



Semi-Annual Success Story ("Section C")
submitted to the
Office of Ocean and Coastal Resource Management/NOAA
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Virginia CZM's Coastal Geospatial and Educational Mapping System (GEMS)

CZMA Performance Measure Areas: Coastal Habitat Protection, Government Coordination & Decision-Making, Coastal Dependent Uses & Community Development, Public Access

Identification & Description of Issue: During a Virginia Coastal Zone Management Program workshop in 2001, our state and local partners expressed the need for a "vision" of Virginia's Coastal Zone and a comprehensive inventory of Virginia's coastal resources. They wanted to know the current status of Virginia's coastal resources and how these resources could be managed in a sustainable fashion in light of increasing development pressures. Spatial coastal resource data existed (a good deal of it resulting from CZM grants), but without GIS training and expensive software, one's "vision" of Virginia's coastal zone was fragmented into reports and static maps of individual resources. Even with the necessary GIS training and software, there was no clearinghouse for all of this coastal spatial data, which is held by as many as a dozen different agencies and organizations. Figuring out what data existed and how to obtain it was a daunting task at that time.

Better access to scientifically sound information results in better planning and decision making, and so, for its entire 25 year history, VA CZM has been committed to collecting coastal resource spatial data and making it available to planners and decision makers. In response to the need expressed by our partners, VA CZM began to identify and compile spatial data for the best remaining water and land based natural resources within the state's Coastal Zone. This process initiated the concept of providing a gateway for accessing this comprehensive collection of coastal resource information. VA CZM decided to create a big picture online interactive data portal emphasizing the connection between blue and green infrastructure where our partners could view and interact with coastal resource data and discover how land use practices can affect resources in the water.

Geographic Location: Virginia's Coastal Zone. Congressional Districts 1, 2, 3, 4, 7, 8, 10 & 11.

How the Virginia CZM Program Was Involved: About six years ago, VA CZM teamed up with VCU's Center for Environmental Studies (CES) to create a comprehensive, new, coastal data resource for its partners and the public called Coastal GEMS. At that time online mapping applications were becoming popular but they typically only highlighted a specific dataset or two from one organization and some of the user interfaces were far from intuitive. Coastal GEMS was ahead of the curve, leveraging some of the latest technologies from several software platforms and pulling together data from local, state, and federal agencies, non-profit organizations and academic institutions and fusing them all into one, easy to use, comprehensive, data portal. In addition to the spatial data, GEMS also includes fact sheets with information about each data layer as well as links to collaborating agencies.

Over the past few years, resource managers have started to realize the effectiveness of online data portals like Coastal GEMS and new web mapping technologies have emerged that make it possible for these portals to be developed into robust decision support tools. Last fall VA CZM partnered again with VCU

CES to utilize these new technologies in the development of Coastal GEMS version 3. Version 3 improvements include:

- use of ArcGIS Server 10.0 which allows access to a much richer array of cartographic options
- new base maps including roads, aerial imagery with or without labeling, National Geographic's world map, ESRI's ocean base map and more
- a "swipe" tool that allows easier comparison between 2 different base maps
- transparency adjustment and ability to move data layers above or below each other to get better views of data and base maps beneath them
- a "mark-up" tool that allows users to add text to maps, draw lines and shapes, add icons and symbols and buffer points and then export and print your customized map
- compatibility with all popular web browsers without having to download plug-ins and with mobile devices such as iPads.

Qualitative Summary of Accomplishments and Outcomes: Recent testimonies from the field convey the success of GEMS and the positive impact of Virginia CZM's problem-solving approach:

Glen Askins, VA Department of Game & Inland Fisheries: "... yesterday during an oil spill drill with the Coast Guard and Colonial Pipeline, I had the opportunity to see first-hand the power and utility of the GEMS 3 mapping program. After participating in two previous drills, where natural resource participants had to scramble and pull information from multiple sources, the GEMS program had virtually all the information in one place for the environmental team to recommend quick, precise and significant resource protection measures immediately. GEMS is truly an amazing new tool and we encouraged the Coast Guard and Colonial Pipeline to further investigate the application of this tool for future planning efforts."

Liz McKercher, VA Department of Environmental Quality: "An oyster growing company used maps that they created with Coastal GEMS to support their request to extend proposed No Discharge Zone (NDZ) boundaries to the Virginia state line. Due to this request the VA Department of Environmental Quality's draft NDZ application to EPA for Westmoreland County showed the proposed NDZ boundaries for these three water bodies extended to the mouth, beyond existing shellfish beds."

From the administrator/planner focus group in a recent VA Sea Grant Communication study: "I would say in my position that GIS data that is put out there by the state or by the federal agencies with coastal centers, that's some pretty critical stuff. Just about every project that I am involved in has some kind of GIS component. So that data, available either by a viewer such as Coastal Gems, which is online, or especially in the raw format where we can download it and manipulate it on our own, I think that is the most useful data for us that we can have available."

Quantitative Summary of Accomplishment and Outcomes:

Since we began tracking usage of Coastal GEMS in FY09, the application has been visited over 4,000 times with average visit durations of over 2 minutes.

CZM Funds Expended & Other Funds Leveraged:

FY 2009 Task 93.02 \$26,844

FY 2010 Task 93.02 \$23,000