



Virginia Commonwealth University  
**Coastal Management GIS Support & Coastal GEMS**

**Maintenance: FY21 Annual Report**

October 1<sup>st</sup> 2021 – September 30<sup>th</sup> 2022

NOAA Grant # NA21NOS4190152

Grant Year FY2021, Task #1.04



**Virginia Coastal Zone**  
MANAGEMENT PROGRAM





## Acknowledgements

This report was prepared by the Virginia Coastal Zone Management Program's Coastal GIS Coordinator. The Coastal GIS Coordinator position is provided through a contract with Virginia Commonwealth University and is funded by the Virginia Coastal Zone Management Program at the Virginia Department of Environmental Quality through Grant #NA21NOS4190152 from the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended.

## Introduction

This report provides a summary of tasks performed and products created under task #1.04 by the Virginia Coastal Zone Management Program's Coastal GIS Coordinator and by staff of Virginia Commonwealth University Life Sciences during the grant year FY2021 (October 1st 2021 – September 30th 2022). Links are provided for web-based products where applicable. For full-resolution map images, spatial data, or further documentation of tasks summarized in this report, contact [nick.meade@deq.virginia.gov](mailto:nick.meade@deq.virginia.gov).

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## Coastal GEMS Mapping Application

### **Hosting and Maintenance**

Virginia Commonwealth University Life Sciences continued to host the Coastal GEMS online mapping application through the FY21 grant period and VCU Life Sciences staff performed routine maintenance and updates on Coastal GEMS during this time.

Tasks included refreshing map services, updating data and cartography in the map file per CZM staff request, and installing software and security upgrades. Coastal GEMS remained operational throughout the FY21 grant period and was only offline to install software/security updates or to refresh map services. Coastal GEMS can be accessed at: [www.coastalgems.org](http://www.coastalgems.org).

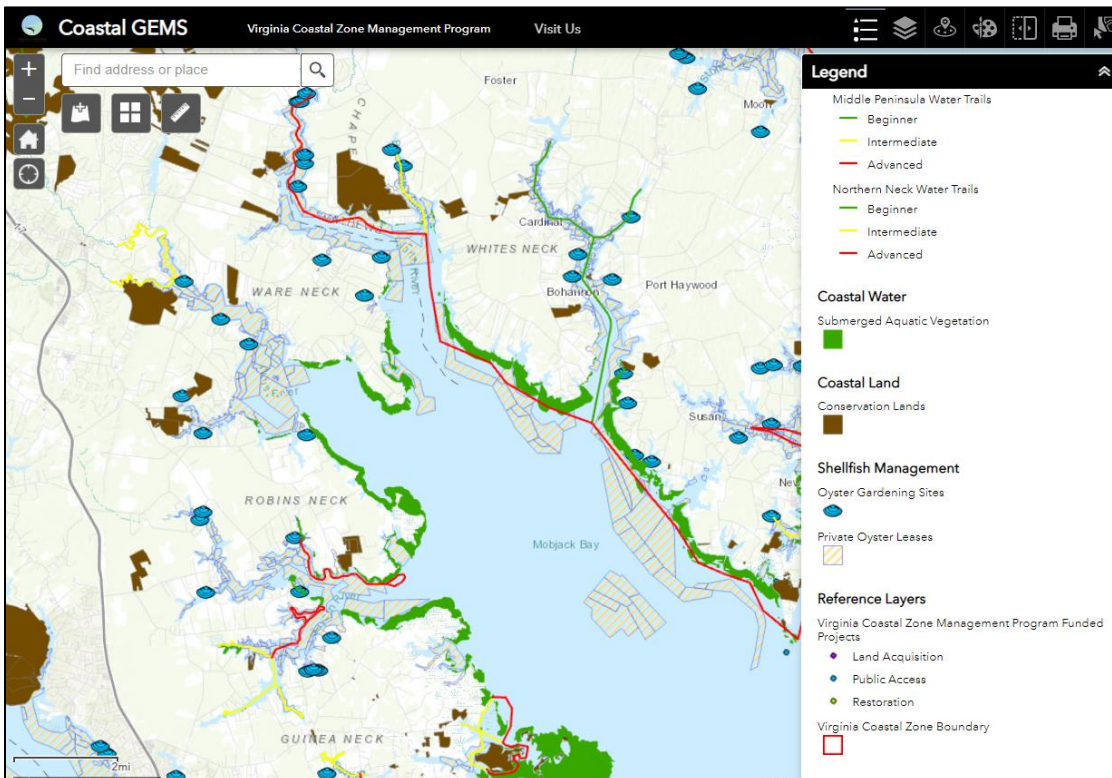
### **Google Analytics Tracking**

Google Analytics services for Coastal GEMS set up by VCU CES staff remained operational throughout the FY21 grant period. VCU CES staff created Google Analytics reports at CZM staff request by querying specific date ranges. From October 1, 2021 to September 30, 2022, Coastal GEMS had 684 distinct users who logged 1,098 sessions with an average site visit time of 1 minute and 18 seconds. Over 85% of Coastal GEMS users reached the site directly, about 12% were referred from a link on another site, and the remaining users reached the site through a search engine. More Google Analytics information for the Coastal GEMS mapping application during the FY21 grant period can be found in the appendix of this report.

## Coastal GEMS Data Management

The Coastal GIS Coordinator requested and obtained available data updates for current Coastal GEMS mapping application and story map layers from data providers, processed/prepared data for display, packaged symbolized data and uploaded to VCU Life Sciences to update map services. Coastal GEMS fact sheets were updated as necessary. The Coastal GIS Coordinator worked with Virginia CZM and MARCO partners to create new story maps. Coastal GEMS can be accessed at: [www.coastalgems.org](http://www.coastalgems.org).

**Coastal GEMS Layers updated during the FY21 grant period:** Submerged Aquatic Vegetation Coverage, CZM funded Projects, Private Oyster Leases, Oyster Gardening, Conservation Lands, Current Population/Population Projections, Lower Chickahominy Water Trails, Middle Peninsula Water Trails, and Northern Neck Water Trails.



*Left: A screenshot of the Coastal GEMS v4 mapping application showing some of the new and updated data from the FY21 grant period.*

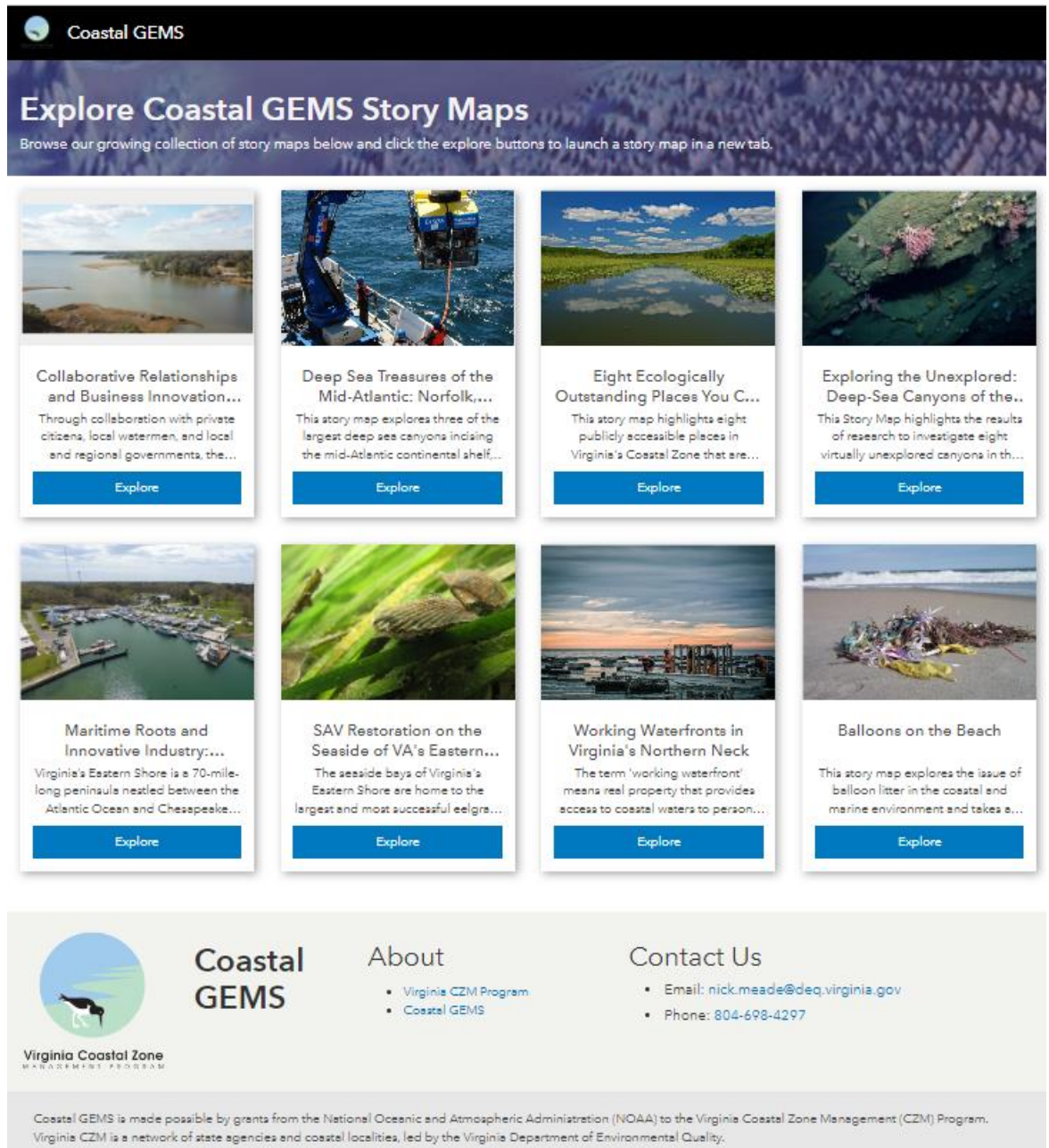
Story Maps

**Story Maps updated during the FY21 grant period:** The Coastal GIS Coordinator updated two story maps for MARCO intended as educational resources for all audiences including:

- A story map on marine debris with a focus on balloon litter highlighting beach monitoring programs in Mid-Atlantic States.
- A story map highlighting three major deep-sea canyons in the Mid-Atlantic (Norfolk, Baltimore, and Hudson) with contextual information on deep-sea topography, canyons, exploration, corals, and protection.

All story maps created by the Coastal GIS Coordinator can be found through [the Coastal GEMS Story Maps page](#).

Right: Screenshot of story maps page on the Coastal GEMS website.



## Coastal GIS Coordination

### Data Requests

The Coastal GIS Coordinator responded promptly to all data and information inquiries. In the FY21 grant period this included requests from private contractors, NGO's, regional planning staff, academic institutions, and state and federal government agencies.

In FY21 the Coastal GIS Coordinator also met with the CBNERR Hollings Scholar and provided guidance on available data, GIS data analysis, and cartography for project.

### Project Management

The Coastal GIS Coordinator performed VA CZM project manager duties in FY21 associated Task 1.04 to VCU (Coastal Management GIS Support and Coastal GEMS Maintenance). In FY21, the Coastal GIS Coordinator also worked with CZM Coastal Planners to determine data product formats and need for data sharing plans for other CZM tasks as necessary.

Assisted Virginia Aquarium staff with submitting hooked sea turtle paper to NOAA repository ahead of publication to comply with NOAA data sharing directives regarding data ultimately used in peer reviewed publications

Completed data sharing plan (Coastal VEVA and DWR PWDCA) for IIJA Capacity grant proposal.

### GIS User Group Participation

During the FY21 grant period the Coastal GIS Coordinator continued participation on the MARCO Ocean Mapping & Data Team (OMDT), the Marine Debris Workgroup, and the VA State Agency GIS User Group. During the FY21 grant period the Coastal GIS Coordinator also worked with VGIN staff to [share Coastal GEMS through VGIN's new Virginia GIS Clearinghouse](#).

### Coastal VEVA

Towards the end of the FY21 grant period the Coastal GIS Coordinator began the process of creating an updated Coastal VEVA synthesis including communicating with partners about updating component models, providing background information as needed, and setting first meeting to begin planning for version 3. This work will continue in FY22.

The screenshot shows the VGIN website header with navigation links: Home, VGIN Board, Clearinghouse, Orthoimagery, Base Mapping, NG9-1-1 GIS, and Contact. The main content area features the title "Virginia Coastal GEMS Geospatial Portal" and the VGIN Administrator logo. Below the logo is an "Open Application" button. The page is divided into two columns: "Summary" and "Details". The "Summary" column contains the text: "Coastal GEMS: Geospatial Education and Mapping System." and "Coastal GEMS is made possible by grants from the National Oceanic and Atmospheric Administration (NOAA) to the Virginia Coastal Zone Management (CZM) Program. Virginia CZM is a network of state agencies and coastal localities, led by the Virginia Department of Environmental Quality." The "Details" column lists: "Registered App Application", "June 2, 2022 Date Updated", and "June 2, 2022 Published Date".

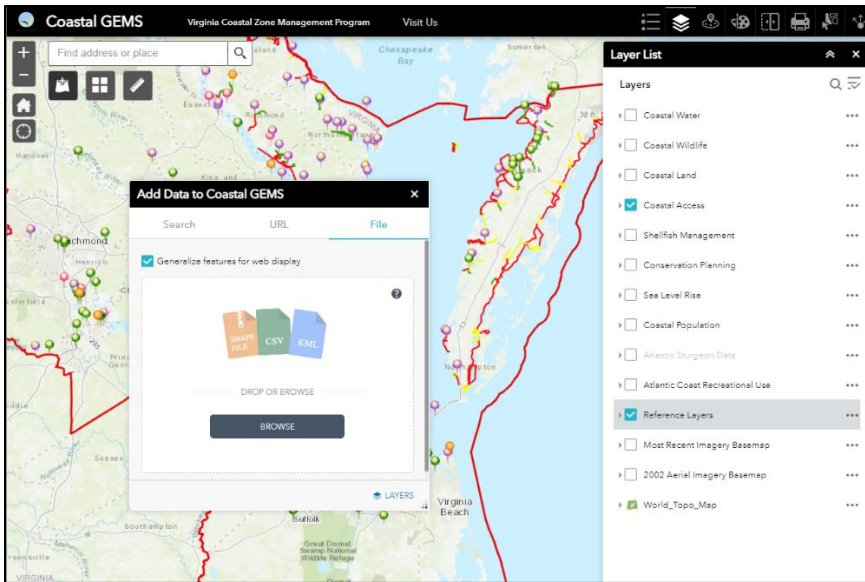
*Above: Screenshot from VGIN's new Virginia GIS Clearinghouse showing Coastal GEMS entry.*



# Training and Outreach

## Coastal GEMS Demos

In FY21, the Coastal GIS Coordinator provided virtual overviews of Coastal GEMS data layers, features, and functions, by request, to a private contractor and to regional planning staff.



Left: Screenshot of the Coastal Coastal GEMS add data widget as demonstrated during virtual overview with regional planning staff.

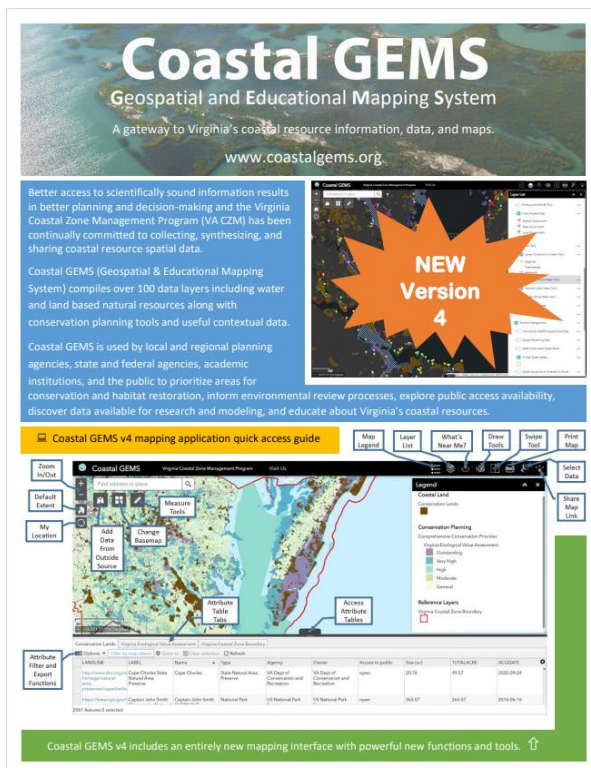
## CZM Technical Assistance

The Coastal GIS Coordinator provided technical assistance to VA CZM and partners during the FY21 grant period including setting up and hosting GoToMeeting webinars and providing links to meeting recordings, chat logs, and transcripts post webinar; Extracting and tabulating Zoom .csv poll results from Coastal Partners Workshop and generating results charts for each poll question; Assisting VA CZM staff with setting up new iPhones and new NOAA CAMMP accounts; Completing full calibration of VA CZM's plotter; Creating high-res screen captures for VA CZM staff as requested for use on displays, publications, and the web.

## Publications

In FY21 the GIS Coordinator created a new 2-page factsheet highlighting Coastal GEMS v4 for use on the web and as a printed handout. A full resolution .pdf version of the factsheet can be found [here on the VA CZM website](#).

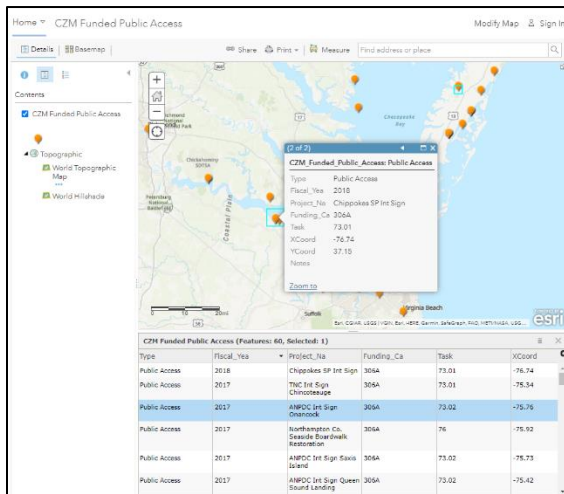
Right: New 2-page factsheet highlighting Coastal GEMS v4 for use on the web and as a printed handout



## GIS Map Products and Services

The Coastal GIS Coordinator continued to provide mapping support to the VA CZM Program in FY21, including:

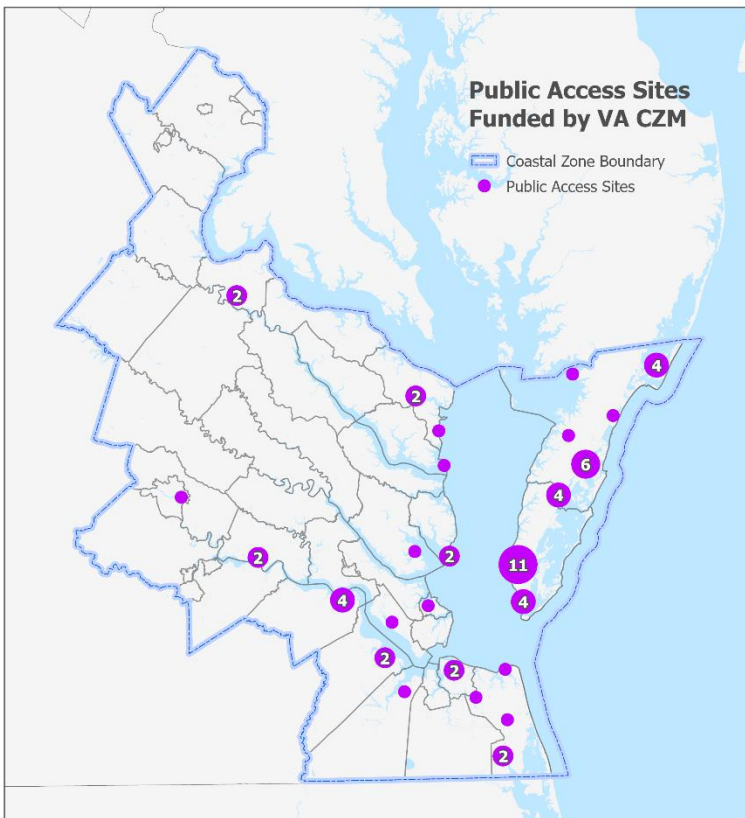
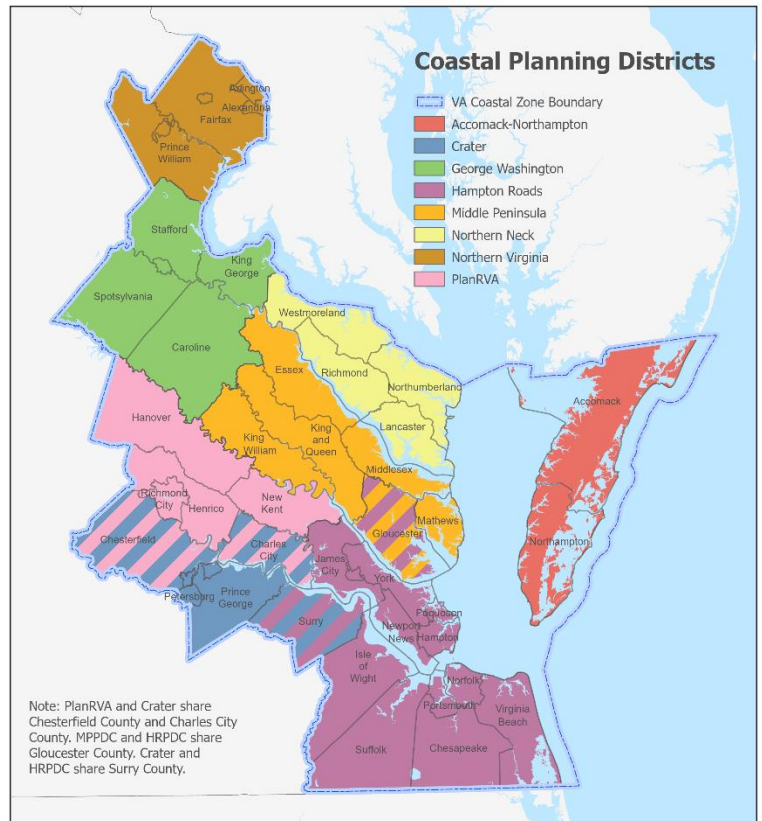
- Created an overview map of Virginia's coastal PDC's reflecting localities shared between multiple PDC's. This map can be found [here on the VA CZM website](#).



Above: Web map of CZM funded access sites

Right: Coastal planning districts map layout

Below: CZM funded public access sites map layout



- Created a map utilizing point clustering and proportionally scaled symbols of public access sites funded by VA CZM, as well as an interactive web map of these access sites. The [web map can be found here](#).
- Created map layouts (shown on pages 9-10) for the VA CZM website of each of the eight coastal PDC's. These maps can also be found on the respective coastal planning district pages on the VA CZM website at the following locations: [Crater PDC](#), [Eastern Shore](#), [George Washington](#), [Hampton Roads](#), [Middle Peninsula](#), [Northern Neck](#), [Northern Virginia](#), [Richmond Region](#).
- Assisted with mapping related needs for meetings, workshops, and the VA CZM website including using GIS to calculate the percent land in the VA CZ currently conserved and creating slides of CZM Funded Projects data.



GIS Map Products and Services continued:



Clockwise from top left: Map layouts of Accomack-Northampton PDC, Crater PDC, Hampton Roads PDC, and George Washington PDC.



GIS Map Products and Services continued:

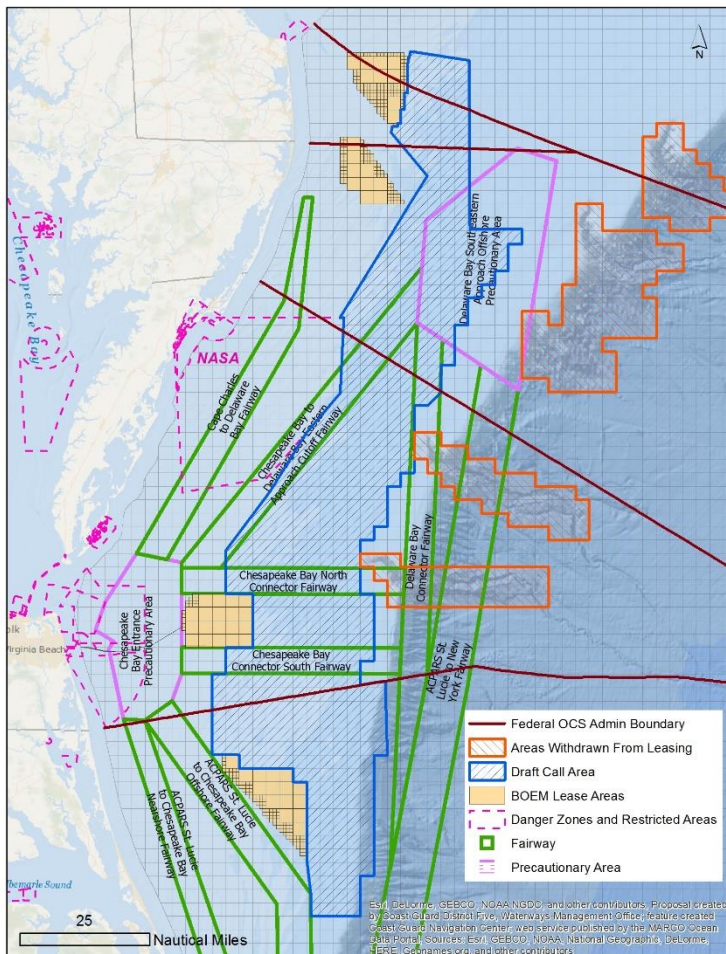
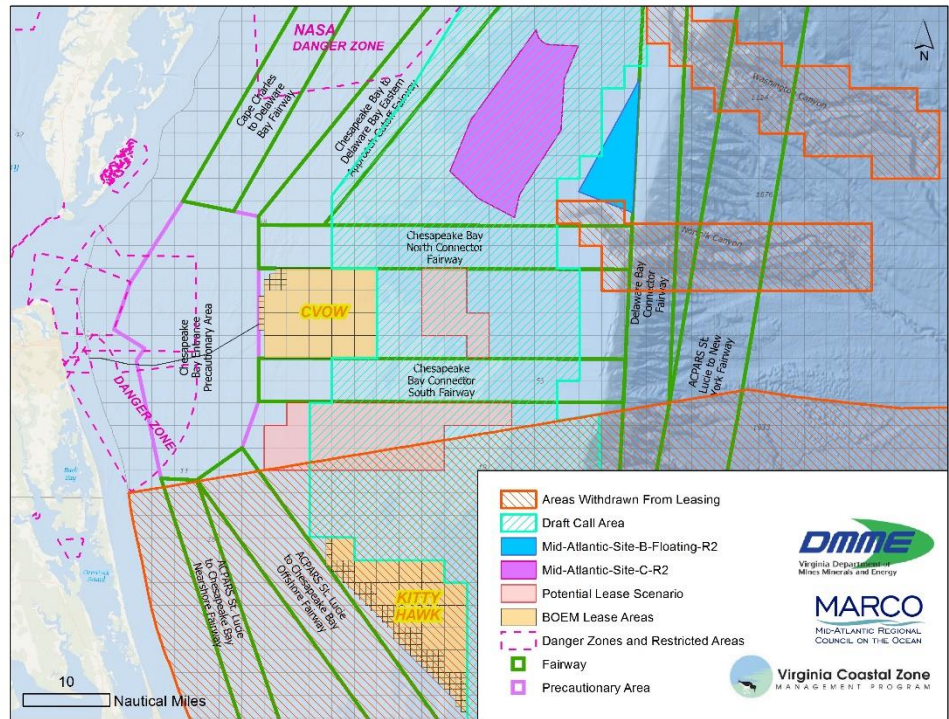


Clockwise from top left: Map layouts of Middle Peninsula PDC, Northern Neck PDC, PlanRVA, and Northern Virginia Regional Commission.

GIS Map Products and Services continued:

The Coastal GIS Coordinator continued to provide mapping support to VA CZM Partners in FY 21, including:

- Created a series of map layouts presenting the best locations for additional wind energy areas offshore of VA for VA Department of Energy staff working to respond to BOEM proposed Central Atlantic Offshore Wind Call Area as well as a potential developer.



Left and Above: Map layouts created as part of VA DOE's response to proposed wind energy areas offshore of VA.

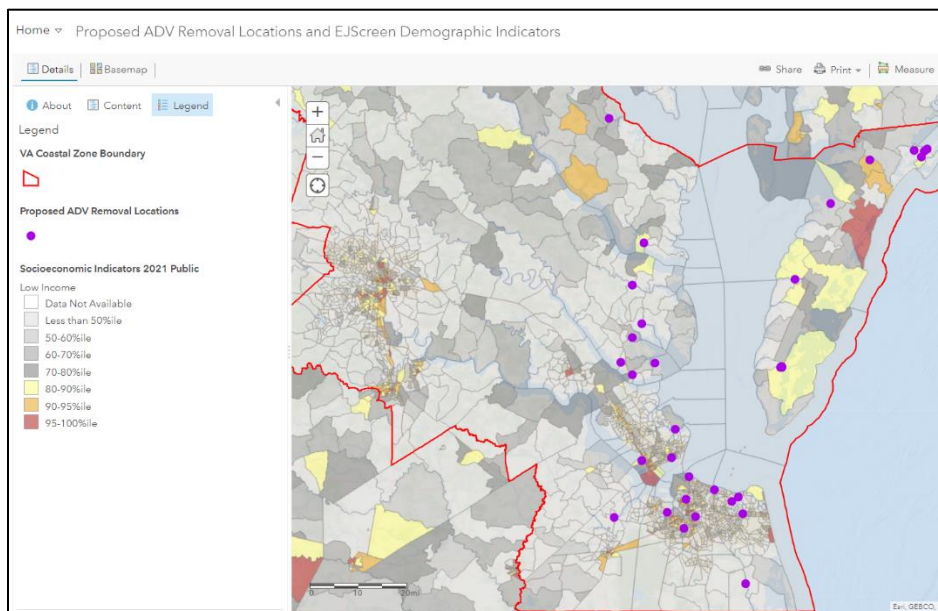
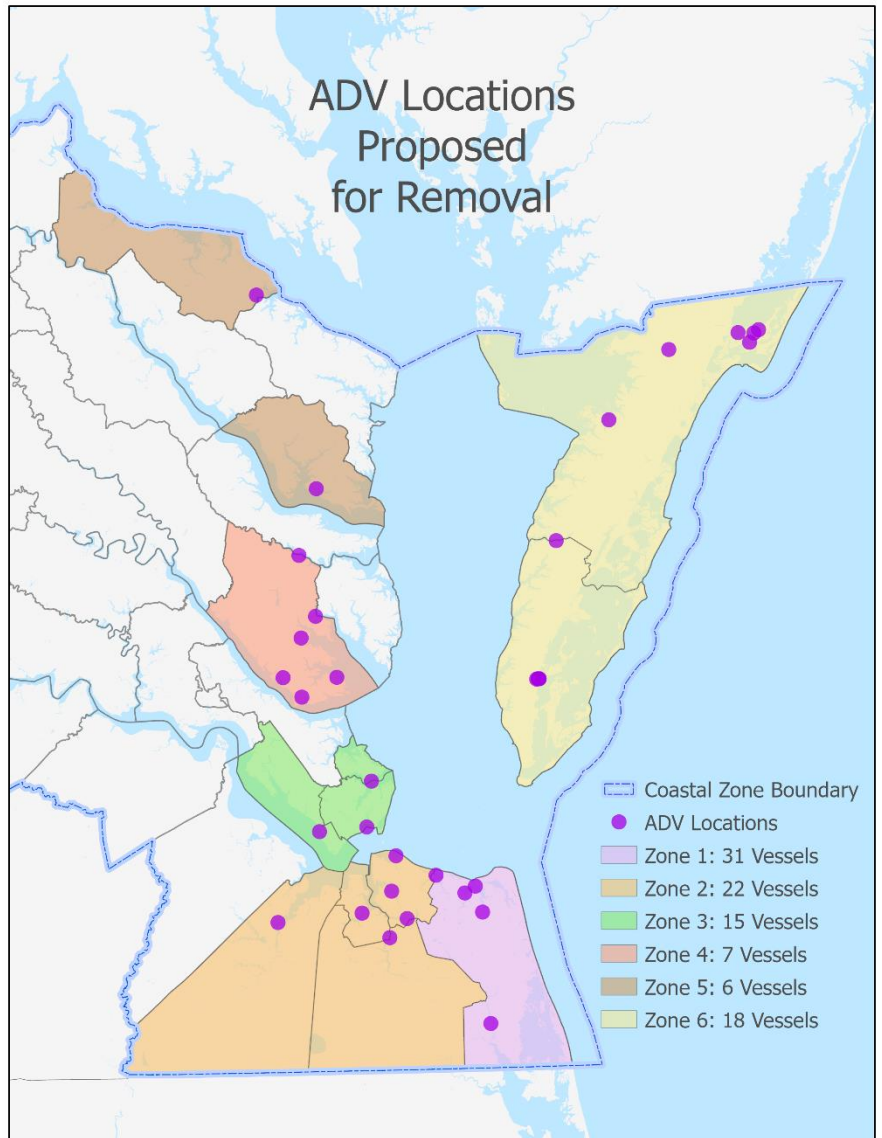


GIS Map Products and Services continued:

- Created products for use by Abandoned and Derelict Vessel (ADV) Workgroup including feature services and a web map to compare and refine ADV location data, and tabular public access site data to identify potential sites for posting ADV flyers. Provided GIS support to CZM Coastal Planner and ADV Workgroup preparing IJJA-NOAA Marine Debris proposal including creating spatial data, map layout of ADV locations proposed for removal and removal zones, and [a web map of ADV locations and demographic data from EPA's EJScreen tool](#).

Right: A map layout of ADV locations proposed for removal and removal zones created for the IJJA-NOAA Marine Debris proposal.

Below: A web map of ADV locations and demographic data from EPA's EJScreen tool created for the ADV Workgroup.

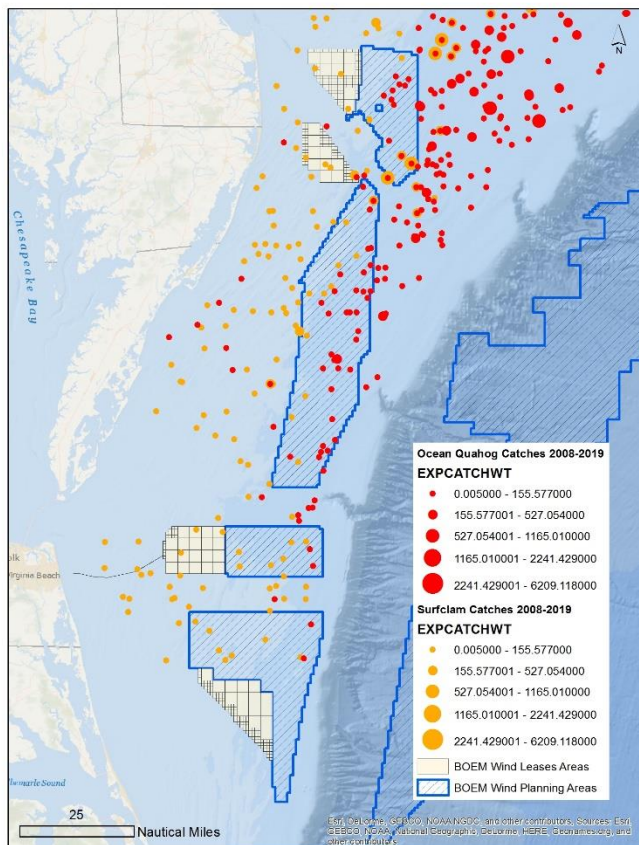
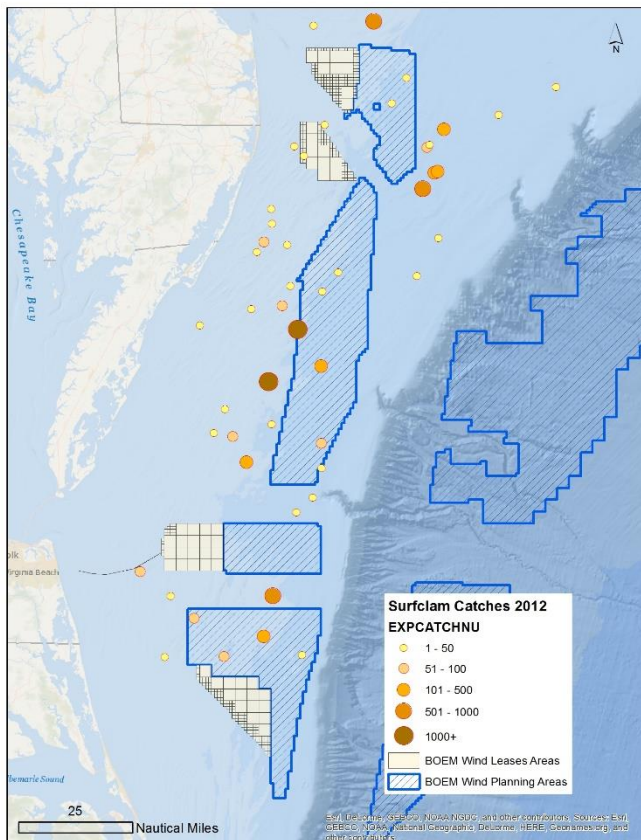
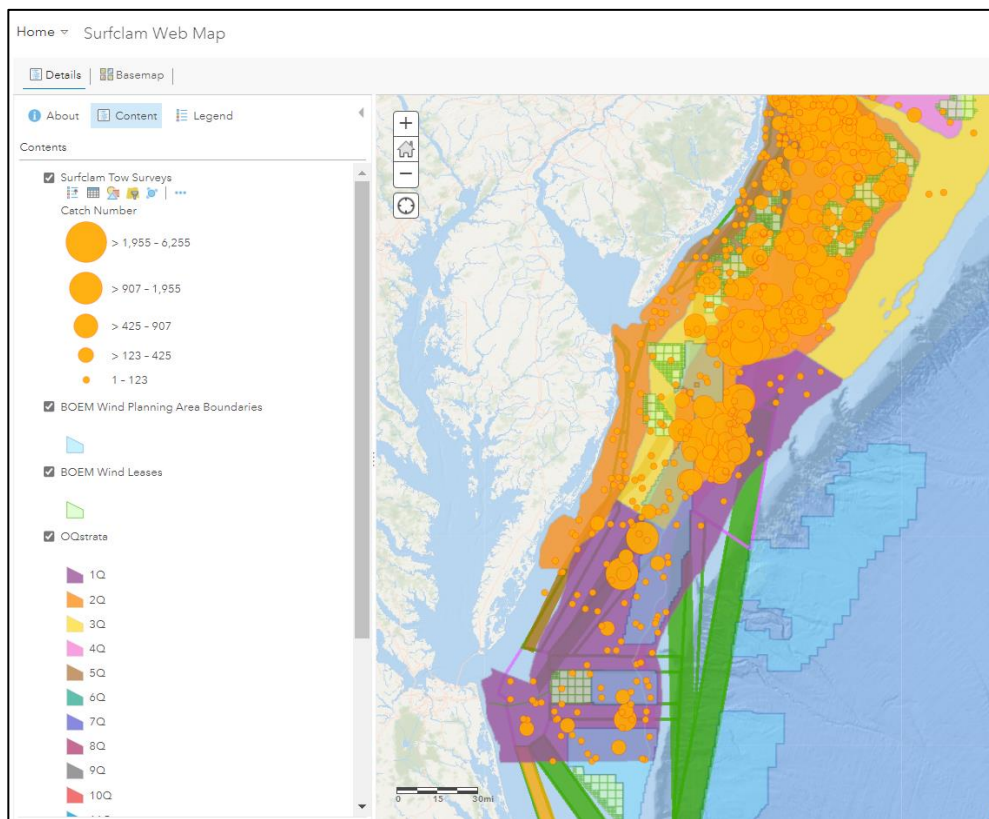


GIS Map Products and Services continued:

- Provided GIS support to VA CZM Ocean Fisheries Coordinator including creating static map layouts and [interactive web maps](#) and worked with the Ocean Fisheries Coordinator and VMRC staff to map areas of concern to fishing industry representatives in real time during a public meeting on Central Atlantic Call Area for new ocean wind energy leases.

Right: An interactive web map created for the VA CZM Ocean Fisheries Coordinator of fishing and wind energy planning data

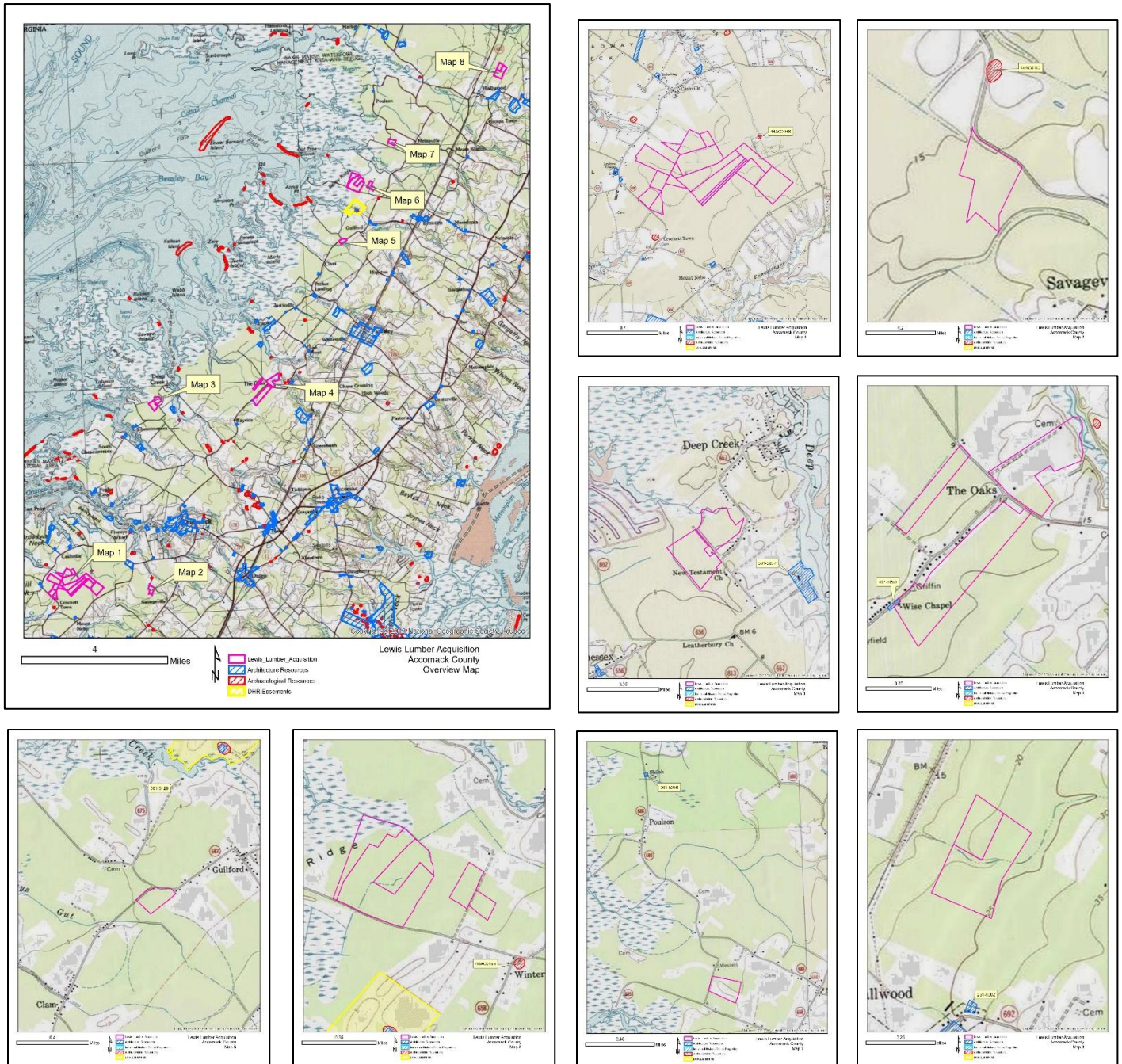
Below: Static map layouts created for the VA CZM Ocean Fisheries Coordinator of fishing and wind energy planning data





GIS Map Products and Services continued:

- Completed SHPO clearance process for DWR and DCR potential land acquisitions on VA's Eastern Shore including performing archive search, creating maps, and submitting applications using DHR's online ePIX system.



Above: Department of Historic Resources archive search maps (including overview map and eight site maps) of proposed DWR land acquisition created by the Coastal GIS Coordinator as part of SHPO review application.

# Appendix

## Google Analytics

