MARLOWE & COMPANY
GOVERNMENT AFFAIRS CONSULTANTS

Memo

To: Marlowe & Company Clients
From: Toby Hicks, Legislative Intern
Re: Eroding Coastlines
Date: November 18, 2009

Note: Our staff covers a number of Capitol Hill events of interest to our clients. What follows is a summary of notes taken at a briefing for congressional staff and others. If you would like more information, please email Arthur.Hicks@marloweco.com.

ERODING COASTLINES:

Geological and Societal Impacts of Extreme Storms, Wetland Loss, and Sea Level Rise

November 18, 2009

Speakers:

Jon Boothroyd, University of Rhode Island and State Geologist of Rhode Island
Coastal Erosion and Nor'easters

Abby Sallenger, US Geological Survey
Coastal Impacts of Extreme Storms

James Titus, Environmental Protection Agency
Recommendations from the US Climate Change Science Program Report on Coastal Loss

Summary:

Jon explained his view of erosion in Rhode Island which is based on his studies. He feels that "Nor'easters" is a misnomer and that some of those same storms can sometimes be better classified as "Sou'easters" based on their rotation and angle of incidence to the shoreline. He also

explained that 20% of sand lost in RI gets sucked out to sea, while 80% gets pushed northeast up the New England shoreline. In addition, he observed that tidal height (not wave height) has been recorded to rise up to eight feet during storm surges in RI.

He also presented some more general conclusions to go beyond RI including the following:

- the orientation of the coastline relative to the storm is very important to the magnitude of damage caused;
- the artificial removal of upland-displaced sand by a storm (on the beach or otherwise) is undesirable as that sand is a natural feedback response which helps buffer the shoreline against further damage;
- FEMA regulations are lax, outdated, and need updating as they were created from data that preceded scientific knowledge of climate change; and
- the Intergovernmental Panel on Climate Change (IPCC) scenarios from 2001 forecast a four foot sea level rise. This estimate, in conjunction the damage currently being done by storms, provides an idea of how big future storm surges may be.

Abby focused his presentation on two things. First, he talked about "feedback" where land changes conformation in ways that can increase the damage caused by the storm. To support this he reviewed photos and studies of Dauphin Island, AL after hurricane Katrina. Although feedback does initially cause additional damage, Jon maintains that the resulting land configuration is often better suited to absorb future storm impacts. Second, Abby talked about how forecasting rises in sea level (such as the estimate from the IPCC, above) is not a simple matter. When considering sea level rise, people generally take topographic maps and just adjust the height of the sea using the topographic data. This however yields an inaccurate result because the force of the sea level rise and the increased kinetic energy from storms will also deform the coastline in ways that are not taken into account in the simple adjustment described above.

He concluded with preliminary analysis of the recent Nor'Ida storm which he predicts has been a major event for North Carolina. The USGS survey plane is out now measuring coastal deformation and feedback caused by the storm.

James focused his presentation on individual and community damage mitigation efforts and their legal basis. First is the "3-response pathways" for coastal cities outlined in a Climate Change Science Program (CCSP) report. The three possible responses are moving one's house further from the ocean, building a seawall, and/or depositing additional sand (beach nourishment). Each of these methods has comparative advantages and tradeoffs. Moving one's house is difficult, you may run into other property behind you, and it may have to be done again if the sea continues to rise. Building a seawall is very effective at keeping water back, but you lose the beach entirely. Depositing additional sand, he feels, – like moving one's house – is a measure that does not maintain the beach or protect the community effectively.

He also talked at length about current legal developments for coastal communities responding to rising sea levels and topography changes. Some of the questions he brought up are described below:

- The public has a right to most beaches. If the beach advances towards someone's house and onto their property, who now has rights to the beach? And if the homeowner loses some of their land to the public, is this a constitutional taking that needs to be compensated?

- Many states prohibit building homes on wetlands or dunes near the ocean. If the sea level rises and the beach advances towards someone's home – making the land that they own the new wetland/dune area – what happens to their property legally?
- Additionally, there are differences in state laws and regulations. Florida and Texas, for example, have very different policies in cases of erosion and terrain change due to the environment.

He finished with mentioning a current events legal case that will be of interest to some Marlowe & Company clients: the Supreme Court case that involves a beach nourishment project in Florida. The central question of the case, he claims, is whether state legislation to renourish eroded beaches along the coast or lakeshores constitutes a regulatory taking or violates the Fifth Amendment when the boundary lines of waterfront private property are affected. The case is called *Stop the Beach Renourishment v. Florida Dep't of Environmental Protection, et al.* and will be heard by the Supreme Court on December 2nd according to http://tinyurl.com/nln7h4.

With specific regard to beach nourishment, the presenters provided their opinions when I asked for them. Abby felt that beach nourishment is not a solution but a "long term maintenance deal." However, he went on to say that the efficacy of beach nourishment is highly dependent on the situational attributes of the specific location at which it is performed. He concluded with the conjecture that beach nourishment will be much harder in the future if sea levels do rise as they have been forecasted to.

Jon agreed with Abby on many of his points but was more favorable to beach nourishment programs. He pointed out an example where beach nourishment does not work (Long Island) and an example of where beach nourishment does work (Ocean City, Maryland). Jon states that successful beach nourishment programs delineate and fill in a "template" where the sand will go – some or most of it may even be underwater – and that "swash shoreline" creation is effective. He feels that this kind of program can work over the long term but feels that the people who would benefit most (i.e. the local residents) should be the ones paying for it.