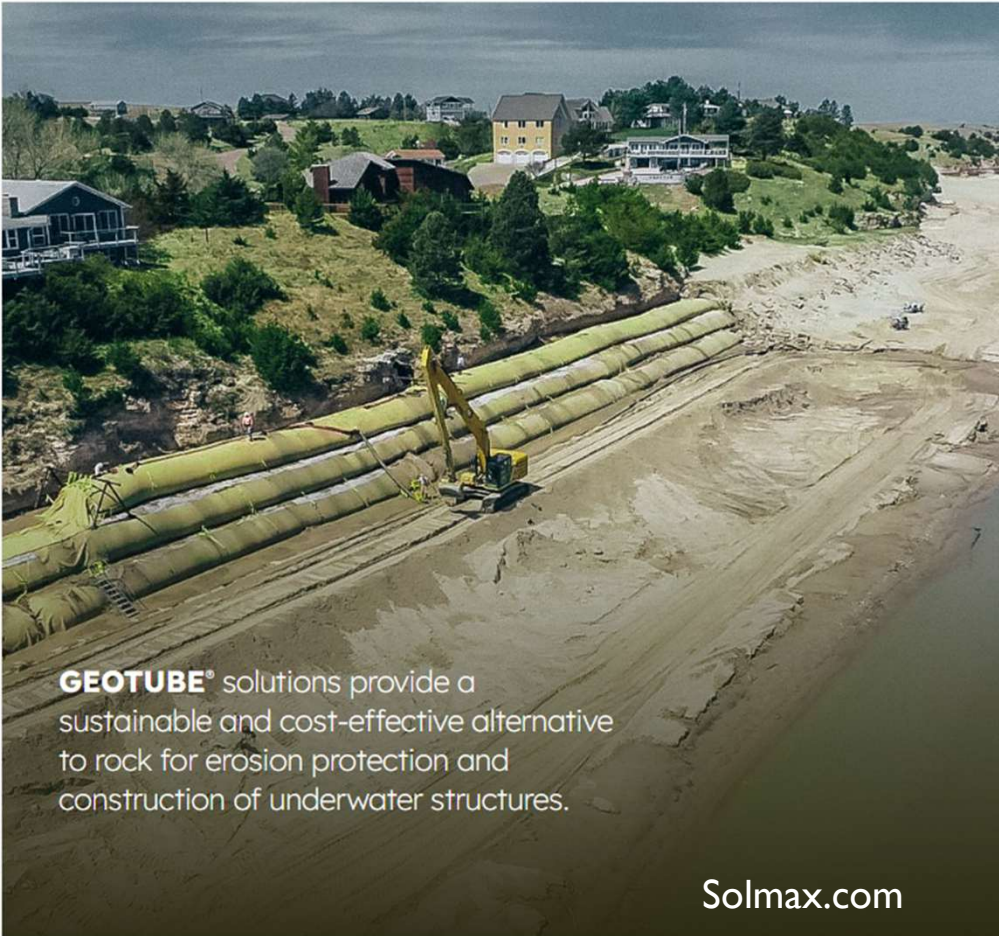
## *General Goals*

- Implement robust protection from critical erosion threatening structures
- Standardize protection levels
- Reduce long-term management cost
- Reduce impacts to owners and guests
- Fill “gaps” in existing coastal structures
- Demonstrate suitability of core dunes in SC
- Extend renourishment interval

## *Vs Existing Alternatives*

- Eliminates beach scraping
- More Proactive
- Accounts for unpredictable sand transport patterns
- Bag removal likely to cost \$50-100k at Beachwood

# Core Dune Examples



# Core Dune Examples



Satellite Beach, FL

- Potential Impacts –
  - Movement
  - Tearing
  - UV Damage
  - Exposure
  - Vandalism
  - Sea Turtle Nesting
  - Dune Vegetation
  - Access

# Pilot Projects

- Pilot project allowable under R30-13(S)
  - (a) Detailed study design and purpose that includes, but is not limited to:
    - (i) Documentation of the erosional issue at the study area;
    - (ii) Study methodology, including how the project is expected to address the erosional issue;
    - (iii) Location of the study including anticipated boundary of potential impacts;
    - (iv) Established control site(s);
    - (v) List of materials and specifications to be deployed or installed;
    - (vi) Timeline of the project, including end date of the study;
    - (vii) Anticipated outcomes;
    - (viii) Previous findings of any existing or similar technology, methodology, or structure that has been implemented in other areas/states; and
    - (ix) Strategy for removal and restoration, if required, after a storm event, at the conclusion of the study, and/or if the Department requires its termination pursuant to R.30-13.S(3)(g).
  - (b) Monitoring plans. Applications for pilot projects must be accompanied by a detailed monitoring plan. The monitoring plan must be approved by the Department prior to permit issuance and shall become a condition of the permit. Monitoring shall be required for the life of the pilot project. Monitoring plans must include, but are not limited to, photographs, data, and information necessary to measure and evaluate pre- and post-site conditions at pilot and control sites and adjacent areas.
  - (c) Applications must include information that demonstrates coordination with federal, state, and local entities. This coordination in no way affects or limits the ability of these entities to comment on the entire permit application before the Department. The applicant must have written acknowledgement from the local government which has jurisdiction in the area where the project is proposed.

# Pilot Projects

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(I) Any person wishing to utilize or alter the beaches or beach/dune system critical areas as part of a pilot project qualifying under S.C. Code Section 48-39-320(C) must receive a pilot project permit from the Department. The Department may consider pilot projects that are intended to study the efficacy of any new technology, methodology or structure that has not previously been tested in South Carolina, is not regulated elsewhere under South Carolina statute or regulation, and is reasonably anticipated to be successful in addressing an erosional issue in the beaches or beach/dune system critical areas. According to S.C. Code Section 48-39-250, the use of armoring in the form of hard erosion control devices to protect erosion-threatened structures adjacent to the beach has not proven effective and, in many instances, contributes to the deterioration and loss of the dry sand beach. The installation of new erosion control structures or devices as part of a pilot project will not be permitted.

# Pilot Projects

- (3) The following standards, along with any special conditions that may be appropriate, shall apply to pilot projects: 11 | Regulation 30-13
  - (a) Any construction activities associated with the pilot project shall be scheduled so as not to interfere with nesting and brood-rearing activities of shorebirds, sea turtles, or other wildlife species;
  - (b) No part of the project can be constructed upon the primary oceanfront sand dune and construction activities shall not adversely impact the primary oceanfront sand dune;
  - (c) Installation of seawalls, bulkheads, or revetments is not allowed as part of a pilot project;
  - (d) No non-native or invasive species shall be allowed as part of a pilot project. Only native beach vegetation may be used as part of a pilot project and must be approved by the Department. Approval may require the applicant to submit a certified letter from the supplier of the source material.
  - (e) Pilot projects shall avoid adverse effects to flora, fauna, and physical and aesthetic resources to the maximum extent practicable;
  - (f) Modifications to the project design, materials, or other aspects of the pilot project must be submitted, evaluated, and approved by the Department prior to implementation. The Department may require a formal permit amendment and public notice depending on the scope of the proposed modifications.
  - (g) The Department may require the termination of the pilot project and/or the removal of pilot project materials, and/or require restoration of impacted critical areas, for reasons that include, but are not limited to: (i) deployed materials are no longer generally intact and functional; (ii) deployed materials have resulted in marine debris; (iii) the pilot project impedes navigation or public use of state lands and waters; (iv) the pilot project timeline has concluded; (v) the pilot project has resulted in material harm to flora, fauna, or physical or aesthetic resources; or if (vi) an adjacent or downdrift community or property owner demonstrates to the Department that the pilot project caused or is causing an adverse impact.
  - (h) The applicant for a pilot project shall provide a financially binding commitment, such as a performance bond or letter of credit that is reasonably estimated to cover the cost of removal of the project, and/or restoration of the affected beach and/or beach dune system as approved by the Department. The financially binding commitment shall authorize the Department to utilize these financial commitments in the event that the permittee is required to remove the project and/or restore the affected area and fails to do so.

# Pilot Projects

- (4) Upon completion of the pilot project, the permittee must submit a detailed final report to the Department.
  - (a) The final report must be submitted within ninety (90) calendar days of the project end date and include, but is not limited to, photographs, data, analysis, and information pertaining to the following: 12 | Regulation 30-13 (i) pre- and post-site conditions at pilot and control sites and adjacent areas; (ii) impacts of the project to flora, fauna, or physical or aesthetic resources; (iii) impacts to adjacent and downdrift properties; (iv) the pilot project's effects on the erosional issue in the beaches and/or beach/dune system critical areas; and (v) any other information the Department determines is necessary to evaluate the success of the pilot project.
  - (b) The Department will review the final report and shall render a final determination regarding the success of the pilot project in addressing an erosional issue in a beach and/or beach/dune system critical area. The Department's determination of success will include an assessment of both the beneficial effects and adverse impacts of the project. If the Department determines that the pilot project is successful, the Department may authorize the use of the studied technology, methodology, or structure at the study site or additional locations through a critical area permit or emergency order. If the Department determines that the pilot project is unsuccessful, it must be removed within thirty (30) calendar days of the final decision.

# Potential Implementation Plan

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- Develop Study Plan
  - Engineering design, environmental review, monitoring plan
- Permit Application
  - Public notice, agency review, community outreach
- Final Design
  - Condition surveys, contractor negotiation
- Construction
  - QA/QC, as-built surveys
- Monitoring

# Questions to Answer

- Construction schedule – pre or post nourishment?
- Repair or Rebuild Existing Bag Wall
- Project limits and control areas
- Permit conditions and monitoring requirements
- City of IOP coordination
- 3<sup>rd</sup> Party Review/Research



# Deliverables

- Design Study
- Monitoring Plan
- Permit Application
- Final Report
  
- Engineering likely \$100-150k depending on amount of post-application support
  
- Likely need to install 500-1,000 additional bags to repair revetment at Beachwood

**Thank You**