

Based on our meeting on August 27, 2014 and further review of the materials, the following summarizes our concerns with the adequacy and accuracy of the ACOE report and proposal.

- 1) The data gathered from the past nine years of quarterly profiles of Zone 2 were not reviewed. As a result the ACOE lacks knowledge of actual conditions and storm impacts and made incorrect assumptions in their models.

The ACOE utilized a single profile from 2005 for its models. That profile has a wall elevation of approximately 9.3 NGVD (the exact elevation is not provided). The 2005 9.3 elevation is roughly equal to the average elevation recorded along the wall from 2006 to 2014. However, the profile was then lowered approximately 3.5 feet to 5.8 feet NGVD. As described in the ACOE report, the lowered profile reflects the presumed winter beach and modeling of the January 1998 storm. The data from 2006 to 2014 does not support these assumptions. In fact, winter profiles average .67 to .95 feet higher than the fall elevations which, on average, are the lowest of the year. Further, the data include three profiles taken immediately after winter storms. Profiles were taken 5 days after the 2007 Patriot's Day storm, 1 day after the December 2010 storm and 1-3 days after "Sandy" in 2011. The only instance in which the sand elevation at the wall dropped was by 1.44 feet in the southern half of Zone 2 after Sandy. For the Patriot's Day, 2010 and Sandy storms (northern half of Zone 2) sand elevations at the wall *increased* by .42 to 2.77 feet. In fact, of the 360 separate measurements of sand elevation at the seawall from 2006 to 2014 there is only a single instance of an elevation equal to or lower than the 5.8 NGVD elevation profiled by the ACOE. Indeed, average wall elevations are more than 3 feet higher.

Omission of the most recent available data from ACOE analysis has two key impacts. First, it appears that the ACOE assumed that the seawall is considerably more vulnerable than the data indicates. As a result, we don't know what solutions might be needed or proposed for the actual wall conditions. The data also shows that while elevations indicate a lowering trend for the southern half of Zone 2, they are nearly stable for the northern half of Zone 2. Second, the volume and cost of beach nourishment and the volume needed for a cobble berm have likely been vastly exaggerated.

(See notes attached for analysis of data. There are separate calculations for the southern and northern halves of Zone 2.)

- 2) Although described as providing 10-year protection, the revetment is designed for more than 100-year protection. The result is far greater encroachment on the recreational beach.

While the design of the revetment has a crest at 10 feet NGVD, the narrative of the announcement proposes a revetment at 12 feet NGVD. In either case, this exceeds the 9 feet NGVD required for 100 year protection. Each additional foot of elevation requires an additional 3 feet of horizontal encroachment on the recreational beach. We understand from our meeting that the decision to 'oversize' the revetment was based on the desire of DCR to limit future maintenance to the greatest degree possible.

- 3) As noted in our first comment letter, the BCA has fundamental flaws.

Most significantly, the ACOE wrongly assumed that the revetment will prevent overtopping. As discussed in our first letter, this is not accurate. The ACOE's own analysis and the Woods Hole Group analysis showed significant reductions in overtopping with beach nourishment and minimal reductions with a revetment. In our meeting on the 27th representatives of the ACOE indicated that property damage from overtopping was not a significant aspect of the BCA. It would be helpful to see those figures as this is not in keeping with our understanding of damage potential. We further note that protection of the bathhouse was highlighted in the report as an important high value benefit despite the fact that a revetment was installed in front of the bathhouse in 2013.

- 4) The ACOE fails to give proper consideration to the fact that the mission of the DCR Nantasket Reservation is to provide a recreational beach. The negative effects of a revetment are not acknowledged and this is evident in the ACOE recommendations.

The failure to prioritize the purpose of Nantasket Beach is exhibited in the following ways:

1) The BCA acknowledges and accounts for the positive impact of beach nourishment on a recreational beach; it does not acknowledge or account for the negative impacts of a revetment. 2) The decision to propose far greater than 100-year protection in order to avoid future maintenance, at the cost of a larger footprint on the beach. 3) The proposal to install the revetment in front of the 27% of Zone 2 that already has a revetment, or has a variety of wide concrete access ways protected by sheet pile that extends five feet deeper than the current seawall. 4) The ACOE response to the CZM request to consider a cobble berm contains the simple statement that "Revetments at this site are proven to work with no negative consequence." This perspective appears to make it impossible for the ACOE to consider berm designs that could preserve the recreational beach by deeply burying cobble. We further note that an ACOE representative indicated a cobble berm would be "massive". The size, character and design of the berm should be recalculated taking into account recent beach elevations recreational priorities.

Finally, while we appreciate the willingness of the ACOE representatives to come to Hull to discuss their proposed project, we are deeply concerned with the assertion, repeated multiple times, that none of these issues, had they been known to the ACOE would have had any impact on the final ACOE proposal. We believe we have raised substantive issues and we hope that the ACOE will review the data and our concerns and develop an analysis that incorporates the available data and protects the purpose of the beach to the greatest degree possible.