

## North Carolina Coastal Scientists Statement Regarding Senate Bill 832:

*The following statement represents the opinions of the vast majority of this state's coastal geologists: Dr. Rob Young (WCU), Dr Len Pietrafesa (NCSU), Dr Stan Riggs (ECU), Dr. J.P. Walsh (ECU), Dr. Steve Culver (ECU), Dr. Dave Mallinson (ECU), Dr. Pete Peterson (UNC-CH), Dr. Tony Rodriguez (UNC-CH), Dr. Matt Stutz (Meredith), Dr. Duncan Heron (Duke). We are not anti-development. Nor are we an environmental lobby. We are simply electing to play our role in helping the state develop sound, science-based policy. These opinions do not represent the actual, or implied positions of our host institutions.*

- 1) In 2003, the North Carolina Legislature voted unanimously to ban the construction of new, permanent erosion control structures from North Carolina's ocean shorelines (including inlets) Session Law 2003-427. There were no dissenting votes in either chamber! This unanimity results from the recognition that the CRCs ban on coastal hard structures enacted in 1985 had served the state well. It was, and is, sound fiscal, environmental, and management policy. Overturning or weakening this ban would be a mistake.
- 2) S832 would permit the construction of "terminal groins". As proposed, these structures could/would be constructed at inlets or "on an isolated segment of shoreline where it will not interrupt the natural movement of sand." In other words not just at inlets.

The following comments argue against permitting this exception to our state's long-standing, hard structure ban from a scientific perspective:

- 1) Any coastal structure designed to trap or hold sand in one location will, without question, deprive another area of that sand. In simple terms, any structure (including terminal groins) that traps sand will cause erosion elsewhere. Permitting the construction of terminal groins will harm the coast and place downdrift property at risk.
- 2) An open letter signed by 43 of the country's top coastal scientists reports: "There is no debate: A structure placed at the terminus of a barrier island, near an inlet, will interrupt the natural sand bypass system, deprive the ebb and flood tide deltas of sand and cause negative impacts to adjacent islands."
- 3) Proponents of S832 point to the terminal groins at Beaufort Inlet and Oregon Inlet as success stories. These structures have also been referred to as jetties in the past, but we will use the terminology in S832. Our data indicate that beaches in the vicinity of both structures have required huge volumes of beach nourishment for decades (at least 20 million cubic yards of sand at a cost \$43 million, without an adjustment for inflation). Therefore, these two structures have at best, had no impact on the stability of the island adjacent to the structure, and at worst, have caused downdrift erosion necessitating massive renourishment. Dr. Stan Riggs has published detailed analyses indicating that the structure at Oregon Inlet has impacted the stability of Highway 12 on the Outer Banks and required its constant maintenance.

- 4) The structures proposed in places like Figure 8 Island and Ocean Isle are on the downdrift side of the neighboring inlet. A shore-perpendicular structure, placed at the downdrift side of an inlet, will block the natural flow of sand onto the island where the structure is located. This will cause an increase in shoreline erosion in front of oceanfront homes downdrift of the structure. Protecting homes at the inlet will be at the expense of a larger number of homes down the beach.
- 5) The unfettered flow of sand through natural inlets is an important mechanism maintaining barrier island health. Blocking this flow of sand will inhibit the ability of the barrier island to respond to rising sea level and storms.
- 6) Project proponents indicate that the structures will be made “leaky” or permeable so that sand will move to downdrift beaches. This is a classic example of “having your cake and eating it too.” The principle of conservation of mass indicates that one cannot build a structure that will both trap sand and still allow the constant flow of the original budget of sand down-drift.
- 7) Groins can impact nearshore circulation by directing currents offshore, especially during storms. Groins can be particularly destructive following storms if a significant portion of the nourishment project is transported offshore, leaving the groin uncovered. During this period, the groin will block all longshore transport until the cell is filled in again.

Additional considerations:

- 1) One of the many benefits of the hard structure ban to North Carolina coastal communities is the general lack of lawsuits related to erosion control structures. In contrast, the state of Florida which permits coastal hard structures is awash in constant lawsuits (property owner versus property owner, community versus community). This leaves many coastal management decisions up to the courts. This poor method of public beach management is one that we have largely avoided in North Carolina. If terminal groins are built along the North Carolina coast, rest assured that there will be lawsuits and legal battles related to those structures and the erosion that they may, or may not have caused.
- 2) Because the S832 does not define the size or specific design of a terminal structure, the bill leaves the door open to building structures that go well beyond a simple groin. The design floated for Figure 8 Island is not a terminal groins as much as it is an inlet shoreline seawall. Structures like these would destroy the natural function of the adjacent inlets.
- 3) In short, we believe that the science overwhelmingly supports maintaining the state’s ban on hard structures. Terminal groins are not new technology. They will harm downdrift property owners.