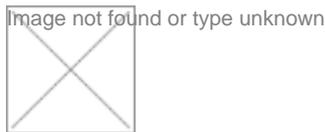




Coastal Flooding and Resiliency: New Challenges and Opportunities for the Commercial Real Estate and Finance Industry

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Virginia, North Carolina and other mid-Atlantic coastal communities are no strangers to severe weather and related storm surges and flooding. However, many of these communities are experiencing storm surges and tidal and routine rainfall-related flooding with greater frequency and intensity. This trend presents challenges to coastal communities and, if realized, could change (quite literally) much of the shoreline landscape, including land use patterns and property values for coastal real estate. However, it can also be expected to create opportunities for innovative property uses that help build resiliency to the risks of coastal recurrent flooding and encroachment of rising seas.

What factors are driving this trend? For the mid-Atlantic area, a varied and localized mix of sea level rise, land subsidence, and changing ocean currents appear to be the contributing factors, as evidenced by decades of recorded tide gauge data, analysis of historical land elevation monitoring data, and emerging findings of ocean current behavior. For example, the Hampton Roads region has already experienced an increase in *relative* sea level rise of about 1.5 feet since 1930, driven as much by land subsidence as any other factor.[1] Other Chesapeake Bay and Mid-Atlantic coastal areas are feeling these effects as well in different ways and to varying degrees.[2]

This is no academic exercise; this is a problem already being experienced week in and week out for many communities, businesses and governmental and military facilities in coastal Virginia and North Carolina. Further, should this trend continue as projected, studies point to a similar rate of increase (or even more) through the century, with permanent inundation and severe storm surges projected in many areas.[3] While they present significant challenges to capital and infrastructure planning and investment

and business and governmental operations, they can also be expected to trigger additional scrutiny of legal and environmental duties and liabilities of local governments, businesses and coastal property owners.

Further, recurrent flooding and building resiliency to such flooding are not just concerns specific to coastal communities and businesses. Anyone who relies on goods and services originating in or being shipped through or from the Tidewater region of Virginia or North Carolina's complex coastal and low country areas, or relies on the military or port facilities in these regions, has a vested interest in how coastal flooding is addressed to build resiliency against these risks and ward off interruption of transportation of goods, customers, employees and utility services.

Faced with the risks of greater flooding or long-term inundation, property owners and tenants ? whether developers, businesses or governmental entities ? can be expected to reassess site suitability, facility development plans, and construction designs for new facilities, as well as to evaluate their willingness to protect and/or reinvest in existing facilities. These considerations will, of course, be accounted for in land use planning and demand for affected properties, as well as financing of the acquisition or development of affected properties, as all players in the property market seek to manage and mitigate the risks.

Accordingly, developers, builders, businesses, and even governmental entities that own or operate property ? and their lenders and insurers ? will need to face and address these factors using careful analysis of the risks and evaluation of potential means to overcome or mitigate them. This analysis of risks and potential options to mitigate them are compounded further by increasingly complex and robust stormwater management and erosion and sediment control measures driven by Chesapeake Bay cleanup standards and stricter water quality regulations generally and evolving federal flood plain management and insurance. Additional considerations include changes in land use planning, development/construction costs, business operations, and transportation, utilities and other infrastructure to account for the trends indicating increasing recurrent flooding conditions. For example, such conditions may over time render certain zoned uses impractical and complicate on-site equipment operability, workforce mobility, facility operations, and movement of goods to and from a business.

Several completed and planned projects in Hampton Roads demonstrate that some developers and property owners are already anticipating and designing for recurrent and more severe flooding and higher storm surges, related changes in stormwater management, and potential permanent inundation. Various federal agencies, state government, and many localities, as well as some businesses, are already responding to address these concerns and take innovative approaches to changing market conditions. In addition, lenders and insurers are already playing an increasingly important role in the waterfront and low-lying residential property marketplace. Commercial, industrial and local government insurance and commercial lending/financing markets can be expected to follow suit.

As alarming as the risks of recurrent flooding and storm surge may appear, there are also opportunities for innovative development, financing and property adaptation and protection. Building awareness of and resiliency to these risks so that economies and communities can thrive despite them are important responses to these risks for success in the long run. The real estate and lending industries in particular can be, and will need to be, integral players building this resiliency in many ways:

- Innovative site use and planning that incorporate resilient design and defensive measures will be necessary to ensure ongoing functionality and marketability of a property;
- Redevelopment and improvement of existing structures, particularly private and public sector shoreline-dependent facilities, to armor them against increased flooding risks, which is already happening in some communities;
- Relocation of existing facilities may be warranted in some cases, prompting new development and construction on the one hand and repurposing of decommissioned property for other uses better suited to the risks expected on the other;
- Protection of existing, and innovative development of new, critical infrastructure and facilities (such as hospitals, water supplies, sewers, wastewater and water treatment plants and their discharge outfalls, shoreline terminals, and railroads, just to name a few) will require new thinking about site design and construction, as well strategic budgeting and funding;
- Adaptive management techniques and creative development to conserve waterfront access and natural coastline systems (e.g., beachfronts, wetlands and tributary water bodies for recreational and commercial fishing access) relied upon by natural ecosystems, commercial and recreational fisherman and hunters, and preserved in some cases to offset development impacts under stormwater quality regulations, will be needed to account for flood-prone conditions; and
- Financing resilient structure design and retrofits for private investment and development, as well as for rehabilitated or new infrastructure and governmental facilities and conservation of natural infrastructure will demand innovative, flexible and specialized financing methods and security interest considerations, with an understanding that good projects with economic return can still proceed with sound proper planning and design.

[1] ?Relative sea level rise? accounts for lower land elevation as well as any actual rise in sea level. See http://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?stnid=8638610 (last visited March 2, 2015).

[2] Other documented local sea level trend lines can be viewed at the National Oceanic and Atmospheric Administration?s website mapping Northern Atlantic tide gage stations and sea level trends at <http://tidesandcurrents.noaa.gov/sltrends/sltrends.html>

(last visited March 2015).

[3] See Larry P. Atkinson, Tal Ezer, and Elizabeth Smith, *Sea Level Rise and Flooding Risk in Virginia*, 5.2 Sea Grant L. & Policy J., 3, 12 (Winter 2013); Virginia Institute of Marine Science, *Recurrent Flooding for Tidewater Virginia* (January 2013) , available at http://ccrm.vims.edu/recurrent_flooding/Recurrent_Flooding_Study_web.pdf (last visited March 2, 2015).

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- Henry R. "Speaker" Pollard, V ? 804.420.6537 ? hpollard@williamsmullen.com

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