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Remarks at NOAA Office of Coast Survey
ARRA Marine Navigation Projects Announcement
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I'm often asked, "what is the difference between a chart and a map?" The clearest explanation is that a map shows you where you can go, and a chart shows you where you cannot go. A chart shows the dangers for a mariner – he or she doesn't want to run aground.

Hydrographers, from centuries ago until today, use the nautical chart to tell mariners where there is safe water. We tell them areas to avoid. Back in the 16th century, charts showed the location of ghoulish monsters, ready to devour complete vessels. Today, we search for our own monsters – the undiscovered underwater geologic formations, shifting shoals, the debris from storms and hurricanes, and any other danger to the safe transit of commercial and recreational mariners.

This was the case when NOAA and its sister agency – U.S. Army Corps of Engineers – surveyed Hampton Roads waterways after Isabelle to ensure they were safe and clear of obstructions. It was the case after Katrina when ports were closed and shipping was paralyzed for weeks. Until we surveyed, ships couldn't navigate because of unknown dangers in the waterways.

We used to use some basic techniques to measure the water depth. They were state of the art at the time. As recently as the 1930s, crews would toss leadlines out of their boats, and measure how deep the line sunk. Do this enough times, and you get a fair picture of the seafloor. Of course, if the survey missed that sunken shipwreck, rock, or obstruction, it was the mariner who suffered.

Our nation's charts are a compilation of the best data we have available. They are the best in the world. Still, today, about half of the soundings on our charts are leadline soundings from as early as the 1800s.

Our charts can be better and we need to make them better. We need to ensure that maritime commerce moves safely in and out of our ports. We need to prevent the next catastrophe, like a major ship grounding.

We have come a long way over the past generation. Depending on the charting requirement, NOAA and other modern surveyors currently use two kinds of sonars to survey the sea floor: multibeam and side scan.

Multibeam sonar measures the depth of the sea floor by analyzing the time it takes for sound waves to travel from a boat to the sea floor and back. It provides amazing detail of the seafloor, especially in rocky and rough terrain where it gives a complete picture of the bottom. It is very useful in areas such as the Northeast and Alaska where the seafloor is complex and often strewn with thousands of rocks.

However, in relatively shallow flat areas, like the mid-Atlantic coast, the multibeam is not very efficient. So we use another tool called side scan sonar, which creates an image of the sea floor, but not depths. If we find a wreck or obstruction, we investigate with a multibeam sonar or divers.

The other essential ingredient to accurate charting is accurate positioning and tides or water levels. Until the 1970s, we determined positions of water depths by using a sextant. Today's modern global positioning system provides accuracy and efficiencies never dreamed of only a few years ago. I know because I've used both a leadline and sextant for surveys.

Measuring and predicting the rise and fall of tides, and accurate positioning, are critical to the mariner as they guide large ships in and out of our ports. In many cases, they are less than 3 feet off the bottom and within inches of clearance below a highway bridge. We need to give the pilots and mariners the knowledge to maneuver.

So, the good news. We now have the technology and the expertise to provide an accurate picture of the seafloor all along America's coastline and into her ports and harbors.

The challenge? We have nearly three and half million square nautical miles of our nations' waters to monitor, understand, and chart. Several of the projects that Secretary Locke announced today are for surveys over areas that haven't been surveyed since a crew dropped a leadline 70 years ago.

We owe our mariners the most up-to-date and accurate charts we can provide. Their safety, their families, and America's economy deserve the products that today's hydrographers can deliver. With today's announcement, doubling the area of Coast Survey's contracted surveys this year, we can be assured of this Administration's commitment to our mariners.