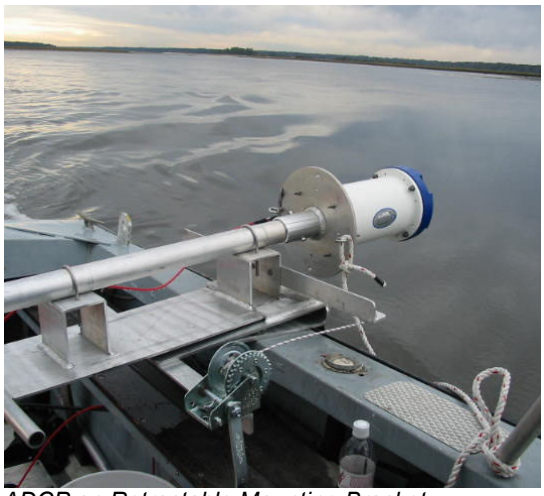
EVANS-HAMILTON, INC.

SUNSET BEACH BRIDGE CURRENT STUDY, SUNSET BEACH, NC

North Carolina Department of Transportation (NCDOT) intends to replace the existing bridge across the intracoastal waterway connecting Sunset Beach to the mainland. A national coastal engineering firm was contracted by NCDOT to perform a design analysis for the new bridge that includes detailed analysis of scour around bridge pilings and foundations. This analysis will be based on the numerical models being developed for the site. To calibrate the numerical models, simultaneous current measurements over at least one tidal cycle in the numerous creeks and inlets surrounding the bridge location were required. Evans-Hamilton, Inc. (EHI), was contracted to perform a current survey along 30 range lines in the project area over a 2-day period.



ADCP on Retractable Mounting Bracket.

SCOPE AND APPROACH

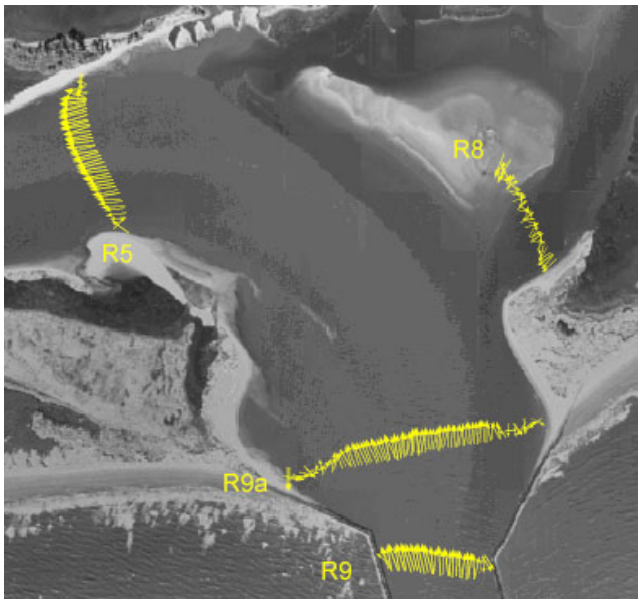
To perform the current survey, EHI outfitted two boats with 1,200-kHz ADCPs on retractable mounts. Differential Global Positioning System (DGPS) was integrated into the ADCPs and was used to provide navigational information. Retractable mounts were required so that the ADCPs could be pulled out of the water and the boats could rapidly transit from one transect to the next, thereby increasing the number of transects that could be completed in a day.

Over a 2-day period, more than 250 transect lines were run, capturing approximately two complete tidal cycles.

The data were processed using custom software to provide both visual representations of the data and digital data that could be fed directly into the numerical models. Data output formats were customized to be consistent with the client's requirements.

RESULTS

Results of the study are still being compiled, but preliminary data have been useful in identifying the tidal nodal point for the system that is near the bridge. In addition, discharge data measured along the transects have been used to develop the preliminary model configuration and identify which channels are the prime contributors to the flow in the region around the proposed bridge location. The project is on schedule and within budget.



Velocity Vectors Showing Current Magnitude and Direction