

**Present:** Chairman Jay Putnam, Paul Chamberlin, John Geiger, Billie Bates, DeeDee Holt, Conservation Agent Kristin Andres and Secretary Mary Fougere.

**Absent:** Commissioner Carol Scott

**325 Fox Hill Road, Eastward Ho! Country Club, SE 10-2534:** The hearing was re-opened for a Notice of Intent (NOI) for the proposed shorefront protection at 325 Fox Hill Road. Roy Okurowski/Coastal Engineering Co Inc, Consultant Peter Rosen and Jack Farrell represented the applicant. Since the last hearing, the applicant has submitted a revised set of plans (revision date November 4, 2009, C3.1.0-C3.1.11) entitled "Proposed Shorefront Protection" and a "Shorefront Protection" narrative dated November 3, 2009 that they would like to address in depth. A memorandum dated November 24, 2009 from consultant John Ramsey was also reviewed

Mr. Farrell stated that the course is smaller in length than most golf courses and there is a fixed width to the golf course. It is not generously wide and there is a finite amount of upland available so as land is lost on Pleasant Bay side, there are golf course features that are encroached upon. On many spots of the course, the playing field is right on top of the bank and these areas need protection. Essentially, this is the purpose of the application.

In general, the design has been modified by removing hard structure in some areas and adding large sacrificial sand dunes to mitigate areas that have had rock in the past but that the applicant will not be able to access. Mr. Rosen's summary included the following points:

- ❖ A volume of sediment has been determined based on the historic recent erosion at the site and will be preferentially placed, at least 2-ft thickness.
- ❖ Some of the nourishment has been shifted to immediately adjacent to the Jackknife Harbor beach to provide a stockpile of sand as a littoral feeder
- ❖ At each segment of the shoreline there will be a twofold approach to determine whether additional re-nourishment is necessary, including a simple trigger based on elevation and an annual survey at specific points along the shoreline
- ❖ The existing beach sediment is largely gravel; gravel will be a component of the nourishment. A local source of sand has been found that contains both sand and gravel geographically similar to the material on site

Mr. Okurowski reviewed the specific areas of the proposal:

- ❖ The work on Area 2 shown on C3.1.2 (the 7<sup>th</sup> tee) has been completed; this work was considered under a separate NOI. Mitigation sand placed on the revetment has buried the revetment, the project was successful. At the height of the existing beach before nourishment, a boundary has been set. It was noted that the fringe marsh in this area is buried and probably will not survive.
- ❖ In Area 1 ( 4<sup>th</sup> hole) shown on C3.1.2, the proposed work has not changed from the original proposal. The applicant proposes 240 ft of fiber rolls plus the existing fiber rolls (Photographs were circulated). There is a great loss of sand and trees are falling. With the fiber rolls and the nourishment, the golf course will be protected. The waves probably

will not get high enough to expose the fiber rolls. Mr. Ramsey recommends the use of coir matting in this area rather than using wire cages on the outside of the structure; Coastal Engineering Company disagrees that wire cages are detrimental.

Discussion ensued regarding the use of wire cages around fiber rolls, their life span and the problems of using wire wrapped fiber rolls to maintain the plant base when the fiber material erodes and empty cages result. Commissioner Holt questioned whether the fiber rolls can be replaced if the material washes out and vegetation has established. It seems that more damage will be done in removing/replacing the rolls. Mr. Okurowski maintains that the wire caged fiber rolls must be kept covered. Commissioner Putnam stressed that incentive in the past projects was not present so that many wire wrapped fiber rolls were not kept covered and therefore failed. The Commission is looking for the applicant to be sufficiently interested in maintaining nourishment.

- ❖ Ms Andres questioned whether there was science behind the thought that gravel mixed with sand will remain landward during wave action. Could it be that there is just a lack of sand in the system that results in gravel being left on the beaches. Mr. Rosen maintains that the sand will move offshore and drift to Jackknife beach. Eroding storm waves should deposit the gravel on the beach face, possibly at the toe of the beach slope
- ❖ Nourishment will be deposited above MHW, on the racks so when higher water comes in, it pulls some of the sand into the intertidal zone. Mr. Ramsey questioned which MHW data was being used .NGVD is what is used by Coastal Engineering, which puts MHW at 4.0; during the recent storm there was a high moon tide plus storm, the entire Eastward Ho coastline was three ft under water. Mr. Okurowski noted that NOAA tide data has not been verified.
- ❖ Mr. Ramsey addressed the profile of the nourishment. If the slope is too steep, the nourishment ends up being transported offshore, the steeper the slope, the greater the chance the nourishment will be transported offshore rather than stay on shore. A cu yd per linear foot is proposed. Calculations and survey data was submitted at the last hearing to map the linear feet lost . The surveys were not completed at the same time of year. The bottom of the bank was mapped, not the beach. Discussion ensued regarding the methodology involved in the mapping provided by Mr. Okurowski.
- ❖ There has been a change from the original proposal in Area 3—the corner revetment terminates here. There was concern regarding wildlife habitat , the revetment has been tapered down starting at eastern side at elevation 12 and tapering to 9.0 ft, which is three ft above the existing beach. There has been substantial scarping and major loss of trees, it was thought the entire bank will eventually slide. The area is too active for fiber rolls and there are revetments on both sides. This section has a lot of clay in the bank with a slower erosion rate, there was some question from John Ramsey regarding the type of nourishment for this location. Commissioner Chamberlin questioned whether the proposed scarp protection could be modified so that the entire shoreline in this area does not become one long revetment. Initially there were no cart paths or vital golf course features that needed

- protection when the original revetments were constructed, resulting in the gaps between revetments. There was no nourishment ever put on the existing revetment
- ❖ Areas 4 & 5 have scarping along the beach for 500 feet and a huge end scour to a height of 30 ft up to top of bank. Mr. Okurowski is proposing to extend the existing revetment and taper down the ends with fiber rolls and terminating with beach. The beach will be nourished. He maintained that this is worst case scenario in which the bank must be protected so that real estate is not lost annually. The Commission questioned whether mats and vegetation could be used on the bank, but there does not appear to be a vertical scarp in this area. The angle of repose has changed and the bank has re-configured itself with a fairly wide beach at the toe.
  - ❖ In area 6, nourishment and planting is proposed. This area remains stable.
  - ❖ In area 7 there is high wave action and the existing fiber rolls have never been nourished but have been moved off the slope by waves. The plan proposes replacing the fiber rolls with a revetment and re-using the fiber rolls elsewhere. Commissioner Geiger asked if the rocks could be further tapered at the ends. Commissioner Chamberlin questioned whether the fiber rolls have been damaged due to lack of nourishment, causing them to break down. Data is necessary for this area to since Mr. Okurowski maintains that the higher waves are causing the break down of the fiber rolls. Wave height is related to depth of water and wind speed. Commissioner Chamberlin maintains that the fetch has not changed and the wind speed remains the same so the height of the waves should not be higher.
  - ❖ In area 8 there is no nourishment proposed in front of the revetment. The whole parking lot of Jackknife Harbor is eroding. The dune that is proposed will function to nourish Jackknife Harbor. Mr. Okurowski does not anticipate that the sand from area 7 may not make it down to Jackknife Harbor since the drift is taking the sand outward from Area 7.

Commissioner Chamberlin questioned the reasoning for use of fiber roll (soft solution) returns in some instances, and the use of revetment rocks (hard solution) for scarp protection in other areas. Mr. Farrell maintained that the conditions of the shoreline vary as one travels along the length of the project. In a storm event, the whole shoreline has different conditions. For example east of Area 7 along the point gets heavy surf along its western edge and requires rock scour protection. The existing fiber rolls have been beat up and are in disre-pair.

From the audience, Coastal resources Director Ted Keon, felt that the feeder dune is a good idea, but questioned the design of it. He felt that a more traditional approach gently tapering the beach fill would be more beneficial and would last longer. The design seems to place the sand close to the MHW line, in which case the sand will probably wash away quite fast. From the audience, John Ramsey felt that the volume of sand will not be problematic for the existing culvert as long as wave action provides gradual erosion. He thought that CZM is developing a plan to widen the culvert.

Due to the scope and size of the proposal, the Commission had asked for a consultant; Eastward Ho! has paid for the consultant, which is a process allowed under the regulations of

the Chatham Wetlands Bylaw. John Ramsey was present to review his Memorandum dated November 24, 2009. This document was compiled after a thorough review of the information submitted by Coastal Engineering Company to date. He writes that "overall the project entails 2,260 linear feet of rock armoring, with fiber rolls in limited areas"... The plans have been modified to include arrows showing construction access point., proposed concrete bounds for trigger points and inclusion of a sacrificial dune at the western project limits"

Further Mr. Ramsey noted that "similar to the previous review of the NOI documentation, the follow-up information lacks quantitative information regarding the basis for the design, as well as anticipated impacts associated with the planned coastal engineering structures. In addition, the additional submittals provide no information relative to the previously requested comprehensive assessment of shore protection alternatives. As discussed during the October 6, 2009 Conservation Commission Hearing, only limited information exists regarding the need for shore protection along the various stretches of shoreline."

Mr. Ramsey provided comments and/or questions in the following categories:

- ❖ Shoreline Erosion Rate and Beach Nourishment Requirements- during the meeting there was discussion between Mr. Keon and MR. Rosen regarding the volume of sand proposed and the littoral drift
- ❖ Need for Armoring and/or Slope Stabilization along the Majority of the Coastal Bank
- ❖ Construction Methodology
- ❖ Existing Fiber Rolls
- ❖ Proposed Beach Nourishment Materials- he noted that MCZM has indicated that angular gravel, as proposed, does not perform in the same manner as naturally rounded sediments, therefore, angular gravel is typically not allowed as a component of a beach nourishment program
- ❖ Sediment compatibility
- ❖ Shoreline vulnerability Assessment
- ❖ Future Beach Monitoring

Ms Andres questioned whether the application would require a MEPA review, since the applicant is trying to avoid a Chapter 91 process at this time. Mr. Farrell stated that since there is a need for some of the work to go forward as soon as possible, the proposed work will occur above MHW to avoid a Chapter 91 application process.

The Commission expressed the need to move forward with the application, in this vein Commissioner Chamberlin questioned whether there was a way to write an Order for segments of the project. Mr. Farrell stated that section #1 and #7 & 8 are the most important sections to be worked on from the applicant's perspective.

**The hearing was continued to December 16, 2009. Prior to that date, the Commission will need the following:**

- **Documentation re: use of wire encased fiber rolls**

- **Input from CZM regarding gravel use and the culvert**
- **A Work Protocol identifying access points for proposed work**
- **Review of the risk analysis**
- **Scheduling of an on-site to view existing conditions, especially since there have two major north east storms since the last on-site**

**Adjournment:** It was moved, seconded and voted to adjourn the meeting at 6:45 PM.

Respectfully submitted,  
Mary Fougere, Secretary