

Minutes SLR 4-26-18 Mtg.

Members present: John Leffler, Jim Chitwood, Diana Mezzanote, Lyn Schroeder, Jane Ellis, Jim Sullivan, Jack Kotz, Jim Jordan, David Pumphrey, Sara Senst

Also attending: Aaron Given, Wendy Kulick

Guests:

Dr. Robert Van Dolah is the retired Director of the S.C. Department of Natural Resource's Marine Resources Research Institute. He has spent his career studying the estuaries, marshes, and beaches of South Carolina and has directed beach monitoring projects on Kiawah. Bob has a national reputation and has served on numerous professional panels and advisory boards such as the technical committee of the Governors' South Atlantic Alliance and advises on environmental issues related to sea level rise. Was John Leffler's boss.

Daniel Burger is the Director of the Coastal Services Division of the S.C. Department of Health and Environmental Control, Office of Ocean and Coastal Resource Management. He works with local coastal governments to develop strategies, programs, products and services to assist with coastal and ocean planning, technical assistance, and policy development. Dan is the organizer and chair of the Charleston Resilience Network, a regional public-private coalition working to mitigate environmental hazard vulnerabilities such as flooding. Dan is working on the coastline change GIS mapping tools and the living shorelines guidelines that may result from Dr. Sanger's work discussed at the last meeting.

William Salters: Coastal planner with OCRM.

- Beach:

(1) We have a good dune buffer (both primary & secondary with some weak areas mid-island) that will migrate inland over time. There may be some ecological issues relevant to turtle nesting & shorebird feeding where habitat cannot keep up, but if the beach ever needs renourishment, most rebuilt beaches, if done right, do not create problems for beach organisms.

(2) Solutions: What we are doing currently is working for now, but they are not sure beach accretion will continue at a rate sufficient to keep up with the rate of sea level rise (even though we have been accreting for many years). If the base level of the ocean goes up, the beach will either become much steeper or the dunes will retreat even if accreting sand continues to build dunes. The shallow slope of our beach suggests that the retreat will be significant as the wave energy dissipation zone moves landward. At some time in the future, suitable sand may have to be imported. There is a shortage of suitable sand on the east coast. Some of the best oceanic sources lie off the north ends of islands but care is needed to mine over a large area to avoid going too deep which brings up mud and affects the possibility of future mining. There are currently problems from improper mining off Folly Beach and Hilton Head. Sand mining in both state and federal waters requires permits. Work is being done to map appropriate areas of offshore sand (Regional Sediment Maps), identify communities that

will need it and when, and identify better ways of harvesting sand (such as in multiple strips with unmined sand between the strips). Upland mining can be done of appropriate sand, but transportation cost is high. Some parts of Florida have imported sand from the Bahamas. Harbor dredge spoils are not appropriate due to contamination. Armoring the beach is currently not permitted in SC. Folly Beach spent \$33M to bring in sand from offshore to rebuild 6 miles of beach recently. Kiawah cannot get state and federal funds to help in such efforts because it is a private island with public access limited to the Beachwalker County Park area. Burger was uncertain about whether TOKI could get state assistance for road elevation work since its roads are outside the gate and provide access to the county park.

(3) Generally, permits are based on need and planning. If you have routinely engineered your beach, you have a greater chance of getting your permit approved and access to federal funding. (although KI will likely be excluded from federal funds due to private beach)

- Marsh:

(1) They expect to see significant loss of marsh in SC as SLR causes more erosion. Marshes can grow some in elevation as oceans rise but they do not think our marshes can keep up with the anticipated rate of SLR. Dr. Jim Morris of USC is an international authority on salt marshes. Van Dolah reported that Morris's research suggests that the marshes in the North Inlet estuary above Georgetown will be lost completely by the end of the century. Van Dolah's own work with the widely used SLAMM (Sea Level Affecting Marshes Model) model (<http://warrenpinnacle.com/prof/SLAMM/index.html>) suggests that there will be large areas of salt marsh loss all along the SC coast. Oyster reef communities, however, are resilient, can grow vertically with SLR, and should be OK. Use of living shorelines such as oyster reef construction and Corelogs[®] can reduce erosion and prevent marsh migration inland, at least to some extent. This approach is effective, generally cheaper than hardened engineered structures, and better ecologically.

(2) Changes in the hydrology on neighboring Islands, (James, Johns and Wadmalaw) affect the *entire* surrounding area.

-Overall:

(1) Communities living on the coast must "Adapt, Mitigate, or Abandon".

(2) Our pond system will become less effective as sea levels rise unless ponds and their outfalls are raised, and effective check valves are used to limit sea water entry.

(3) There are no suitability requirements for upland fill, unlike the beach. Fill has been used extensively on lots before construction and could be used on lots with existing structures as needed. The ARB has provided guidance on how to do this to minimize drainage problems for neighbors and guide re-vegetation. This guidance could be upgraded with the help of Levine's maps & modeling and TOKI's current work on suitable plant selections. (Personal, [JWL] observation: what does it tell you when truckloads of fill have to be brought in to raise a site sufficiently so that it is buildable?)

(4) We may need some rules that prevent hard structures on the marsh edge as well as guidance on suitable alternatives.