

Florida Specifier

Practical Information For Environmental Professionals

The search for sand:

Beach communities face challenge of long term sources for beach nourishment

By MICHAEL JENKINS, PhD, PE

Healthy beaches are a valuable natural re-source for the state of Florida and an issue of ongoing concern for coastal communities. The Florida Department of Environmental Protection's Bureau of Beaches and Coastal Systems has identified 387 miles of Florida's 825 miles of shoreline as critically eroded, with 192 miles currently under some form of active management.

For these managed shorelines, beach nourishment or sand placement is a common practice used to address the impacts of beach erosion. Typically this requires the use of dredge equipment to excavate large volumes of offshore sand for use as beach material. Current trends in sand supply however, have the potential to significantly curtail this well established practice.

For beach nourishment, not just any sand will do. State and federal regulatory agencies require that sand sources for nourishment be 'beach compatible' or similar to the natural sand for any given area. Various qualities such as grain size, silt content, color and mineralogical content are taken into account. While sand may be readily available, beach compatible sources are becoming increasingly more difficult to find.

Acceptable sources are further restrained by environmental concerns as buffers from dredging are required to protect sensitive resources such as coral reefs. This is a particular concern for counties with extensive hardbottom resources such as Broward County.

"Our most recent nourishment project used 400-foot buffers around hardbottom areas," explains Steve Higgins, beach erosion administrator for Broward County. "We have had recommendations for 600-foot buffers from some of the regulatory agencies for future projects. We may be able to find more sand, but increased buffers may restrict its use."

Additional constraints may also occur in the future due to increased management of submerged lands. Marine Protected Areas, pipeline and fiber optic corridors, as well as artificial reef leases all have the potential to further restrict areas for consideration as beach nourishment borrow areas. "We may have exhausted the economically and environmentally available offshore sand resources," said Higgins.

Programs like Broward's may be forced to reconsider their long-term beach management programs and develop new strategies that account for shrinking sand resources. "We are exploring alternate sand sources," said Higgins, "and may need to more effectively manage our limited sand supplies."

Alternatives may include the use of upland sand, non-domestic supplies and even manufactured sand from recycled glass. "Quality control is clearly an issue for future use of all these sources," cautions Higgins.

Better management of sand supplies around coastal inlets also increases in importance with the reduction in offshore sand supplies. Beach erosion in Florida is largely attributable to losses of sand from the beach system at coastal inlets. Recovery of this lost sand for use on downdrift eroding shorelines lessens the need for additional offshore sand.

Within Broward County, the implementation of a sand bypassing system at Port Everglades is under development and may lessen the need for renourishment of the beaches to the south of the port. Sand bypassing is a common practice for many coastal inlets in the state and is strongly supported by the FDEP's BBCS as a proven method to limit the impacts of these cuts to the littoral system.

The lack of beach-compatible sources may increasingly force communities to consider more distant sand supplies and this may lead to increased competition between user groups. "There needs to be some kind of system developed to address this issue,"

explains Kathy Fitzpatrick, a coastal engineer for Martin County.

While Martin County does not face the critical sand supply issues of some Florida counties, sand sources within their waters are being eyed by other more distant counties. Offshore sand deposits the county currently counts on for its long-term requirements may be up for grabs.

At present there is no process within Florida to formally designate borrow area ownership. Individual programs are left to their own devices to find and permit sand sources for their own beach needs; and projects are approved on a case-by-case basis within the project permitting process. "The best way to address this issue may be to get all the various interests into one room and hammer out guidelines acceptable to all parties," suggests Fitzpatrick.

The issue is further complicated by the demarcation of state and federal waters. While the state can assert control over their submerged lands, beyond the three-mile limit (nine miles on the gulf coast) potential sand sources are under federal jurisdiction and are administered by the Department of Interior Mineral Management Service.

Given the value of Florida's beaches and the history of effective beach management, it is unlikely that the use of beach nourishment as a primary tool to address beach erosion will end any time soon. Individual beach programs, however, will face increasing hurdles and rising costs associated with diminishing supplies of beach quality sand.

"We may have painted ourselves into a very expensive corner," said Steve Higgins. "Given our increasingly urbanized shoreline, it is difficult for our beaches to recover naturally."

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