



Town of Hull



BOARD OF SELECTMEN

MUNICIPAL BUILDING
HULL, MASSACHUSETTS 02045
(617) 925-2000

June 4, 2014

U.S. Army Corps of Engineers
District Engineer
696 Virginia Road
Concord, MA 01742
Attn: Engineering/Planning Division

The Town of Hull offers the following comments regarding the Coastal Storm Damage Reduction Project proposed by the Army Corps of Engineers (ACOE) for the Department of Conservation and Recreation (DCR) Nantasket Beach Reservation. Our comments address the benefit to cost ratio (BCR) analysis, the impact on the recreational beach and, community involvement.

BENEFIT TO COST RATIO

The ACOE divides the DCR Nantasket Reservation into three zones. Zone 1 extends from the southern end of the reservation to approximately Wharf Avenue. Zone 2 comprises the area roughly from Wharf Avenue to Water Street and Zone 3 extends from Water Street to the northern end of the reservation at Phipps Street. Zone 1 includes the "temporary seawall fortification" (TSF) constructed in 2005. The revetment, located in Zone 3, was constructed in 2008.

The ACOE limited their project study area to Zone 2. This 2,100 foot section comprises only 30% of the 6,800 foot length of the DCR Nantasket Reservation. In multiple previous studies, the ACOE has considered storm damage and flood control solutions for the entire reservation.

The ACOE describes the reason for excluding Zones 1 and 3 from their analysis as follows:

"Significant actions taken by the DCR at the Nantasket Beach Reservation in the last ten years included construction of the TSF as an emergency measure in 2005 and construction of the new Northern Revetment in 2008. These measures changed the level of protection afforded to the backshore in Zones 1 and 3, as the volume of water due to wave overtopping and wall failure risk in Zone 1 and 3 are significantly reduced." (page 14, DRAFT Feasibility Report and Environmental Assessment, May 2014)

The report also notes that the portion of Zone 3 not protected by the revetment (from the northern end of the revetment to Phipps Street) has "little or no backshore development" (page 10).

The presumed protective impacts of the TSF and Northern Revetment on Zones 1 and 3 stated above are demonstrably false and not supported by the ACOE's own reports filed with the Public Notice. It is critical to distinguish between flood impacts due to wave overtopping and those due to wall failure risk.

With regard to wave overtopping, the ACOE "Coastal Engineering Appendix, July 2013" says the following:

"For the revetment alternatives, overtopping will likely not be reduced significantly from the without project condition (wall still standing condition) due to the relatively low crest elevation of the revetment and the resulting limited freeboard between the revetment crest and the storm water surface. The real benefits of the revetment will be to keep the seawall standing and for both the revetment and seawall to provide protection levels similar to existing conditions." (page 54)

A review of storm damage claims paid to Hull property owners supports the analysis that the revetment will not reduce overtopping impacts. ACOE documents reference the significant damage done during the December 1992 storm, an approximately 10-year storm event. After the TSF was installed, Hull was impacted by a northeaster in December 2010. That storm was a much less significant 4-5 year storm event. Yet FEMA records show that the value of flood damage reimbursement to properties affected by overwash from Zone 1 was three and one-half times larger as a result of the December 2010 storm than it was for the December 1992 storm. This 350% increase in damages far exceeds the 55% inflation rate from 1992 to 2010.

Further, in the December 2010 storm, FEMA also reimbursed property owners just north of Zone 3 for flood damage claims. The ACOE report rightly notes there is little current development landward of the northern section of the reservation not protected by revetment. Yet, the ACOE fails to take into account the fact that flood waters from this section of the reservation currently settle in residential areas just north of the reservation. In fact, the area impacted by Zone 3 has historically experienced some of the most severe flooding in Hull. It must also be acknowledged that the Hull Redevelopment Authority is actively seeking to develop the parcels landward of Zone 3. A recent build-out analysis estimated the value of commercial and residential development at \$82 million.

The Town of Hull has invested significant resources in analyzing and addressing flooding and storm damage. As part of this work, the town analyzed FEMA flood insurance claims for the 21 coastal storms that resulted in claims from 1987 to 2007. Attached to this comment letter is a graphic showing the locations impacted by flooding from the DCR Reservation. The graphic clearly identifies the areas vulnerable to overwash flooding from Zones 1 and 3. While the

properties in Zone 3 are also impacted by overwash originating north of the reservation, overwash from the reservation is significant. Both of these areas have been identified by the town as flooding "hotspots" due to the concentration of FEMA repetitive loss properties located there. In addition, the graphic reflects that the properties landward of Zone 2 have been least affected by overwash flooding.

It is unclear to us whether the ACOE BCR also assumed, as stated in their narrative and despite their own analysis, that the proposed revetment would reduce overwash from Zone 2. The Woods Hole Group, on behalf of DCR, conducted an in-depth study of the two alternatives the ACOE found had a positive BCR. Their study encompassed the entire reservation. They concluded that upland damage costs over a 50-year time horizon would be \$2.5 million with beach nourishment and \$19.8 million with a revetment. The decision to limit the study area to Zone 2 is flawed, as the ACOE wrongly assumed that flood protection was no longer needed for the properties affected by overwash from Zones 1 and 3. Given the reality of flood vulnerability, the Town of Hull maintains that an appropriate BCR analysis must encompass the entire reservation.

The decision to restrict the analysis to Zone 2 impacts the beach nourishment analysis. The report acknowledges that the small area of proposed nourishment would require much more frequent renourishment due to end losses. As a rule of thumb, doubling the size of renourishment quadruples its longevity. The ACOE decision to consider nourishing only 30% of the reservation significantly increases the needed frequency of renourishment.

An additional flaw with the BCR analysis is that it "assumes a 100% probability of wall failure in the project base year because the current beach does not meet the original design requirements and beach is only expected to degrade further over time" (page 5, Economic Analysis, July 2013). This analysis ignores the fact that fully one-third of the 2,100 feet in Zone 2 is already protected by a variety of recently installed ramps, stairwells and stone toe. The ramps and stairways vary from ten to almost twenty feet wide and were installed with steel sheet piling that extends 5 feet deeper than the current seawall. Essentially much of the seawall is now a 10 to 20 foot wide concrete wall protected with deep sheet piling. In addition, it appears that the BCR was not updated to take into account the fact that as of 2013 the Mary Jeanette Murray Bathhouse, which the report notes has been restored at the cost of \$2 million, is now protected with a 150-foot length of stone toe similar to the TSF.

Finally, while the BCR credits the additional recreational beach that would be created with the beach nourishment alternative, it does not take into account the loss of beach that a revetment would require. The ACOE calculates that the proposed revetment would displace 129,800 square feet of beach. This loss should be reflected in the BCR in the same manner as additional beach was credited. Alternatively, the cost of mitigation for the loss of beach should be included in the BCR.

RECREATIONAL BEACH

As noted above, the ACOE BCR failed to recognize the loss of recreational beach in its analysis. This point is critical as the purpose of the Nantasket Beach Reservation is to provide a recreational beach for Commonwealth residents. It is already the case that there is no dry beach available for as much as 2 hours per tide cycle for much of the reservation. The ACOE proposal will remove a 27 foot wide swath of beach along 2,100 feet in the heart of the reservation.

Among the opportunities for the project cited by the ACOE are: "enhance the economic strength, recreational opportunities and well-being of the area." The proposed revetment will not serve any of these functions. A further reduction in the size of the beach reduces recreational opportunities. The revetment itself is a safety hazard for children and adults who are tempted to climb on it during high tides and as it harbors trash and rodents. A result of the loss of high tide beach is that a mass exodus occurs at the time of high tide. This results in a loss of economic benefit to nearby businesses as patrons do not spend a full day at the beach. It has also resulted in notable traffic tie ups to the detriment of public safety.

COMMUNITY INVOLVEMENT

No Town of Hull official, board or commission member was consulted or even aware of this latest ACOE study. Town officials and community representatives actively participated in the Community Advisory Council (CAC) sponsored by the DCR in 2007/2008. As part of the CAC process, the DCR made a significant investment in engineering consultants. Their analysis considered a broader range of options for storm damage reduction and allowed for community input. The ACOE does not appear to take into account the analysis or the community deliberations and recommendations. The ACOE must revisit their analysis, consider the entire reservation, and solicit community input regarding alternatives. The work of the CAC should be part of an updated analysis.

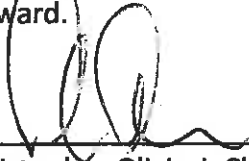
CONCLUSION

The ACOE report is fundamentally flawed in its analysis of flooding conditions. Further, it does not consider the walls, ramps and stone toe constructed in Zone 2 in recent years. The TSF and stone toe at the MJM Bathhouse, while providing protection to the seawall, significantly reduce the available recreational beach and do nothing to address the fundamental problem of long-term beach loss. The proposed revetment will have the same impacts. In short, the ACOE advocates a solution that does little to reduce flood damage from overwash, armors a seawall that is already armored over 1/3 of its length, reduces the recreational beach by an additional

129,800 square feet, and does nothing to address the fundamental problem of long-term erosion.

Beach nourishment, as proposed in the past by the ACOE, would protect the seawall, address flooding that results from overtopping, and provide a recreational beach. The town is well aware of the many challenges that make a large scale beach nourishment project unlikely in the short-term. The town has, in the past, suggested that each fall the need for beach nourishment to buttress areas of vulnerable seawall be evaluated.

The revetment as proposed will provide protection only against a 10-year storm. We believe that a project that provides 10-year protection to the seawall, does not protect against overtopping, does not address erosion, yet encroaches on the recreational beach, is not in the public interest. For these reasons, the ACOE Coastal Storm Reduction Project should not go forward.



Christopher Olivieri, Chairman
Hull Board of Selectmen

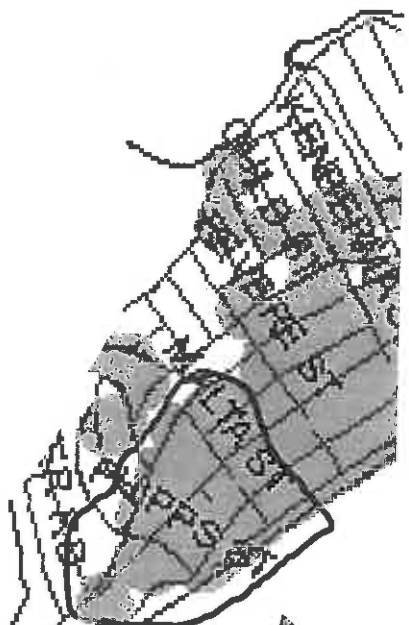


Sheila Connor, Chairman
Hull Conservation Commission



Rhoda Kanet, Chairman
Beach Management Committee

NEV



Flood claims from Zone 3 flooding
(also affected by coastline north of the reservation)

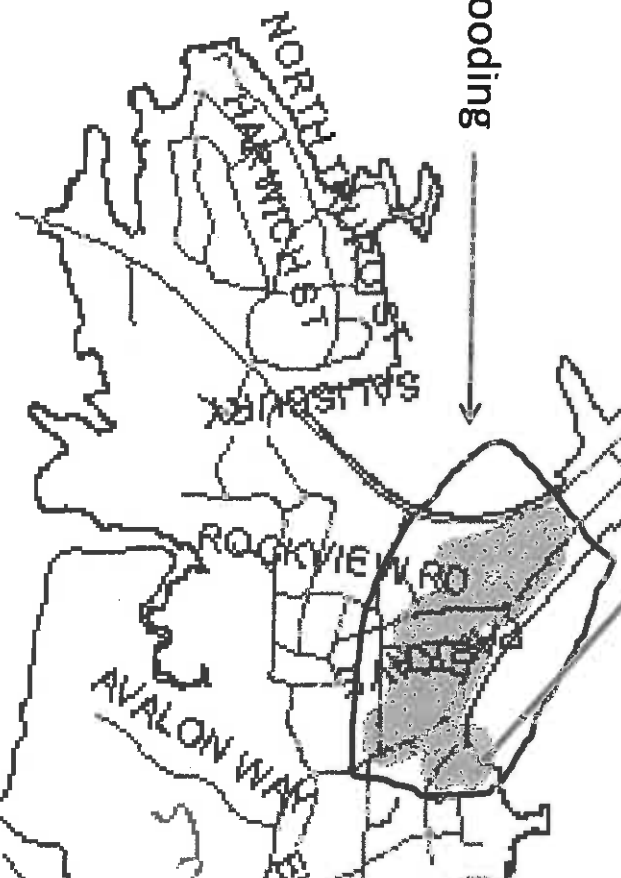
Zone 3

Zone 2

Zone 1

Flood claims from Zone 1 flooding

Location of Paid Flood Insurance Claims
23 Coastal Storms 1978-2007
(with 3 or more claims)



Locations are blurred and expanded so as
not to identify individual properties.