

History

Renters and owners have used Corn Hill's coastal bank and its sand path for over 100 years to access the beach at the bottom. Erosion has always been a concern; in the early 1900's, vegetation on Corn Hill was sparse, but over the years, substantial planting of dune grass and other plants has filled in most previously bare areas. In more recent years, to avoid further erosion, the sand path from the top of the bank was routinely nourished with "sacrificial sand" and covered with snow fences and cut brush over the winter. The photo archive at https://www.cornhillcottages.org/private/dune_photos.pdf shows the evolution of the bank and its vegetation and sand footpath(s) from the early 1900's to the present day.

In 2003 following major storms in 1995 and 2000 that seriously eroded the toe of the bank (back of the beach), the Corn Hill Condominium Association (CHCCA) established a committee that recommended to the Board to erect a barrier fence at the bottom of the bank to prevent further erosion. The Association applied for a permit to build the fence, at which time the Truro Conservation Commission (TCC) imposed an "Order of Conditions" (OoC) requiring closure of the existing sand path as a requirement for obtaining the permit. In the late fall of 2016, one of the cottages was being sold, it was noted that no Certificate of Compliance with the Order of Conditions had ever been issued. In order to enable the sale to go through, the path was closed, an agent of the TCC inspected the closure, and the Certificate of Compliance (CoC) issued. Subsequently, use of the path for beach access by renters and some owners continued. Maintenance of the path by sand nourishment and protection over the winter was stopped in the early 2000s, and at present erosion has created a deep gully or cut in the top half of the bank.

Considerable erosion has also occurred under the beach stairs, which do not comply with current recommended/required practice in which beach stairs "zig-zag" and traverse the slope to reduce erosion beneath. Ongoing concern over these two points of erosion as well as erosion of the toe of the bank led the CHCCA to establish a committee to determine what, if anything, we should be doing to protect our coastal bank from further erosion and in general, how to best maintain the area while still enabling beach access and use. This document reports the findings and recommendations of the committee to date.

Committee Charter/Tasks

The CHCCA Board President (Lynn Bowman) requested that a Committee be formed in May of 2020 to address the issue of the Sand path use, management of the erosion, identify an expert that can assess the health of the property including the sand path, and develop a mitigation plan to reduce potential erosion concerns.

The Committee consists of: Nancy Ide, Brice McKane, Judy Pachter, Susan Rothstein, and Toby Wright (chair).

The Board President's email of 5/25/2020 identified the following as items for the Committee to address.

1. *Identify an Expert who can assess the health of our Dune (Coastal Bank) including the Sand Path and develop a mitigation plan to reduce potential erosion concerns*
2. *Discuss and recommend future sand path actions:*
 - Option 1 - leave sand path open*
 - Option 2 - close sand path for all*

Option 3- close sand-path and abide by the Town of Truro's order to close the path and look the other way as owners/guest use the sand path (no enforcement of closure- this is our current approach)

3. *If the committee recommends option 3 above, then make a recommendation on whether CHCCA funds should be used to "nourish" the sand path.*
4. *If the committee recommends option 2 then the committee should address any legal or equity issue with beach access.*
5. *Determine if the Trustees have any liability for not enforcing the town of Truro order to close the sand path.*

Based on these items, the Committee identified two major independent issues:

1. *Legal issues* concerned with use of the sand path in the light of the existence of the Certificate of Compliance. This Issue focuses on Item 5, above.
2. *Environmental issues* concerned with the health and maintenance of the coastal bank and dune at the property This issue focuses on Items 1 through 4, above.

To address (1), the committee would discuss and recommend future sand path actions, including leaving the path open, closing the path, or closing the path but not enforcing prohibition of its use. To address (2), the committee was to identify an expert or experts who can assess the health of our dune (coastal bank) including the sand path and develop a mitigation plan to reduce potential erosion concerns.

Legal Issues:

The Committee sought informal legal counsel from Mr. Joe Hutcheson (Corporate Law; family member of owners in Cottage 8SLW) and Mr. Adam Kahn (Environmental Law, of Foley Hoag).

Counsel indicated that the authority of the TCC derives from the Order of Conditions (OoC) and subsequent Certificate of Compliance (CoC). The TCC is authorized by law to enforce OoC and CoC. The OoC and CoC were not contested or rejected and therefore a court would reasonably find that they are legally enforceable.

- The 2002 MDEP Order of Conditions, which included an erosion control Fence Plan and detail, prescribed closure of the path.
- CHCCA presented the path as closed upon inspection and was granted a Certificate of Compliance (2016) based on this inspection.
- Counsel advised that the path should stay closed to all until permitted for use. Non-compliance poses a potential for further action by the DEP/ TCC.
- Counsel indicated that financial penalties are a possible future action for non-compliance, though the likelihood of incurring those penalties was not knowable and would not likely be the first of any actions taken.
- Counsel indicated that future applications for permitted use of the existing path or installation of new stairs were permissible.
- While acknowledging that arguments to allow use of the path have some merit, Counsel indicated they were not optimistic regarding the success of such applications given a) existing beach access via the stairs, b) the reluctance of TCC

to permit non-engineered foot paths down coastal banks, and c) their personal experiences with similar matters.

- Based on this counsel, the CHCCA Board of Trustees met in an Emergency session in August, 2020 and voted to close the path to all.

Environmental Issues:

The environmental issues have been addressed to date through identification of technical resources, site visits and discussions with some of the identified resources, and technical proposals from some of these resources. The following summarizes the Committee's findings regarding environmental issues and is organized by the items identified by the CHCCA Board President.

Expert Resources:

The Committee identified potential candidate expert resources by referral from the TCC as well as based on personal experience with experts in the area. Resources identified to date include the following:

- **Epsilon Associates, Inc.;** 3 Mill & Main Place, Suite 250; Maynard, MA 01754. (978) 897-7100
- **Safe Harbor Environmental Management (Mr. Gordon Peabody)** 95 Commercial Street #211, Wellfleet, MA 02667. (508) 237-3724
- **Coastal Advisory Services (Mr. Jim O'Connell)** PO Box 401, Brant Rock, Ma. 02020. (781) 588-0502
- **Ryder Wilcox Engineering** Giddiah Hill Rd, South Orleans, MA 02662, (508) 255-8312
- **J. M. O'Reilly Associates:** 1573 Main St, Brewster, MA 02631, (508) 896-6601
- **Coastal Engineering Company Inc.** 260 Cranberry Hwy, Orleans, MA 02653. (508) 255-6511.
- **Dr. Jay Fleisher** (glacial geologist and Professor Emeritus at SUNY, College at Oneonta; Spouse of Judy Pachter)

Committee members met with and received proposals and opinions from:

- Epsilon Associates, Inc. (met with committee member Brice McKane)
- Safe Harbor Environmental Management (Gordon Peterson) (met with committee members Susan Rothstein, Brice McKane, plus Lynn Bowman and owners of cottage 6)
- Coastal Advisory Services (Jim O'Connell) - no visit but submitted a proposal for advising the CHCCA on dune maintenance.
- Dr. Fleisher (submitted professional opinions regarding the sand path mitigation and erosion potential).

These experts visited the property, performed preliminary inspections of existing features including the sand path, stairs and areas around the cottages, and/or had previous familiarity with the property and issues.

The following summarizes the proposals received to date.

- The proposal from Epsilon included:
 - Site Documentation: delineate all coastal resource areas and boundaries, Identify erosion hot spots, invasive vegetation, soil and hydrologic (surface water flow) conditions. (Does not include the Site Plan topo survey)
 - Landscape and Vegetation Management Plan (LVMP): Plans to mitigate erosion or potential erosion, remove invasive plants, install catchment devices, future monitoring activities, prioritized list and budgetary info for remedial actions.
 - Notice of Intent: File the NOI on behalf of CHCCA and attend up to 2 public meetings as technical consultant, 1 site walk with Commissioner's Agent.
 - Estimated Cost: \$25,980 (plus \$950 in filing fees, no included in proposal)
 - This contractor indicated that the stairs and sand path are the primary, though not sole, areas of substantial erosion that should be mitigated. This proposal also identified the presence of and need to mitigate invasive species present on the bank and dune. Their proposal addresses the elements that would be required to support an application to MDEP/TCC to perform the erosion mitigations but did not include the cost of an updated Site plan (topographic) survey or the actual costs of mitigation, the scope and approach of which are to be determined.
- Two submittals were received from Safe Harbor
 - The first submittal was a proposal for work and included:
 - Limited Fall Planting and Biomimicry: Limited planting of American Beach Grass in areas not well vegetated 1) Bluff Area (in front of cottages), plus limited biomimicry sand collection and; 2) upper bank viewing area (near observation deck); and 3) mid bank area (between observation deck and cottage #17). It is understood that "biomimicry sand collection" means installation of man-made objects/structures to facilitate the natural collection/deposition of wind/water transported dune sand (e.g., drift fences).
 - Cost: \$2,450. 50% in advance.
 - This proposal did not address assessment or mitigation of the existing stairs or the sand path, permitting or associated data needed but rather focused solely on limited planting in areas of secondary priority.
 - The second submittal was a Draft Land Management Plan
 - Overall, the submittal proposes for Safe Harbor to act as CHCCA's Environmental Consultant and offers some thoughts on scope and approach to such projects.

- The submittal divides the property into six possible project areas, from Upper Beach (grass line to high tide line) to Back Bluff (50 feet past Top of Bank to Road).
- This submittal identifies the following possible projects:
 - Seasonal (fall/winter) Turtle Stranding notifications posted by Safe Harbor.
 - Limited, annual, seasonal (fall/winter) planting of Beach Grass in void areas at toe of Coastal bank, seasonal use of wooden “shims” to trap wind blown sand, and consideration of kayak/ water toys storage racks.
 - Re-vegetation for the upper sand path and design/redesign of stair access to the beach
 - Planting of Beach Grass in void areas at toe of Coastal bank, seasonal use of wooden “shims” to trap wind blown sand in the Upper Bluff (in front of cottages and around observation deck).
 - This submittal is considered something like a “statement of technical approach” rather than a Management Plan that can be implemented as is. There are no costs or labor rates associated with these potential plans or projects.
- The proposal from Coastal Advisory included:
 - Conduct desk top research (e.g., web-based DEP Wetland Resource Maps; USGS Surficial Geology data; Barnstable County Soil Survey data; Flood Insurance Rate Map etc.).
 - Conduct a site visits to view and document on-site conditions.
 - Prepare a detailed written report on the above information including possible erosion control alternatives, including photograph examples, to assist in stabilizing the Bank, as well as any constraints for conducting work on the Bank relative to the Town of Truro and state DEP Wetlands Protection Regulations.
 - Cost: \$2,100, 30% in advance
 - This proposal includes a desk top data review, Site visits, and report but does not include any engineering design for erosion mitigation suitable for permitting, topographic survey, delineation of resource areas, or permitting support.
 - This submittal is considered to represent a plan to develop a “statement of technical approach”
- Dr. Jay Fleisher provided two professional opinions; one regarding mitigation measures for the existing path gully now that use is prohibited unless permitted for use in the future, and one that addressed what would transpire should no action be taken and foot traffic continue.

- Treatment- recommendation for achieving the short-term goal of precluding future natural erosion along the entire path involved adding sand to upper portion (1/3) of the gully at the top of the bluff to an approximate depth of two (2) feet, adding a covering layer of straw to protect the added sand from direct impact by rain and melting snow, and sprinkling a light sand coating over the straw to retard wind erosion followed by planting grass and/or other native vegetation (e.g., American Beach Grass) to stabilize the surface.
- The second submittal by Dr. Fleisher included his professional opinions on what would transpire should no action be taken and foot traffic continue. The opinion stated that, without mitigation, the gully would continue to erode headward, encroach on area in front of the cottages and will generate lateral erosion, causing the gully would get wider until the gradient (slope) of the gully and the inclination of the gully sides reach equilibrium with the material and climate (the gully would grow at the expense of the land between the cottages and the top of the bluff and eventually consume the observation deck). This opinion indicated that this process is inevitable, absent mitigation, though the timing and rate of erosion is not known.

Legal and Equity of Access Issues:

Equity of beach access was identified by the Committee as an issue (owners farthest from the existing stairs had relied upon and assumed access to the beach via the path as an asset of the property). Based on the opinions of legal counsel, application for additional beach access via the existing sand path is permissible, though Counsel was not optimistic about the outcome of such an application. Potential future access options include:

- a) permitting the existing path for future use, and
- b) new stairs along the path alignment (new stairs would likely have to “zig-zag” and traverse the slope rather than descend directly down the existing path).

Some restoration/mitigation of the existing erosion in the upper portions of the existing path would likely be required by TCC even if new stairs were approved or the existing path was permitted for continued use. Though there is no specific requirement at the moment to perform mitigation of the currently closed path, the Committee address this issue in the recommendations, below.

Discussions with TCC (Ms. Arozona Davis) indicated that a Notice of Intent/Application for new beach access or restoration/mitigation plan would require a new Site Plan survey and engineered design; Site plan surveys older than 10 years old must be updated. Proposals from consultants and informal discussions with Coastal Engineering indicated that a Site Plan survey and design would run approximately \$8k-\$10k, new stair construction would cost at least \$75k, likely more.

Liability Issues With non-enforcement of Path Closure Until Future Use is Permitted:

Non-compliance poses a potential for further action by the DEP/TCC. Counsel indicated that financial penalties are a possible future action for non-compliance

though the likelihood of incurring those penalties is not knowable and would not likely be the first of any actions taken. As the legal representatives of the CHCCA, the Trustees have exposure to the potential liabilities associated with non-compliance with the OoC and CoC.

COMMITTEE FINDINGS TO DATE

- Any physical mitigation of the existing erosion in the path gully and under the existing stairs **must** be legally permitted with the MDEP/TCC. Technically, the historical practice of seasonal path “nourishment” with sacrificial sand is now understood to require permitting.
- Any permitting for erosion mitigation will require an updated Site plan (topographic) survey that delineates the topographic features and the resource areas within the areas of proposed action.
- Plans to mitigate the existing erosion should be designed by a qualified professional to satisfy permitting requirements.
- Restoration/mitigation of the existing erosion in the upper portions of the existing path would likely be required by TCC even if new stairs or re-permitting of the historical path were approved.
- Site Plan survey and design is expected to cost approximately \$8k-\$10k, new stair construction would cost at least \$75k, likely more, though the limited number and scope of the currently available proposals are inadequate to develop reliable estimates.
- Design of a plan for erosion mitigation for the stairs and path suitable for permitting will cost in the \$10k’s. The cost of mitigation construction after permitting is not yet known but will certainly be more than the cost for design and permitting. The Committee has gathered a limited range of proposals from qualified experts and contractors for this work, additional proposals are deemed necessary to refine the likely range of these costs.

COMMITTEE RECOMMENDATIONS:

General:

- Interim (winter/Spring 2020/2021 mitigation of further path gully erosion measures be implemented, as allowable under the MWPA.
 - Placement of temporary drift fencing (a.k.a wood/wire “snow fencing” or cut brush) at several points within the gully from the point where the sand “ramp” meets the natural bank face up to the top of the gully (where there is no more “cut”), with the objective of depositing wind-blown sand in the gully over the winter and periods of high sand transport. This would require TCC review and administrative approval.
- Mitigation of Stair Erosion: As stair treads wear out (individually or in sections, focused on upper portion of stairs where the bank slope is steepest), replace

solid wood treads with grate-style treads that allow rain through and don't cause enhanced erosion via drip lines from solid treads (\$50-\$70/tread).

Planning for 2021 and Beyond

The Committee recommends that the Board consider potential future investments/costs to preserve the property in their planning for 2021 and beyond. The following are the general priorities identified by the Committee.

- Site plan survey (needed for essentially any/all future actions, good baseline control for the property).
- Continue to procure focused proposals from qualified professionals for path and stair erosion restoration/mitigation; design, permitting, and construction.

Other Potential Long-Term Actions

- Continue to procure proposals from qualified professionals to develop a property vegetation and management plan: addresses sustainable land use practices (what kind of actions/disturbances are OK and where based on resource area designations, what are not), mitigation measures for invasive species, identification of other actions/practices to minimize erosion and sustain the health and stability of the property.

To address beach access equity issues, two primary alternatives have been identified:

- Submit an application to permit use of the existing path, coupled with a mitigation plan for the future.
 - Two committee members have volunteered to do the necessary preparatory work, thereby decreasing permitting costs
- Submit an application to permit installation of new stairs near or along the path, coupled with a mitigation plan for the future. This may involve decommissioning and reclamation of the existing stairs and the affected area under them.

COMMITTEE REQUEST TO THE BOARD OF TRUSTEES

Given the status of the Committee's work and information provided above, the Committee request renewed direction for the Board regarding, what, if any continued study, investigation, collection of proposals, recommendations the Board would like from this Committee.