



Rhode Island Coastal Resources Management Council

### **Inter-Office Memorandum**

Date: June 24, 2011

To: Anne Maxwell Livingston, CRMC Chairperson  
CRMC Members

From: Jeff Willis, CRMC Deputy Director

CC: Grover Fugate, CRMC Executive Director  
Brian Goldman, CRMC Legal Counsel

Subject: Matunuck Erosion Meeting of May 31, 2011

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The purpose of this memo is to clarify some issues and correct several misconceptions that were stated at the May 31, 2011 joint meeting between the Coastal Resources Management Council (CRMC) and the South Kingstown Town Council. Additionally, I want to provide an update on actions that the CRMC has taken since that meeting as we move forward on developing potential solutions to address the erosion conditions along Matunuck Beach Road.

#### Temporary Shoreline Protection

Following the March 29, 2011 joint meeting between the CRMC and the Town Council, the CRMC developed a draft "Temporary Assent" to authorize temporary shoreline protection structures (i.e., wooden bulkheads) for the eight eligible parcels identified in the CRMC Matunuck Erosion report dated April 20. These wooden bulkhead structures were requested by property owners and the Town Council as a short-term, temporary erosion control solution. It should be noted that one property owner installed a wooden bulkhead structure without a CRMC permit prior to the March 29 meeting, and extended the wall two weeks following that meeting, again without a CRMC permit. Additionally, the "emergency" erosion that has since occurred and now threatens Matunuck Beach Road is occurring at the western end of this non-permitted structure. A copy of the draft "Temporary Assent" for temporary shoreline protection structures and a list of eligible properties were provided to the Town on April 22 and posted on the CRMC web pages. To date, none of the eligible property owners have applied to the CRMC for these temporary structures.

### Experimental Shoreline Protection

At the May 31 joint meeting, there was discussion concerning alternative options for temporary shoreline protection measures in lieu of the wooden bulkheads. These options include the use of so-called “burritos” or sand-filled natural fiber woven tubes described by state geologist, Dr. Jon Boothroyd, and the “Hesco Floodline” units. These units consist of wire baskets containing sand-filled geotextile liners. CRMC staff has researched the Hesco Floodline units and we believe the CRMC may consider their use as an experimental erosion control device with appropriate stipulations as part of any CRMC Assent issued to eligible property owners. The CRMC has already permitted the use of “burritos” in other locations along the South Shore, so their installation in Matunuck would be quickly approved if a property owner applied for a permit.

The Council may want to consider designating the shoreline segment that was identified in the April 20 CRMC staff report as an area for use of “experimental shoreline protection” methods. There are several factors that should be considered in designating this area for such experimental uses, namely: the shoreline segment is a headland and not a barrier; the segment is bounded on either end by an existing revetment or seawall; the segment is heavily altered by structures, including old cesspools, septic tanks, concrete footings, etc.; and a public roadway and utilities are in close proximity to the eroding shoreline. This shoreline segment could serve as the Rhode Island testing grounds for experimental shoreline protection with projects serving to provide data and monitoring of the effectiveness of such erosion control methods.

It is important to note that State Geologist Dr. Boothroyd stated that regardless of what “temporary” or permanent erosion control method is selected, they all require regular maintenance and they are all temporary, some will last a bit longer than others. Property owners will find that these temporary options are much less expensive than a revetment-type shoreline protection structure.

### Beach Replenishment

Direct beach face replenishment is an option that the Town has indicated would not be viable or effective in their opinion. The Town, however, did not provide any objective reasons for conducting beach replenishment other than they understood that such projects are expensive, the Town would have to fund the entire cost of the project, and the project could be wiped out in one storm. Nevertheless, the CRMC has permitted many successful beneficial reuse (dredge sediment) projects over the years that place sand in the nearshore sediment transport system and replenish adjacent beaches. Additionally, we’ve permitted several small beach replenishment projects that are completed on a regular basis to create nice blanket space. Although a direct beach replenishment project of the extent suggested for Matunuck has not yet been proposed in RI, they are common and successful in nearby Massachusetts.

Beach replenishment can be relatively expensive operations and require regular replenishment of sand on the beach face to maintain sufficient sand to buffer against erosion, but as Dr. Boothroyd pointed out, beach replenishment is still cheaper than a revetment structure. In addition, beach replenishment provides and maintains public access along the shoreline. With revetments the beach erosion will accelerate, completely eroding the beach, leaving the feature as revetment and cobble surface. In addition as there is no sacrificial sand deposit to form an offshore bar during storms, as a result the shore area becomes more susceptible to storm damage.

As an example, Surfside Beach, Texas just completed a beach replenishment project this past March bringing in 167,500 tons of sand to create a one-mile long by 100-foot wide beach that protects \$53 million worth of streets, sewers, and homes. The project was funded with \$480,000 of state money that leveraged \$4.2 million of other funding. Therefore, the cost of that beach replenishment project was about \$900 per linear foot, which is considerably less than the \$5000 per linear foot for the Town's proposed 200-foot long revetment project for Matunuck Beach Road. Moreover, if the Town were to construct the entire proposed 675-foot long revetment the total cost would be \$3,375,000, whereas beach replenishment for the same segment would be \$607,500.

#### Relocation of Matunuck Beach Road

CRMC staff in the April 20 report recommended that the Town consider relocating Matunuck Beach Road farther inland to reduce its exposure to erosive wave forces. The Town, however, has indicated that this option is not feasible or practicable and did not provide any objective reasons other than "we looked at it and the topography of the area will not allow it." While staff acknowledges the complexity and expense in executing this action, it is our opinion that relocation of the road is the best long-term option to ensure a functional roadway in this area. This solution is also supported by Dr. Boothroyd. Additionally, the relocation option can be phased so that the most impacted areas are done initially to limit the complexity and disruptions.

#### Rip-rap Revetment (seawall)

Armoring the shoreline with large angular stone (creating a revetment) is an expensive option to protect Matunuck Beach Road. The current estimate for the design being pursued by the Town for the approximately 200-foot revetment section immediately west of the Ocean Mist is about \$5000 for each linear foot. Revetments also require regular and expensive maintenance and failures occur when these structures are not maintained. The state of Massachusetts completed an assessment of shoreline defense infrastructure in 2009. The report identified 139 miles of structures and beaches that need \$627 million in repairs to be restored to original condition. Additionally, it was determined that it will cost more than \$1 billion to strengthen and raise existing shoreline protection structures to protect against rising sea levels. Most of this infrastructure is owned and maintained by cities and towns (i.e., taxpayers) who are responsible for paying these repair costs.

There are also legal issues that could be problematic. For example, the Town of Scituate, MA Select Board is arguing with private property owners regarding the responsibility for costly repairs (reportedly millions of dollars) to an 80-foot damaged section of an existing seawall that occurred from the December 2010 storm. Although the seawall was originally built decades ago using federal funds, it is located on private property. The town selectman determined that town funds cannot be used to repair the seawall even though it also provides protection for the town road. This matter could be headed to court for resolution of the responsible party issue.

South Kingstown town staff have been working the last several weeks with the CRMC Marine Infrastructure Coordinator to pursue an Emergency Assent for the initial 200 feet identified above. As of the May 31 meeting, the Town had issued an RFP for coastal engineering services and we expect the Town to file an application for an Emergency Assent for the initial 200-foot section with the CRMC in the near future.

One of the questions from a Town Council member at the May 31 meeting was, if the CRMC will allow the Town to construct a revetment to protect the roadway, why can't a revetment be constructed in front of the existing buildings to protect them too? First, the coastal program prohibits revetments along the entire south coastline. See RI Coastal Resources Management Program (CRMP) Section 300.7.D.1. Nonetheless, at the request of the Town, the CRMC is considering a revetment in this case under an Emergency Assent because public health and safety are in imminent peril. See Coastal Resources Management Program (CRMP) Section 180. The Town seeks to protect a segment of a public roadway (i.e., Matunuck Beach Road) and associated public utilities that are in imminent peril due to erosion immediately adjacent to the road. Constructing a revetment in front of private commercial buildings and private residential dwellings, however, does not appear to constitute a compelling public purpose nor is the intended purpose strictly for the protection of public infrastructure. Only a public entity could seek an Emergency Assent in this situation, and private interests face a difficult burden to meet the public benefit conditions.

A major issue that was not discussed in detail at the May 31 meeting was who is going to pay for construction and maintenance of a revetment along Matunuck Beach Road? The initial revetment segment that the Town wants to immediately build will be designed and constructed with public taxpayer dollars through the RI Department of Transportation (RIDOT), who according to the Town have set aside approximately \$2 million for the 200-foot section where Matunuck Beach Road is currently threatened by shoreline erosion. Additionally, this section of revetment will be constructed on a privately-owned vacant parcel of land. Therefore, the Town and the property owner will need to be co-applicants to the CRMC for this Emergency Assent. Then the question becomes, who is responsible for future maintenance of the revetment? The RIDOT, the Town, or the private property owner? We need to be absolutely clear on who the responsible party(ies) will be when the revetment needs maintenance repairs, especially repairs resulting from storm damage and needed immediately to protect public infrastructure. It would be good coastal zone management to have a record of the responsible party(ies) for short- and long-term maintenance when/if the CRMC grants a permit.

The issue of long term maintenance is exemplified in a recent court case in Scituate, MA. See: <http://masscases.com/cases/land/2011/2011-08-382429-DECISION.html>). There is also the legal issue if RIDOT money can be used to protect private property and thus it seems unlikely that public funds would be allocated to pay for the design, permitting, and construction of a large revetment structure that protects numerous private residential and commercial properties, even if the revetment also protects Matunuck Beach Road from becoming undercut by erosion.

Notwithstanding the current prohibition for new structural shoreline protection, another project and legal issues that needs to be considered, is who will be responsible for design, construction and maintenance if one property owner decides not to build their section due to cost. The current estimate of \$5000 per linear foot of revetment construction obtained by the Town, it would cost \$300,000 and more for nearby property owners to protect their commercial or residential structures. Thus, if one property owner within the project design limits cannot afford the revetment or refuses to construct their revetment segment, a gap will be created that will result in failure of the adjacent revetment sections and eventually threaten Matunuck Beach Road.

### Special Exception Issue

When a property owner seeks to conduct an activity that is prohibited under the coastal program, the Council may grant a Special Exception provided the applicant meets all the burdens pursuant to CRMP Section 130. In particular, there are three primary criteria that a proposed activity must meet as follows: (1) it serves a compelling public purpose providing benefits to the public as a whole, as opposed to individual or private interests; (2) all reasonable steps are taken to minimize environmental impacts or use conflicts; and (3) there is no reasonable alternative means, or location for, serving the compelling public purpose.

One of the earlier proposals voiced by the Town was to construct a revetment seaward of existing residential and commercial structures starting from the existing revetment at the Matunuck Beach Trailer Association and terminating at the point opposite the end of Prospect Road. That proposed revetment would be approximately 900 feet long and encompass commercial and residential structures in the Matunuck Business District. The major impediment with that proposal is that the Town does not own or control any of the properties, as it is held by private interests. Therefore, the Town could not be an applicant in that case. Private property owners on the other hand would not qualify for a Special Exception because the revetment would be constructed seaward of existing structures and well below the mean high water (MHW) line. The State of Rhode Island owns and controls for the public trust all shoreline property and submerged lands below the MHW line out to 3 miles. Thus, private property owners could not demonstrate that the revetment project serves a compelling public purpose, as it would be constructed with the intended purpose of protecting private structures. That is why CRMC staff indicated previously to the Town that it would be difficult to support such a proposal. If, however, the Town owned or controlled all the parcels where a revetment was to be constructed, and met all the criteria of CRMP Section 130, the Council in that case could consider granting a Special Exception to the coastal program prohibition for construction of a revetment along a CRMC-designated Type 1 shoreline.

#### Reclassification of Matunuck Shoreline

One long-term option noted in the April 20 CRMC staff report is that the Council could consider reclassifying a segment of the Matunuck shoreline as “manmade,” as defined in Section 210.6 of the coastal program. While not a preferred option, the reclassification of the segment identified in the staff report could allow for the in-fill of new structural shoreline protection between existing revetment sections. It is the CRMC staff recommendation that should the Council consider this option, the reclassification should be balanced with the designation of a Matunuck Headland Coastal Natural Area east of the project area identified in the CRMC staff report. This designation will provide priority protection for this important segment of coastline as a scenic and low-intensity recreational use area, which also includes the DEM Matunuck Deep Hole public access area.

#### Potters Pond Breaching and Flooding Issues

Several persons stated at the May 31 meeting that they were concerned about the potential risk of roadway failure and breaching into nearby Potters Pond. It is highly unlikely that Matunuck Beach Road will “breach” in this location and impact Potter Pond due to the local geology and topography and the Potter Pond tidal prism. The road, however, would be undercut in the future if nothing is done to address the current erosion situation. Matunuck Beach Road has and will continue to flood during storm surges associated with hurricanes and extra-tropical storms (Nor’easters), notwithstanding the construction of any revetment structure. These storm surge flooding conditions will impede access into and out of the Matunuck area of concern for both

residents and emergency responders. Moreover, the flooding will continue unabated into the future, especially with rising sea levels, despite any of the Town's proposed temporary and long-term solutions to protect the road from shoreline erosion.

### Enforcement Issues

During the past couple months while the CRMC and the Town have been discussing potential solutions to the Matunuck erosion issue, the CRMC has held in abeyance all enforcement proceedings and fines associated with illegally constructed shoreline protection structures that have been installed in the Matunuck area without a CRMC permit. Evidently, illegal construction continued by at least one property owner following the March 29 joint CRMC-Town meeting despite the CRMC making available a Temporary Assent for temporary erosion control solution.

### Summary

1. Although the CRMC "Temporary Assent" for wooden bulkhead structures has been available since April 22, not a single property owner has filed an application with the CRMC.
2. Alternative temporary erosion control methods were discussed at the May 31 meeting and CRMC staff have researched the Hesco Floodline units mentioned at that meeting. Staff believe that these units may be permitted by the Council on an experimental basis with conditions, as they have not been previously used in the high wave energy environment typical along Rhode Island's south shore. The so-called "burritos" may be permitted immediately with conditions, as these soft structures have been permitted previously by the CRMC for use along the south shore.
3. CRMC staff continue to work with the Town of South Kingstown staff on the preparation of an application to construct a rip-rap revetment approximately 200 feet long along Matunuck Beach Road, as shown on the Town's exhibit "Shoreline Protection Alignment." This segment of roadway is imminently threatened by recent erosion and the CRMC will issue a permit to the Town under CRMP Section 180 – Emergency Assents. The Town, however, has yet to submit an Assent application to the CRMC.
4. Rising sea levels and more significant storm surge impacts will require the State to carefully review where new revetments are to be constructed in the future. Cost versus benefit analyses will show in some cases that it may be less expensive to move roadways and structures to higher elevations and retreat landward. If permitted reveted segments of shoreline will require long-term costly maintenance (due to continued erosion and construction access) and may still not be successful in the long-term.