

Finding the second 12 million cy of sand

Where do you go after the easiest sand sources are used up?
Panama City Beaches, Florida Erosion Control Project

Stephen Keehn, P.E., Lindino Benedet
2481 NW Boca Raton Blvd, Boca Raton, FL 33431
Coastal Planning & Engineering, Inc.

Lisa Armbruster
Beach Management Coordinator for the Panama City Beach, FL CVB
skeehn@coastalplanning.net

Through 2005, the Panama City Beach project has used 12 million cubic yards of sand, and another million has been identified to complete the replacement of the 2004-5 hurricane impacts. The easiest to find and dredge sand was used up for the 1998 Panama City Beach erosion control project and recovering from the 2004-5 hurricane seasons. The 1998 and 2005 projects placed over 12 million cubic yards of beach compatible sand along 18 miles of shoreline. There is now a need to identify enough sand for the next nourishment, which may be in response to a hurricane. In the Florida Panhandle, the annual erosion rate is fairly low, except when large tropical storms and hurricanes hit the area. Beach nourishment is not conducted at fixed intervals, but in response to large storms. Previous nourishments were in response to Hurricane Opal, Ivan and Katrina, along with smaller storms.

Beach quality sand is a challenge to find in the Panhandle of Florida since it has to be white in addition to the proper grain size, both of which are in short supply. Much of the new sand requires special permitting considerations. A combination of geological remote sensing, the use of LIDAR bathymetry, 3D modeling and GIS mapping and calculations of potential sand deposits are used to identify new sand sources. The tools available today make identifying the future sand resources feasible in what was formally a difficult region. Twenty years ago, hundreds of vibracores were used to identify the required sand volume, which had a marginal quality. Today's tools make the job much easier. In addition, today's 3D modeling can answer many of the regulatory questions essential for permitting. The recent search has discovered between 10 and 50 million cubic yards of beach compatible sand, enough to provide the 7 million cubic yards needed for the next decade.

Where do you find the sand in a previously heavily searched area (see map below)? In the nearshore, where white beach sized sand is plentiful, but precautions must be taken to keep the adjacent shoreline stable. Offshore, into deep shoals beyond where earlier sand searches ventured. Across the adjacent inlet where a terrace of beach quality sand lies beyond the eastern limits of earlier sand searches. Each of these new areas have concerns and issues that will have to be addressed during permitting. This means that future plans need to include all three regions, so that any future restrictions in one area do not jeopardize the future project.

Both permitting issues and impact caused by sand sources close to shore need to be addressed. The development of these future sand sources were conducted in partnership with the state permit agencies, which has identified the information needed for permit determination.

