Siasconset Beach Preservation Fund Update to the Community

Summer 2014

Volume 1

Preserving and Protecting 'Sconset Beach for Future Generations

To the Nantucket Community:

Residents and visitors alike value Nantucket's natural beauty and resources, its historic character and the strong sense of community. Unfortunately, the realities of changing weather patterns have put some of our most beloved areas at risk – particularly Siasconset ('Sconset) Beach and Bluff – from the impacts of erosion.

For the past several years, the Siasconset Beach Preservation Fund (SBPF) has been working to identify ways to protect and preserve 'Sconset Beach and Bluff that are environmentally responsible, carried out collaboratively and help Nantucket adapt to the rising sea levels that threaten its very existence. With up to 30 feet of the Bluff lost in some spots during the most severe storm years, this is a challenge that cannot be ignored without serious consequences for Baxter Road, local homes and access to Sankaty Light.

As the SBPF considers the best way to address this challenge, we follow some core principles, including:

- Evaluate possible solutions to address erosion in terms of their long-range potential to maintain the unique environment of 'Sconset Beach and Bluff
- Rely on scientifically sound options for protecting and preserving the Beach and Bluff
- Act in a financially responsible way
- Cooperate and coordinate with the Town of Nantucket whenever possible
- Leverage private funding to support preservation plans

We put these principles into practice during the Fall 2013 and Winter 2014 as we collaborated with the Town to implement a new erosion prevention system designed to safeguard Baxter Road and the parts of the 'Sconset community most at risk from potential erosion.

In its first six months in place, the geotube system installed on an emergency basis has protected 'Sconset Beach and Bluff from potentially devastating impacts of both a late winter blizzard and July tropical storm. We remain hopeful that the approach we have taken will ultimately be approved on a non-emergency basis and that the community will benefit from additional work (such as the planting of natural vegetation at the top of the Bluff and managing stormwater runoff from the road).

This Update is designed to help Nantucket residents understand the facts about our work to preserve and protect 'Sconset Beach and Bluff, as well as the community adjacent to it. For more information, visit our website: www.sconsetbeach.org.

Sincerely,

Josh Posner President, SBPF



SBPF seeks to protect the historic and natural beauty of 'Sconset Beach and Bluff for the benefit of future generations of Nantucket residents and visitors.

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Points of Interest

- Geotube system working well through severe storms
- Added sand offsets impact on neighboring beaches
- Privately funded
- Escrow provided to Town to cover cost of removal if harm occurs
- Approved by MA DEP in Dec 2013, overriding local denial
- Up Next: Expand proejct from Sankaty Light to 3500 feet south, protecting entire erosion damaged area

Winter 2013-14: Installing Geotubes to Protect the Bluff and Baxter Road

A series of serious storms in the late winter/early spring of 2013 led the Town to consider closing Baxter Road and relocating it in order to maintain access to local homes and assure the integrity of infrastructure (water, sewer, electric lines, etc.). The Town and SBPF ultimately decided to partner on a project that could slow the impact of erosion and maintain the safety of Baxter Road.

Though several alternatives were explored, the Town and SBPF proposed an approximately 1500 foot geotube installation that was focused on the most vulnerable portions of the Bluff, where Baxter Road and certain homes are imminently threatened. When it became clear that the geotube project would not be approved by the Conservation Commission (ConCom) before the winter storm season through the regular hearing process, SBPF filed a Emergency Certification request for 4 tiers of geotubes for the most critical 900 foot stretch of the Bluff.

After winning an override appeal of the local ConCom denial from the MA Department of Environmental Protection (DEP), a compromise 3 tier version of this request was approved and the geotubes were constructed in December 2013 and January 2014. It is important to note that though the proposal was in partnership with the Town of Nantucket, the actual project was funded and constructed by SBPF with private contributions.

In March, a severe late winter Nor'easter storm and blizzard hit Nantucket; the geotubes performed as expected with some loss of sand template (as designed) and no erosion at toe of the bluff. Some face erosion above the geotubes continues, but that is largely related to runoff from Baxter Road.

In June 2014, the ConCom voted to deny the Town and SBPF a normal permit for the existing erosion protection project, in an attempt to reverse what had just been approved in December. The decision contradicted findings by the DEP, scientific and environmental support for the project, a legal requirement to protect pre-1978 houses, and public interest in addressing the future of Baxter Road in a responsible manner.

SBPF is once again appealing that decision with the DEP.



Installation of geotubes took place during a 35 day period between December 2013 and January 2014. The project benefits from significant sand cover over the tubes (volume calculated at 1.5 times the rate of typical erosion) to limit impact on nearby beaches.



Completed geotube project with sand cover blends into bluff. The geotubes performed well during both a late winter blizzard and July tropical storm, with limited new erosion.



Bluff today; note the proximity of the eroded Bluff to homes and Baxter Road. Should the road be relocated, direct access to Sankaty Light would be threatened.

Next Steps

The emergency installation of 900 feet of a 3 tier geotube system was an important, but temporary, step. Moving forward, we hope to:

- Maintain the current geotubes: SBPF is seeking state approval for the geotube system in place today to remain (with the addition of a 4th tier as designed by the engineers), with important monitoring and oversight.
- **Prepare for the expansion of the protection system:** Pursue approval for an expanded (4 tier) geotube system to protect vulnerable areas from Sankaty Light to mid-Baxter Road.
- Evaluate the best method for moving forward: Determine whether geotubes or other systems, such as a rock revetment, are the most effective approach in the long term.

Impacts of Erosion: Lost homes, tax revenues and access

At its closest point, the top of 'Sconset Bluff is only 29 feet from the public Baxter Road. Many homes are this close (or even closer) to the top of the bluff. Eight homes have been moved or demolished leaving vacant lots and 12 more have been moved back to the roadway on their lots to gain time.

In an era of climate change and sea level rise, we know that if we do nothing this community will continue to be lost, one



Bluff pre-erosion (2006 photo); today, nearly half of the bluff is bare and eroded

house at a time, until all of 'Sconset is destroyed. At the same time, there are a number of important issues at play in our desire to protect 'Sconset Beach and Bluff from further erosion:

• As the top of the Bluff erodes, Baxter Road could be seriously undermined, along with town infrastructure, such as water and sewer lines, causing a dozen or more homes to be stranded and needing a different access route.

- The northern half of the Bluff Walk has already been closed. The public access along the bluff that once ran from the village to the lighthouse has been lost.
- Many more houses, which are not just private homes but also historic structures and part of a historic setting, are threatened. Erosion has been moving from north to south at the rate of about 70-80 feet per year on average for the last 30 plus years.

The town's tax base has been reduced by tens of millions in previously taxable assessed value as the Bluff erodes away. The process continues costing taxpayers as taxes (approximately \$300,000 in lost tax revenue last year alone) are shifted from properties along Baxter Road to all other island properties.

Learning More About Geotubes: What are they and how they work

What is a Geotube?

Geotubes are sand-filled sleeves of geotextile fabric. The ones in this project are approximately 7 feet tall and 18 feet across with a circumference of 45 feet. They are approximately 100-200 feet long. They rest on a fabric scour apron with sand-filled anchor tubes along the seaward edge of the bottom tube and the landward edge of the top tube. Geotubes are typically placed parallel to shore along the back beach, with sand and natural vegetation cover.

How do they limit erosion?

Because the sand is held in place by the geotubes, it provides an extremely robust barrier against erosion. Fully realized, the multi-tiered geotube structure is expected to withstand a 150 year storm. The geotubes are covered by sand in the amount that would naturally wash away if the project were not there, mimicking the natural erosion process. Natural plantings can be placed on the bluff above to maintain a natural look.

Can't jute be used?

A structure made of jute or other natural material would fail in a major storm. Jute has a tendency to rip and failure can be difficult to control. Once the jute rips and sand is lost, the Bluff is left vulnerable until the jute can be repaired or rebuilt, which is required regularly. In addition, when damaged, jute can wash out to sea causing numerous other problems.

Don't structures like Geotubes hurt other beaches?

We have committed to cover the geotubes by sand in the amount equal to approximately 1.5 times the volume that would naturally wash away if the project were not there, so that nearby beach-



Visit our new observation area at 87 Baxter Road and decide about the geotube project for yourself.

es are not harmed. The sand is delivered a few times throughout the year (typically during the offseason). The project adds more sand to offset erosion than any project of its kind that we are aware of—the amount requested by project opponents themselves. SBPF has given the Town a cash escrow account sufficient to remove the system if it actually causes harm (or if we stop providing added sand).

What if the geotubes are impacted by storms?

After major storms, the geotube system will be inspected to determine if repairs are required. The tubes can readily be patched, or in extreme cases, damaged sections can be replaced.

Is beach access impacted?

The geotube system was designed to assure continued beach access. Both sides are graded with a slope of sand allowing walkers to go up one end and down the other even during storm tides; at other times a wide beach remains in front.

Protecting 'Sconset Beach and Bluff

Each year, 'Sconset Beach and Bluff is at risk for further erosion – in some recent difficult storm years, up to 30 feet or more have been lost from the Bluff. While beach erosion is certainly a "fact of life" in many communities, 'Sconset specifically and Nantucket overall are special places. The community of 'Sconset is home to some of Nantucket's most beloved features (including Sankaty Light), historic homes and family memories.

There is both an opportunity and a challenge before us: preserving 'Sconset Beach and Bluff in a way that limits future erosion, stabilizes the current bluff and does not inadvertently accelerate erosion elsewhere on the island. Doing so may not be the right choice for every community on Nantucket facing erosion challenges, but we are hopeful that by protecting 'Sconset Beach and Bluff, Nantucket and others can learn about how this approach works — something important in this time of sea level rise and climate change.

Siasconset Beach Preservation Fund

Mission:

Identify ways to protect and preserve 'Sconset Beach and Bluff that are environmentally responsible, carried out collaboratively and help Nantucket adapt to climate change and rising sea levels that threaten its very existence.

Sconset Beach Preservation Fund PO Box 2279 Nantucket, MA 02584

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www.sconsetbeach.org

About SBPF

Siasconset Beach Preservation Fund is a 501(c)3 organization that was formed by a group of 'Sconset homeowners concerned about erosion and the threat it poses to the village of 'Sconset. Since the early 1990s, SBPF has worked to research and install, on an experimental basis, a series of measures that might control the erosion of the 'Sconset Beach from south of Sesachacha Pond to south of the 'Sconset sewer beds. The goal has been to find an effective, environmentally benign and economically feasible approach. Virtually all funding has been provided from private, nongovernmental sources.

Funding

Funding for the efforts of SBPF is provided by our members, local community organizations, and the general public.

Public Private Partnership

SBPF seeks opportunities to partner with the Town of Nantucket, local organizations, community members and agencies that share our goal of limiting the impact of erosion on 'Sconset Beach and Bluff. We thank the Town of Nantucket for their time and expertise.

Let us send	l you	updates!
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