

Peer Review Summary Document

(10/27/2014)

Peer Review Plan

http://www.usgs.gov/peer_review/docs/sediment_borrowpits_breton-island-LA.pdf. [62.6 KB PDF]

Title and Authorship of Information Product Disseminated

Impacts of Proposed Sediment Borrow Pits on Nearshore Wave Climate and Longshore Sediment Transport Rate along Breton Island, LA, By P.S. Dalyander, R.G. Mickey, J.W. Long, and J. Flocks.

Peer Reviewers Expertise and Credentials

Reviewer #1 received a PhD degree in Marine Science with a focus in Geological Oceanography from the College of William and Mary, Virginia Institute of Marine Science and a BS and BA in Marine Science (geology focus) and Spanish, respectively, from the University of South Carolina. The reviewer has more than 10 years of experience conducting research in coastal and marine geology. This includes geophysical and sedimentological studies of barrier island and coastal evolution over a short time scales (<5 years) and in response to storms, necessitating the identification of strong linkages between observations and hydrodynamic processes.

Reviewer #2 received a PhD in Oceanography from the Virginia Institute of Marine Science, with research on modeling wave dynamics in the nearshore. The reviewer subsequently has 25 years of experience as a Research Oceanographer with the U.S. Geological Survey (USGS), focusing on coastal change processes driving by waves, currents, and sediment transport in the nearshore. The reviewer has prior experience and publications (primary and co-authored) on the impact of borrow pits on nearshore waves and sediment transport.

Charge Submitted to Peer Reviewers

The reviewers were asked to make an objective evaluation of the research.

Summary of Peer Reviewers Comments

Peer Reviewer #1 had a favorable response to the manuscript, and did not have concerns about the methodology, results, or conclusion of the work. The reviewer noted several references that were incorrectly cited in the in-line citation. The reviewer asked a specific question in regards to the use of the model skill score. The reviewer noted that borrow pit designs considered are contingent on sediment availability at the sites. In addition, the reviewer made several suggestions for text clarity.

Peer Reviewer #2 expressed concern about how the longshore transport (LST) formulation methodology was applied in the original draft, and if it would impact the results of the analysis, namely (1) the use the Airy linear wave theory for approximating wave celerity, as opposed to a purely wave height dependent formulation; (2) the use of contour angle rather than shoreline angle in calculating LST; and (3) the discretized methodology of using wave

parameters along wave contours for ranges of scenarios, rather than using a wave breaking threshold to identify the edge of the surf zone. The reviewer requested additional information be added to the model assessment, to insure the accuracy of the model was put in the context of the application and local wave climate, and for additional information on the possible causes of variation observed in the sensitivity analysis to triad wave interactions. The reviewer also had suggestions and questions regarding text clarity, particularly in regards to the numerical modeling approach and assessment of model accuracy, and requested the addition of a figure and assessment of changes in longshore transport gradient.

Summary of USGS Response to Peer Reviewers Comments

In-line reference citation errors noted by Reviewer #1 have been corrected throughout the manuscript. Text clarifications have been made in response to specific reviewer comments, and to clarify the discussion of model skill. The underlying assumption in the borrow pit designs considered, that there is sufficient sediment supply for the proposed design, has been made explicit in the text.

To address the concerns expressed by Reviewer #2, the analysis was run again using a breaking dissipation threshold to address the edge of the surf zone, and following the Coastal Engineering Research Center (CERC) formulation precisely in its calculation of wave celerity and wave/shoreline angle. The new results, which support the same conclusions as the original formulation, were substituted into the manuscript. Statistics of mean wave values at this location were added to the model assessment to put the error statistics in context. Text was added to the sensitivity analysis regarding triad interactions. Additional modifications to the text were made in response to the reviewer's questions and suggestions for clarity. Analysis of the LST gradient was conducted and a figure added as suggested by the reviewer.

The Dissemination

The product will be released in the USGS Open File Report series and will be available at <http://pubs.usgs.gov/>.