

Assessment of Short-term and Long-term Impacts of the November 2009 Nor'easter on the Ocean View Shoreline, Norfolk, VA

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The City of Norfolk, Virginia collects semi-annual, seamless topo/bathy survey data along the Ocean View shoreline to monitor morphological change as well as the design life of several coastal engineering projects. A fall survey was conducted in late October 2009, three (3) weeks before the November 2009 Nor'easter impacted the region. A post-storm survey was conducted in late November to capture the influence of this historic storm event along the beachface and nearshore regions of Ocean View. A spring survey was conducted in late March 2010. In addition to the survey data, an offshore wave gauge located approximately one mile offshore of Central Ocean View, in approximately twenty-one (21) feet of water, collected detailed wave data prior to, during and following the storm event. Waves almost 14 feet high were measured during the storm with a significant wave height of 6 feet persisting for almost 2 days.

Using these data, the impacts of the Nor'easter on the shoreline were accurately assessed. Critically eroded areas were identified to further enhance the knowledge of storm impacts on this region for future mitigation efforts, and the performance of existing engineered offshore structures and nourishment projects in protecting the shoreline were examined. Results of the pre- and post-storm surveys reveal that the subaerial beach berm portion of the profile was lowered more than five feet (NAVD 88) in some sections of the shoreline. While there was a lowering of the profile and significant dune scarping, much of this volume was captured in the nearshore region. Additionally, most upland infrastructure was protected from significant damage due to previous coastal engineering projects completed under the City of Norfolk's beach management program. The spring 2010 survey indicated that the subaerial beach berm has seen some natural recovery, although the dune system required manual restoration in several critically eroded sections.

Ms. Boswell joined Moffatt & Nichol as a Coastal Engineer in 2006 where her responsibilities have included serving as both Project Engineer and Project Manager on a wide range of projects involving coastal processes, shore protection, marina design and port planning. Her coastal engineering experience includes coastal structure design, post-storm condition field assessment, shoreline change assessment, permit acquisition and preparation of final design documents, wave prediction and wave force studies for fixed and floating structures and water quality assessment.