Integrate Coastal Mapping Efforts and Ensure Federally Maintained Channels, Approaches, and Anchorages Are Surveyed to the Highest Standard (pages 12 – 16)

New or significantly edited text in blue highlight.

Finding 2:
NOAA is not alone in its requirements for accurate hydrographic and shoreline data. Numerous federal and state agencies collect similar or related datasets to perform their own mission-critical functions. The lack of data integration, inconsistent standards, and the use of different vertical datums cause confusion among users. Federal agencies must accelerate efforts to integrate data in order to conserve resources, minimize duplication and inconsistency, and maximize taxpayer investments.

Integrating federal efforts to conduct ocean and coastal mapping is not a new concept. Circular Number A-16, an Office of Management and Budget directive on federal geospatial data collection and standards integration, dates from 1990. The 2002 revision to A-16 sets forth supplemental guidance to provide the foundation for a portfolio management approach to improvements in coordination and use of nationally significant geospatial data, with focus on building the National Spatial Data Infrastructure and following Federal Geographic Data Committee standards to integrate datasets and share products with accurate metadata defining methods, processes, and intended uses of each dataset. It also directs Lead Agencies, including NOAA, to efficiently and cost-effectively collect, integrate, maintain, disseminate, and preserve spatial data, building upon local data wherever possible. Geospatial Line Of Business OMB Circular A-16 Supplemental Guidance (Endorsed December 10, 2008) was developed as a supporting document to Circular A-16 by the Federal Geographic Data Committee (FGDC) steering committee to set the framework for a lifecycle-based portfolio management and reporting process intended to increase the transparency of the development and maintenance of nationally significant datasets. The impetus for coordination was renewed with the 2004 U.S. Commission on Ocean Policy report recommendation on integrated federal mapping. The U.S. Ocean Action Plan echoes this recommendation, requiring agencies to be responsive to the coordination of federal and federally supported mapping activities for the U.S. coastal and marine environments. As outlined in the Ocean Action Plan, better coordination and accountability on federal agency efforts in existing mapping will generate efficiencies. Just this year, Congress directed federal agencies to take an integrated approach to mapping, as outlined in Public Law 111-11, the Ocean and Coastal Mapping Integration Act. A nationally coordinated mapping effort also supports goals of the Global Earth Observing System of Systems and the U.S. Integrated Ocean Observing System (IOOS) for particular observation parameters.

The HSRP concurs with the intent of the directives above, recognizing that no federal agency has the capacity to completely address 100% of its mapping requirements. But the HSRP wants to see demonstrable results from these coordination efforts, particularly in hydrographic and shoreline data collection and data sharing between NOAA's Navigation Services and agencies such as the U.S. Army Corps of Engineers (USACE), the U.S. Navy, the U.S. Coast Guard, Federal Emergency Management Agency (FEMA), and the U.S. Geological Survey (USGS).

The HSRP urges NOAA to increase its efforts with other agencies to find ways to leverage federal resources to collect and integrate data of a predetermined quality standard so that everyone – federal, state, academia, and the private sector – can seamlessly use the same data, complete with metadata, to address their diverse requirements. NOAA's tide controlled, georeferenced, digital data is an asset upon which other agencies rely. Integrating their own efforts into this standard will help all programs supporting the Marine Transportation System (MTS) and coastal zone management to meet requirements by combining efforts and increasing efficiency. Further, the HSRP finds that NOAA could acquire multibeam backscatter imagery and other marine spatial planning data concurrent with hydrographic operations, and urges NOAA to collect this multi-use data when practicable to foster agency collaboration.

In particular, NOAA, USGS, and the USACE have a number of overlapping data requirements that could be better coordinated to serve the nation's needs. One is shoreline mapping. USACE, USGS, and NOAA have Coastal Mapping Programs, though each program is attuned to the individual agency's separate requirements. To leverage these somewhat duplicative activities, all agencies should develop a common standard that will meet all agency's needs. Currently there is some coordination of project areas, but the standards to which USGS and USACE collects data do not meet those required by NOAA for charting applications. There have been a few examples of coordination and leveraging, but a comprehensive integrated ocean and coastal mapping standard should be derived. A joint National Survey Plan for shoreline mapping, akin to the NOAA Hydrographic Surveys Priorities document, should also be developed and implemented in order to maximize the internal and contract resources invested in data collection and processing. From the HSRP's perspective, this coordination would help to address NOAA shoreline mapping, USGS coastal mapping, and USACE sediment transport modeling requirements as well as to support IOOS with greater utility and integration of datasets. The USGS, FEMA, and state efforts to improve the nation's baseline floodplain maps should also be incorporated in the plan. Mapping in the coastal zone for this purpose should be coordinated with NOAA to identify coincident needs and means to address each agency's mission simultaneously.

Another area for collaboration supported by the HSRP derives from NOAA's work on a new vertical datum transformation tool (VDatum). VDatum enables any user — federal, state, local, and/or individual — to integrate bathymetric and topographic coastal data from different sources and different reference datums. The tool provides tremendous value to the taxpayer because it removes the most serious impediments to data sharing, resulting in seamless data that can serve more than one purpose, as well as multiple agencies, thereby saving time, money, and effort by reducing redundant data collection. VDatum will help NOAA acquire hydrographic and shoreline data more efficiently, and improve the accuracy of hydrographic surveys and shoreline maps by eliminating the need for time-consuming water-level corrections and post-processing. Seamless integration of geospatial data has many applications, from Homeland Security and natural disaster preparedness to tsunami and storm-surge inundation models and coastal restoration projects. Other federal agencies rely on NOAA's expertise in developing, maintaining, and providing the support services for these tools. The HSRP acknowledges the Administration's support of VDatum in the FY2008 budget request, and encourages Congress to provide adequate funding to develop, maintain, and support the tool.

Comment [V1]: NOAA still needs to update info as required. (Stimulus money for 08 and 09 ARRA money.)

An area of grave concern to the HSRP is the fact that in federally maintained channels – where deep-draft commercial ships have to transit and where there is minimal underkeel clearance – the federal government is not using the most effective technology to detect the presence of submerged objects. The USACE, responsible for maintaining, dredging, and surveying inside the channel, does not use the same technology and standards as NOAA, whose area of responsibility falls outside federally designated channels. The HSRP wants to ensure that the nation's federally maintained channels, approaches, and anchorages are surveyed to NOAA's standards that provide full-bottom coverage for object detection to facilitate safe maritime commerce in U.S. waters. Since 1985, NOAA has conducted multibeam and side scan sonar surveys to achieve full bottom coverage for depths and obstructions. These surveys give mariners and other users a complete picture of the bottom. Previously undetected rocks, pipes, wrecks, and other marine debris are frequently found by NOAA in navigable waters transited by large container ships, cruise ships, and tankers. Using this technology, NOAA finds new hazardous obstructions at an average rate of about 2.5 per day (see Table 1). However, federally maintained channels, which are the responsibility of USACE, do not often receive this level of scrutiny, because USACE's survey mission centers more on sediment management rather than hazard detection.

Comment [JLD2]: Rebecca to work with OCS to verify and update (need to check in with MCD and well as HSD). Also update Table #1

The HSRP is well aware that NOAA and the USACE have historically surveyed to address different purposes, but finds that with channel clearances so tight, the status quo is no longer acceptable. The HSRP strongly recommends NOAA either be authorized and funded to survey all federally maintained channels on a routine basis, or both agencies should use a single standard that implement the best available technology and full-bottom coverage to prevent accidents and ensure navigation safety. Otherwise, the HSRP anticipates more environmentally and economically devastating incidents such as the *Athos I* tanker spill, caused by an undetected anchor, pump casing, and concrete block submerged in the Delaware River channel and anchorage. Other examples include the *Hai Kang* strike of the remains of a Burlington Northern Railroad bridge pier in the Willamette River, and the *Teal Arrow* rock pinnacle grounding in a deepened Coos Bay channel.

The HSRP finds the fact that these channels and anchorages were inadequately surveyed by USACE to be unacceptable, and worries the nation's other channels may also mask hidden dangers. Our waters are much too busy with commercial, military, and recreational traffic to leave so much to chance.

Homeland Security presents another argument for full-bottom coverage surveys in U.S. waterways. Rapid military mobilization depends on safe maritime transits in the same channels used by commercial mariners and recreational boaters. The health of our coastal economies and the nation's success in the global market require safe and efficient marine operations conducted in an environment of assured security, with special focus on sustaining the rights of safe passage. The increasing level of maritime trade poses risks, not only in the form of accidents caused either by human error or environmental conditions, but also by terrorist attacks. Countering this threat requires an improved Maritime Domain Awareness to prevent port and waterway closures. NOAA, the U.S. Navy, and the U.S. Coast Guard have partnered in the past on Homeland Security surveys to establish a baseline dataset for countermine warfare change analysis. NOAA and the Department of Defense have worked together to enhance unmanned survey capabilities, including underwater vehicles to help ensure U.S. ports, harbors, and inland waterways are clear

of underwater explosives and other hazards. These efforts should continue in a coordinated and routine fashion among NOAA, the Navy, USACE, and the Coast Guard to ensure the integrity of our maritime borders and commercial and military transit routes.

The HSRP recognizes that its recommendations for NOAA and its fellow agencies to actively pursue integration of standards and activities for an improved MTS infrastructure is not a simple task. Such integration will require considerable discussion at the highest levels of the agencies and the Administration. In integrating data acquisition across agencies, it is typically necessary to utilize the most stringent specifications in order to serve the broadest range of data needs. Since data collected in support of safe navigation (e.g., NOAA chart data) typically have the most stringent specs, the HSRP recommends that NOAA take the lead in such integration. Specifically, the HSRP recommends that NOAA pursue this issue within the cabinet-level Committee on the Marine Transportation System as well as Interagency Working Group on Ocean and Coastal Mapping, to ensure widespread support and awareness of the potential partnerships and benefits to navigation safety and the integrity of our maritime borders.

Recommendation 2:
The HSRP recommends that NOAA take a larger role in improving partnerships with other federal and state agencies and other nongovernmental entities to:

- Integrate coastal mapping efforts with coordinated mapping plans, for example NOAA, USGS, and USACE shoreline mapping efforts;
- Collect ancillary multi-use data such as multibeam backscatter imagery concurrent with charting surveys to support marine spatial planning;
- Refine, implement, and maintain tools such as VDatum to collect, integrate and disseminate seamless coastal geospatial data; and
- Ensure that the nation's federally maintained channels, approaches, and anchorages are surveyed with full-bottom coverage technologies to NOAA's standard to facilitate safe maritime commerce in U.S. waters.

Sidebars:

a) **NOAA's Hydrographic Survey Priorities** are updated every year or so, reflecting recommendations made by the HSRP and other stakeholders such as the U.S. Coast Guard, pilots, and port authorities. The criteria for evaluating priority survey areas within the U.S. Exclusive Economic Zone waters are available at: http://nauticalcharts.noaa.gov.
(photo of tides support vessel)

b) **What We Can't See Does Hurt Us: NOAA's Ability to Survey Federally Maintained Channels Is Tragically Underutilized** (Keep this sidebar in the chapter)

(PHOTOS: Includes: photo of anchor that punctured the Athos **(keep this photo);** ~~Side Scan Sonar imagery~~ **(DELETE and consider replacing with one of photos from HSRP members);** Digital Terrain Model **(DELETE and consider replacing with one of photos from HSRP members);** and ~~Seagirt pipe obstruction~~ **(DELETE and consider replacing with one of photos from HSRP members)**

Comment [rla3]: Keep in this sidebar if there is room – OK to remove if there is not room.

Comment [rla4]: Remove the three photos at the bottom of the sidebar as not really relevant to the story – room permitting – consider replacing with some of the photos sent by HSRP members – including pictures of wrecks. (look at photos from Jon Dasler and Andrew McGovern)

On November 26, 2004, the 750-foot, single-hull tanker Athos I was reported to be leaking oil into the Delaware River en route to its terminal at the CITGO asphalt refinery in Paulsboro, New Jersey. As two tugboats were helping the vessel maneuver to its terminal, the oil tanker listed eight degrees and lost power. Two punctures in the tanker's hull — 1-by-2 feet and 1-by-6 feet in size — were later confirmed by divers. Home to the fifth largest port complex in the United States in total waterborne commerce, the Delaware River and Bay sees 70 million tons of cargo moving through every year. It is the second largest oil port in the U.S., handling about 85% of the East Coast's oil imports. The Athos I spilled an estimated 265,000 gallons of oil into the Delaware River, impacting about 115 miles of shoreline. The Port of Philadelphia closed for days. Waterfowl, migratory birds, and wildlife perished. Ironically, this accident was preventable.

The Athos I collided with three uncharted and undetected submerged obstructions in the channel and anchorage that the pilot and captain had no way of knowing existed. Had the federal government conducted a full-bottom coverage hydrographic survey, the objects — later identified as a ship's anchor, a pump casing, and a 64-cubic-foot slab of concrete — would have been located, charted and/or removed from the tanker's path to the refinery dock. In the case of this spill, the final report from the U.S. Coast Guard clears the ship's crew and pilot of blame. Officially, the accident was caused by large metal debris in a government maintained channel and anchorage, which had not been fully surveyed. NOAA has the technology to survey the federally maintained waters where the accident occurred. Unfortunately, NOAA is often not called to survey within a channel until after an accident occurs. This costs. The Athos I incident alone has cost the ship owner and his insurer over $165 million. The true value of wildlife lost and port commerce delayed or deferred cannot be calculated.

c) **NEW**: An Example of Integrated Mapping: NOAA and Oregon State University Map Oregon's Seafloor (insert the new sidebar and photo – need to know who to give photo credit to; the sidebar is an adaptation of an 8/09 NOAA News Release)

d) **NEW**: Multiple uses of coastal mapping data (written by NGS – shows multiple uses of data and making data available to others) – has three pictures associated with it

Other:

a) **Photo of person leveling to tidal bench marks.** (**REVISE:** Update photo if possible – need a higher resolution photo)

b) **Table 1: Dangers to navigation detected by NOAA.** (**UPDATE** table with new information – up through FY09 if possible – include debris work from hurricane funding)

c) ~~**Photo of PORTS system.**~~ (**MOVE** to Chapter 3: not good match for the chapter)