

Virginia Coastal Zone Management Program

Final Section 309 Coastal Needs Assessment & Strategy

January 2016

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Virginia Coastal Zone
M A N A G E M E N T P R O G R A M

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I. INTRODUCTION

The Virginia Coastal Zone Management Program was established in 1986. The Department of Environmental Quality (DEQ) serves as the lead agency for the program's network of state agencies that administer state laws and policies to protect and enhance coastal resources. Other agencies in the network that form the "Coastal Policy Team" include the Virginia Marine Resources Commission (VMRC), the Department of Conservation and Recreation (DCR), the Department of Game and Inland Fisheries (DGIF), the Department of Health (VDH), the Department of Forestry (DOF), the Department of Agriculture and Consumer Services (VDACS), the Department of Historic Resources (DHR), Virginia Institute of Marine Science (VIMS), Virginia Department of Transportation (VDOT), Virginia Department of Mine Minerals and Energy (DMME) and eight Coastal Virginia Planning District Commissions (PDCs).

Section 306/306A of the Coastal Zone Management Act (CZMA) provides federal funds to implement federally-approved CZM Programs. Section 309 of the CZMA is known as the Coastal Zone Enhancement Program. Established when the CZMA was reauthorized in 1990, Section 309 is a voluntary grant program in which match-free federal funds are made available to coastal states with federally approved coastal management programs to enhance coastal policies. Every five years the Virginia CZM Program conducts an assessment of nine coastal enhancement areas:

1. wetlands
2. coastal hazards
3. public access
4. marine debris
5. cumulative and secondary impacts
6. special area management planning (SAMPs)
7. ocean resources
8. energy and government facility siting
9. aquaculture

Specifically, Section 309 encourages states and territories to develop "program changes" -- changes to the state's enforceable policies or authorities -- that help the state make improvement(s) in one or more of the nine coastal enhancement areas.

The Virginia CZM Program's Coastal Policy Team (CPT) meets to review and prioritize (high, medium or low priority) the nine assessment areas for each five year cycle of work. In 2015, The CPT used the criteria listed below to determine the priority ranking for each area. Team members individually ranked each area on scoring sheets, considering each area on its own merits. Individual scores were combined and the overall ranking of the areas posted for reflection and discussion by Team members. The Team discussed whether arguments could or should be made to increase or lower the priority of any area, and then by consensus decided on the priority assigned to each area.

- *Feasibility*: Could progress be made within the time and financial constraints? Is successful development of enforceable policies likely? Is adoption of enforceable policies likely?
- *Importance*: Is there a significant threat in this enhancement area? How valuable (economically or ecologically) is the coastal resource?
- *Appropriateness for the CZM Program*: Is this an issue that other agencies are not addressing? Is there a need for coordination of efforts within Virginia?

Once the Virginia CZM Program has conducted its coastal needs assessment, and prioritizes the areas, the program develops 5-year strategies to address improvements in the areas of high priority. These strategies are developed with input from the program's partners and constituencies through focus groups and strategy work group meetings.

The completed Virginia Coastal Needs Assessment and Strategies document is made available for Public Comment on the Virginia CZM website. Virginia CZM then sends the report to NOAA's Office for Coastal Management for approval.

Once NOAA's approval is received, specific grant projects are developed to accomplish the strategies over the five-year period. The proposals for these projects are then approved by NOAA's Office for Coastal Management.

Pending NOAA's approval of the proposals, the Virginia CZM Program receives approximately \$500,000 each year over the five years to implement its strategies.

In 1997, Virginia developed a three-year Assessment and Strategy that reviewed each enhancement area of Section 309 and identified five high priority areas (public access, hazards, cumulative and secondary impacts, SAMPs, and aquaculture). These areas were selected based on the recognized need for regulatory or program changes. Based on the highest priority of need and high likelihood for success, three strategies were developed for the FY'97-FY'99 period: SAMPs for Northampton and Southern Watershed Areas, and Aquaculture.

In 2000, Virginia developed a five-year Assessment and Strategy that identified five high priority areas with seven proposed strategies: 1. Wetlands: Wetlands Regulatory Programs Strategy; 2. Coastal Hazards: Dune Management Strategy; 3. Cumulative and Secondary Impacts: Shoreline Management Strategy and Clean Marina Program Strategy; 4. SAMP: Southern Watershed Area Strategy, and Dragon Run Area Strategy; and 5. Aquaculture: Aquaculture Management Strategy.

In 2005, Virginia developed a five-year Assessment and Strategy that identified six high priority areas including: 1. Wetlands; 2. Public Access; 3. SAMPs; 4. Aquaculture; 5: Coastal Hazards; and 6. Cumulative and Secondary Impacts. To address these priorities, the Coastal Program developed six key strategies: A. Intergovernmental Decision-Making (CSI); B. Shoreline Management (CSI, wetlands, public access); C. Prioritizing Conservation Corridors (CSI, wetlands); D. Dragon Run SAMP Implementation (SAMP); E. Seaside of Virginia's Eastern Shore

(SAMP); F. Management Initiatives for Shellfish Aquaculture (Aquaculture); and G. Administrative Actions: Data Collection, Indicator Development, Program Changes and the 2010 Coastal Needs Assessment and Strategy (Public Access and other areas).

In 2010, Virginia developed a five-year Assessment and Strategy that identified three high priority areas including 1. Cumulative and Secondary Impacts (Working Waterfronts, Shoreline Management, and Land and Water Quality Protection); 2. Special Area Management Planning (Seaside SAMP) and 3. Ocean Resources (Virginia Marine Spatial Plan).

This report presents Virginia's 2015 Assessment of the nine enhancement areas and Strategy for addressing 3 of the identified high priority areas. The analysis and strategy preparation was completed using the National Oceanic and Atmospheric Administration's (NOAA) final Section 309 Guidance (June 2014). Assessment questions prepared by NOAA helped to update and determine the current status of each enhancement area.

Upon completion of the draft assessment, the Coastal Policy Team, comprised of the agencies noted above, met on February 3, 2015 to review and finalize the priorities developed during the December 2014 Coastal Partners Workshop.

The Virginia CZM Program will focus its attention and efforts on the following three issues over the next five years:

1. Coastal Hazards
2. Cumulative and Secondary Impacts of Growth and Development
3. Ocean Resources

Based on meetings with stakeholders, potential strategies have been developed and are included immediately following the assessments in this document.

The Virginia CZM Program also conducted a public review and comment period from October 20, 2015 through November 20, 2015. During this time an announcement of the opportunity to review and comment on the draft Section 309 Assessment and Strategy was made in the Virginia Regulatory Town Hall web site as well as on the Virginia CZM web site. Written comments that were received during this time frame are included in Appendix VII at the end of this document.

II. SUMMARY OF RECENT SECTION 309 ACCOMPLISHMENTS (2011-2015)

Area	Title	FY2011	FY2012	FY2013	FY 2014	FY2015	TOTAL
	Program Implementation	0	0	0	30,000	30,000	60,000
CSI	Working Waterfronts	50,000	50,000	47,000	50,000	50,000	247,000
CSI: Shoreline Management	Living Shoreline Policies	30,000	0	0	0	0	30,000
	Local Shoreline Plans	150,000	135,000	126,500	135,000	135,000	681,500
CSI: Land & Water Quality	Urban & Transitional	90,000	90,000	84,600	40,000	79,476	384,076
	Rural	50,000	50,000	47,022	40,000	60,524	247,546
SAMP	Seaside	60,000	60,000	0	0	0	120,000
Ocean Resources	Planning	47,980	98,000	81,884	60,000	60,000	347,864
	Marine Debris	58,020	0	0	65,000	60,600	183,620
	Marine Mammal Mapping			63,994	100,000	0	163,994
	Data Collection					44,400	44,400
	TOTAL	536,000	483,000	451,000	520,000	520,000	2,510,000
Projects of Special Merit	Marine Mammal Mapping		180,544				
	Shoreline Management					125,000	

Program Implementation

This portion of Section 309 funds, although not a separate strategy, was intended to support preparation of program change packages for submission to NOAA. No funds have been expended to date under this period however, at the September 2015 Coastal Policy Team meeting, it was agreed that a switch to a “narrative enforceable policies” approach should be considered. If the decision is made to go ahead with that approach, currently available FY14 and FY15 funds (\$30,000 in each year) may be used to begin writing the narrative policies.

Cumulative and Secondary Impacts: Working Waterfronts Plan

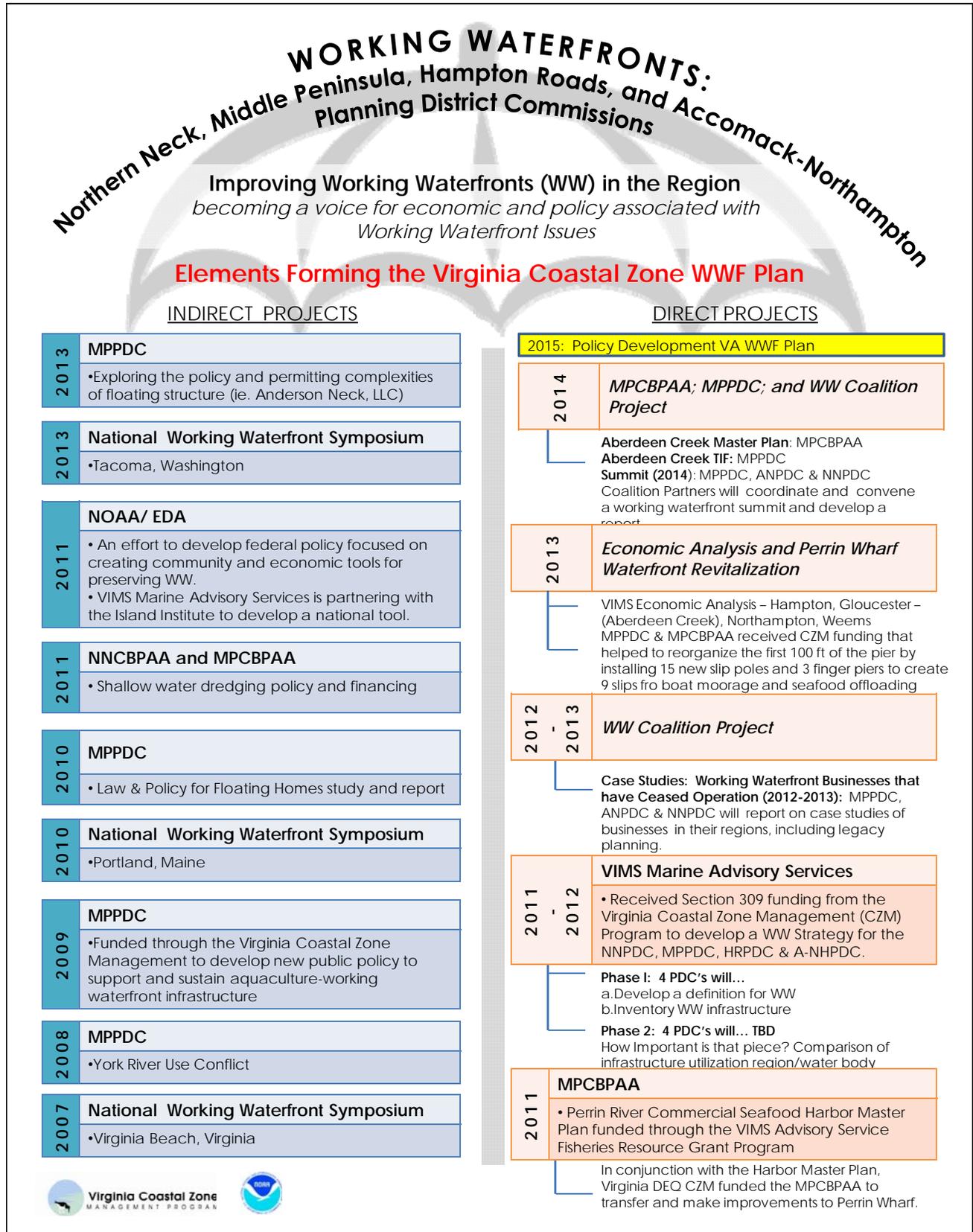
This strategy coordinated and supported four local Planning District Commissions (PDCs) Accomack Northampton, Hampton Roads, Middle Peninsula and Northern Neck to develop benchmark information that would establish the foundation of a working waterfronts plan for Virginia. In the first two years, each PDC developed a consensus definition of working waterfronts for its region in collaboration with its member county governments and stakeholders. Based on these definitions, details of working waterfronts infrastructure were collected in each region, creating an inventory of just under 400 working waterfronts facilities among the four planning districts.

In the second and third years, economic impact modeling was conducted in working waterfronts communities within each of the four regions enabling completion of quantitative assessments on the economic importance of working waterfronts facilities to their respective communities.

In the fourth year, outreach to local decision makers within each region took place to help increase awareness of the economic importance of working waterfronts as well as identify existing policies and also new policies that could be successfully introduced and implemented within a given region. One specific product of this effort was conducted under NA13NOS4190135, Aberdeen Creek Dredging Project- Restarting an Economic Engine was requested by the Gloucester County Board of Supervisors in an effort to determine the economic impact of the Commercial seafood industry for a specific working waterfront harbor experiencing significant sedimentation problems. The study found over \$4,000,000 in economic impact from direct seafood landing annually which is significantly greater than the dredging cost estimates projected between \$608,000 and \$1,592,000 for the Harbor. The public policy question facing the Gloucester Board of Supervisors remains - *Does \$4,000,000 of economic impact warrant the spending to local tax dollars to dredge the harbor.*

The final year of the strategy, now currently underway, involves synthesizing all of the prior year components with recommended policies and action items to establish a working waterfronts plan for Virginia that will help protect and sustain the working waterfronts industry in the Commonwealth.

The graphic below depicts the flow of effort made to cultivate strong working waterfronts policy in Virginia and highlights investments made by the Virginia Coastal Zone Management Program (both Section 309 and 306 funds) as well as leveraged support acquired through other sources.



Cumulative and Secondary Impacts: Shoreline Management

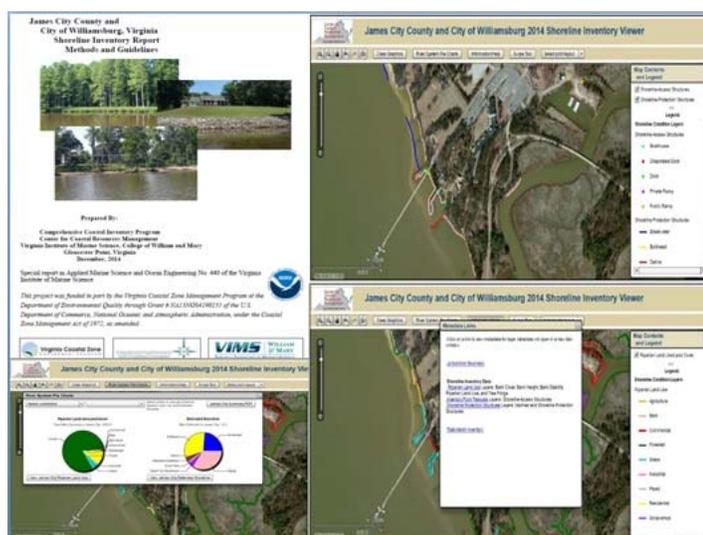
This strategy built on previous Section 309 strategies to improve shoreline management practices and encourage the use of living shoreline techniques as opposed to more traditional hardened shorelines. Living shorelines provide water quality and habitat benefits, and in many cases can allow wetlands to migrate upland as sea level rises. The primary outcomes of the FY 11 – 15 strategy were new local shoreline inventories, shoreline evolution reports and shoreline plans to help improve local decision making. Individually each one of these contributes to a better understanding of the condition of the shoreline, how it has evolved over time, and how it should be managed into the future to sustain important ecological services that humans derive benefits from. These documents were developed by the Virginia Institute of Marine Science.

Shoreline Inventories describe land uses along the shoreline, the stability of the shoreline, where the shoreline has been stabilized to counter erosion, and the general shoreline morphology. These data support a number of different modeling efforts. Among them, the geospatial Shoreline Management Model (SMM) developed to make recommendations for controlling shoreline erosion in a manner that minimizes impacts to ecosystem services. The SMM provides critical data for the development of Shoreline Management Plans. As a result of this strategy, shoreline inventories were developed for the counties of Henrico, Charles City, James City, Stafford and Gloucester and the cities of Virginia Beach and Suffolk. Inventories for Accomack and Prince George Counties are currently being developed. The inventories are available through the following website:

http://ccrm.vims.edu/gis_data_maps/shoreline_inventories/index.html.

Shoreline Evolution Reports describe the change in shoreline position overtime through an analysis of aerial imagery dating from the present back to 1937. These reports are valuable to property owners and shoreline managers for determining the severity of erosion and the degree of shoreline protection that may be necessary. Shoreline evolution reports were generated for the counties of Westmoreland, Charles City, Northampton, Northumberland, Fairfax, Stafford and Accomack, and the City of Virginia Beach. Reports are underway for Prince George County and the Cities of Norfolk and Chesapeake. The shoreline evolution reports are available online at:

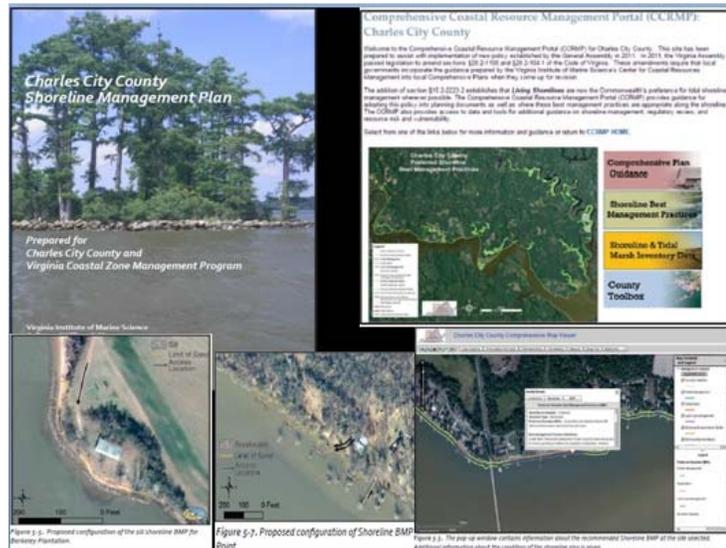
<http://web.vims.edu/physical/research/shoreline/Publications-Evolution.htm>.



Shoreline Management Plans were developed by using both modeled and field assessment, and provide information to guide management of tidal shoreline at the local level. These reports characterize the shoreline's geology, morphology, and wave climate while providing specific guidance on tidal shoreline erosion control. Options recommended range from planting marsh grasses, performing upland modifications, to construction of sizeable offshore breakwater systems. The Plans reflect a desire to use the minimal amount of erosion control required based on the setting and the conditions observed. Shoreline Plans were generated for Westmoreland, York, Charles City, Fairfax, James City and Stafford Counties along with the Lynnhaven River Watershed in the City of Virginia Beach, and the City of Suffolk. Plans are under development for Gloucester and Prince George Counties. Shoreline Management Plans are available at (<http://web.vims.edu/physical/research/shoreline/Publications-ShoreMgt.htm>) and as an additional resource in the "Toolbox" under the locality's Comprehensive Coastal Resource Management Plan (<http://ccrm.vims.edu/ccrmp/index.html>).



In 2011 the Virginia General Assembly passed legislation that defined living shorelines and recognized them as the preferred method of shoreline stabilization. It also required that the Virginia Marine Resources Commission develop a general permit to encourage the use of living shorelines and that all coastal localities incorporate shoreline management guidance from VIMS into local comprehensive plans. The legislation is available online at: <http://leg1.state.va.us/cgi-bin/legp504.exe?111+ful+CHAP0885+pdf>



Beginning in 2012, the Center for Coastal Resources Management at VIMS started developing Comprehensive Coastal Resource Management Portals (CCRMPs) for each coastal locality in response to this legislation. The portals are gateways to resources that address data gaps,

shoreline best management practices, and sea level rise issues at the local level. Each portal links to comprehensive shoreline data, maps displaying management recommendations, and decision support tools.

Virginia CZM projects under the previous Section 309 Shoreline Strategy helped raise the profile of living shorelines and highlighted their importance. These efforts provided a foundation for adoption of the living shoreline legislation. The FY 11 – 15 Strategy then provided critical data to support development of the mandated CCRMPs. In addition to the shoreline inventories, evolution reports and plans, Virginia CZM also supported a VIMS report in FY 11 to facilitate VMRC’s consideration of a general permit for living shorelines. A general permit for non-structural living shorelines was adopted by VMRC in 2015. The permit is available online at: http://www.mrc.state.va.us/regulations/MRC_Scanned_Regs/Habitat/FR1300_09-01-15.pdf .

Virginia was awarded an FY 15 – Project of Special Merit for \$125,000 entitled “Implementing sustainable shoreline management in Virginia: assessing the need for an enforceable policy” which will evaluate current the shoreline management decision-making process.

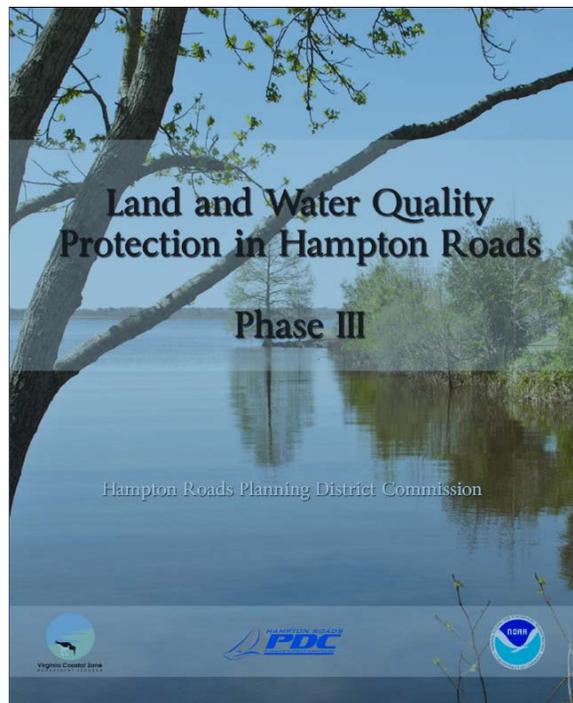
In addition to Section 309 projects, the Virginia CZM Program provided a grant with Section 306 funds to the Middle Peninsula Planning District Commission to research the feasibility of adding the construction of living shoreline to the list of activities that could receive low interest loans backed by the Virginia Clean Water Revolving Loan Fund. In response to this study, the Virginia General Assembly passed legislation in 2015 allowing localities to receive loans from the fund or set up a program to provide loans to private citizens. The legislation is available online at: <http://lis.virginia.gov/cgi-bin/legp604.exe?151+ful+CHAP0474> .

Cumulative and Secondary Impacts: Land & Water Quality Protection

Urban & Suburban (Hampton Roads Planning District Commission)

This project incorporated three related and parallel initiatives undertaken by the Hampton Roads Planning District Commission (HRPDC) to develop new enforceable policies to improve stormwater management. The first was an evaluation of the regulatory impacts of new Virginia Stormwater Management Regulations and the Chesapeake Bay Total Maximum Daily Load (TMDL) on local governments. The second was an effort to assess and/or develop tools which local governments could use to identify changes to their existing ordinances and plans. This effort also included research to identify policies which could be used to promote water quality as well as compliance with the stormwater regulations and Chesapeake Bay TMDL. The third effort was an assessment and demonstration of various software tools that could be used by local governments to model the water quality impacts of developments or the effects of regulatory changes on those impacts.

Two localities, Norfolk (urban) and Suffolk (suburban/transitional), were selected to be pilot localities. As part of the pilot studies, HRPDC analyzed state regulations and obstacles to using traditional stormwater management best management practices (BMPs) in the coastal plain. It also provided guidance for developers on how environmental site design can be used to reduce stormwater loads and treatment costs. HRPDC reviewed the two localities' development regulations using the Center for Watershed Protection's Code and Ordinance Worksheet and identified opportunities for changing existing policies and developing new policies to protect water quality. They then conducted a geographic information system (GIS) analysis of stormwater impacts from different development scenarios, such as traditional suburban and cluster developments. One site was selected from Norfolk and one from Suffolk. The analysis assessed how the various alternatives performed in terms of nutrient loads using the Runoff Reduction Method/GIS methodology.



HRPDC then developed recommendations for enforceable policies related to water quality and implementation of the Virginia Stormwater Management Regulations and the Chesapeake Bay Total Maximum Daily Load. Policy recommendations were divided into three categories: those relating to impervious cover, those related to the siting of development, and those related to stormwater best management practices. Specific amendments to local ordinances for both Norfolk and Suffolk, the pilot localities for this project, were provided along with broader policy recommendations.

HRPDC also demonstrated the use of GIS to model the physical and environmental impacts of two proposed policy changes. The first was an assessment of how changes in parking regulations such as quantities required and size requirements could affect the total availability of parking and the total amount of impervious surface created by parking. The second was an assessment of how changes to a local transfer of development rights program could affect the total amount of development that is available to transfer within a locality. Hampton Roads localities are currently considering recommendations from the HRPDC reports. In response to these recommendations, the City of Norfolk has already updated its parking ordinance to reduce requirements in its urban core and placing an emphasis on the multiple benefits approach toward stormwater management. Both Norfolk and Suffolk have indicated that HRPDC's analysis of state listed BMPs for use in the coastal plain has been very useful in administering their local ordinances.

HRPDC was originally awarded an FY 15 grant for implementation of the water quality strategy through an analysis of state stormwater management thresholds and Chesapeake Bay TMDL requirements. However, a delay in recommendations from a state stormwater stakeholder advisory group raised questions as to the feasibility of the project. Because of the more immediate need, and likelihood of new enforceable policies, the Virginia CZM Program's Coastal Policy Team agreed that these funds should be redirected to a pilot project for developing a unified coastal hazards planning process in Hampton Roads. A scope of work for this project was under development in fall, 2015.

Urban & Suburban (Northern Virginia: Managing Storm Water with Green Infrastructure and Native Plant Campaign – Policy Development & Implementation)

Localities are realizing that green infrastructure can be a solution to the land use and water quality challenges facing municipalities including storm water management and flood control. In order to identify “regionally appropriate and cost effective Best Management Practices” for Northern Virginia, the Northern Virginia Regional Commission undertook an effort to develop a methodology for modeling impacts of various development scenarios on water quality.

Funded in the fourth year of the strategy (FY14), this project is still underway. Accomplishments include:

- Evaluation of all the county codes looking at local tree canopy ordinances to determine if they synchronize with the Virginia Department of Forestry tree density per acre standards.
- Mapping of population growth data to identify high growth watersheds in the region.
- Identified watersheds that are projected to experience the most population growth
- Estimation of land cover characteristics in projected high growth watersheds.
- Conducted build-out analyses of those watersheds based on current zoning and an alternative more dense zoning
- Simulated the effects of full build out and more dense build out on canopy and impervious surface cover as well as on stream flow and pollutants of concern.
- A “leaf out” analysis to determine how to integrate forest cover goals into a full build out scenario i.e. identify planting and/or canopy preservation locations.
- Interface with local planners from Fairfax and Prince William counties to give an overview of the project and determine how to best integrate the results into watershed plans and regional MS4 storm water plans.

Finally, in the fifth year of the strategy, which is now underway during the preparation of this report, funds were directed to support the NVRC native plant social marketing campaign. The

campaign encourages a shift in behavior toward increased commercial supply, consumer purchase and both public private and installation of native plants with one of the primary benefits being land and water quality protection.

Rural (Middle Peninsula Planning District Commission)

In light of changing Federal and State regulations associated with Chesapeake Bay nutrient goals (i.e. Total Maximum Daily Loads (TMDL), clean water, onsite sewage disposal system (OSDS)/ alternative onsite sewage system (AOSS) management, and storm water management), the Middle Peninsula Planning District Commission (MPPDC) developed a rural pilot project aimed at identifying enforceable policy tools to assist localities with the reduction of nutrient loadings by evaluating and assessing a series of factors to maximize locality or regional participation proposed in the Chesapeake Bay TMDL Phase II Watershed Implementation Plan.

As failing systems within the Middle Peninsula persist and continue to impact local water quality, year one of this project focused on understanding the failing septic system enforcement process; the mechanics of establishing a sanitation district or sanitary district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems; and the impacts of Virginia Department of Health (VDH) Emergency Regulations on land use and reassessment.

Through the development of a project committee, MPPDC staff and consultants found communication gaps within the existing enforcement process that may hinder homeowners and VDH in fixing failing/leaking septic systems. As these gaps were specifically identified, the committee and MPPDC staff recommended and implemented solutions to improve the current enforcement process. Additionally, year one of this project was devoted to positioning Middle Peninsula localities to respond comprehensively to recent water quality mandates (i.e. Erosion and Sediment Control Act integrated the Storm water Management Act). The MPPDC received grant funding to assist in the future compliance with Federal and State regulations associated with Chesapeake Bay nutrient goals.

During year 2, MPPDC staff partnered with Middle Peninsula localities to comprehensively address local implications of changing federal and state regulations associated with Chesapeake Bay nutrient goals. With leveraged funding through the Virginia Department of Environmental Quality (DEQ) and the National Fish and Wildlife Foundation (NFWF), MPPDC and Middle Peninsula localities worked toward the development of a Virginia Storm water Management Program (VSMP) to address new Virginia Storm water Management regulations. Localities submitted a draft VSMP ordinance, staffing and budget plan, and a draft administrative guidance manual that includes program policies and procedures.

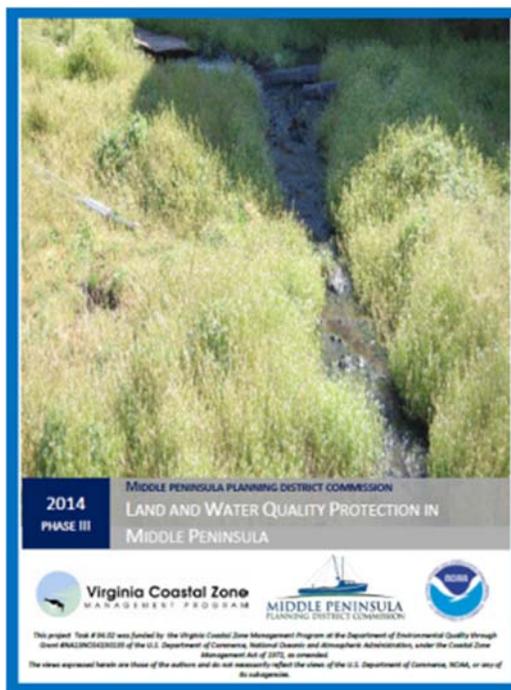
Also in Year 2, MPPDC continued to seek the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems in Gloucester County.

A new program element that was identified by local governments included an analysis of ownership, management, and oversight of storm water ditches and the relationship to the secondary road system overseen by the Virginia Department of Transportation (VDOT). Initial thoughts were divided on the idea that all ditches (roadside or parallel ditches and outfall ditches or perpendicular ditches) were under public ownership and therefore the responsibility of VDOT. In year 2, a legal analysis of ditches parallel and perpendicular to VDOT right-of-ways (ROW) was conducted to help clarify which party would be responsible for maintaining them. It was found in the majority of cases, that outfall ditches that run perpendicular to VDOT roads are the responsibility of private property owners. Ultimately however the report found that the duty to keep ditches clear and maintained is determined by ditch-specific circumstances. This report generated additional questions for local governments that will be explored in upcoming projects.

In year 2 MPPDC continued to advance the idea of water reuse, linking the Hampton Roads Sanitation District (HRSD) effluent discharges with WestRock a significant industrial user of ground water in the Middle Peninsula.

In year 3, as Federal and State water quality regulations tighten, particularly, the MPPDC continued to address issues relating to failing septic systems and storm water ditch maintenance associated with Chesapeake Bay clean-up goals.

The MPPDC contracted with the Virginia Coastal Policy Clinic (VCPC, College of William and Mary) to identify legal and financial resources that could sustainably address septic repairs and rural storm water ditch maintenance. The VCPC provided several case studies of approaches used by other jurisdictions to ensure long-term maintenance of septic systems. VCPC also researched the responsibility for the maintenance of ditches and identified federal and state funding programs that could assist local governments and citizens, the different types of assistance available and how to gain access to such assistance, and the authority local government has to enter private property to clean ditches in the name of public improvements and/or how such authority could be enabled. The report also reviewed two funding options for private drainage maintenance. The first option entailed a locality's use of general tax revenue to support private ditching and roadside ditches. The second option entailed a utility model which could sustain financing for long-term repair and maintenance. These findings were presented to the Commission in January 2015 for review and comment by the Commission and to facilitate report finding to locality elected representatives for knowledge transfer for local application. Lastly, Virginia's



98 District Representative, Delegate Keith Hodges requested a Virginia Attorney General's opinion on VDOT's responsibility over ditches running perpendicular to VDOT controlled right of way. There are two pending lawsuits over VDOT drainage responsibility within the MPPDC project area (*Theresa Adams v. Commissioner of Highways and Gloucester County* and *Mathews County, Commissioner of Highways v. Audrey R. Faulkner et al.*) The Attorney General's office has declined to issue an opinion over drainage responsibly until these two lawsuits are settled.

With the first three years of this strategy, MPPDC paved the way to receive additional support in the last two strategy years to explore the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority may be developed. These efforts have created a matrix of options for Middle Peninsula localities to consider depending on the type(s) of authority desired. Future policy guidance and action will most likely be delayed until the pending lawsuits are settled and clear legal guidance can be provided related to ownership and maintenance responsibility.

Special Area Management Plans:

The Virginia CZM Program has a long history of employing SAMPs as a forum for multiple parties to work together to resolve a variety of coastal management issues. During the last section 309 funding cycle CZM funded two additional years of a SAMP on Virginia's seaside.

Seaside SAMP (2006 – 2012)

Building on previous Seaside SAMP work from the 2006-2010 Section 309 cycle, the goal of the Seaside SAMP strategy for the 2011-2012 period was to develop a plan for the waters of the Seaside of Virginia's Eastern Shore that would reduce use conflicts (especially between clam farming, wild shellfish harvest and restoration of eelgrass – also known as Submerged aquatic vegetation or SAV), maximize sustainable uses and enhance both environmental and economic productivity in this dynamic barrier island lagoon system.

In FY11, a comprehensive recreational use assessment for the seaside was produced which used data gathered through a literature search and a participatory GIS workshop to identify and map 22 distinct recreational and cultural uses, and supplemental data from thirteen aerial survey flights of the seaside during peak use times resulting in over 2,000 photographs of 10 different recreational use types. Also in FY11, an SAV restoration goal was set and a management report (including maps of potential expansion areas) for the seaside was presented to the Virginia Marine Resources Commission (VMRC). This report took into account the recently mapped recreation uses. The report resulted in the Commission suggesting that additional SAV set-aside areas be identified by the SAMP partners.

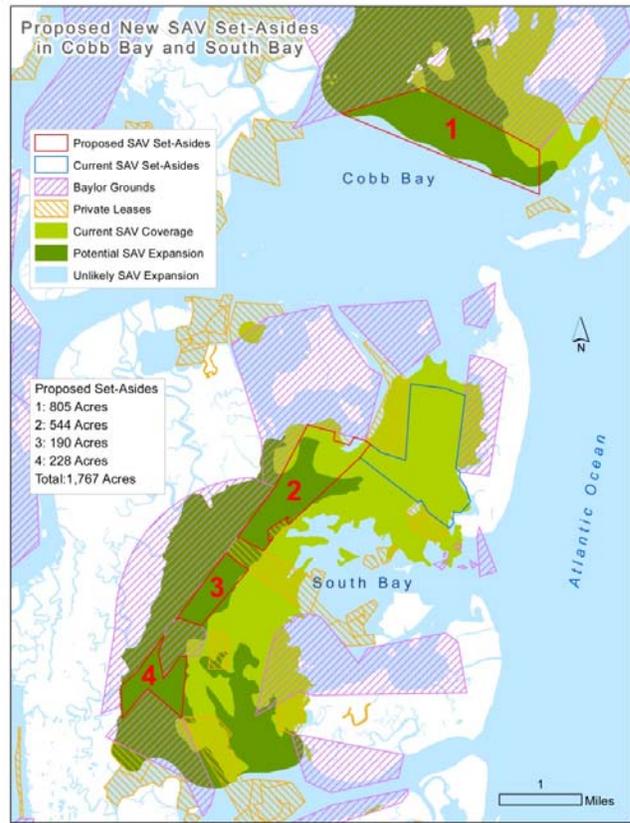
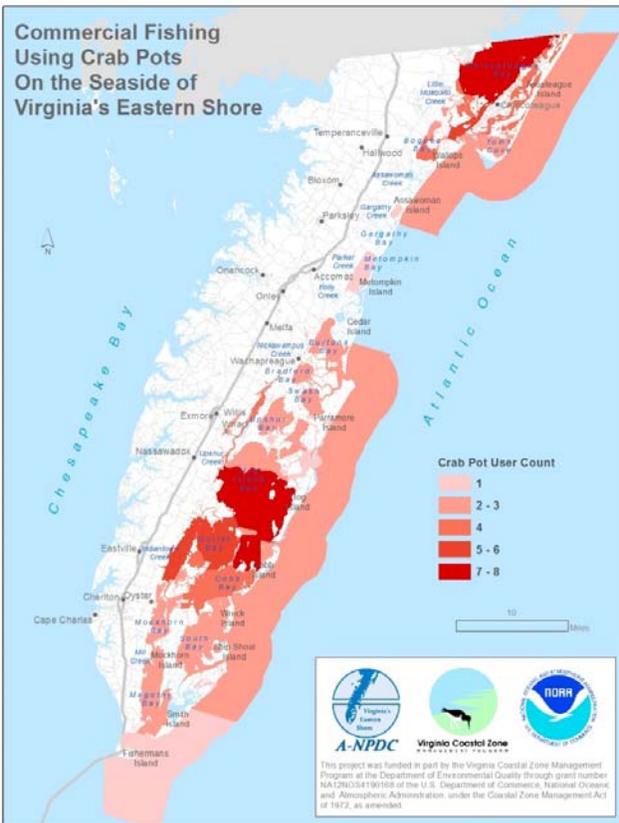
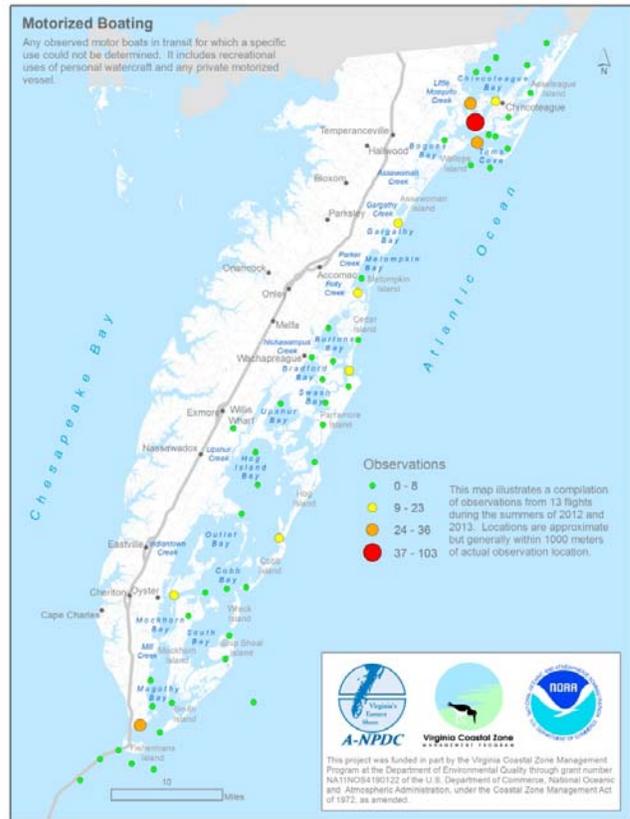
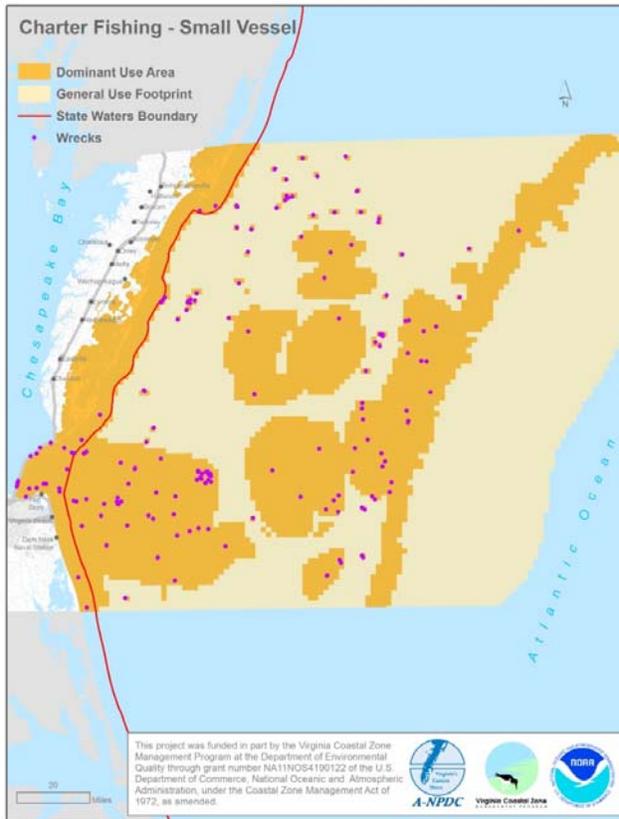
In FY12, a comprehensive commercial use assessment for the seaside was produced which used information from a literature search, and data gathered by engaging commercial fishermen through mailed surveys and participatory GIS, to map the coverage of various commercial fishing activities on the seaside and potential conflicts resulting from overlapping activities such as recreation and SAV restoration. Four new potential SAV aside areas were then identified.

The major accomplishments of the Seaside SAMP are twofold:

1. VMRC formally adopted two of the set-aside areas for SAV expansion. These areas are no longer available for leasing.
2. VMRC changed its procedures such that they now require an annual review of where SAV has, and has not, expanded so that areas where SAV restoration is not successful can be released for leasing or wild fisheries harvesting and additional needs for protected space for SAV expansion can be considered. This new annual review process has met the Seaside SAMP goal of creating a more dynamic management structure to match the dynamic nature of the seaside of Virginia's Eastern Shore.

Captions for maps on page 18 (clockwise starting from top left):

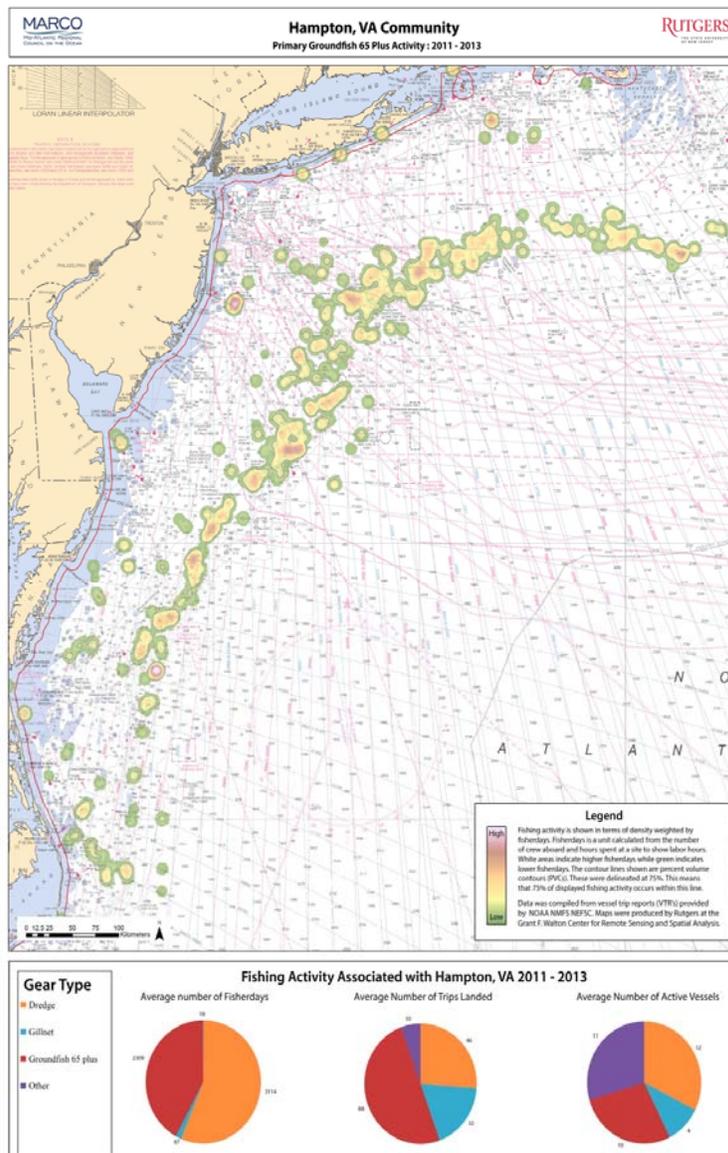
- Charter fishing from small vessels, 1 of 22 distinct recreational uses mapped by over 40 expert participants at a participatory GIS workshop on Virginia's Eastern Shore in FY11
- Motorized boating, 1 of 10 distinct recreational uses mapped by compiling and processing observations from 13 aerial survey flights of the seaside during the summers of 2012 and 2013
- Potential SAV set-asides submitted to VMRC in FY12, VMRC authorized the larger two areas (numbered 1 and 2 on this map) as new official set-asides
- Commercial fishing using crab pots, one of three gear types mapped by digitizing and compiling maps hand drawn by commercial fishermen active on the seaside of Virginia's Eastern Shore



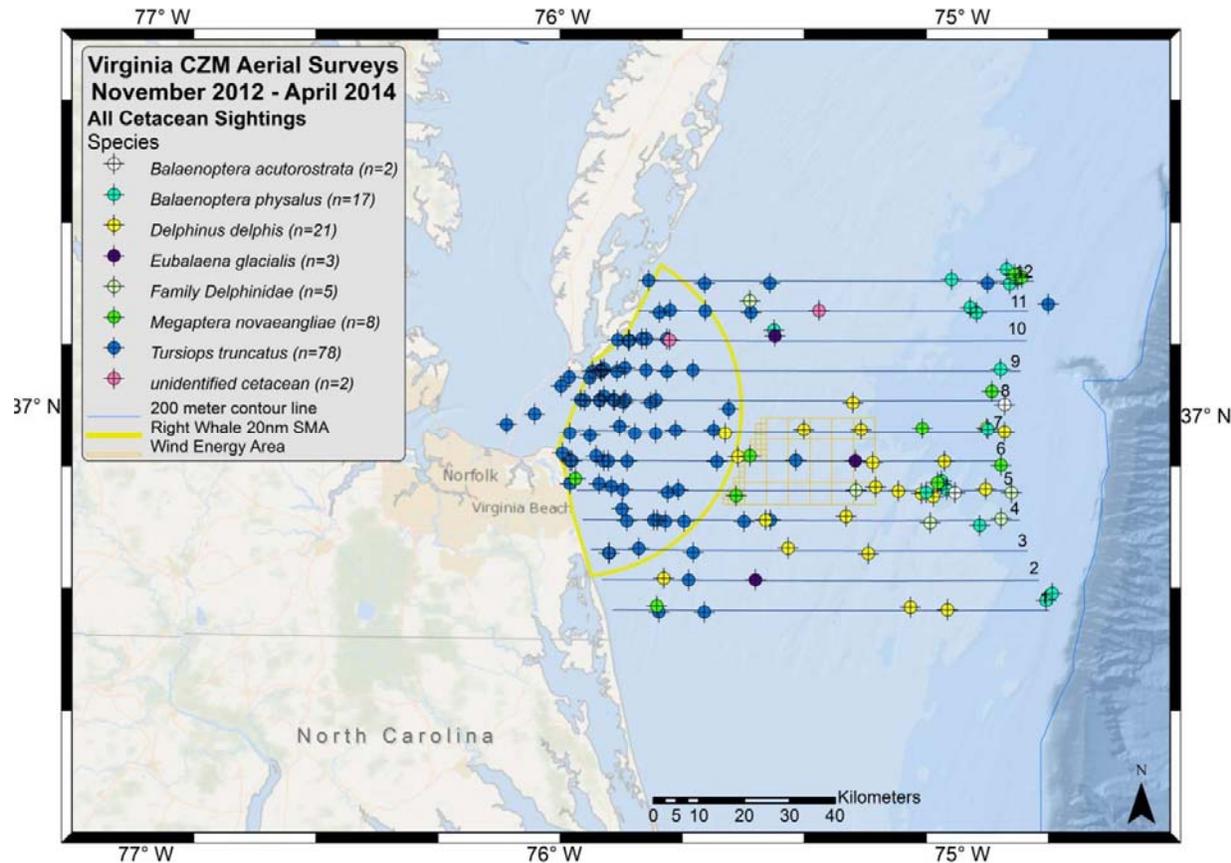
Ocean Resources

Since fall of 2011, major accomplishments in ocean planning with assistance of the VCU Stakeholder Engagement Coordinator and a Project of Special Merit undertaken by the VA Aquarium under Section 309 include:

- A major workshop in 2012 that brought together recreation specialists and professionals who work on the water to map the spatial extent of 22 different recreational uses. The VCU Coordinator focused on the Virginia Beach area. (See maps on page 18)
- Collection of aerial photography along Virginia’s Atlantic coast which verified the validity of the recreational use maps generated by the above workshop.
- Several meetings with Virginia shipping and port stakeholders to vet shipping data and
- identify future needs for the shipping industry
- Collection of and vetting of commercial fishing data and “communities at sea” maps that show fishing intensity by home port and gear type



- Collection of 3 years of aerial survey data for marine mammals



- Research on the potential impacts of electromagnetic fields on sturgeon behavior

Additional work by the CZM Manager funded under Section 306 resulted in:

- Development of a Framework for Mid-Atlantic Ocean planning
- Development of options for different types of ocean plans ranging from process oriented to geographically specific
- Development of data syntheses for both ecological resources and human uses of the Mid-Atlantic
- Development of 5 specific interjurisdictional coordination actions under the goal of “Healthy Ocean Ecosystems” and several more for securing the future of the Mid-Atlantic Ocean Data Portal

Since fall of 2011, major accomplishments in reducing marine debris were achieved with assistance from CZM staff funded through Section 306 and Section 309 grants to Longwood University’s Clean VA Waterways Director:

- A Marine Debris Summit held in February 2013 attended by over 75 professionals. Break-out groups generated ideas for marine debris actions that could be taken in the

- areas of Fishing Gear—Commercial and Recreational; Food and Beverage and Plastic Bags Containers; Butts, Balloons and Special Concern Items; Innovative Solutions
- Development of Marine Debris Reduction Plan – the first on the east coast.
 - Development of a social marketing campaign to reduce balloon releases which cause injury and mortality to a variety of marine life using a combination of CZM 306 and 309 funds as well as funding from the NOAA Marine Debris Program.
 - A NOAA Marine Debris Program grant to monitor marine debris in 4 locations on Virginia’s Atlantic coast using NOAA’s national protocols.

III. ASSESSMENT

Wetlands (Phase I only)

Phase I Assessment

Resource Characterization:

- Using provided reports from NOAA's Land Cover Atlas¹ indicate the extent, status, and trends of wetlands in the state's coastal counties. You can provide additional or alternative information or use graphs or other visuals to help illustrate or replace the table entirely if better data are available.

Coastal Wetlands Status and Trends		
Current state of wetlands in 2011 (acres)	1,078,355.7 (14.3% of state)	
Net change in total wetlands (in acres) *	from 1996-2011	from 2006-2011
	-15,510.5	1,295.9
Net change in freshwater (palustrine wetlands) (gained or lost)*	from 1996-2011	from 2006-2011
	-13,316.3	-59.4
Net change in saltwater (estuarine) wetlands (gained or lost)*	from 1996-2011	from 2006-2011
	-1,664.8	266.0
Net change in Unconsolidated Shore wetlands (% gained or lost)*	from 1996-2011	from 2006-2011
	-529.3	1,089.3

Coastal Wetlands Status and Trends		
Current state of wetlands in 2011 (acres)	1078355.7 (14.3% of state)	
Percent net change in total wetlands (% gained or lost)*	from 1996-2011	from 2006-2011
	-1.44%	-.027%
Percent net change in freshwater (palustrine wetlands) (% gained or lost)*	from 1996-2011	from 2006-2011
	-1.23%	-.006%
Percent net change in saltwater (estuarine) wetlands (% gained or lost)*	from 1996-2011	from 2006-2011
	-.154%	+.025%

¹ <http://www.csc.noaa.gov/ccapatlas/>. Summary reports compiling each state's coastal county data are provided on the ftp site.

How Wetlands Are Changing*		
Land Cover Type	Area of Wetlands Transformed to Another Type of Land Cover between 1996-2011 (Sq. Miles)	Area of Wetlands Transformed to Another Type of Land Cover between 2006-2011 (Sq. Miles)
Development	-13.7	-3.9
Agriculture	-8.7	+1.7
Barren Land	-2.1	+0.6
Water	-3.2	+1.1

- If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends of coastal wetlands since the last assessment to augment the national data sets.

Data: see data for the York River included in VIMS report below

Reports:

Strengthening Virginia’s Wetlands Management Programs, Virginia Institute of Marine Science (2011)

<http://ccrm.vims.edu/publications/pubs/YorkRiverProjectFinalReport.pdf>

Management Characterization:

- Indicate if there have been any significant changes at the state or territory level (positive or negative) that could impact the future protection, restoration, enhancement, or creation of coastal wetlands since the last assessment.

Management Category	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y
Wetlands programs (e.g., regulatory, mitigation, restoration, acquisition)	Y

- For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:

- Describe the significance of the changes;

Living Shoreline Legislation: See the description of new Living Shoreline legislation passed by the Virginia General Assembly in 2011 in the Coastal Hazards section. New Shoreline Data: The

Virginia CZM Program has funded additional shoreline inventories, shoreline evolution reports and shoreline management plans for Coastal localities. These provide critical data for shoreline models being developed in response to the 2011 living shoreline legislation. They also provide useful tools for local decision-makers prior to model development.

Climate Change Impacts on Wetlands: Significant tidal wetland losses are now anticipated in Virginia as a result of sea level rise. Assurance of wetland sustainability will require action to address both vertical and horizontal wetland shifts. The primary limitation for horizontal retreat of wetlands is shoreline management, specifically shoreline hardening preventing vertical migration. Virginia has begun to address the effect of shoreline hardening on wetland sustainability in the face of sea level rise, but further state change in the Virginia's shoreline decision process may be necessary.

Clean Water Rule: In 2015, the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency finalized the Clean Water Rule in an effort to protect streams and wetlands from degradation and pollution by more clearly defining protected waters (Waters of the U.S.). Because a combination of geology and state laws, Virginia does not anticipate that significant changes in the overall regulation of wetlands, streams, and ponds will be necessary as a result of this Rule. Virginia laws already regulate isolated wetlands and other waters – except for certain ditches. Virginia will continue to monitor and evaluate this rule change as interpretations evolve.

Limited Technical Advisories: Because of budget limitations, the Virginia Institute of Marine Science is no longer able to provide technical advice on all shoreline management projects submitted to local wetland boards. Although decision support tools have been developed to assist local wetland boards, the loss of site specific analysis and site visits by VIMS staff has, in some cases, led to less informed local decisions. With fewer project specific advisories and recommendations from VIMS it has been more difficult for local wetlands boards to require living shorelines, the alternative preferred in state legislation, over property owners wishes to have hardened shorelines. Although not documented, it is likely that this has resulted in lost opportunities to preserve, or even expand, tidal wetland resources. Virginia is taking steps to improve this situation, in part by providing additional funding for the Shoreline Erosion Advisory Service (SEAS) which provides on-site consultations with property owners prior to permit applications. Virginia also received an FY 15 Project of Special Merit grant award from NOAA to evaluate local wetland board decisions and make recommendations for improved tidal wetlands management.

Virginia Wetlands Catalog: The Department of Conservation and Recreation – Division of Natural Heritage developed an Inventory of wetlands and potential wetlands with prioritization summaries for conservation and restoration purposes. The catalog is an important tool for wetlands restoration efforts, especially in the face of rising sea-level and climate change.

- b. Specify if they were 309 or other CZM-driven changes;

Previous Section 309 Strategies to improve shoreline management and advance the concept of living shorelines have contributed to a broader understanding and acceptance of the concept and helped pave the way for the living shoreline legislation.

- c. Characterize the outcomes or likely future outcomes of the changes.

Climate change and sea-level rise will pose a significant challenge to Virginia’s efforts to manage wetland resources. Legislation and planning initiatives promoting the use of living shorelines should continue to help, but additional management programs and technical advice to local decision-makers are still needed. The Virginia Wetlands Catalog provides important information for the creation of new wetlands to replace those that are lost to sea-level rise, but additional effort and resources will be needed to expand restoration levels.

Enhancement Area Prioritization:

- 1. What level of priority is the enhancement area for the coastal management program?

High	_____
Medium	<u> X </u>
Low	_____

- 2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

A broad range of stakeholders from Virginia’s regulatory, academic, and advocacy sectors participated in the assessment process. Although wetlands loss is a significant coastal resource management issue for Virginia, losses are primarily to tidal wetlands and are often, at least in part, the result of sea level rise. As a result, stakeholders felt this issue would be better addressed as a coastal hazards priority rather than under the wetlands category.

Coastal Hazards (Phase I and II)

Phase I Assessment

Resource Characterization:

1. Flooding: Using data from NOAA's *State of the Coast* "Population in the Floodplain" viewer² and summarized by coastal county through NOAA's Coastal County Snapshots for Flood Exposure,³ indicate how many people were located within the state's coastal floodplain as of 2010 and how that has changed since 2000. You may use other information or graphs or other visuals to help illustrate.

Population in the Coastal Floodplain			
	2000	2010	Percent Change from 2000-2010
No. of people in coastal floodplain ⁴	450,000	485,135	7.8%
No. of people in coastal counties ⁵	4,173,003	4,680,674	12.2%
Percentage of people in coastal counties in coastal floodplain	10.8%	10.4%	-----

2. Shoreline Erosion: Using data from NOAA's *State of the Coast* "Coastal Vulnerability Index,"⁶ indicate the vulnerability of the state's shoreline to erosion. You may use other information or graphs or other visuals to help illustrate or replace the table entirely if better data is available.

Vulnerability to Shoreline Erosion		
Vulnerability Ranking	Miles of Shoreline Vulnerable ¹¹	Percent of Coastline ⁷
Very low (>2.0m/yr) accretion	0	0
Low	0	0

² <http://stateofthecoast.noaa.gov/pop100yr/welcome.html>. Note FEMA is in the process of updating the floodplain data. This viewer reflects floodplains as of 2010. If you know the floodplain for your state has been revised since 2010, you can either use data for your new boundary, if available, or include a short narrative acknowledging the floodplain has changed and generally characterizing how it has changed.

³ www.csc.noaa.gov/digitalcoast/tools/snapshots

⁴ To obtain exact population numbers for the coastal floodplain, download the Excel data file on the State of the Coast "Population in the Floodplain" viewer: <http://stateofthecoast.noaa.gov/pop100yr/welcome.html>. Summary population data for each coastal state is available on the ftp site.

⁵ To obtain population numbers for coastal counties, see spreadsheet of coastal population and critical facilities data provided or download directly from <http://www.csc.noaa.gov/digitalcoast/data/stics>. Summary population data for each coastal state is available on the ftp site.

⁶ <http://stateofthecoast.noaa.gov/vulnerability/welcome.html> (see specifically "Erosion Rate" drop-down on map). The State of the Coast visually displays the data from USGS's Coastal Vulnerability Index.

⁷ To obtain exact shoreline miles and percent of coastline, mouse over the colored bar for each level of risk or download the Excel data file.

(1.0-2.0 m/yr accretion)		
Moderate (-1.0 to 1.0 m/yr) stable	94	4%
High (-1.1 to -2.0 m/yr) erosion	422	21%
Very high (<-2.0 m/yr) erosion	1,418	73%

3. Sea Level Rise: Using data from NOAA’s *State of the Coast* “Coastal Vulnerability Index,”⁸ indicate the vulnerability of the state’s shoreline to sea level rise. You may provide other information or use graphs or other visuals to help illustrate or replace table entirely if better data is available.

Coastal Vulnerability to Historic Sea Level Rise		
Vulnerability Ranking	Miles of Shoreline Vulnerable ¹¹	Percent of Coastline
Very low	0	0
Low	0	0
Moderate	20	1%
High	684	35%
Very high	1229	63%

4. Other Coastal Hazards: In the table below, indicate the general level of risk in the coastal zone for each of the coastal hazards. The state’s multi-hazard mitigation plan is a good additional resource to support these responses.

Type of Hazard	General Level of Risk ⁹ (H, M, L)
Flooding (riverine, stormwater)	H
Coastal storms (including storm surge) ¹⁰	H
Geological hazards (e.g., tsunamis, earthquakes)	L
Shoreline erosion ¹¹	H

⁸ <http://stateofthecoast.noaa.gov/vulnerability/welcome.html> (see “Vulnerability Index Rating” drop-down on map). The State of the Coast visually displays the data from USGS’s Coastal Vulnerability Index.

⁹ Risk is defined as “the estimated impact that a hazard would have on people, services, facilities and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage.” *Understanding Your Risks: Identifying Hazards and Estimating Losses. FEMA 386-2. August 2001*

¹⁰ In addition to any state- or territory-specific information that may help respond to this question, the U.S. Global Change Research Program has an interactive website that provides key findings from the 2014 National Climate Assessment for each region of the country, including regions for the coasts and oceans, and various sectors. The report includes findings related to coastal storms and sea level rise that may be helpful in determining the general level of risk. See <http://nca2014.globalchange.gov/>.

Type of Hazard	General Level of Risk ⁹ (H, M, L)
Sea level rise ^{13,14,15}	H
Great Lake level change ¹⁴	NA
Land subsidence	M
Saltwater intrusion	M
Other (please specify)	

- If available, briefly list and summarize the results of any additional data or reports on the level of risk and vulnerability to coastal hazards within your state since the last assessment. The state’s multi-hazard mitigation plan or climate change risk assessment or plan may be a good resource to help respond to this question.

Commonwealth of Virginia Hazard Mitigation Plan: Virginia’s Hazard Mitigation Plan provides guidance for hazard mitigation activities within the Commonwealth and includes goals, and actions that will reduce or prevent injury from natural hazards to citizens, state facilities, and critical facilities. The Plan also includes information on local hazard mitigation plans.

<http://www.vaemergency.gov/em-community/recovery/haz-mit-plans>

Regional Vulnerability Assessments Conducted with Virginia CZM Program Assistance: Prior to the assessment period, the Virginia CZM Program worked with the Accomack-Northampton, Hampton Roads and Middle Peninsula Planning District Commissions and the Northern Virginia Regional Commission to identify potential impacts from sea level rise. During the Assessment period, projects have continued in the Accomack-Northampton and Hampton Roads Planning District Commissions. Hampton Roads PDC worked to further refine and communicate their previous analysis and to evaluate potential management measures. Accomack-Northampton PDC continued to support their local planning advisory group on this issue, and conducted an analysis of the potential impacts of sea level rise on their transportation infrastructure.

Management Characterization:

- Indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) have occurred that could impact the CMP’s ability to prevent or significantly reduce coastal hazards risk since the last assessment.

¹¹ See NOAA State of the Coastal Vulnerability to Sea Level Rise Tool (select “Erosion Rate” from drop-down box) <http://stateofthecoast.noaa.gov/vulnerability/welcome.html>. The State of the Coast visually displays the data from USGS’s Coastal Vulnerability Index.

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these that address:			
1) <i>elimination of development/redevelopment in high-hazard areas¹²</i>	N	N	N
2) <i>management of development/redevelopment in other hazard areas</i>	Y	Y	Y
3) <i>climate change impacts, including sea level rise or Great Lake level change</i>	Y	Y	Y
Hazards planning programs or initiatives that address:			
4) <i>hazard mitigation</i>	Y	Y	Y
5) <i>climate change impacts, including sea level rise or Great Lake level change</i>	Y	Y	Y
Hazards mapping or modeling programs or initiatives for:			
6) <i>sea level rise or Great Lake level change</i>	Y	Y	Y
7) <i>other hazards (storm surge and recurrent flooding in Virginia)</i>	Y	Y	Y

2. Briefly state how “high-hazard areas” are defined in your coastal zone.

While Virginia does not specifically define “high-hazard areas”, the Commonwealth has a number of laws that manage development on high risk coastal lands such as dunes, beaches and wetlands. Virginia also recognizes the risks associated with development in floodplains in state and local floodplain management programs. State-level floodplain management efforts are coordinated by the Department of Conservation and Recreation.

¹² Use state’s definition of high-hazard areas.

3. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:

a. Describe the significance of the changes.

Living Shoreline legislation: In 2011 Virginia passed legislation acknowledging living shorelines as a preferred solution to erosion in Virginia, and directed that management decisions should consider climate change impacts such as sea level rise. (Category 2, 3, 4, 5, 6, and 7)

Regional and Local Climate Adaptation Planning: Several coastal planning district commissions (PDCs), including the Accomack-Northampton PDC, the Middle Peninsula PDC, the Northern Virginia Regional Commission, and especially the Hampton Roads PDC have undertaken multi-year initiatives to map and assess the potential impacts of sea-level rise and severe storm surge, as well as provide technical assistance to localities to help advance local coastal resiliency efforts. A number of coastal localities have continued this work and are developing climate adaptation plans and ordinances. (Category 2, 3, 4, 5, 6, and 7)

VIMS Recurrent Flooding Report: In 2012 the General Assembly asked the Virginia Institute of Marine Science to prepare a report on potential strategies to prevent recurrent flooding in coastal Virginia. The report was presented at the 2013 session of the General Assembly. (Category 4, 5, 6, and 7)

Secure Commonwealth Panel: Recurrent Flooding Subpanel: A panel of representatives from state and federal agencies and institutions, members of the Virginia General Assembly, and local officials was created to review the issue of recurrent flooding associated with climate change. In its deliberations the subpanel considered the VIMS Report, and presented its own report and recommendation to the Secure Commonwealth Panel in September, 2014. (Category 4, 5, 6, and 7)

Joint Legislative Subcommittee to Address Recurrent Flooding: The 2014 Virginia General Assembly passed a resolution creating of a Joint Legislative Subcommittee on Recurrent Flooding. The Subcommittee began meeting in July, 2014 with a charge to “formulate recommendations for the development of a comprehensive and coordinated planning effort to address recurrent flooding”. (Category 4, 5, 6, and 7)

Governor’s Commission on Climate Change: Governor McAuliffe convened the Governor’s Climate Change and Resiliency Update Commission in 2014. The bipartisan Commission is made up of leaders from around the state including local elected officials, members of the General Assembly, business leaders, environmental advocates, faith leaders, and industry representatives. (Category 4, 5, 6, and 7)

Local Implementation of the National Flood Insurance Program – Community Rating System

(CRS): Increases in flood insurance rates caused by federal legislation have created new interest in the CRS program in Virginia. The CRS offers residents of participating localities discounts on flood insurance and the level of discount is based on how many flood management objectives the locality has achieved. These requirements address a number of coastal hazard issues, but participation requires significant commitments on the part of localities. Only 5% of Virginia localities that are eligible currently participate in the CRS system. (Category 2, 4, and 7)

Hampton Roads Comprehensive Plan Legislation: The 2015 Virginia General Assembly passed legislation (SB 1443) that requires the 17 localities of the Hampton Roads Planning District Commission to incorporate strategies to combat sea level rise and recurrent flooding into their next comprehensive plan updates. (Category 2, 3, 4, 5, 6, and 7)

b. Specify if they were 309 or other CZM-driven changes.

The Virginia CZM Program has had significant involvement in both regional adaptation planning efforts and in advancing the use of living shorelines.

c. Characterize the outcomes or likely future outcomes of the changes.

There has been a significant increase in state-level climate change adaptation initiatives that should ultimately result in improved coastal resilience. Regional adaptation planning efforts have helped advance local initiatives and encouraged localities to begin discussing adaptation alternatives. State living shoreline legislation has raised the profile of this shoreline management technique, but further efforts are needed for this strategy to meet its full potential.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High	<u> X </u>
Medium	<u> </u>
Low	<u> </u>

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

During the Virginia CZM Program’s Coastal Partners Workshop in December, 2014, participants from four different 309 topic breakout groups (Hazards, Wetlands, CSI, and SAMPs) identified coastal hazard issues as priorities for Virginia. A subsequent issue ranking exercise confirmed this consensus. Coastal hazard priority issues fell into two categories - actions to improve management of natural and nature-based shoreline resources, and actions to build community resiliency.

Phase II Assessment

Resource Characterization:

Purpose: To determine key problems and opportunities to improve the CMP’s ability to prevent or significantly reduce coastal hazard risks by eliminating development and redevelopment in high-hazard areas and managing the effects of potential sea level rise and Great Lakes level change.

1a. Flooding In-depth (for all states besides territories): Using data from NOAA’s *State of the Coast* “Population in the Floodplain” viewer¹³ and summarized by coastal county through NOAA’s Coastal County Snapshots for Flood Exposure,¹⁴ indicate how many people at potentially elevated risk were located within the state’s coastal floodplain as of 2010. These data only reflect two types of vulnerable populations. You can provide additional or alternative information or use graphs or other visuals to help illustrate or replace the table entirely if better data are available. *Note: National data are not available for territories. Territories can omit this question unless they have similar alternative data or include a brief qualitative narrative description as a substitute.*

2010 Populations in Coastal Counties at Potentially Elevated Risk to Coastal Flooding¹⁵				
	Under 5 and Over 65 years old		In Poverty	
	# of people	% Under 5/Over 65	# of people	% in Poverty
Inside Floodplain	87,662	18.1%	37,942	7.8%
Outside Floodplain	719,434	17.1%	333,882	8.0%

1b. Flooding In-depth (for all states besides territories): Using summary data provided for critical facilities, derived from FEMA’s HAZUS¹⁶ and displayed by coastal county through NOAA’s Coastal County Snapshots for Flood Exposure,¹⁷ indicate how many different establishments (businesses or employers) and critical facilities are located in the FEMA floodplain. You can provide more information or use graphs or other visuals to help illustrate or replace the table entirely if better information is available.

¹³ <http://stateofthecoast.noaa.gov/pop100yr/welcome.html>

¹⁴ <http://www.csc.noaa.gov/digitalcoast/tools/snapshots>

¹⁵ To obtain exact population numbers for the coastal floodplain, download the excel data file from the State of the Coast’s “Population in Floodplain” viewer.

¹⁶ <http://www.fema.gov/hazus>; can also download data from NOAA STICS <http://www.csc.noaa.gov/digitalcoast/data/stics>. Summary data on critical facilities for each coastal state is available on the ftp site.

¹⁷ <http://www.csc.noaa.gov/digitalcoast/tools/snapshots>

Critical Facilities in the FEMA Floodplain ⁴⁴						
	Schools	Police Stations	Fire Stations	Emergency Centers	Medical Facilities	Communication Towers
Inside Floodplain	1920	400	560	NULL	40	520
Coastal Counties	48	10	14	NULL	1	13

2. Based on the characterization of coastal hazard risk, what are the three most significant coastal hazards¹⁸ within the coastal zone? Also indicate the geographic scope of the hazard, i.e., is it prevalent throughout the coastal zone or are specific areas most at risk?

	Type of Hazard	Geographic Scope (throughout coastal zone or specific areas most threatened)
Hazard 1	Coastal Storms	Coastal Zone-wide, but especially HRPDC, A-NPDC, MPPDC, NNPDC
Hazard 2	Shoreline Erosion	Coastal Zone-wide, but especially HRPDC, A-NPDC, MPPDC, NNPDC
Hazard 3	Sea Level Rise	Coastal Zone-wide, but especially HRPDC, A-NPDC, MPPDC, NNPDC

3. Briefly explain why these are currently the most significant coastal hazards within the coastal zone. Cite stakeholder input and/or existing reports or studies to support this assessment.

Coastal storms are ranked as the most significant coastal hazard because of the potential for widespread damage to the natural and built environments and the potential loss of human life. However, all three hazards are related and thus difficult to prioritize. Sea level rise is causing greater impacts from storm surge. The combined effects of coastal storms and sea level rise also appear to be accelerating shoreline erosion problems, including the loss of wetlands. A study conducted by the Virginia Institute of Marine Science on the York River showed a net loss of almost nine percent (1,794 acres) of its tidal marshes in slightly more than thirty years. Almost thirty percent of fringe marshes in the study area, which have high habitat, water quality protection, and natural buffer values, were lost during this timeframe. These narrow bands of wetlands along the shoreline are especially vulnerable because of the combination of sea level rise and structurally hardened shorelines that block their upland migration. All areas of Virginia’s Coastal Zone are affected by these hazards; however, the four planning districts located along the eastern half of the zone are more threatened than the more western districts. This is because eastern areas have more flood-prone lands and more extensive shorelines and wetlands.

¹⁸ See list of coastal hazards at the beginning of this assessment template.

Are there emerging issues of concern, but which lack sufficient information to evaluate the level of the potential threat? If so, please list. Include additional lines if needed.

Emerging Issue	Information Needed
Potential impacts of climate change on coastal habitats	Research on potential impacts, along with spatial analysis of areas of predicted habitat migration and change

In-Depth Management Characterization:

Purpose: To determine the effectiveness of management efforts to address identified problems related to the coastal hazards enhancement objective.

1. For each coastal hazard management category below, indicate if the approach is employed by the state or territory and if there has been a significant change since the last assessment.

Management Category	Employed by State/Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Change Since the Last Assessment (Y or N)
Statutes, Regulations, and Policies:			
<i>Shorefront setbacks/no build areas</i>	Y	N	N
<i>Rolling easements</i>	N	N	N
<i>Repair/rebuilding restrictions</i>	Y	N	N
<i>Hard shoreline protection structure restrictions</i>	N	N	N
<i>Promotion of alternative shoreline stabilization methodologies (i.e., living shorelines/green infrastructure)</i>	Y	Y	Y
<i>Repair/replacement of shore protection structure restrictions</i>	Y	N	N
<i>Inlet management</i>	Y	Y	Y
<i>Protection of important natural resources for hazard mitigation benefits (e.g., dunes, wetlands, barrier islands, coral reefs) (other than setbacks/no build areas)</i>	Y	Y	N
<i>Repetitive flood loss policies (e.g., relocation, buyouts)</i>	Y	N	N
<i>Freeboard requirements</i>	N	N	N
<i>Real estate sales disclosure requirements</i>	Y	N	Y
<i>Restrictions on publicly funded infrastructure</i>	N	N	N
<i>Infrastructure protection (e.g., considering</i>	Y	N	N

<i>hazards in siting and design)</i>			
<i>Other (please specify)</i>			
Management Planning Programs or Initiatives:			
<i>Hazard mitigation plans</i>	Y	N	Y
<i>Sea level rise/Great Lake level change or climate change adaptation plans</i>	Y	Y	Y
<i>Statewide requirement for local post-disaster recovery planning</i>	Y	N	N
<i>Sediment management plans</i>	N	N	N
<i>Beach nourishment plans</i>	N	N	N
<i>Special Area Management Plans (that address hazards issues)</i>	N	N	N
<i>Managed retreat plans</i>	N	N	N
<i>Other (please specify)</i>			
Research, Mapping, and Education Programs or Initiatives:			
<i>General hazards mapping or modeling</i>	Y	Y	Y
<i>Sea level rise mapping or modeling</i>	Y	Y	Y
<i>Hazards monitoring (e.g., erosion rate, shoreline change, high-water marks)</i>	Y	Y	Y
<i>Hazards education and outreach</i>	Y	Y	Y
<i>Other (please specify)</i>			

- Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state’s management efforts in addressing coastal hazards since the last assessment. If none, is there any information that you are lacking to assess the effectiveness of the state’s management efforts?

The four reports below provide an overview of analysis conducted by the Virginia Institute of Marine Science into coastal hazard issues since the last assessment. The first two relate to wetlands/shoreline management issues, while the next two cover issues related to coastal flooding and climate adaptation/sea level rise.

Strengthening Virginia’s Wetlands Management Programs (2011)

<http://ccrm.vims.edu/publications/pubs/YorkRiverProjectFinalReport.pdf>

Regulatory Fidelity to Guidance in Virginia’s Tidal Wetlands Program (2012)

http://ccrm.vims.edu/publications/pubs/Permit_Fidelity_2012.pdf

Recurrent Flooding Study for Tidewater Virginia (2013)

http://ccrm.vims.edu/recurrent_flooding/Recurrent_Flooding_Study_web.pdf

Virginia Accomplishments since the 2008 Climate Action Plan Release (2014)

http://ccrm.vims.edu/Report_FINAL_ExeSum.pdf

A Virginia CZM Program funded study of Chincoteague Inlet Management was completed in October of 2015. The study, conducted by VIMS and A-NPDC, is entitled “Inter-jurisdictional Coordination for Alternatives Assessment for the Northern Seaside of Virginia’s Eastern Shore, Accomack County” and includes input from the various stakeholders in the area as to future needs for management of Chincoteague Inlet.

Identification of Priorities:

1. Considering changes in coastal hazard risk and coastal hazard management since the last assessment and stakeholder input, identify and briefly describe the top one to three management priorities where there is the greatest opportunity for the CMP to improve its ability to address more effectively the most significant hazard risks. (*Approximately 1-3 sentences per management priority.*)

Management Priority 1: Promote resiliency of natural and nature-based shoreline features
Description: Studies have shown that Virginia is losing important shoreline features as a result of sea-level rise and waterfront development. Improving shoreline management programs, both to protect existing resources and to identify opportunities to restore shoreline resources to help offset climate-related losses, is a priority for Virginia’s CZM efforts.

Management Priority 2: Promote resiliency in coastal communities
Description: Coastal storms and recurrent flooding are significant problems in coastal Virginia, and are likely to get worse in the future as a result of climate change. A number of opportunities exist for improving community resiliency and planning for this change. Coastal resiliency planning priorities for Virginia include local comprehensive plans, local hazard mitigation plans, and local participation in the Community Rating System of the National Flood Insurance Program.

2. Identify and briefly explain priority needs and information gaps the CMP has for addressing the management priorities identified above. The needs and gaps identified here should not be limited to those items that will be addressed through a Section 309 strategy but should include any items that will be part of a strategy.

Priority Needs	Need? (Y or N)	Brief Explanation of Need/Gap
Research	Y	Cost-benefit analysis for CRS participation and for regional CRS coordinators
Mapping/GIS/modeling	Y	Wetland & shoreline mapping, location of existing living shoreline projects and restored wetlands
Data and information management	Y	First floor elevations for buildings in flood hazard areas

Training/Capacity building	Y	Living shoreline, climate adaptation and CRS training
Decision-support tools	Y	Shoreline management recommendations, prioritized opportunities for shoreline feature restoration
Communication and outreach	Y	Citizen outreach regarding shoreline management options and recommendations for building community resiliency
Plans and Policies	Y	New local plans that better address coastal hazards and stronger state policies on shoreline management

Enhancement Area Strategy Development:

1. Will the CMP develop one or more strategies for this enhancement area?

Yes X
 No

2. Briefly explain why a strategy will or will not be developed for this enhancement area.

During the 309 Assessment process stakeholders were in agreement that issues associated with coastal hazards were a significant issue for Virginia’s Coastal Zone and that developing strategies to address these issues should be a priority. Stakeholders further agreed that promoting resiliency in coastal communities and in natural and nature-based shoreline features should be the areas of concentration.

Public Access (Phase I only)

Phase I Assessment

Resource Characterization:

1. Use the table below to provide data on public access availability within the coastal zone.

Public Access Status and Trends			
Type of Access	Current number ¹⁹	Changes or Trends Since Last Assessment ^{1F20} (↑, ↓, -, unknown)	Cite data source
Beach access sites	49	No change	VACZM 2011-2015 Assessment & Strategy
Shoreline (other than beach) access sites	388 sites		
Sites per miles of shoreline	1 Public Access Site /8.5 miles of shoreline	Increase	http://www.beachapedia.org/State_of_the_Beach/State_Reports/VA/Beach_Access
Recreational boat (power or non-motorized) access sites	254 sites	No change	VACZM 2011-2015 Assessment & Strategy
Number of designated scenic vistas or overlook points	74 on coastal phase of VA Birding and Wildlife Trail	No change	VACZM 2011-2015 Assessment & Strategy
Number of fishing access points (i.e. piers, jetties)	155	Increase	http://www.beachapedia.org/State_of_the_Beach/State_Reports/VA/Beach_Access
Coastal trails/boardwalks	79	Increase	http://www.beachapedia.org/State_of_the_Beach/State_Reports/VA/Beach_Access

¹⁹ Be as specific as possible. For example, if you have data on many access sites but know it is not an exhaustive list, note “more than” before the number. If information is unknown, note that and use the narrative section below to provide a brief qualitative description based on the best information available.

²⁰ If you know specific numbers, please provide. However, if specific numbers are unknown but you know that the general trend was increasing or decreasing or relatively stable or unchanged since the last assessment, note that with a (increased)(decreased)(unchanged). If the trend is completely unknown, simply put “unkwn.”

Public Access Status and Trends			
Type of Access	Current number	Changes or Trends Since Last Assessment	Cite data Source
Miles of Trails/ Boardwalks	No Data Available	No Data Available	
Number of acres parkland/ open space	80,000 acres	Increase	http://www.beachapedia.org/State_of_the_Beach/State_Reports/VA/Beach_Access
Other (please specify) Public Access Sites in Chesapeake Bay Watershed in VA	312	Increase	http://www.chesapeakebay.net/indicators/indicator/public_access

2. Briefly characterize the demand for coastal public access and the process for periodically assessing demand. Include a statement on the projected population increase for your coastal counties.^{2F21} There are several additional sources of statewide information that may help inform this response, such as the Statewide Comprehensive Outdoor Recreation Plan,^{3F22} the National Survey on Fishing, Hunting, and Wildlife Associated Recreation,^{4F23} and your state’s tourism office.

The population within Virginia’s coastal shoreline counties is projected to increase by 18% between 2010 and 2020.

In the 2011 Virginia Outdoors Survey, 55.6% of respondents considered it very important to have access to outdoor recreation opportunities. 36.1% of respondents considered it important to have access to outdoor recreation opportunities. 8.2% of respondents considered it not important to have access to outdoor recreation opportunities.

²¹ See NOAA’s Coastal Population Report: 1970-2020 (Table 5, pg. 9): <http://stateofthecoast.noaa.gov/coastal-population-report.pdf>

²² Most states routinely develop “Statewide Comprehensive Outdoor Recreation Plans”, or SCROPs, that include an assessment of demand for public recreational opportunities. Although not focused on coastal public access, SCROPs could be useful to get some sense of public outdoor recreation preferences and demand. Download state SCROPs at www.recpro.org/scorps.

²³ The National Survey on Fishing, Hunting, and Wildlife Associated Recreation produces state-specific reports on fishing, hunting, and wildlife associated recreational use for each state. While not focused on coastal areas, the reports do include information on saltwater and Great Lakes fishing, and some coastal wildlife viewing that may be informative and compares 2011 data to 2006 and 2001 information to understand how usage has changed. See www.census.gov/prod/www/fishing.html.

The 2011 Virginia Outdoors Survey process of surveying respondents was broken into four different survey groups:

- 1) Treatment Group 1 – Mail-Only Protocol. Advance letter, First survey packet, reminder postcard, and second survey packet to non-responders. 6,075 households.
- 2) Treatment Group 2 – Mail with Web Option later. Advance letter, first survey packet, reminder postcard, and second survey packet with web option to non-responders. 2,603 households.
- 3) Treatment Group 3 – Web with Mail Option later. Advance letter with link to the web, reminder postcard, and mailed survey packet to non-responders. 2,601 households.
- 4) Treatment Group 4 – Mail and Web Equal Choice option. Advance letter with link to the web, first survey packet with link to the web, reminder postcard, and second survey packet to non-responders. 2,601 households.

3. If available, briefly list and summarize the results of any additional data or reports on the status or trends for coastal public access since the last assessment.

No additional data or reports available

Management Characterization:

1. Indicate if the approach is employed by the state or territory and if there have been any significant state- or territory-level management changes (positive or negative) that could impact the future provision of public access to coastal areas of recreational, historical, aesthetic, ecological, or cultural value.

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y	Y	Y
Operation/maintenance of existing facilities	Y	Y	N
Acquisition/enhancement programs	Y	Y	N

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:

- a. Describe the significance of the changes;

Virginia Outdoors Plan

An updated fully electronic version of the Virginia Outdoors Plan (VOP) has been published since the last assessment (not a CZM-driven change). According to the Code of Virginia section §10.1-207, The Department of Conservation and Recreation (DCR) is responsible for developing a long-range comprehensive outdoor plan for the Commonwealth. The VOP constitutes the official state comprehensive outdoor recreation plan, or SCORP, for Virginia. This plan is a “living” document and provides up-to-date interactive mapping, guidance on the latest trends and options in outdoor recreation and land conservation techniques and strategies.

b. Specify if they were 309 or other CZM-driven changes;
Not a CZM-driven change

c. Characterize the outcomes or likely future outcomes of the changes.
The new VOP will facilitate and improve recreation planning in the Commonwealth, thereby identifying opportunities for additional public access sites and enhancement of existing public access areas and facilities.

3. Indicate if your state has a publically available public access guide. How current is the publication and how frequently it is updated? (See table below)

Public Access Guide	Printed	Online	Mobile App
State or territory has? (Y or N)	N	Y	N
Web address (if applicable)		http://www.dcr.virginia.gov/recreational_planning/vop.shtml http://www.dgif.virginia.gov/boating/access/ http://www.coastalgems.org/	N/A
Date of last update		2013	N/A
Frequency of update		Virginia Outdoors Plan - Every 5 years DGIF Boating Access and Coastal GEMS – Updated as new information is obtained	N/A

Some of the impediments to providing new public access sites:

- Development pressures: First, waterfront property is in high demand and can be a financially profitable alternative for localities to creating emotionally and environmentally profitable public access sites. Waterfront property in some parts of the coastal zone has appreciated an average of 400% over six years. Related to this, private landowners who have allowed public access to watermen for generations now often cannot afford to pay the property taxes associated with the rapid appreciation and may be forced to sell their

property. New owners without this historic relationship with the watermen can block water access through their property.

- A recent trend along the coast has been the “privatization of the shoreline.” For example, marinas for public boat access are being redeveloped into condominium complexes with private boat access.
- Potential use conflicts between providing access and protecting sensitive resources: For example, boat wakes are significant cause of erosion in smaller tidal creeks.
- While often supporting creation of public space for larger tracts of preserved open space and greenways, the public, especially private landowners, frequently oppose potential public access sites near their property for fear of litter, vandalism, and crime, even though such public access may require as little as one-quarter acre. The importance of trash as an issue should not be underestimated. This fear is often misplaced as experience has indicated that users of public trails and other public open space often are willing help to maintain the site.
- Political pressures are also often an impediment to creating new public access sites. The limited resources at the local level are often used for projects other than public access improvement. Without vocal support from the public, localities are hesitant to spend scarce resources on public access.

Source:

http://www.beachapedia.org/State_of_the_Beach/State_Reports/VA/Beach_Access

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High	_____
Medium	<u> x </u>
Low	_____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

The Virginia Coastal Zone Management Program (CZM) held a workshop in December 2014 in which CZM state and local partners in participation (see also description of stakeholder engagement process) were asked to rank the separate 309 enhancement areas as low, medium or high priority; with high priority areas to be assigned a Section 309 Strategy. Public Access was ranked as a medium priority by the CZM partners, and therefore no strategy was assigned to this enhancement area. Appropriate policies supporting public access already exist within the Commonwealth so the medium ranking is consistent with the pursuit of projects using other CZMA funds (e.g. 306-A) to bolster public access in the coastal zone.

Marine Debris (Phase I only)

Phase I Assessment

Resource Characterization:

1. In the table below, characterize the existing status and trends of marine debris in the state's coastal zone based on the best available data.

Source of Marine Debris	Existing Status and Trends of Marine Debris in Coastal Zone		
	Significance of Source (H, M, L, unknown)	Type of Impact ²⁴ (aesthetic, resource damage, user conflicts, other)	Change Since Last Assessment (?????????unknown)
<i>Land-based</i>			
Beach/shore litter	H	Aesthetic, economic, human health/safety, wildlife/habitat, resource damage	—
Dumping	M	Aesthetic, economic, human health/safety, wildlife/habitat, resource damage, user conflict	—
Storm drains and runoff	H	Aesthetic, economic, human health/safety, wildlife/habitat, resource damage	—
Fishing (e.g., fishing line, gear)	L to M	Aesthetic, economic, human health/safety, wildlife/habitat, resource damage	—
Other (balloons litter)	M	Aesthetic, wildlife/habitat, resource damage	(Was not on previous assessment)
<i>Ocean-based</i>			
Fishing (e.g., derelict fishing gear)	H	wildlife/habitat, resource damage, boating safety	?
Derelict vessels	M	Aesthetic, boating safety, resource damage, user conflict	—
Vessel-based (e.g., cruise ship, cargo ship, general vessel)	Unknown	Aesthetic, wildlife/habitat, resource damage	— (Was "M" on previous assessment)
Hurricane/Storm	M to H	Aesthetic, economic, human health/safety, wildlife/habitat, resource damage	—
Tsunami	Unknown	Aesthetic, economic, human health/safety, wildlife/habitat, resource damage	(Was not on previous assessment)
Other (please specify)			

2. If available, briefly list and summarize the results of any additional state-specific data or reports on the status and trends or potential impacts from marine debris in the coastal zone since the last assessment.

²⁴ You can select more than one, if applicable.

Appendix A of the *Virginia Marine Debris Reduction Plan* (described below) provides a list of marine debris research and reduction activities currently underway in Virginia, including programs hosted or coordinated by state and local government agencies, nonprofit organizations, community groups, and academic institutions. Below are summaries of some of the key programs.

A. Virginia Marine Debris Reduction Plan

The *Virginia Marine Debris Reduction Plan* (published in October 2014) summarizes the results of a collaborative project that engaged stakeholders in determining the sources, impacts, and Virginia-specific action steps to decrease this form of water pollution. In order to strategically address this problem through Virginia policies and programs, the Virginia Coastal Zone Management (CZM) Program undertook a planning process from 2012 to 2014 that culminated in the development of the Virginia Marine Debris Reduction Plan (VMDRP).

The VMDRP describes major goals and strategies to address marine debris on a statewide basis through prevention, interception, innovation, and removal for ecological, social, and economic benefits. It is designed to guide the work of a collaborative team of Virginia agencies, community groups, citizens, and other stakeholders for the next decade. The VMDRP was developed by a leadership team consisting of stakeholders who are potential implementers of the reduction plan.

Throughout the process, the focus was on determining specific actions that are politically, socially, and economically feasible for Virginia to accomplish in the near-term (two years), mid-term (two to five years), and long-term (up to 10 years). The planning process sought input from participants who attended the 2013 Virginia Marine Debris Summit, surveys and one-on-one interviews, and through multiple meetings of the leadership team.

The plan was developed around **five main goals**: leadership, prevention, interception, innovation, and removal and clean up.

Strategies for achieving each of these goals were organized around **five themes**: (1) influencing individual behavior change; (2) increasing collaboration among Virginia litter and marine debris prevention and removal projects; (3) increasing the marine debris knowledge base; (4) identifying and securing necessary funding for implementation; and (5) utilizing regulations to reduce the sources of marine debris.

The Virginia Marine Debris Reduction Plan identifies near-term actions and specific steps for 2015 - 2016:

- 1. On-going Leadership and Coordination.** Establish an on-going Virginia marine debris advisory committee.
- 2. Balloon Reduction Campaign.** Develop and implement a social marketing campaign targeting behaviors that will reduce balloon litter in the marine environment. (Balloons were identified as one of the most harmful items to wildlife.)

3. Legislation and Policy. Analyze existing legislation and policies and provide recommendations to support land-based waste minimization of the most common items found as marine debris (e.g., single-use plastic bags, food and beverage packaging, balloons, cigarette butts).

4. Revenue. Identify existing and potential revenue streams to sustain statewide marine debris and litter prevention.

Goals beyond the near-term are described in general terms in the Virginia Marine Debris Reduction Plan, and will require further work to develop specific steps.

B. Monitoring Marine Debris in Virginia’s Coastal Zone

Researchers from the Virginia Aquarium & Marine Science Center and Clean Virginia Waterways are currently collecting data on the quantities and types of marine debris found in Virginia’s coastal zone using NOAA’s Marine Debris Shoreline Survey protocol.

Two different surveys (accumulation and standing stock) are conducted on a monthly basis at four coastal sites (Chincoteague National Wildlife Refuge, Fisherman Island National Wildlife Refuge, Back Bay National Wildlife Refuge, and Grandview Nature Preserve in Hampton). Funding to support this work comes from NOAA through a Virginia CZM Program grant that actually derived from NOAA Marine Debris Program funding as a result of our Marine Debris Summit in 2013.

C. International Coastal Cleanup in Virginia - Virginia Waterways Cleanup

The Virginia Waterways Cleanup is part of the Ocean Conservancy’s International Coastal Cleanup (ICC). Clean Virginia Waterways (CVW) of Longwood University organizes this annual statewide cleanup event of streams, rivers, bays, and coastal waters throughout Virginia. More than 84,500 volunteers removed more than 3.5 million pounds of litter and debris from Virginia’s waterways between 1995 and 2014.

Volunteers act as citizen scientists by using data forms to tally the number of cigarette butts, beverage containers, food-related wrappers, balloons, plastic bags, and other common marine debris items – information that CVW has used to build a comprehensive database of litter and marine debris found in Virginia’s waterways. The table below shows the trend of trash items over 20 years of waterway cleanups in Virginia. Many of these “Top 20” items were mentioned as items of concern in Virginia during the stakeholder survey and interviews conducted during the development of the VMDRP.

International Coastal Cleanup Data for Virginia, 1995-2014; Top 20 items over 20 years
Source: Clean Virginia Waterways & Ocean Conservancy

	1995-1999	2000-2004	2005-2009	2010-2014
1	Cigarettes/Cigarette Filters	Beverage Bottles (Plastic) 2 liters or less	Cigarettes/Cigarette Filters	Cigarettes/Cigarette Filters
2	Bags	Cigarettes/Cigarette Filters	Beverage Bottles (Plastic) 2 liters or less	Food Wrappers/Containers
3	Cups, Plates, Forks, Knives, Spoons	Beverage Bottles (Glass)	Food Wrappers/Containers	Beverage Bottles (Plastic) 2 liters or less
4	Food Wrappers/Containers	Food Wrappers/Containers	Bags	Bags
5	Beverage Cans	Beverage Cans	Beverage Cans	Beverage Cans
6	Caps, Lids	Bags	Beverage Bottles (Glass)	Cups, Plates, Forks, Knives, Spoons
7	Beverage Bottles (Glass)	Cups, Plates, Forks, Knives, Spoons	Cups, Plates, Forks, Knives, Spoons	Caps, Lids
8	Beverage Bottles (Plastic) 2 liters or less	Caps, Lids	Caps, Lids	Beverage Bottles (Glass)
9	Straws, Stirrers	Straws, Stirrers	Straws, Stirrers	Straws, Stirrers
10	Building Materials	Balloons	Building Materials	Tires
11	Balloons	Building Materials	Clothing, Shoes	Building Materials
12	Rope	Clothing, Shoes	Tobacco Packaging/Wrappers	Tobacco Packaging/Wrappers
13	Clothing, Shoes	Tobacco Packaging/Wrappers	Balloons	Cigar Tips
14	Fishing Line	Toys	Fishing Line	Toys*
15	Oil/Lube Bottles	Fishing Line	Bait Containers/Packaging	Fishing Line **
16	Tires	Bait Containers/Packaging	Cigar Tips	Clothing, Shoes *
17	Toys	Rope	Toys	Balloons
18	Buoys/Floats	Cigarette Lighters	Tires	Strapping Bands
19	Cigarette Lighters	Oil/Lube Bottles	Rope	Rope
20	Six-Pack Holders	Pull Tabs	Pull Tabs	Bait Containers/Packaging *

* Due to a change in the Data Form starting in 2013, data for these items were not collected in 2013 & 2014. In spite of this, toys, clothing/shoes, and bait containers/packaging, still made the top 20 list for this five-year time period.

** Due to a change in the Data Form starting in 2013, the methodology for collecting fishing line data changed. Starting in 2013, one meter of fishing line is equivalent to "one piece." This change has greatly increased the number of pieces of fishing line reported by volunteers.

Blue indicates food and beverage-related items

Orange indicates fishing-related items

Green indicates smoking-related items

Items in bold indicate that these items have appeared on the "Top 20" list in each of these time periods.

Severe storm events can cause a massive influx of debris into Virginia's waterways, wetlands, and coastal areas. In such storm events, building materials and household items generate a high volume of debris.

D. Virginia Balloon Litter Study

Since 2012, Clean Virginia Waterways and the Virginia Aquarium & Marine Science Center have been conducting the Virginia Balloon Litter Study to better understand the sources, accumulation, and impacts of littered balloons. People who find a littered balloon anywhere in Virginia or in its coastal waters are asked to provide information via a website survey²⁵.

²⁵ See <http://www.virginiaballoonstudy.org/>

The study provides information to better understand the following issues:

- The fate of helium-filled balloons (do they shatter into tiny pieces or deflate and return to earth?).
- Percentage of found balloons with attachments (e.g., ribbons, plastic valves, etc.).
- Types and materials of attachments.
- The percentage of latex vs. metalized nylon (also known as foil or "Mylar") balloons.
- Origins of balloon releases based on messages printed on them (e.g., graduation, Valentine's Day, or birthday messages).
- Where balloon litter is found (are balloons likely to be found in one type of environment rather than another?)

This study – the first of its kind – helped inform the CZM Program's grant proposal to the NOAA Marine Debris Program's Education and Outreach Grant. The grant project, entitled "Reducing Balloon Release and Debris through a Social Marketing Campaign" is described below.

E. Reducing Balloon Release and Debris through a Social Marketing Campaign

This project will research, develop and implement a social marketing approach to reduce a deadly and common source of marine debris: balloons and their attachments. Balloons and their attachments (often made of non-biodegradable plastics) can end up in streams and rivers and ultimately the ocean where endangered marine animals can ingest them or become entangled in them, causing great injury and even death. Through formative research—interviews, focus groups and surveys—CZM project staff and its partners (Clean Virginia Waterways and the Virginia Aquarium) will determine the underlying drivers of the celebratory or bereavement behavior and the barriers to a different way of expressing these emotions at important events. Project staff will then design and test a social marketing strategy to "sell" alternatives to balloon releases. Social marketing is a process that applies marketing principles and techniques to create, communicate, and deliver value in order to influence target audience behaviors that benefit society. This multi-year project is supported by an Education and Outreach grant from NOAA's Marine Debris Program, and the Virginia CZM Program's Section 309 Ocean Resources Strategy.

F. Virginia Marine Debris Location and Removal Program: Crab pots in the Chesapeake Bay and Virginia coastal waters

In Virginia's coastal waters and the Chesapeake Bay, approximately 20 percent of the crab pots deployed annually is lost due to breaks in buoy lines, breaks resulting from wear, or from being severed by vessel propellers. Many other crab pots are purposely discarded (abandoned), vandalized, or are lost due to storms. These lost and abandoned crab pots are capable of capturing and killing fish, crabs, and other organisms that are economically important.

In response to this problem, the Virginia Institute of Marine Science, in partnership with the Virginia Marine Resources Commission, trained and employed commercial fishers to remove derelict crab pots and other fishing gear. Over the course of four winters, more than 32,000 crab pots, nets, and other fishing gear were removed. More than 40 species and 31,000 animals were found in the retrieved traps including blue crabs, fish, ducks, and diamondback terrapins.

According to a review of the VIMS program and six other NOAA-funded trap fisheries studies, indiscriminate impacts on target and non-target species demonstrate the considerable potential marine debris has to kill individual animals, as well as impact breeding populations, habitat, and ecosystems. The review also determined that the losses to habitat and harvestable annual catch due to derelict traps are pervasive, persistent, and largely preventable.

VIMS has conducted research using biodegradable material on crab pots to minimize the negative impacts of lost or abandoned pots. This research has led to the manufacture of a biodegradable panel for use in crab, lobster, and other fishing traps.

G. Waste Tires

The Artificial Reef Program, which was managed by the Virginia Marine Resources Commission, used scrap tires in the construction of artificial reefs off the coast of Virginia Beach in the 1970s. The tires were cut in half and banded together with stainless steel bands. The bands over time rusted and were disturbed, causing loose tires to float to the surface. Because of typical Atlantic storm patterns, these tires have often washed up on the shore in North Carolina. DEQ, working with the VMRC and North Carolina's environmental groups, organized the pickup and processing of all Virginia identified waste tires. No reef tires have been identified in recent years and the beach cleanup program is no longer in place.

A waste tire dump site was identified in Hoskins Creek, a tidal creek in the town of Tappahannock. An estimated 4,000 to 5,000 tires were located at this site, but a volunteer effort cleaned up the site in 2014.

H. Stormwater Management and Litter

Virginia DEQ Pollution Prevention's Virginia Environmental Excellence Program (VEEP) has a web site²⁶ that lists Best Management Practices for stormwater, including several debris- and litter-related practices.

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<http://www.deq.virginia.gov/Programs/PollutionPrevention/VirginiaEnvironmentalExcellenceProgram/ResourcesLinks/Stormwater.aspx>

Recycling requirements for localities

Effective July 1, 2006, the Virginia General Assembly established a two-tiered recycling mandate. Localities or solid waste planning units/regions with population densities of less than 100 persons per square mile or with unemployment rates of 50% above the state average are required to meet a 15% mandatory recycling rate. All other localities are required to meet a 25% recycling rate. In 2013, Virginia’s state recycling rate was 41.2% (only 42 of 71 Solid Waste Planning Units [SWPUs] reported – SWPUs with populations 100,000 or less only are required to report every 4 years).

Recycling requirements for state agencies

In 2009, Governor Tim Kaine’s Executive Order #82 directed state agencies to reduce waste, as well as water use, energy use, and travel. At minimum, individual agency waste reduction policies were to address reducing the use of paper and other office supplies, reducing the use of disposable supplies, and recycling of white paper, mixed paper, plastic, batteries, printer cartridges, and aluminum. When relevant, the policy was to address recycling of motor oil and antifreeze. Additionally, the inclusion of provisions for composting was encouraged. This Executive Order expired in July 2013. Most state agencies still recycle but are not required to report on their programs.

Management Characterization:

Indicate if the approach is employed by the state or territory and if there have been any significant state- or territory-level management changes (positive or negative) for how marine debris is managed in the coastal zone.

Management Category	Employed by State/Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Marine debris statutes, regulations, policies, or case law interpreting these	Y	Varies	<i>Information was requested from DEQ staff (Nov 2014 and June 2015). Development of a Virginia Marine Debris Reduction Plan has been a very significant change. Implementation of the Plan should lead to regulations and policies that will reduce sources and impacts of marine debris.</i>
Marine debris removal programs	Y	Varies	As described above, Virginia has volunteer marine debris removal and cleanup efforts as well as a program that trains and employs commercial fishers to remove derelict crab pots and other fishing gear.

1. For any management categories with significant changes briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:

a. Describe the significance of the changes:

The significance of the changes (development of a VA Marine Debris Reduction Plan, a shoreline monitoring program using NOAA’s national protocol and the development of a social marketing campaign to reduce balloon releases) are described above.

b. Specify if they were 309 or other CZM-driven changes:

All of the work which Virginia undertook to create the *Virginia Marine Debris Reduction Plan* was supported by Section 309 Ocean Resources Strategy which funded the Plan developer (from Clean Virginia Waterways/Longwood University) and stakeholder facilitation (by VCU). The Shoreline monitoring program was funded via transfer of Marine Debris Program funds at NOAA to OCM and then to VA CZM. The balloon social marketing campaign is being funded with NOAA Marine Debris Program funds and CZM 309 funds.

c. Characterize the outcomes and likely future outcomes of the changes.

The Virginia Marine Debris Reduction Plan has received national attention and already led the CZM Program toward development of the balloon social marketing campaign. In addition the plan has spurred other partners such as EPA to begin addressing needs outlined in the plan such as a catalogue of best practices for marine debris reduction.

It is too soon to tell what outcomes there will be from the shoreline monitoring and balloon social marketing efforts however, the shoreline monitoring work to date continues to verify the need to reduce balloon and other plastic waste and the social marketing efforts are revealing useful insights as to why people release balloons and therefore what type of messages we need to craft in order to effectively change their behavior.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High __H__
Medium _____
Low _____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Stakeholders engaged in the creation of the *Virginia Marine Debris Reduction Plan* stressed the urgency of decreasing the amount of derelict fishing gear, plastic litter, and other trash items from entering coastal waters. While many agencies, institutions, and organizations

have worked on these marine debris related issues, the Virginia CZM played a significant role in providing coordination and leadership. Feasible actions to reduce marine debris have been identified, and there is great momentum in Virginia as it takes an East Coast leadership position on this important topic.

At the December 2014 Coastal Partners workshop, stakeholders ranked this topic as a high priority and because this topic is 1) ocean-focused (i.e. debris that ends up in the ocean and harms marine life) and 2) it is aligned with one of MARCO's four, shared, regional priorities (i.e. protecting ocean water quality), marine debris will be addressed under the Ocean Resources Strategy.

Cumulative and Secondary Impacts (Phase I and II)

Phase I Assessment

Resource Characterization:

- Using National Ocean Economics Program Data on population and housing,²⁷ please indicate the change in population and housing units in the state's coastal counties between 2012 and 2007. You may wish to add additional trend comparisons to look at longer time horizons as well (data available back to 1970), but at a minimum, please show change over the most recent five year period (2012-2007) to approximate current assessment period.

Trends in Coastal Population and Housing Units				
Year	Population		Housing	
	Total (# of people)	% Change (compared to 2002)	Total (# of housing units)	% Change (compared to 2002)
2007	4,865,832	6.67%	2,007,898	3.71%
2012	5,190,204		2,082,419	

- Using provided reports from NOAA's Land Cover Atlas²⁸ or high-resolution C-CAP data²⁹ (Pacific and Caribbean Islands only), please indicate the status and trends for various land uses in the state's coastal counties between 2006 and 2011. You may use other information and include graphs and figures, as appropriate, to help illustrate the information. Note that the data available for the islands may be for a different time frame than the time periods reflected below. In that case, please specify the time period the data represents. Also note that Puerto Rico and the Commonwealth of the Northern Mariana Islands (CNMI) currently only have data for one time point so will not be able to report trend data. Instead, Puerto Rico and CNMI should just report current land use cover for developed areas and impervious surfaces.

Distribution of Land Cover Types in Coastal Counties		
Land Cover Type	Land Area Coverage in 2011 (Acres)	Gain/Loss Since 2006 (Acres)
Developed, High Intensity	177,778	10,703
Developed, Low Intensity	414,483	7,274
Developed, Open Space	235,661	540
Grassland	91,601	19,960
Scrub/Shrub	423,377	73,002
Barren Land	39,692	6,454
Open Water	1,877,843	1,350

²⁷ www.oceaneconomics.org/. Enter "Population and Housing" section. From drop-down boxes, select your state, and "all counties." Select the year (2012) and the year to compare it to (2007). Then select "coastal zone counties." Finally, be sure to check the "include density" box under the "Other Options" section.

²⁸ www.csc.noaa.gov/ccapatlas/. Summary data on land use trends for each coastal state is available on the ftp site.

²⁹ www.csc.noaa.gov/digitalcoast/data/ccaphighres. Summary data on land use trends for each coastal state is available on the ftp site.

Distribution of Land Cover Types in Coastal Counties		
Land Cover Type	Land Area Coverage in 2011 (Acres)	Gain/Loss Since 2006 (Acres)
Agriculture	1,058,894	-4,219
Forested	2,149,305	-115,269
Woody Wetland	1,068,365-Wetlands in general; emergent not available	1295.9- Wetlands in general; emergent not available
Emergent Wetland	not available	not available

3. Using provided reports from NOAA’s Land Cover Atlas³⁰ or high-resolution C-CAP data³¹ (Pacific and Caribbean Islands only), please indicate the status and trends for developed areas in the state’s coastal counties between 2006 and 2011 in the two tables below. You may use other information and include graphs and figures, as appropriate, to help illustrate the information.

Development Status and Trends for Coastal Counties			
	2006	2011	Percent Net Change
Percent land area developed	809,405 (10.7%)	827,921 (11.0%)	18,516 (2.3%)
Percent impervious surface area	250,027 (3.3%)	258,760 (3.4%)	8,733 (3.5%)

How Land Use Is Changing in Coastal Counties	
Land Cover Type	Areas Lost to Development Between 2006-2011 (Acres)
Barren Land	1,079
Emergent Wetland	2,672.5-Wetlands in general; emergent not available
Woody Wetland	woody not available
Open Water	163
Agriculture	5,133
Scrub/Shrub	1,816
Grassland	564
Forested	11,475

³⁰ www.csc.noaa.gov/ccapatlas/. Summary data on land use trends for each coastal state is available on the ftp site.

³¹ www.csc.noaa.gov/digitalcoast/data/ccaphighres. Summary data on land use trends for each coastal state is available on the ftp site.

- Using data from NOAA’s State of the Coast “Shoreline Type” viewer,³² indicate the percent of shoreline that falls into each shoreline type.³³ You may provide other information or use graphs or other visuals to help illustrate.

Shoreline Types	
Surveyed Shoreline Type	Percent of Shoreline
Armored	8%
Beaches	10%
Flats	14%
Rocky	.5%
Vegetated	67.5%

- If available, briefly list and summarize the results of any additional state- or territory specific data or reports on the cumulative and secondary impacts of coastal growth and development, such as water quality and habitat fragmentation, since the last assessment to augment the national data sets.

Management Characterization:

- Indicate if the approach is employed by the state and if there have been any significant state-level changes (positive or negative) in the development and adoption of procedures to assess, consider, and control cumulative and secondary impacts of coastal growth and development, including the collective effect on various individual uses or activities on coastal resources, such as coastal wetlands and fishery resources, since the last assessment.

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y	Y	Y
Guidance documents	Y	Y	Y
Management plans (including SAMPs)	Y	Y	Y

- For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the

³² <http://stateofthecoast.noaa.gov/shoreline/welcome.html>

³³ Note: Data are from NOAA’s Environmental Sensitivity Index (ESI) Maps. Data from each state was collected in different years and some data may be over ten years old now. However, it can still provide a useful reference point absent more recent statewide data. Feel free to use more recent state data, if available, in place of ESI map data. Use a footnote to convey data’s age and source (if other than ESI maps).

document, please provide a reference to the other section rather than duplicate the information:

Land and Water Quality Protection

Growth and development in Virginia's coastal zone continues to increase at a rate that is disproportionate with the rest of the Commonwealth. Water quality impacts associated with urban growth are further magnified by development trends characterized by increasing impervious cover. Rural land use patterns have also been impacted by recent changes in state regulations.

Chesapeake Bay TMDL:

- Phase II Watershed Implementation Plan [(WIP), EPA driven change]
 - Virginia submitted its final Phase II WIP on March 30, 2012
- The Commonwealth met the Phase II WIP objectives identified by EPA by undertaking the following:
 - Virginia Department of Conservation and Recreation (DCR) staff subdivided the TMDL allocations and communicated the resulting local area targets to localities.
 - DCR communicated with local government elected officials and staff to explain how the TMDL model represents local land use and BMP implementation levels and loadings from each land use.
 - The Commonwealth encouraged local governments to be active partners in improving the TMDL and WIP by updating modeled land use with more accurate local information, updating local BMP implementation progress and, most importantly, providing local BMP scenarios that met local goals and objectives.
 - The Commonwealth asked localities to identify resource needs and strategies to advance the identified BMP scenarios.
 - The Commonwealth of Virginia's local engagement initiative worked with local partners to help improve understanding of their contribution to, and responsibility for, meeting the TMDL allocations.
- Nutrient Credit Expansion (non-CZM driven change)
 - In 2011, Virginia drafted a framework for an expanded nutrient credit exchange program, which resulted in legislation establishing a process for certifying and registering nutrient credits
 - This legislation authorized state agencies to establish clear regulatory standards for credit certification, establishment of baselines, and other factors for the efficient operation of nutrient credit markets in Virginia
- Agricultural Resource Management Plans (non-CZM driven change)
 - In 2011, General Assembly passed legislation requiring the promulgation of regulations for the development and implementation of agricultural resource management plans
 - Final regulations published on May 6, 2013 set forth specific criteria for the implementation of agricultural BMPs and promoted greater and more consistent use of voluntary agricultural practices across the state

- Urban Nutrient Management
 - In 2011, General Assembly passed legislation advancing many of the strategies identified in the Phase I WIP to reduce the nutrients used in urban settings

Stormwater Management:

- As of July 1, 2013, DEQ became the lead agency for developing and implementing nonpoint source pollution control programs to protect the Commonwealth's water quality and quantity (non-CZM driven change)
 - DEQ now administers stormwater permits under the Virginia Stormwater Management Program Regulations
- Virginia Soil and Water Conservation Board adopted final stormwater management regulations (Virginia Stormwater Management Program Permit Regulations Parts I, II, and III) May 24, 2011, which became effective on Sept. 13, 2011
 - These regulations provide innovative tools for local decisions, protection of local waterways, and consistent application of new state and federal requirements

Chesapeake Bay Preservation Act:

- On July 1, 2013, administration of the Chesapeake Bay Preservation Act was moved to the State Water Control Board from the Virginia Soil and Water Conservation Board as part of a larger transfer of authority that included administration of the Stormwater Management Act and the Erosion and Sediment Control Law
- In April 2012, the General Assembly passed a bill integrating the Stormwater Management Act and the Chesapeake Bay Preservation Act regulatory programs into one consistent regulation under the Erosion and Sediment Control Act. This bill also eliminated the Chesapeake Bay Local Assistance Board and transferred its responsibilities to the Virginia Soil and Water Conservation Board.

Alternative Onsite Sewage Systems Regulations:

- Regulations for Alternative Onsite Sewage Systems were adopted by the Virginia Department on Health on December 7, 2011 requiring that all new alternative onsite sewage systems applying for a construction permit after Dec. 7, 2013 must reduce nitrogen by 50% as compared to a conventional onsite sewage system.

VDH Sewage Handling and Disposal Regulations:

- As noted in the 2011-2015 Section 309 Assessment, changes to the VDH Sewage Handling and Disposal Regulations in 2000 allowed new alternative onsite sewage system technologies to be installed on marginal lands. This change has the potential to open new, previously undevelopable land to development and dramatically alter development patterns in Virginia localities. (Non-CZM Driven)
- In response to this potential change, Virginia CZM funded a 2011 study by MPPDC to assess the potential impact of the changed regulations.

Chesapeake Bay Watershed Agreement:

- On June 16, 2014, the governors of the Bay's headwaters states signed the Chesapeake Bay Watershed Agreement committing each state to full participation in the Bay Program and

collaboration between the states to achieve the agreements outlined goals and outcomes for restoration of the Bay, its tributaries, and the lands surrounding them.

- The agreement specifies goals and outcomes for a number of issue areas including sustainable fisheries, vital habitats, water quality, toxic contaminants, healthy watersheds, stewardship, land conservation, public access, environmental literacy, and climate resiliency.
- The agreement commits the Chesapeake Bay Program's Goal Implementation Teams to, within one year; develop strategies for achieving each outcome as well as monitoring, assessing, and reporting progress and coordinating actions among partners and stakeholders.
- Action will likely be required by Virginia in the coming years to meet commitments and achieve outcomes outlined in the agreement.

EPA Waters of the United States Rule:

- In response to 2008 U.S. Supreme Court decision, the EPA published a new proposed rule for defining "waters of the United States" on April 21, 2014. This rule expands the types of waters that can be regulated under the Clean Water Act.

The Virginia Coastal Zone Management Program has supported multi-year projects addressing Land and Water Quality Protection.

Working Waterfronts

Coastal areas are experiencing dramatically increased demand for residential development. This demand often results in the need for services and resources that are not compatible with the nature and character of the community that attracted the development in the first place. As a result, historic industries that support the functionality of many waterfront communities become disadvantaged by impacts of new development. The following projects were undertaken by the Virginia CZM program since the last assessment to address this issue.

Developing a Working Waterfronts Plan for Virginia's Coastal Zone

Section 309, 2011-2015, projects were undertaken as an initial step in establishing a coastal zone-wide Working Waterfronts plan for Virginia that will serve to guide communities in protecting, restoring and enhancing their water-dependent commercial and recreational activities.

- Phase 1:
 - Developed benchmark information through a comprehensive inventory on the number, location, and characteristics of working waterfronts for each of the counties in Accomack Northampton PDC, Hampton Roads PDC, Middle Peninsula PDC and Northern Neck PDC.
 - PDCs developed a consensus definition for working waterfronts in their region in collaboration with member county governments and stakeholders.

- Phase 2:
 - Finalized the inventory created in Phase 1 and expanded on data collected to achieve consistent reporting between the different regions in view of the differing definitions of working waterfronts that were adopted.
 - Determined particular sites for more detailed economic evaluation with Hampton, Virginia being selected as a pilot site for an in-depth economic assessment.
- Phase 3:
 - Economic analysis completed for communities in each of the four participating working waterfronts regions.
- Phase 4:
 - Policy development and outreach to each of the four working waterfronts regions.
- Phase 5:
 - Synthesize all four phases of Section 309 Working Waterfronts projects into a Working Waterfronts Plan for Virginia, with specified action items for implementation at the local, regional and state level.

Rural Chesapeake Bay/Seaside of Virginia Working Waterfront Coalition

- Section 306 project that established the Coastal Virginia Working Waterfront Coalition to expand and complement the current Working Waterfront 309 strategy to ensure sustainability of working waterfronts and related industries.
- In 2011, the Coalition produced the following:
 - ANPDC, NNPDC, and MPPDC each established a coalition node through Memorandums of Understanding;
 - A report was generated in which each coalition partner identified and researched issues relating specifically to working waterfront businesses
 - The coalition partners coordinated with Advisory Services at the Virginia Institute of Marine Science for scientific, technical and local industry coordination and collaboration.
- In 2013, the Coalition and CZM held a Virginia Working Waterfront Summit to discuss the challenges in Coastal Virginia related to working waterfronts and gather stakeholder input for possible local policy changes that could be included as part of the Virginia Working Waterfronts Plan.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?
High X
Medium
Low

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

In December 2014, the Virginia CZM Program held a Coastal Partners Workshop to present the Phase I High Level Assessments on all Section 309 enhancement areas. The CSI enhancement area was ranked as a high area for prioritization based on continuous increases in population and demand for coastal land for commercial and residential development. Stakeholders wanted to develop a strategy that would create policies and new authorities to better coordinate local land use planning with state land protection priorities and leverage the benefits of conservation for initiatives in ecotourism and local government cost savings.

Phase II Assessment

In-Depth Resource Characterization:

Between 2009 and 2014, both James City and New Kent Counties of Virginia’s coastal zone ranked in the top 15 localities in Virginia for percentage population growth. James City County (13th) grew 9.45 percent in that five year period, while New Kent County (5th) grew 12.2 percent. In terms of actual growth, James City County again ranked 13th, growing by 6,143, while New Kent County ranked 30th, growing by 2,193. Charles City County actually lost 16 residents in those five years. The population of the watershed overall grew 8,321, or 9.22 percent.

	Stressor/Threat	Coastal Resource(s)/Use(s) Most Threatened	Geographic Scope (throughout coastal zone or specific areas most threatened)
Stressor 1	Population Growth	Water Supply and quality	Overall net increase in population; however some rural areas are losing population
Stressor 2	Coastal Development - land conversion/ increased impervious cover	Biodiversity, Forests, Wetlands, Water Quality, Open Space	Major Metropolitan areas: NoVA, Greater Richmond, Hampton Roads
Stressor 3	Shoreline Hardening	11.1% of shoreline inventoried In Virginia tidal waters has been hardened.	CZ Wide
Stressor 4	Exacerbation due to climate change - SLR	9 percent overall marsh loss due to SLR in last 30 years 30 percent loss of fringe marshes to SLR in last 30 years	York, Pamunkey and Mattaponi Rivers
Stressor 5	Invasive Species (mainly plants)	Riparian and wetland areas; native habitats	CZ Wide

The most significant cumulative and secondary stressor in the coastal zone is land conversion resulting in increasing impervious cover and therefore a reduction in natural areas, habitat and open space. Increased impervious cover also leads to degraded water quality from increases in volume of storm water runoff containing excess nutrients, sediments and contaminants. Impacts of converting natural landscapes to commercial and residential development and the hardening of shorelines are further exacerbated by the natural loss of wetland habitats due to sea-level rise. At least 27 percent of Virginia tidal riparian lands have been developed and approximately 11 percent of shoreline inventoried in Virginia tidal waters has been hardened (Bilkovic et. al. 2009). Further, research in the York River revealed a 9 percent loss of marsh and 30 percent loss of fringe marsh in the last 30 years (Mitchell et. al. 2011). Although 38 percent of existing tidal marshes in Virginia are moderately-highly vulnerable to sea-level rise due to adjacent development, 62 percent of tidal marshes may have opportunities for landward migration (Bilkovic et. al. 2009). Therefore, protecting landscapes that allow for the migration of essential shallow-water habitats should be considered as a high conservation priority.

With respect to development, James City County has been ranked both above the regional average in Hampton Roads and in the top five for building permits for residential construction. 2010 rank: 3rd, 2011 rank: 3rd, 2012 rank: 4th, 2013 rank: 5th, 2014 rank: 3rd. The average number of permits issued for those five years in James City County was 395, compared to the regional average of 208. Between 2005 and 2010, James City County ranked 7th among coastal Virginia counties and cities in the total increase in lands defined as “developed” by the Coastal Change Analysis Program and 3rd among coastal Virginia counties and cities in the percent change (21.5% increase). New Kent ranked 21st in total change and 13th in percent change (12.1% increase). Charles City was last in percent change, actually decreasing by 25.9% (could be issues with this data).

Resources:

Mitchell, M.M., M.R. Berman, J., H. Berquist, Bradshaw, K. Duhring, S. Killeen and C.H. Hershner, 2011. Strengthening Virginia’s Wetlands Management Programs, final report to US EPA Region III, Wetlands Development Grant Program.

Bilkovic, Donna Marie, Hershner, Carl, Rudnicky, Tamia, Nunez, Karinna, Schatt, Dan, Killeen, Sharon and Berman, Marcia, 2009. Vulnerability of Shallow Tidal Water Habitats in Virginia to Climate Change, Final report to the National Oceanic and Atmospheric Administration-Chesapeake Bay Office grant number NA07NMF4570342.

*Population estimates, 2009 – 2014, Weldon Cooper Center, University of Virginia
Building Permit Data, 2009-2014, US Census Bureau
Land Cover, NOAA C-CAP Data 2005, 2010*

Emerging Issue	Information Needed
Ditch Maintenance (rural areas) – Water Quality <i>Currently addressing this issue in FY 14 – 15 projects</i>	Take economic negative and turn them into economic drivers; BMPs. Can nutrient credits be applied?

In-Depth Management Characterization:

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Methodologies for determining CSI impacts	N	N	N
CSI research, assessment, monitoring	N	N	N
CSI GIS mapping/database	Y	Y	N
CSI technical assistance, education and outreach	Y	Y	N
Other (please specify)			

- Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state’s or territory’s management efforts in addressing cumulative and secondary impacts of development since the last assessment. If none, is there any information that you are lacking to assess the effectiveness of the state and territory’s management efforts?

There are currently no studies that illustrate the effectiveness of Virginia’s management efforts to address cumulative and secondary impacts of development. Economic assessments that demonstrate the value of natural resource protection to state and local economies are lacking in Virginia. This strategy will address this need by generating economic assessments to provide quantitative evidence of the value of protected lands to economic strength and stability.

Identification of Priorities:

Considering changes in cumulative and secondary impact threats and management since the last assessment and stakeholder input, identify and briefly describe the top one to three management priorities where there is the greatest opportunity for the CMP to improve the

effectiveness of its management effort to better assess, consider, and control the most significant threats from cumulative and secondary impacts of coastal growth and development. (Approximately 1-3 sentences per management priority.)

Management Priority 1: Preserving landscapes that allow for transgression of the Bay’s essential shallow-water habitats.

Description: Although 38 percent of existing tidal marshes in Virginia are moderately-highly vulnerable to sea-level rise due to adjacent development, 62 percent of tidal marshes may have opportunities for landward migration.

Management Priority 2: Addressing development patterns such that coastal development will ensure preservation of coastal landscapes and foster retention of natural features critical for building coastal resilience.

Description: Coordination between local decision makers and state natural resource agencies can improve to ensure protection of coastal landscapes that provide ecological and economic benefits sustaining coastal communities. Significant ecological features and economic drivers should be identified to guide planning decisions. Stakeholders impacted by development patterns should be involved in the entire planning process.

Priority Needs	Need? (Y or N)	Brief Explanation of Need/Gap
Research	Y	Economic analyses in targeted areas of coastal zone
Mapping/GIS	Y	New mapping needed based on updated ecological assessments
Data and information management	Y	Updates to information based on new ecological assessments
Training/Capacity building	N	
Decision-support tools	Y	Virginia Ecological Value Assessment, Virginia Natural Landscape Assessment Update
Communication and outreach	Y	Networking and education with stakeholders and elected officials on economic value of protected lands
Other (Specify)		

Enhancement Area Strategy Development:

1. Will the CMP develop one or more strategies for this enhancement area?

Yes X

No

2. Briefly explain why a strategy will or will not be developed for this enhancement area.

A strategy will be developed for this enhancement area because there is high potential for the cumulative and secondary impacts of growth and development described above

continue to affect areas surrounding major metropolitan growth centers particularly the selected pilot area – the lower Chickahominy watershed – as higher than average growth is occurring in two of the watershed localities, both New Kent and James City counties.

Special Area Management Plans (Phase I only)

Phase I Assessment

Resource Characterization:

1. In the table below, identify geographic areas in the coastal zone subject to use conflicts that may be able to be addressed through a special area management plan (SAMP). This can include areas that are already covered by a SAMP but where new issues or conflicts have emerged that are not addressed through the current SAMP.

Geographic Area	Opportunities for New or Updated Special Area Management Plans
	Major conflicts/issues
Chickahominy	Encroaching development from Richmond on the western side and from Williamsburg on the eastern side.

2. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends of SAMPS since the last assessment.

There are no additional reports on SAMP status and trends, however data were compiled to create a Virginia Ecological Value Assessment which maps areas of outstanding, very high, high moderate, and general ecological value. The map layers can be viewed at: www.coastlgems.org by going to the conservation planning theme and clicking on "VEVA." This map, completed in 2011, is based on more than 30 land and coastal water data layers from the Virginia Departments of Conservation & Recreation, Game & Inland Fisheries; VA Commonwealth University, Virginia Institute of Marine Science and the VA CZM Program. Fortunately the map shows that previous SAMPS were in fact conducted in areas of outstanding and very high ecological value. The map did, however, reveal an area where little work has been done – the Chickahominy.

Management Characterization:

1. Indicate if the approach is employed by the state or territory and if there have been any significant state- or territory-level management changes (positive or negative) that could help prepare and implement SAMPS in the coastal zone.

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
SAMP policies, or case law interpreting these	Y (Seaside)	Y (Noho, Dragon, SWAMP)	Y (Seaside)
SAMP plans	Y (Seaside)	Y (Noho, Dragon, SWAMP)	Y (Seaside)

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
 - a. Describe the significance of the changes;
 - b. Specify if they were 309 or other CZM-driven changes; and
 - c. Characterize the outcomes or likely future outcomes of the changes.

Seaside SAMP: These were all 309-driven changes.

- Following 8 years of CZM-funded eelgrass and oyster restoration, GIS analyses were conducted on public oyster grounds, lease areas and eelgrass coverage and 22 recreational uses were mapped to better understand spatial needs of resources and human uses.
- The VA Marine Resources Commission designated two additional set-aside areas for eelgrass expansion at their January 2015 meeting and also instituted annual reviews of eelgrass set-aside areas to determine the need for additional sites and also release set-aside areas to other uses if eelgrass failed to take hold in those areas.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High	_____
Medium	__X__
Low	_____
2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Although the Virginia CZM Program has had great success in creating SAMPS for the past 20+ years, stakeholders at the 2014 Virginia Coastal Partners Workshop expressed satisfaction with work completed and that moving on to other issues would be more productive. One of the major issues that arose was the concern among localities that conserving land leads to a perceived loss of local tax revenues. Although the Chickahominy was brought up as an area in need of protection, there was concern that local officials would not be willing to engage in a SAMP. Therefore, the Virginia CZM Program plans to address concerns in the Chickahominy area under a CSI strategy that looks more broadly at local economic concerns in rural areas and finding ways to highlight the economic benefits of land conservation.

Even though a SAMP strategy is not envisioned at this time in fall of 2016, it's possible that as work progresses on the CSI strategy and possibly even some of the near-shore work under the Oceans strategy, a "spin-off" SAMP could be requested.

Ocean Resources (Phase I and II)

Phase I Assessment

Resource Characterization:

- Understanding the ocean economy can help improve management of the resources it depends on. Using Economics: National Ocean Watch (ENOW),³⁴ indicate the status of the ocean economy as of 2010, as well as the change since 2005, in the tables below. Include graphs and figures, as appropriate, to help illustrate the information. **Green** highlight indicates largest values. **Red** indicates lowest values.

Status of Virginia Ocean Economy for Coastal Counties (2010)				
	Establishments (# of Establishments)	Employment (# of Jobs)	Wages (Millions of Dollars)	GDP (Millions of Dollars)
Living Resources (excludes recreational fishing which is included in tourism & rec; includes aquaculture, commercial fishing, seafood processing & markets)	191	2,225	73	573.7
Marine Construction	170	2,397	153.5	252.6
Ship and Boat Building	64	32,159	2.0 billion	1.6 billion
Marine Transportation (excludes value of cargo on ships includes value of housing and moving cargo, deep sea freight, passenger transport, search & navigation, warehousing)	373	16,286	1.1 billion	2.2 billion
Offshore Mineral Extraction (sand & gravel)	46	281	20.1	106.9
Tourism & Recreation (includes boat dealers, dining, lodging, marinas, rec vehicle parks, campsites, tours, rec rentals, aquaria and zoos,	3,434	63,217	961.1	2.0 billion
All Ocean Sectors	4,278	116,568	4.3 billion	6.7 billion

³⁴ www.csc.noaa.gov/enow/explorer/. If you select any coastal county for your state, you receive a table comparing county data to state coastal county, regional, and national information. Use the state column for your responses.

Change in Virginia Ocean Economy for Coastal Counties (2005-2010)				
	Establishments (% change)	Employment (% change)	Wages (% change)	GDP (% change)
Living Resources	-12.39	-9.33	10.97	58.70
Marine Construction	-2.86	4.86	48.06	34.21
Ship and Boat Building	8.47	8.67	27.66	-19.18
Marine Transportation	5.37	-11.00	7.48	20.49
Offshore Mineral Extraction	4.55	-31.30	6.52	94.99
Tourism & Recreation	2.17	-1.14	12.65	10.64
All Ocean Sectors	1.59	-0.36	18.84	8.01

2. In the table below, characterize how the threats to and use conflicts over ocean resources in the state's or territory's coastal zone have changed since the last assessment.

Significant Changes to Ocean and Great Lakes Resources and Uses	
Resource/Use	Change in the Threat to the Resource or Use Conflict Since Last Assessment (↑, ↓, -, unknown)
Resource	
<i>Benthic habitat (including coral reefs)</i>	↑ (increasing due to ocean acidification, damage from marine debris, damage from fishing gear, sand gravel mining, offshore energy development)
<i>Living marine resources (fish, shellfish, marine mammals, birds, etc.)</i>	↑ (same as above plus increased ship traffic, offshore energy development)
<i>Sand/gravel</i>	↑ (increasing due to increasing need for sand for beach replenishment)
<i>Cultural/historic</i>	unknown
<i>Other (please specify)</i>	
Use	
<i>Transportation/navigation</i>	↑ (offshore energy development and marine mammal concerns may restrict where ships can traverse, potential conflicts with commercial fishing specifically fixed gear)

<i>Offshore development</i> ³⁵	↑ (shipping and military concerns as well as marine animal protection concerns)
<i>Energy production</i>	↑ (same as above)
<i>Fishing (commercial and recreational)</i>	↑ (increasing offshore energy development and shipping traffic could exclude fishers from areas and risk their fixed fishing gear, increased use and increased pressure on resources))
<i>Recreation/tourism</i>	↑ ↓ (increasing shipping and offshore energy development, however hard structures offshore could attract fish and increase fishing opportunities)
<i>Sand/gravel extraction</i>	↑ (offshore energy development and laying of cables could interfere with extraction of sand and gravel deposits)
<i>Dredge disposal</i>	
<i>Aquaculture</i>	↑ (as existing and future uses take additional space in the ocean, offshore aquaculture could be precluded)
<i>Other (please specify)</i>	

3. For the ocean resources and uses in Table 2 (above) that had an increase in threat to the resource or increased use conflict in the state’s or territory’s coastal zone since the last assessment, characterize the major contributors to that increase.

Major Contributors to an Increase in Threat or Use Conflict to Virginia Ocean Resources												
Resource	Major Reasons Contributing to Increased Resource Threat or Use Conflict											
	(Note All that Apply with “X”)											
	Land-based development	Offshore development	Polluted runoff	Invasive species	Fishing (Comm & Rec)	Aquaculture	Recreation	Marine Transportation	Dredging	Sand/Mineral Extraction	Ocean Acidification	Other (Specify)
<i>Example: Living marine resources</i>		X	X	X	X	X		X	X			
Benthic habitat	X	X	X		X			X		X		
Living marine resources		X	X		X			X	X		X	
Sand/gravel		X						X				
Cultural/historic												
Transportation/navigation		X			X							

³⁵ Offshore development includes underwater cables and pipelines, although any infrastructure specifically associated with the energy industry should be captured under the “energy production” category.

Offshore development					X		X	X		X		
Energy production					X		X	X	X	X		
Fishing (commercial & recreational)	X	X	X	X		X		X			X	
Recreation/tourism	X	X	X			X						
Sand & gravel extraction		X										
Aquaculture	X	X	X		X		X	X	X		X	

4. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends of ocean resources or threats to those resources since the last assessment to augment the national data sets.

Since the last assessment, numerous efforts have been underway to collect ocean resources data. Many of these new datasets are available on the Multipurpose Marine Cadastre, the Mid-Atlantic Regional Council on the Ocean’s (MARCO’s) ocean data portal (<http://midatlanticocean.org/data-portal/>) which was begun with Virginia CZM funding, and Virginia CZM’s Coastal GEMS portal (www.coastalgems.org). For benthic habitat, The Nature Conservancy provided a layer showing various bottom types (flats, slopes, depressions, etc) and the MARCO portal also provides sediment grain size, modeled coral habitat, coral observations and canyons. A variety of living resource data is now available for birds, fish, marine mammals, sea turtles. Data collected on whales offshore of Virginia funded under a PSM award and subsequent Section 309 awards is being incorporated into AMAPPs data which is being incorporated into a marine mammal data synthesis project being funded by MARCO. For transportation, the portal includes AIS shipping data, aids to navigation, anchorage grounds, maintained channels, separation lanes, pilot boarding areas, shipwreck density, and routing measures. For offshore development, both the MARCO and Coastal GEMS portals show Virginia’s offshore wind research lease, commercial lease and power cable alignment. New information based on NOAA/NMFS data (vessel permits and vessel trip reports) is being used to create commercial fishing maps called “communities at sea maps.” In 2012 Virginia CZM held workshops with stakeholders to map 22 recreational fishing uses, 6 of which involved fishing.

Management Characterization:

1. Indicate if the approach is employed by the state and if any significant state-level changes (positive or negative) in the management of ocean resources have occurred since the last assessment.

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	N	N	N
Regional comprehensive ocean management plans	Y		Virginia, along with MD, DE, NJ and NY maintained its membership in the Mid-Atlantic Regional Council on the Ocean. Virginia currently chairs the Management Board. Virginia also appointed 2 state reps to the Mid-Atlantic Regional Planning Body and one of the Virginia reps has served on the Ocean Action Plan Work Group of the RPB and now co-chairs the Data Synthesis Work Group.
State comprehensive ocean management plans	N		Although Virginia has no comprehensive state ocean management plan, the Virginia CZM Program nominated sites for inclusion in the National System of Marine Protected Areas and seven were approved for inclusion. These are the blue crab sanctuary, 4 waterfront Natural Area Preserves and 3 waterfront State Parks.
Single-sector management plans	N		

2. For any management categories with significant changes briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
 - a. **Describe the significance of the changes;** For MARCO, major headway has been made in developing data layers for inclusion in MARCO’s Ocean Data Portal including data on 22 recreational uses, whale migration, AIS shipping types and volumes, commercial fishing categorized by ports and gear types, ports, predicted coral habitats, seabirds, wind energy areas and military areas. These data are critical building blocks for the

development of a regional ocean action plan. The establishment of the Mid-Atlantic Regional Planning Body in 2013 has led to creation of a charter, a framework for ocean planning, a white paper as the starting point for a regional ocean assessment, an outline for a regional ocean action plan, and scopes of work for a full regional ocean assessment and synthesis efforts for human use and ecological data.

- b. **Specify if they were 309 or other CZM-driven changes:** All of the work which Virginia has contributed to regional ocean planning is derived from either Section 306 Program Management funding (i.e. the Program Manager’s time to participate in MARCO, lead MARCO’s Ocean Mapping & Data Team and serve on the Mid-A RPB and its Work Groups) or the current Section 309 Ocean Resources Strategy which has funded an ocean planner (from VCU who has worked on recreational use and fishing data) and whale migration studies (by the VA Aquarium). The current Section 309 Ocean Resources Strategy has also funded all of the CZM Program’s efforts in Marine Debris – see that assessment for further details.
- c. **Characterize the outcomes or likely future outcomes of the changes:** MARCO’s Ocean Data Portal was the first of its kind in the nation. It now serves as the ocean planning tool for the Mid-Atlantic RPB. The Mid-A RPB is now on the cusp of creating the first ever ocean action plan for the region. The plan is expected to help us meet our two goals: 1) To promote ocean ecosystem health, functionality, and integrity through conservation, protection, enhancement and restoration; 2) To plan and provide for existing and emerging ocean uses in a sustainable manner that minimizes conflicts, improves effectiveness and regulatory predictability, and supports economic growth.

3. Indicate if your state or territory has a comprehensive ocean management plan.

Comprehensive Ocean Management Plan	State Plan	Regional Plan
Completed plan (Y/N) (If yes, specify year completed)	N	N
Under development (Y/N)	N	Y
Web address (if available)		http://www.boem.gov/Environmental-Stewardship/Mid-Atlantic-Regional-Planning-Body/index.aspx
Area covered by plan		New York through Virginia

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High ___

Medium ___

Low ___

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Development of a regional ocean action plan as called for in the President’s 2010 National Ocean Policy is expected to be completed within the next two years and for implementation to begin. A great deal of progress and momentum has been realized and for the first time in our nation’s history there is a joint federal-state-tribal effort underway that promises to end the absence of state and tribal input to ocean management as well as the traditional stove-piping of federal agency activities so that together, through regional planning bodies we take a comprehensive approach to managing our ocean resources.

Without continued funding through Section 309, Virginia will not be able to play a significant role in the continued development of this plan. Congress has discontinued direct funding for regional ocean partnerships making Section 309 (and 306) CZM funding the only available source apart from the possibility of funding from private foundations.

Phase II Assessment

In-Depth Resource Characterization:

Purpose: To determine key problems and opportunities to enhance the state CMP to better address management of ocean resources.

1. What are the three most significant existing or emerging stressors or threats to ocean resources within the coastal zone? Indicate the geographic scope of the stressor, i.e., is it prevalent throughout the coastal zone or are specific areas most threatened? Stressors can be land-based development; offshore development (including pipelines, cables); offshore energy production; polluted runoff; invasive species; fishing (commercial and/or recreational); aquaculture; recreation; marine transportation; dredging; sand or mineral extraction; ocean acidification; or other (please specify). When selecting significant stressors, also consider how climate change may exacerbate each stressor.

	Stressor/Threat	Geographic Scope (throughout coastal zone or specific areas most threatened)
Stressor 1	Ocean Energy Development: wind, oil & gas	24 miles offshore for wind and 50 miles off the VA coast for oil & gas development
Stressor 2	Maritime Commerce and Transportation: Increased and/or larger ship traffic	Port of Hampton Roads which currently has the deepest channel and is home to world’s largest naval base.
Stressor 3	Offshore Sand Management: dredging and replenishment	Sand shoals off the VA coast may be mined in order to re-nourish beaches
Stressor 4	Increasing Plastic and Other Marine Debris	Throughout the coastal zone and ocean

2. Briefly explain why these are currently the most significant stressors or threats to ocean resources within the coastal zone. Cite stakeholder input and/or existing reports or studies to support this assessment.

In April of 2015 the Mid-Atlantic Regional Planning Body's (RPB's) Regional Ocean Assessment (ROA) Work Group produced a white paper entitled: *A Brief Overview of the Mid-Atlantic Ocean: Characteristics, Trends and Challenges* which is now available on the Bureau of Ocean Energy Management website: <http://www.boem.gov/A-Brief-Overview-of-the-Mid-Atlantic-Ocean/>. This white paper reflects a consensus of federal agencies and the 6 Mid-Atlantic States from Virginia through NY, including PA. The Virginia CZM Manager is one of VA's two representatives on the RPB. While the report does not prioritize stressors, it does describe nine ocean uses and cites particular challenges generated by the three relatively new "stressors" included in the table above which also affect the other 6 uses. In addition, the Virginia CZM Program has undertaken a project funded by the state and BOEM to collaboratively plan with fishermen for fishing around VA's Wind Energy Area. As we work more closely with Virginia's fishermen through this effort, we are learning more about their concerns and needs as they strive to maintain their livelihoods in an increasingly busy ocean.

Offshore energy development: As mentioned in the Phase I energy facilities assessment, Virginia's 2014 Energy Plan calls for an "all of the above" approach to energy development, including offshore wind, oil and gas. Virginia expects to erect two 6MW wind turbines in the research lease area by 2017 and to begin development in the commercial lease area by 2021. Thus, this Section 309 cycle overlaps directly with all of Virginia's planning for offshore wind development. Likewise for offshore oil and gas development, VA's Energy Plan calls for inclusion of waters off Virginia in BOEM's 2017-2022 Five Year Outer Continental Shelf Oil and Gas Leasing Program. This next round of 309 strategies promises to be a very busy time for offshore energy development therefore making a comprehensive ocean planning perspective imperative to ensure that new and traditional uses can coincide while maintaining ocean health.

Maritime commerce and transportation: Virginia's Port of Hampton Roads ranks third among the top 10 U.S East Coast Container Ports after New York/New Jersey and Savannah and it is the 2nd largest port on the East Coast and the largest ship building and repair complex. 1 in 10 jobs and over \$41 billion in business revenue is connected to the port. Virginia ranks 4th in the country and 1st on the East Coast for total cargo according to the VA Maritime Association at: <http://www.boem.gov/A-Brief-Overview-of-the-Mid-Atlantic-Ocean/>. As the Panama Canal opens a third, much larger ship lane for traffic in 2016, the capacity of ships able to traverse will increase from 5,000 Twenty-foot Equivalent Units (TEUs) to 13,000 TEUs. Thus much larger ships can be expected on the East Coast. This could have implications for marine mammals, fishermen, energy development, recreation, etc.

Offshore sand management: Hurricane Sandy devastated much of the NY/NJ coast. It's imperative that Virginia and the mid-Atlantic region work to ensure that beach renourishment, using near shore and offshore sand supplies is done in a way compatible with protection of benthic habitats and ecosystem sustainability. At the same time, as the need for dredging shipping lanes continues, there may be greater opportunities for using appropriate dredged material for renourishment. Again, it is important that sand management be undertaken within the context of comprehensive ocean planning.

Increasing Plastic and Other Marine Debris: See Marine Debris Phase I Assessment. Plastics from cigarette butts, food containers, balloons, cosmetics and other items are entering the ocean at alarming rates. Many plastics start out as, or break down into, microplastics which can enter the food chain. Other items such as balloons and their strings pose serious ingestion and entanglement risks which are known to be lethal to marine wildlife such as sea turtles, birds and marine mammals. Derelict fishing gear also has been accumulating in the marine environment. Abandoned fishing line and traps continue to kill fish and wildlife after they have been lost or abandoned. Many of these sources and impacts are more fully described in the 2014 Virginia Marine Debris Reduction Plan.

3. Are there emerging issues of concern, but which lack sufficient information to evaluate the level of the potential threat? If so, please list. Include additional lines if needed.

Emerging Issue	Information Needed
Ocean acidification	Baseline data on Mid-Atlantic pH levels and monitoring at appropriate time intervals
Oil & gas development	Seismic testing impacts remain a concern to many scientists and additional data may be helpful. Assuming seismic testing is completed, it will be helpful to understand where the resources are located in the context of important ecological areas.

In-Depth Management Characterization:

Purpose: To determine the effectiveness of management efforts to address identified problems related to the ocean resources enhancement objective.

1. For each of the additional ocean resources management categories below that were not already discussed as part of the Phase I assessment, indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) have occurred since the last assessment.

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Ocean research, assessment, monitoring	Y	N	Y
Ocean GIS mapping/database	Y	N	Y
Ocean technical assistance, education, outreach and regional collaboration	Y	N	Y
Other (please specify)			

2. For management categories with significant changes since the last assessment briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information.
 - a. Describe significant changes since the last assessment;
 - b. Specify if they were 309 or other CZM-driven changes; and
 - c. Characterize the outcomes or likely future outcomes of the changes.

Ocean research, assessment and monitoring: A great deal of work has been done on research and monitoring since the last assessment in 2010. NOAA and BOEM have conducted multiple research cruises with live video of the Mid-Atlantic canyons, corals, shipwrecks and gas seeps. Although 309 funds did not directly support this, CZM managers who form the MARCO Management Board were consulted on which canyons should be researched and what our management questions were that they should keep in mind. This new data reflect a quantum leap in our understanding of deep sea habitats which is critically important to have in order to ensure that these habitats are protected from potential negative impacts of human uses such as bottom-tending fishing gear and oil and gas exploration and development. Although it appears that the Mid-Atlantic Fishery Management Council has adopted an amendment to ban bottom-tending gear in both discrete and broad zones of the canyons. VA CZM received a Section 309 PSM for whale surveys and also used 309 funds subsequently to extend that survey work. This research has lead to a far better understanding of whale activity off Virginia’s coast including the sighting of right whales in the winter in Virginia’s Wind Energy Area. Additionally, the Virginia Commonwealth University has initiated a study with reprogrammed Section 309 monies to understand the electromagnetic field impacts on the endangered, migratory Atlantic Sturgeon

Ocean GIS mapping/database: Huge strides were made during the last assessment in development of the Mid-Atlantic ocean data portal. Original funding for the portal came from Virginia CZM and the first version was launched in late 2010. Subsequently funding

from NOAA and the Moore Foundation has supported refinements and upgrades. The latest version of the portal was launched in June 2015 during Capitol Hill Oceans Week (see <http://midatlanticocean.org/data-portal/>). In June of 2012, VA CZM funds (306 and 309) were used to create, for the first time, maps of 22 different recreational uses. These will soon be on the MARCO portal but can now be viewed on Virginia CZM's Coastal GEMS at www.coastalgems.org . Section 309 funds were also used to support Virginia's Ocean Stakeholder Coordinator to ground-truth maps of important commercial fishing areas with Virginia and other nearby fishermen. These "Communities at Sea " maps were developed by Rutgers University using NOAA vessel trip report and vessel permit data to map where 75% of fishing days occur by gear type and by home port of vessels. . The VA Ocean Stakeholder Coordinator is also working to obtain offshore fishing set data from the menhaden industry and red crab industry.

Ocean technical assistance, education, outreach and regional collaboration: The Virginia CZM Program Manager devotes a large portion of her time – funded under Section 306, on assisting MARCO and the RPB. She leads MARCO's Ocean Mapping and Data Team which guides development of the portal, recently assumed chairmanship of MARCO, served on the RPB's Ocean Action Plan Work Group and now co-chairs its Data Synthesis Work Group. All of these efforts involve technical assistance, education and outreach and are reported on regularly in the Virginia CZM Magazine and by the CZM Outreach Coordinator on our website pages:

<http://www.deq.virginia.gov/Programs/CoastalZoneManagement/CZMIssuesInitiatives/OceanPlanning.aspx> and
<http://www.deq.virginia.gov/Programs/CoastalZoneManagement/CZMIssuesInitiatives/OceanPlanning/VirginiaOceanPlanning.aspx> .

The 309-funded Ocean Stakeholder Coordinator has developed strong relationships with the fishing community, building their trust so that they are more willing to share their data and relay their needs and concerns so that they can be considered in the larger context of comprehensive regional ocean planning. This effort was expanded through a grant from BOEM and Virginia's Department of Mines, Minerals and Energy to produce fine scale maps of commercial and recreational fishing around VA's Wind Energy Area (WEA) and to produce a BMP document that identifies fishermen's needs for fishing in and around the WEA as well as a plan for communicating with fishermen during construction and operation.

The most significant outcome of all these efforts is that Virginia and the Mid-Atlantic region are on the cusp of producing a first-ever, regional ocean action plan in 2016. Data synthesis efforts being undertaken by MARCO are slated to synthesize both ecological data layers and human use data layers that will drive where and what "interjurisdictional coordination" or "IJC" actions should be undertaken by the Regional Planning Body. Initial actions will be included in the 2016 plan however; the plan is expected to evolve over time.

3. Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state's or territory's management efforts in planning for the use of

ocean resources since the last assessment. If none, is there any information that you are lacking to assess the effectiveness of the state's or territory's management efforts?

Ocean planning work is still underway in the Mid-Atlantic. It will not be possible to assess the effectiveness of the Mid-Atlantic plan until it is implemented. Implementation of initial IJC actions is expected beginning in 2017 and additional actions may be added in later years. Although we are not aware of any studies done on this, it is fair to state that Virginia's efforts in developing a regional ocean portal, populating it with sound, stakeholder-vetted data and its efforts to ensure those data are synthesized in a way that allows users to better understand "the big picture" have led to a greater awareness of the Mid-Atlantic Ocean's resources and human uses and this tool has become the planning tool for use by the Mid-Atlantic Regional Planning Body (RPB).

Identification of Priorities:

1. Considering changes in threats to ocean resources and management since the last assessment and input from stakeholders, identify and briefly describe the top one to three management priorities where there is the greatest opportunity for the CMP to improve its ability to effectively plan for the use of ocean resources. (*Approximately 1-3 sentences per management priority.*)

Management Priority 1: Ensuring that traditional uses of the ocean can be sustainably maintained while accommodating new uses such as offshore energy development and better management of old resources such as sand that are lately in high demand.

Description: At its Sep 23-24, 2015 meeting, the RPB approved a variety of actions regarding human uses: offshore wind energy, sand management, maritime commerce & navigation, national security, and commercial & recreational fishing.

Management Priority 2: Ensuring that the best stakeholder vetted and trusted data are available for and incorporated into interjurisdictional coordination actions.

Description: At the September 23-24 meeting the RPB also approved 5 IJC actions for a Healthy Ocean Ecosystem and several actions regarding ongoing development of the MARCO Ocean Data Portal.

2. Identify and briefly explain priority needs and information gaps the CMP has to help it address the management priorities identified above. The needs and gaps identified here do not need to be limited to those items that will be addressed through a Section 309 strategy but should include any items that will be part of a strategy.

Priority Needs	Need? (Y or N)	Brief Explanation of Need/Gap
Research	Y	Data gaps still exist for understanding where the most important areas are for marine mammals, sea turtles, seabirds, fish and corals as well as what the cumulative and secondary impacts of various human ocean uses are on these animals
Mapping/GIS	Y	Virginia CZM and MARCO have excellent mapping portals available but additional data and decision support tools will be needed. Maps depicting syntheses of both ecological and human use data will need continual updating and improvement.
Data and information management	Y	The Mid-Atlantic Regional Ocean Assessment will be completed by spring 2016 and will be a repository for data and narrative information. This online assessment will need to be updated with new information as it becomes available.
Training/Capacity building	Y	It will be critical as the Ocean Action Plan continues to be developed and evolves that stakeholder representatives receive training in the use of mapping portals and decision support tools so that their engagement in the process can be fully integrated and considered.
Decision-support tools	Y	Although some tools have been developed, additional tools will likely be needed and their use will need to be sanctioned by stakeholders, MARCO, RPB reps, etc.
Communication and outreach	Y	Communicating the complexities of ocean planning will remain a daunting challenge. More work needs to be done to ensure that ocean planning information reaches stakeholders where they live and work and that the information is made relevant to their needs.
Other (Specify)		

Enhancement Area Strategy Development:

1. Will the CMP develop one or more strategies for this enhancement area?

Yes X

No

2. Briefly explain why a strategy will or will not be developed for this enhancement area.

Development of a regional ocean action plan as called for in the President’s 2010 National Ocean Policy is expected to be completed within the next two years and for implementation to begin. A great deal of progress and momentum has been realized and for the first time in

our nation's history there is a joint federal-state-tribal effort underway that promises to end the absence of state and tribal input to ocean management as well as the traditional stove-piping of federal agency activities so that together, through regional planning bodies we take a comprehensive approach to managing our ocean resources.

Without continued funding through Section 309, Virginia will not be able to play a significant role in the continued development and implementation of this plan. Congress has discontinued direct funding for regional ocean partnerships making Section 309 (and 306) CZM funding the only available source apart from the possibility of funding from private foundations. However private foundations are cutting off their funding believing these efforts should be government-funded.

Energy and Government Facility Siting (Phase I only)

Phase I Assessment

Resource Characterization:

1. In the table below, characterize the status and trends of different types of energy facilities and activities in the state's or territory's coastal zone based on best available data. If available, identify the approximate number of facilities by type. The MarineCadastre.gov may be helpful in locating many types of energy facilities in the coastal zone.

Status and Trends in Energy Facilities and Activities in the Coastal Zone				
Type of Energy Facility/Activity	Exists in CZ		Proposed in CZ	
	(# or Y/N)	Change Since Last Assessment (↑, ↓, -, unkwn)	(# or Y/N)	Change Since Last Assessment (↑, ↓, -, unkwn)
<i>Energy Transport</i>				
Pipelines ³⁶	1	Transcontinental Gas Pipe Line Co, LLCs Mid-Atlantic Connector Expansion Project, 2011	1?	Dominion-Atlantic Coast Pipeline-spur in Chesapeake
Electrical grid (transmission cables)	7- http://www.energy.vt.edu/vept/electric/vapowerlines.asp		1-cable between Aquia Harbor and Stafford County	
Ports	5-APM, Port of Richmond, Newport News, Norfolk, Portsmouth Marine Terminal		1 – Craney Island Marine Terminal	
Liquid natural gas (LNG) ³⁷	0		No	
Other (please				

³⁶ For approved pipelines (1997-present): www.ferc.gov/industries/gas/indus-act/pipelines/approved-projects.asp

³⁷ For approved FERC jurisdictional LNG import/export terminals: www.ferc.gov/industries/gas/indus-act/lng/exist-term.asp

Status and Trends in Energy Facilities and Activities in the Coastal Zone				
Type of Energy Facility/Activity	Exists in CZ		Proposed in CZ	
	(# or Y/N)	Change Since Last Assessment (↑, ↓, -, unkwn)	(# or Y/N)	Change Since Last Assessment (↑, ↓, -, unkwn)
specify)				
Energy Facilities				
Oil and gas	19- http://www.energy.vt.edu/vept/electric/plantlocations.asp			There is currently no oil or gas production in the Coastal Zone. Technically, no drilling or fracking has yet been proposed. Governor McAuliffe's Energy Plan does support oil and gas development at 50 miles or more offshore
Coal	12		No	
Nuclear ³⁸	2-North Anna; 2-Surry		No	
Wind	0?		2	Dominion won the lease for Virginia's Wind Energy Area. 2 test turbines and a submarine cable to bring power to shore are in the permit review process.
Wave ³⁹	0		0	
Tidal ³⁶	0		0	
Current (ocean, lake, river) 36	0		0	
Hydropower	4		0	

³⁸ The Nuclear Regulatory Commission provides a coarse national map of where nuclear power reactors are located as well as a list that reflects there general locations: www.nrc.gov/reactors/operating/map-power-reactors.html

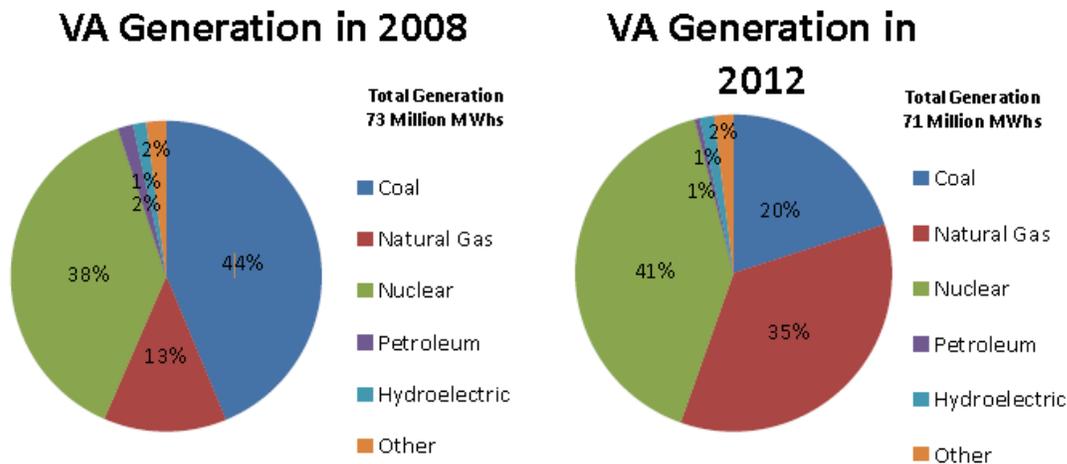
³⁹ For FERC hydrokinetic projects: www.ferc.gov/industries/hydropower/gen-info/licensing/hydrokinetics.asp

Status and Trends in Energy Facilities and Activities in the Coastal Zone				
Type of Energy Facility/Activity	Exists in CZ		Proposed in CZ	
	(# or Y/N)	Change Since Last Assessment (↑, ↓, -, unkwn)	(# or Y/N)	Change Since Last Assessment (↑, ↓, -, unkwn)
Ocean thermal energy conversion	0		0	
Solar	1-Canon, VA in Gloucester		0	
Biomass	0		1-Hopewell	
Other (please specify)	Landfill Gas-3; Municipal Solid Waste-3;			

- If available, briefly list and summarize the results of any additional state- or territory-specific information, data, or reports on the status and trends for energy facilities and activities of greater than local significance in the coastal zone since the last assessment.

Virginia’s Energy Plan is available at:

www.dmme.virginia.gov/DE/2014_VirginiaEnergyPlan2.shtml. It provides a comprehensive view of where Virginia has been and currently is in terms of its energy assets, and it charts a path forward for energy policy in the Commonwealth. It espouses an “all of the above” strategy that includes traditional energy sources, renewable sources and energy efficiency. The plan emphasizes the need for increasing renewable energy generation. Total energy generation in Virginia has shifted from 82% of total megawatt hours (MWhs) deriving from coal and nuclear in 2008 to 76 percent of total MWh’s deriving from natural gas and nuclear in 2012.



3. Briefly characterize the existing status and trends for federal government facilities and activities of greater than local significance⁴⁰ in the state’s coastal zone since the last assessment.

No significant trends.

Management Characterization:

1. Indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) that could facilitate or impede energy and government facility siting and activities have occurred since the last assessment.

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y VA Energy Plan	N	Y
State comprehensive siting plans or procedures	Y Virginia Wind Energy Area	Y	Y
State comprehensive siting plans or procedures	Y Fort Monroe National Monument	N	Y

2. For any management categories with significant changes briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:

- a. Describe the significance of the change:
- b. Specify if they were 309 or other CZM-driven changes; and
- c. Characterize the outcomes or likely future outcomes of the changes.

Virginia’s 2014 Energy Plan, under Recommendation #1 “strongly and aggressively supports the timely development of offshore wind in Virginia” and strives to “establish Virginia as the ideal manufacturing, operational and supply chain hub for offshore wind development in the mid-Atlantic region and provide support and resources to accelerate development of Virginia’s offshore wind resources.” Under Recommendation #4 it urges pursuit of “development of Virginia’s offshore gas and oil resources.” Current VA statute favors permitting production 50 miles or more off the coastline. The plan states that “it is critical that the

⁴⁰ The CMP should make its own assessment of what Government facilities may be considered “greater than local significance” in its coastal zone, but these facilities could include military installations or a significant federal government complex. An individual federal building may not rise to a level worthy of discussion here beyond a very cursory (if any at all) mention).

development of these resources be conducted in a safe manner that is protective of Virginia’s coastal environment and its broad economic and ecologic base” and the plan also supports development contingent upon a revenue sharing agreement between the state and federal government. The plan called for and Virginia recently completed a readiness study for oil and gas which considered geological and geophysical studies, port infrastructure, and military concerns. The report is available at:

<http://dmme.virginia.gov/dgmr/pdf/VirginiaOffshoreOilandGasReadinessStudyFinal.pdf>

None of these efforts were 309 or CZM-driven however they are significant policies that help define the parameters of Virginia’s involvement in regional ocean planning and the Virginia CZM Program plans to deal with these issues in its 2016-202 Ocean Resources Strategy.

Fort Monroe, in the City of Hampton, was decommissioned in 2011 as a result of the Base Realignment and Closer Commission’s recommendation and designated as a National Monument as a unit of the National Park Service. It contains 325 acres with historic buildings and significant coastal resources. The future of the area will be shaped through a public planning process currently underway.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High _____
Medium X
Low _____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

At the December 2014 Coastal Partners Workshop which included stakeholders from state and local government, ENGOs and industry, there was broad agreement that while these issues are very important, the Virginia CZM Program’s most appropriate niche for addressing these issues is through the Mid-Atlantic Regional Council on the Ocean and the Mid-Atlantic Regional Planning Body.

Aquaculture (Phase I only)

Phase I Assessment

Resource Characterization:

1. In the table below, characterize the existing status and trends of aquaculture facilities in the state's coastal zone based on the best available data. Your state Sea Grant Program may have information to help with this assessment.

Type of Facility/ Activity	Status and Trends of Aquaculture Facilities and Activities		
	# of Facilities	Approximate Economic Value	Change Since Last Assessment (, ↓, -, unknown)
Private Hatcheries	9 -- Private hatcheries are the core of the shellfish culture industry, which has an economic impact of \$81.2 million on the Commonwealth ¹ . The number of facilities in operation has not changed, however production capacity at certain hatcheries has increased to meet the growing demand. Water quality is the key issue; poor water quality threatens the potential for VA hatcheries to meet the production demand.	Cannot determine	No change
Public Hatcheries	2 -- Two research hatcheries are owned and operated by VIMS. The Gloucester Point facility is specifically focused on oyster genetics and breeding. The facility produces improved oyster broodstock strains for the industry oyster hatcheries. Each year the improved broodstock is offered to privately owned industry hatcheries for use in commercial production. The Eastern Shore facility is focused on production of bay scallops for local restoration efforts.	Unknown	No change
Finfish aquaculture	2 -- private and 2 public One private facility is active in culturing black sea bass as a food fish. The two public facilities include VIMS and Virginia Tech's Seafood AREC in Hampton	Unknown	No change
Crayfish aquaculture	Unknown	Unknown	Unknown
Spat-on-	Approximately 36 -- There are ~36 facilities	Not available	Increase

shell oyster growing	in Virginia that have remote setting capability. Spat on shell aquaculture is expanding and is ultimately limited by the available supply of oyster eyed larvae from commercial hatcheries. To support the current demand, larval needs are estimated to be 2-3 billion. Facilities vary in capacity and range from the ability to set 200 bushels of oyster shell at a time to setting upwards of 1,200 bushels at a time.		
Oyster aquaculture	352 ⁱⁱ -- Intensive culture continues to expand in Virginia. The industry is diverse and methodology continues to evolve. The increase in oyster sales documents what has become a long-term positive growth trend. There are no expected market limitations for the foreseeable future.	\$ 17.1 M ⁱⁱⁱ 2014 farm gate estimate	Increase in #permits, #sold, #planted, farm gate value increased by about \$6M over 2013.
Clam aquaculture	108 ^{iv} -- Virginia produces more cultured hard clams than any other state. The slight changes in sales and plantings year to year reflect more typical annual variability of a more mature agricultural industry.	\$38.8M ^v 2014 farm gate estimate	Increase in #permits, #sold, #planted, farm gate value increased by almost \$5M over 2013.
Shellfish aquaculture overall	460 ^{vi} -- Growth of the industry continues to add value to the state's seafood marketplace.	\$55.9 M ^{vii} 2014 farm gate estimate \$81.2 M ^{viii} total economic impact	Increase in #permits, #sold, #planted, farm gate value increased by almost \$10.8M over 2013.
Bay Scallop cultivation	1 -- Bay scallops are being raised for restoration purposes on the seaside of the Eastern Shore	Not available	Increase
Algae production	11 -- (9 private + 2 public) All shellfish hatcheries produce algae as a food source for the larval clams and oysters.	Not available	Unknown
Oyster gardening	1136 applications were received by end of 2014 (11-4-14 email from Chip Neikirk of MRC). 685 permits are currently valid. This is likely an underestimate of actual # of oyster gardeners	Unknown	Unknown

Virginia Marine Resources Commission
Engineering & Surveying Department
Oyster Ground Leasing

Print Date: Tuesday November 4, 2014 2:23 PM



Applications Completed & Assigned Per Year

Calendar Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
# Applications	55	112	70	130	85	111	124	96	148	129

Applications Entered Per Year

Calendar Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
# Applications	100	211	99	83	104	155	118	150	182	301

1. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends or potential impacts from aquaculture activities in the coastal zone since the last assessment. The most recent report available is at http://www.vims.edu/research/units/centerspartners/map/aquaculture/docs_aqua/2015_shellfish_aq_report.pdf. The Virginia Institute of Marine Science produces the report annually. This report covers 2014 and was published in March 2015. The headline for
2. 2014 was:



This page serves as the Executive Summary of the "Virginia Shellfish Aquaculture Outlook and Report: Results from the 2014 Virginia Shellfish Crop Reporting Survey," March 2015. The complete report can be found online at: www.vims.edu/mas/aquaculture
VIMS Marine Resource Report No. 2015-3
VSG-15-01

\$55.9M Farm Gate Value for VA Shellfish Aquaculture in 2014—An All-Time High

Virginia shellfish farmers sold \$55.9 million in oysters and clams in 2014, an increase of 14% total revenue for clam growers and 33% for oyster growers, according to an annual survey of shellfish aquaculture in the state.

"It's all-around good news for the industry," says Karen Hudson, Virginia Institute of Marine Science extension affiliated with Virginia Sea Grant. Hudson co-authored the "2014 Virginia

At a Glance

- \$55.9M** Farm gate value in 2014
- \$17.1M** oysters
- \$38.8M** clams
- 100s** Directly employed
- 243M** All-time high in clam sales
- 86%** Oysters sold out of state
- 1st** U.S. clam production
- Leader in East Coast oyster production**

Management Characterization:

1. Indicate if the approach is employed by the state or territory and if there have been any state- or territory-level changes (positive or negative) that could facilitate or impede the siting of public or private aquaculture facilities in the coastal zone.

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Aquaculture comprehensive siting plans or procedures	Y	N	N
Other aquaculture statutes, regulations, policies, or case law interpreting these	Y	N	N

2. For any management categories with significant changes briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
 - a. Describe the significance of the changes;
 - b. Specify if they were 309 or other CZM-driven changes; an
 - c. Characterize the outcomes or likely future outcomes of the changes.

- Aquaculture Special-Use Permits

- In January 2014, the Supreme Court of Virginia sided with York County in two cases challenging the county’s requirement that aquaculture farmers (in this case two oyster farmers) obtain a special use permit in order to offload their harvest on property that is zoned for rural residential development
- In March 2014, the General Assembly passed a bill removing the power of localities to require special use permits for certain agricultural activities in areas that are zoned for agriculture. This bill references a definition for “agricultural activities” that specifically includes aquaculture.
- In October 2014, York County Board of Supervisors passed new performance standards that apply to all residential properties in zones that allow agricultural activities. This prohibits offloading aquaculture harvest on property that fails to meet the standards.

- **Water Quality**

Water quality is a key issue; poor water quality threatens the potential for VA hatcheries to meet the production demand.

As was noted at the December 2014 Coastal Partners Workshop, Virginia’s previous Section 309 strategies that lead to the adoption of a streamlined leasing system for shellfish aquaculture, along with the involvement and commitment of Virginia’s state agencies, including the Marine Resources Commission, the Department of Health, the Virginia Institute of Marine Science, the Department of Environmental Quality and the Virginia Tourism Corporation have resulted in an excellent management system for shellfish aquaculture which has enabled Virginia to be a national leader in shellfish cultivation. Each agency has done its part to provide adequate space for cultivation, disease control, genetic vigor, water quality, and marketing. This has made Virginia a top-notch state for the shellfish industry. Work in other 309 enhancement areas (such as CSI) can help maintain this status.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High	_____
Medium	_____x_____
Low	_____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

The Virginia Coastal Zone Management Program (CZM) held a workshop in December 2014 in which the CZM state and local partners were asked to rank the separate 309 areas as low, medium or high priority; with high priority areas to be assigned a Section 309 Strategy. Aquaculture was ranked as a medium priority by the CZM partners; therefore no strategy was assigned to this area. Aquaculture was also not chosen to receive a strategy because a number of the issues facing aquaculture will be addressed by other strategies during this round, i.e. climate change will be addressed by the Hazards strategy and water quality impacts will be addressed by the CSI strategy.

ⁱ Economic Activity Associated with Shellfish Aquaculture in Virginia – 2012. July 2013. VIMS Marine Resource Report No. 2013-4

ⁱⁱ Virginia Marine Resources Commission’s 2013 Clam and Oyster Aqua Product Owner Permit List

ⁱⁱⁱ Virginia Shellfish Aquaculture Situation and Outlook Report – Results of the 2014 Virginia Shellfish Aquaculture Crop Reporting Survey. March 2015. VIMS Marine Resource Report No. 2015-3

^{iv} Virginia Marine Resources Commission’s 2013 Clam and Oyster Aqua Product Owner Permit List

^v Virginia Shellfish Aquaculture Situation and Outlook Report – Results of the 2014 Virginia Shellfish Aquaculture Crop Reporting Survey. March 2015. VIMS Marine Resource Report No. 2015-3

^{vi} Virginia Marine Resources Commission’s 2013 Clam and Oyster Aqua Product Owner Permit List

^{vii} Virginia Shellfish Aquaculture Situation and Outlook Report – Results of the 2014 Virginia Shellfish Aquaculture Crop Reporting Survey. March 2015. VIMS Marine Resource Report No. 2015-3

^{viii} Economic Activity Associated with Shellfish Aquaculture in Virginia – 2012. July 2013. VIMS Marine Resource Report No. 2013-4

IV. STRATEGY

5-YEAR (2016 – 2020) BUDGET SUMMARY BY STRATEGY (updated Dec 2018)

Area	Title	FY2016	FY2017	FY2018	FY 2019	FY2020	SUBTOTAL	TOTAL
	Enforceable Policies Revisions	0	30,000	0	0	0	30,000	30,000
Coastal Hazards	Shoreline Plan & Policy Development	120,000	100,000	83,794	83,900	83,900	471,599	0
	Community Resiliency Plans	40,000	56,000	90,651	83,900	83,900	354,451	826,050
CSI	Leveraging Economic Benefits of Land Conservation	125,000	113,500	120,550	161,500	161,500	682,050	0
	Working Waterfronts	50,000	47,500	50,000	0	0	147,500	829,550
Ocean Resources	Stakeholder Coordination for IJC Actions	60,000	48,000	48,000	48,000	48,000	252,000	0
	Sand IJC Action	0	0	0	30,000	30,000	60,000	0
	Ocean Data Collection /Synthesis or Tools	32,290	48,000	50,000	26,700	26,700	183,690	0
	Marine Debris	75,710	60,000	60,000	60,000	60,000	315,710	811,400
	TOTAL	503,000	503,000	503,000	494,000	494,000	2,497,000	2,497,000

A complete strategy is not detailed for “enforceable policies” however, these funds would be used to acquire assistance from the William & Mary Coastal Policy Center to complete work on converting the CZM Program’s enforceable policies to the new, “narrative policies” format preferred by NOAA. Narrative policies would be relatively short statements of policies with links to related laws and regulations rather than including the complete, current laws and regulations to provide clarity and reduce the need for lengthy updating procedures.

Coastal Hazards Strategy

I. Issue Area(s)

The proposed strategy or implementation activities will support the following high-priority enhancement areas :

- | | |
|--|---|
| <input type="checkbox"/> Aquaculture | <input type="checkbox"/> Cumulative and Secondary Impacts |
| <input type="checkbox"/> Energy & Government Facility Siting | <input checked="" type="checkbox"/> Wetlands |
| <input checked="" type="checkbox"/> Coastal Hazards | <input type="checkbox"/> Marine Debris |
| <input type="checkbox"/> Ocean/Great Lakes Resources | <input type="checkbox"/> Public Access |
| <input type="checkbox"/> Special Area Management Planning | |

II. Strategy Description

A. The proposed strategy will lead to, or implement, the following types of program changes :

- A change to coastal zone boundaries;
- New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
- New or revised local coastal programs and implementing ordinances;
- New or revised coastal land acquisition, management, and restoration programs;
- New or revised special area management plans (SAMP) or plans for areas of particular concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,
- New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government, and other agencies that will result in meaningful improvements in coastal resource management.

B. Strategy Goal: Develop state and local plans to enhance coastal resiliency for Virginia's natural and built environments in the face of the anticipated impacts of climate change. Provide data and decision support tools to promote more informed decisions and better coordination at all levels of government and among all stakeholders.

C. Strategy Description: The Virginia CZM Program has directed previous initiatives, with both Section 309 and 306 funds, to improve shoreline management and build community resilience. This strategy, based on priorities identified through the coastal hazards assessment and significant stakeholder feedback, will build on those initiatives and expand the capacity of state and local partners to develop plans to improve resiliency. The strategy will focus on actions to improve management of natural and nature-based shoreline resources, and to build community resiliency. Shoreline resources will be better managed by 1) accelerating development of site-specific shoreline management

recommendations and corresponding local comprehensive plan elements, 2) promoting the use of living shorelines, and 3) developing a state atlas and corresponding policy to build resiliency. Community resiliency will be enhanced by 1) providing more accurate vulnerability assessments for adoption of local hazard mitigation plans, 2) promoting local adoption of the National Flood Insurance Program's Community Rating System, and 3) helping localities develop comprehensive plan elements to address climate change issues.

III. Needs and Gaps Addressed

1) Management of Natural and Nature-based Shoreline Resources.

As a result of sea level rise, subsidence, and shoreline erosion control practices, Virginia has lost and is continuing to lose tidal wetlands and other shoreline features that are critical for natural resilience. A study conducted by the Virginia Institute of Marine Science (VIMS) on the York River showed a net loss of almost nine percent (1,794 acres) of its tidal marshes in slightly more than thirty years. Almost thirty percent of fringe marshes in the study area, which have high habitat, water quality protection, and natural buffer values, were lost during this timeframe. These narrow bands of wetlands along the shoreline are especially vulnerable because of the combination of sea level rise and structurally hardened shorelines that block their upland migration.

Two previous Section 309 Strategies (2006-2010 and 2011-2015) resulted in a number of initiatives to improve shoreline management and promote the use of living shorelines, which can often provide opportunities for upland migration of wetlands as well as create new fringe wetlands and help offset wetlands loss due to sea level rise. Key new enforceable policies during this timeframe included expanded protection for beaches and dunes, and legislation clarifying that living shorelines are the Commonwealth's preferred shoreline management technique. This legislation also required all coastal localities to adopt comprehensive plan amendments based on shoreline management guidance provided by VIMS. Local comprehensive coastal resource management portals (CCRMPs), developed by VIMS to help meet this requirement, provide gateways to local shoreline data, maps displaying management recommendations, and decision support tools.

In order to complete a local portal, VIMS must complete local shoreline and tidal marsh inventories. Data from these reports are used to run a model that determines the most appropriate shoreline management technique for each reach of shoreline. As of 2015 VIMS has completed 18 CCRMPs and has 4 more in progress. However, 6 shoreline inventories and 24 tidal marsh inventories remain to be completed or updated. Without additional resources, VIMS estimates it will take 10 years to complete the portals, including site-specific management recommendations, for all localities. Accelerating development of these portals and corresponding local comprehensive plan elements has been identified as a priority need by Virginia stakeholders.

Stakeholder feedback also indicated that there is a critical need for other actions that Virginia should undertake to support new living shoreline policies. These include training for contractors and local wetland board members and staff, property-owner education, incentive programs, and strengthening of existing shoreline management guidance. Virginia has also received an FY 2015 Project of Special Merit entitled “Implementing sustainable shoreline management in Virginia: assessing the need for an enforceable policy” that is likely to include recommendations for strengthening current regulations and guidance and creating the need for more policy development.

Stakeholders also identified the need for a state policy on building coastal resiliency along Virginia’s shoreline and for creating a corresponding coastal resiliency atlas. The atlas would serve as a repository for information on various resiliency-related issues, and could be added to the Virginia CZM Program’s “Coastal GEMS” online mapping and information system. Developing the atlas would provide an opportunity for Virginia CZM partners to share existing data and to identify and prioritize data gaps for use in targeting future projects. While some of these projects could be funded through this 5-year strategy, other priority data sets would be targeted for acquisition through competitive grant opportunities such as Section 309 projects of special merit. Potential data layers for the atlas would include:

- Sites for the beneficial use of dredge spoil material
- Current and potential living shoreline demonstration sites (public property)
- An inventory of living shorelines and created wetlands
- Opportunities for upland migration of wetlands
- Detailed shoreline management recommendations for publicly-owned shorelines

A corresponding state resiliency policy will be developed for adoption by the Virginia Marine Resources Commission, or possibly through an executive order from the Governor. In addition to clarifying state policy and project priorities, this initiative will help coordinate resiliency-building efforts among the various state, federal, local and private organizations.

2) Community Resiliency

Outside of the Section 309 process, the Virginia CZM program has provided Section 306 funds to promote community resiliency in four of the eight coastal planning district commissions. These projects have provided initial spatial and economic analysis of the potential impacts of sea level rise and options for addressing these issues. They served as important starting points for discussion among community leaders and citizens. Stakeholder input for developing the current strategy focused on the need to continue and broaden this discussion, recognizing that in order to build community resiliency all sectors of the community must be involved. Elected officials, local and state staff, business leaders, academia, and individual citizens will all need to make informed, and coordinated, decisions in order to adapt to a changing climate.

The process of developing local plans and ordinances can be an effective means of improving communication and coordination on coastal resiliency issues among all of these stakeholders. As

of July 2015, local hazard mitigation plans are required as a condition for participation in the Federal Emergency Management Agency's National Flood Insurance Program (NFIP). However, undertaking the required vulnerability assessments for these plans is often hampered by the lack of adequate, localized data. Without reliable data, local plans are not as useful for decision making and are less likely to be implemented. Stakeholders identified the need for more accurate vulnerability assessments in local hazard mitigation plans as an important need in Virginia.

Participation in the NFIP's Community Rating System (CRS) also provides an opportunity for localities to receive credit for resiliency initiatives already in place and incentives for additional efforts. Relatively few coastal Virginia localities, however, currently participate in CRS. This is due in part to the resources necessary to enter and maintain a program, and also to some possible misperceptions about the value of the program. Promoting participation in the CRS was also identified as an important need.

Inclusion of local hazard mitigation plans in local comprehensive plans and CRS participation are both encouraged in legislation passed by the 2015 Virginia General Assembly. The legislation (SB 1443) requires the 17 localities of the Hampton Roads Planning District to incorporate strategies to combat sea level rise and recurrent flooding into their next comprehensive plan updates. Although not yet required for other coastal zone localities, considering these issues in plan and ordinance updates were recognized by stakeholders as priority needs.

IV. Benefits to Coastal Management

Benefits of this strategy will be new local plans and state policy to enhance natural and nature-based resiliency features as well as more resilient communities. Localities will be better able to preserve and create the shoreline features that are critical for adapting to climate change. Their comprehensive plans will clearly state policy on shoreline management and contain links to specific recommendations for management of each reach of their shoreline. They will also receive additional support from the state in the form of training, outreach and strengthened guidance on shoreline management. State agencies will also have new policies regarding coastal resiliency and an atlas of current efforts and future options to build resiliency. This will help with efforts to prioritize restoration projects and to improve coordination among partner agencies at all levels of government. The strategy will also improve local coastal hazards planning by helping localities to more effectively analyze and communicate the potential impacts of hazards such as coastal storms and sea level rise. Greater local participation in the NFIP-CRS program will increase community resiliency through a wide range of local initiatives and result in lower flood insurance rates for citizens of the localities.

V. Likelihood of Success

This strategy was developed with significant stakeholder input and builds on past successful strategies and initiatives. There are now several committees and organizations evaluating the

appropriate responses to climate change in Virginia. The priorities of these groups were considered in developing this strategy and a number of stakeholders from those efforts provided input into strategy development. A goal of this Section 309 planning process, as recommended in preliminary comments in Virginia's recent Section 312 Evaluation, has been to identify an appropriate niche for the Virginia CZM Program with regard to climate adaptation. With broad stakeholder input and support, this strategy appears to have addressed that recommendation.

VI. Strategy Work Plan

Strategy Goal: Develop state and local plans to enhance coastal resiliency for Virginia's natural and built environments in the face of the anticipated impacts of climate change.

Total Years: 5

Total Budget: \$825,000

Years: 1-2

Description of activities:

Natural / Nature-based Shoreline Resources - Plan and Policy Development: Coordinate with stakeholders to design a coastal resiliency atlas that identifies shoreline habitat restoration priorities and evaluates potential restoration resources such as beneficial use of dredge spoil, competitive grant opportunities, local mitigation funds, and others. Populate the atlas with existing data and evaluate opportunities to acquire other data prioritized by stakeholders. Draft a state policy supporting the atlas. Begin initial support for data development for CCRMPs. Support training on living shoreline design and shoreline management plans developed during the last strategy.

Local Resiliency Plan Development: Work with a pilot locality or region to integrate planning efforts for hazard plans, local comprehensive plans and the Community Rating System (CRS). Evaluate data needs to improve and implement these plans. Conduct cost benefits analyses of CRS participation and regional CRS coordinator positions.

Major Milestones:

- Initial Coastal Resiliency Atlas and Draft State Policy
- Data for CCRMPS and Local Plan Adoption
- Training on Shoreline Plans and Living Shoreline Design
- Pilot Project integrating local hazards and comprehensive planning
- Improved vulnerability assessment methodology
- Cost-benefit analysis of CRS participation and regional coordinators

Budget: \$ 324,700

Years: 3-5

Description of activities:

Natural / Nature-based Shoreline Resources - Plan and Policy Development: Data layer development for Coastal Resiliency Atlas as prioritized by stakeholders. Potential layers include priorities for dredge spoil deposition, opportunities for living shoreline demonstration sites on

public lands, location of existing living shorelines, and opportunities for upland migration of wetlands. Continued support for data development for CCRMPs and adoption of comprehensive plan shoreline management components.

Local Resiliency Plan Development: Support data development and provide technical assistance for adoption of coastal resiliency components in local comprehensive plans, as well as participation in the CRS Program.

Major Milestone(s):

- Data layers and state policy for Coastal Resiliency Atlas
- Data for CCRMPs and Local Plan Adoption
- Technical assistance for local plan resiliency components
- Data for Improved Vulnerability Assessments

Budget: \$500,300

VII. Fiscal and Technical Needs

A. Fiscal Needs: Both the natural/nature-based shoreline resources and the community resilience components of this strategy will result in identification of additional data needs. Completely addressing these needs is likely beyond the scope of the resources available for the strategy. But documenting the need and refining the objectives of data acquisition projects will help position the Commonwealth to apply for other available resources, such as the Section 309 Projects of Special Merit. Virginia has received a 2015 Project of Special Merit which will analyze the current permitting process for living shorelines. This project will complement and strengthen the strategies included in the 2016–2020 document.

B. Technical Needs: NA

VIII. Projects of Special Merit: This strategy identifies several data gaps that could be addressed through projects of special merit. It is anticipated that Virginia will apply for these competitive funds on a regular basis.

IX. 5- Year Budget Summary for Coastal Hazards Strategy

Strategy Title	FY2016	FY2017	FY2018	FY 2019	FY2020	Total Funding
Shoreline Plan & Policy Development	85,000	77,350	82,350	83,900	83,900	412,500
Community Resiliency Plans	85,000	77,350	82,350	83,900	83,900	412,500
Total Funding	170,000	154,700	164,700	167,800	167,800	825,000

Cumulative and Secondary Impacts Strategy: *Leveraging Economic Benefits of the Natural Resources of the Lower Chickahominy River*

I. Issue Area(s)

The proposed strategy or implementation activities will support the following high-priority enhancement areas (*check all that apply*):

- | | |
|--|--|
| <input type="checkbox"/> Aquaculture | <input checked="" type="checkbox"/> Cumulative and Secondary Impacts |
| <input type="checkbox"/> Energy & Government Facility Siting | <input type="checkbox"/> Wetlands |
| <input type="checkbox"/> Coastal Hazards | <input type="checkbox"/> Marine Debris |
| <input type="checkbox"/> Ocean/Great Lakes Resources | <input type="checkbox"/> Public Access |
| <input type="checkbox"/> Special Area Management Planning | |

II. Strategy Description

A. The proposed strategy will lead to, or implement, the following types of program changes (*check all that apply*):

- A change to coastal zone boundaries;
- New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
- New or revised local coastal programs and implementing ordinances;
- New or revised coastal land acquisition, management, and restoration programs;
- New or revised special area management plans (SAMP) or plans for areas of particular concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,
- New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government, and other agencies that will result in meaningful improvements in coastal resource management.

B. Strategy Goal:

Through this strategy stakeholders at the local, state and federal level – including government and non-government organizations – will work together to align priorities in land use and land protection for maximum socio-economic and ecological benefit and create a shared vision for economic growth and conservation in the lower Chickahominy watershed and possibly additional locations. The overall strategy objective is to develop and adopt policies, procedures and new partnerships to address the cumulative and secondary impacts of coastal growth and development, including the collective effect of various individual uses or activities on coastal resources such as coastal wetlands and fisheries.

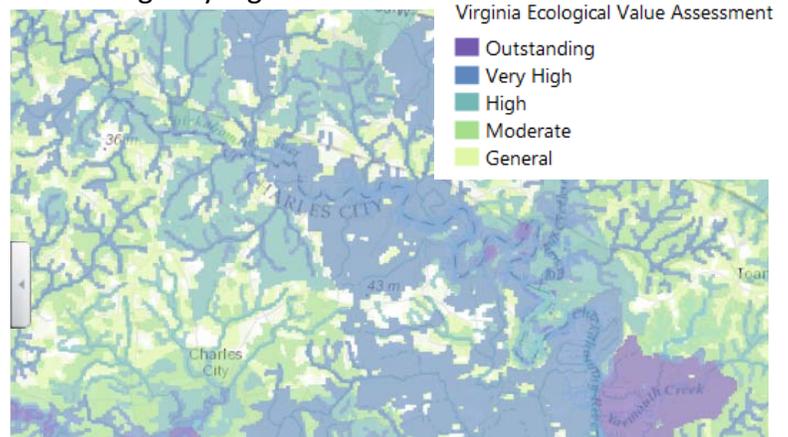
C. Describe the proposed strategy and how the strategy will lead to and/or implement the program changes selected above:

While the strategy will begin with a broad approach, assessing the economic values of protected lands in targeted regions coastal zone wide, it will continue with a specific focus on the lower Chickahominy watershed as a pilot area for future initiatives. Much of the lower Chickahominy has been identified as having very high to

outstanding ecological significance by the [Coastal Virginia Ecological Value Assessment \(VEVA\)](#), a GIS dataset that ranks land and water areas based on modeled ecological and conservation value.

Maintaining ecological integrity of the lower Chickahominy watershed, while appreciating and encouraging economic development opportunities will be priorities of the pilot. Comprehensive plans and other policies in localities within the watershed will be reviewed to identify

opportunities for aligning state and local priorities. A memorandum of understanding will be developed to express a shared vision and outline consistent approaches toward watershed protection and leveraging of identified economic benefits. This could lead to development of a management plan and possibly draft legislation to enable local governments in the watershed to establish a public access authority. This will be written and offered for sponsorship and introduction to the General Assembly.



(Data Source: Coastal Virginia Ecological Assessment, Virginia CZM Program, 2011)

III. Needs and Gaps Addressed

This strategy addresses the need for improved coordination among state natural resource agencies and local governments in land use planning and conservation of coastal assets. Trends in expansion of impervious cover (C-CAP data for VA and RRPDC data for Richmond region) and wetland loss ([VIMS](#)) in Virginia's coastal zone due to land conversion coupled with the influence of sea-level rise demonstrate a need for strong coordination in local land use planning. Place-based focus in the Lower Chickahominy addresses a need for coordinated planning in an area identified for its outstanding ecological significance ([Coastal VEVA](#)) that is situated between two high-growth metropolitan areas. Actions outlined in the strategy will bring watershed stakeholders together building key partnerships among local, state and federal government agencies and NGOs in the region that are not presently in place.

Scientific/ecological field studies are needed in the lower Chickahominy watershed to fill spatial and temporal data gaps. The three counties of the Lower Chickahominy watershed (10-digit HUC – 0208020606) are recognized for harboring some of the most biologically

diverse and ecologically significant areas in the Coastal Zone of Virginia. The Coastal VEVA classifies much of these counties, and especially the Lower Chickahominy corridor itself as very high to outstanding ecological significance.

The Chickahominy watershed earned these highest ranks in the Coastal VEVA based on comprehensive analysis of terrestrial, freshwater aquatic and estuarine biodiversity and habitat value there. This analysis was conducted by VIMS, DGIF, DCR-Natural Heritage, and the VCU-Center for Environmental studies, and driven by decades of field inventory data collected and maintained by these partners. The strength and utility of the Coastal VEVA, as well as other land use and conservation prioritizations (e.g. local conservation plans), hinges on the quality of information used to build these tools. More comprehensive, current and spatially accurate input data (i.e. locations and health of species populations and natural communities, habitat quality), ultimately enables more informed and impactful decisions to be made from the Coastal VEVA and other tools like it.

The landscape of Virginia's Coastal Zone is continually changing due to land conversion and climate change stressors such as sea level rise and storm events (i.e. storm surge and flooding in coastal areas). Naturally, species populations and their habitats respond to this change, as does the distribution of functioning ecological systems and the benefits derived from them for coastal communities. Understanding the current patterns in ecological systems and their benefits begins with an understanding of the distribution and health of species populations, their habitats and natural communities. And, to assure that land use and economic development decisions are adaptive and sustainable from a natural resources perspective, those decisions must start with a strong foundation of current scientific data collected in the field.

Data for this region are rich and informative, but there are also significant temporal and spatial data gaps. Temporal gaps are represented in the last observation dates of rare species populations and natural community locations in the study area. Currently there are 123 natural heritage resources (habitat of rare, threatened, or endangered plant and animal species, rare or state significant natural communities or geologic sites) identified throughout Charles City, James City and New Kent counties. Of these 123 natural heritage resources, 67 are, or will soon be considered "historic" because they have not been visited or verified, in at least 25 years. Once Natural Heritage data enter this "historic" status, they are no longer used to develop other conservation prioritization tools and assessments (e.g. Coastal VEVA). Thus, with this temporal data gap, about 54 percent of natural heritage data in the study area will not be used to inform future conservation and land use decisions until it is updated.

Key spatial data gaps might also be filled with targeted ecological assessment fieldwork. Many of the conserved areas in the study area may not have been thoroughly surveyed for biodiversity and habitat values. Tools like the Virginia Natural Landscape Assessment

(VaNLA) and the Coastal VEVA could be used to target “high priority” portions of conserved lands that warrant field inventories. Or, it may be apparent (i.e. from aerial photography or cursory field observation) that changes in vegetation composition and/or habitat structure warrant more focused field inventory since an area was last visited. Spatial data gaps also occur on privately owned lands. Nearly all natural heritage resources documented in the lower Chickahominy watershed occur on currently conserved lands. However, only 8.1, 12 and 4.5 percent of all lands in Charles City, James City and New Kent counties respectively are currently conserved. While rare species and habitat inventory on private lands is inherently more complex, perhaps certain areas could be identified where inventory is feasible. Biologists at DCR-Natural Heritage and DGIF could seek permission and target field inventory on some private lands, with the agreement of landowners. In fact, predictive species distribution models under development now at DCR could help to concentrate these efforts on areas with the highest predicted likelihood of suitable habitat for certain rare, threatened and endangered species.

In addition to ecological assessments through field inventory, the logical follow-on work of updating the Coastal VEVA in Lower Chickahominy watershed study area, and throughout the Coastal Zone is needed to conduct coordinated planning. Using the same partner team that originally developed the Coastal VEVA, this update could efficiently utilize consistent methods, but with updated input datasets (e.g. VaNLA, INSTAR data from VCU, estuarine priority areas data from VIMS). This would update the Coastal VEVA prioritization tool, while also providing a means of assessing change in ecological value of areas in the coastal zone since its original release.

Economic studies to support coordinated planning and educate elected officials are needed for Virginia’s coastal zone. While an economic study, (Southwick Associates, 2012) has been done for the Delmarva region (MD and VA) a more specific (VA only or specific VA regions) and detailed analysis is needed.

Further, through the Chesapeake Bay Watershed Agreement a management strategy goal of protecting two million new acres by 2025 has been established. Our CSI strategy complements this goal by aiming to develop and strengthen policies that will protect land to achieve conservation goals, support economic growth and provide open space for recreation.

Finally, the strategy will introduce policy concepts to enable establishment of a public access authority, which the region currently lacks. Success with public access authorities in other regions ([MPCBPAA](#)) in the VA coastal zone demonstrates a need for this kind of authority in the lower Chickahominy region that will provide an avenue for ownership of land for the sole purpose of providing public access to coastal waters. This kind of land ownership facilitates water access for residents and tourists alike. The most recent [Virginia](#)

[Outdoors Demand Survey](#) reveals that 60 percent of respondents find “public access to state waters” as “most needed in Virginia.”

IV. **Benefits to Coastal Management**

Coordinated land use planning will ensure successful long term economic growth by maintaining the natural resource base that supports it. This strategy aims for improved coordination among local, state, and federal stakeholders to develop a shared vision for growth and conservation. A coordinated approach will help reduce land use conflicts and align goals to balance demand between development needs and natural resource conservation. Both growth and conservation will be addressed through a variety of tools, such as a public access authority, whereby natural resources can meet demand for eco and nature tourism while also ensuring low impact uses of natural areas.

V. **Likelihood of Success**

There is a high likelihood of success with this strategy since we are working directly with major local government stakeholders in the pilot area of the lower Chickahominy; New Kent, James City and Charles City Counties, as well as others (Middle Peninsula PDC which has direct experience with establishment and functioning of a regional public access authority). Local government stakeholders can help direct the strategy work plan to focus on creating new policy that will be well received and successful in their community. Stakeholders from state natural resource agencies and national, as well as, local land trusts will also be involved in this collaborative effort among local, state and federal partners.

VI. **Strategy Work Plan**

Strategy Goal: Align state and local land use and land protection priorities in the lower Chickahominy region utilizing economic and ecological analyses, development of a watershed management plan and draft legislation to enable establishment of a public access authority for the lower Chickahominy.

Total Years: 5

Total Budget: \$672,400

Year(s): 1-2

Description of activities: Establish a steering committee of stakeholders and technical experts to develop a shared vision for coordinated planning in the lower Chickahominy and possibly other areas in the coastal zone. Conduct ecological assessments and update data tools to aid analysis that could identify potential conflicts with current planning and zoning policies. Conduct economic analyses of protected lands in the lower Chickahominy and perhaps other specified target areas of Virginia’s Coastal Zone. Economic analyses would summarize findings into educational tools (e.g. fact sheet(s), web pages) for outreach. A model for one or more economic analyses will come from one that is to be conducted on Virginia’s Eastern Shore. It could include (but not be limited to) the following key elements:

- Documenting the physical and mental health benefits of open space (Regional Health and Communities) – savings in health costs
- Surface and groundwater water quality benefits to aquaculture and commercial fishing
- Benefits to water supply/groundwater recharge
- Costs of conserved lands vs. benefits
- Costs to whom? Counties? Or General?
- Economic value of hunting
- Economic value of recreational fishing/commercial
- Economic value of wildlife watching
- Tourism impacts
- Mitigation of storm impacts/SLR
- Value of conservation resource management – institutions who are here managing lands, doing research, etc.
- Direct impact to local tax base
- Long-term implications to tax base/county budgets... what is the tipping point, where is the continuum? Consideration of long-term conservation goals?
- Value of conservation lands (i.e. easements)? Placing or selling easements?
- Tax rates on conservation lands? Is it really taking land away from the tax base?
- Economic value of ag/farmland
- Biodiversity, habitat
- Ecosystem services
- Value of conserved lands as far as reducing need for and cost of infrastructure services (fire, rescue)
- Recreational value of lands
- Impact on insurance rates – do conservation lands reduce rates, claims, etc.?
- Historical and cultural benefits
- Property value
- Environmental education
- Light pollution
- Quality of life

Water

- Surface and groundwater quality benefits to aquaculture and commercial fishing
- Ecosystem services
- Water supply/groundwater recharge

Focus: Economic benefits and costs of services (if developed, other than tax base) of conservation lands.

Cost/benefit analysis

- Natural resources
- Recreation
- Health
- Employment
- Cultural/historical
- Liability/insurance
- Economic Growth
- Sustainable Development/Infrastructure Protection
- Resiliency

Major Milestone(s): Quantify benefits of protected lands in select Virginia coastal regions to help demonstrate the value of coordinated land use and land conservation. Address local government concerns that conservation and land protection erodes the local tax base.

Budget: \$232,000

Year(s): 3-4

Description of activities: Review and analysis of local plans and policies in lower Chickahominy localities to identify opportunities for new or revised policies or procedures that will leverage the benefits of natural resources. Begin development (with stakeholders) of a plan to optimize land uses while protecting very high and outstanding ecological resources. Develop potential enabling legislation to promote multiple benefits, such as the authority to establish public access authorities. Identify additional regions to which the lower Chickahominy pilot could be applied.

Major Milestone(s): Establish coordination for land use/land protection among state agencies and Lower Chickahominy watershed localities. Enable local governments in the Lower Chickahominy (and others, if possible) to create a Public Access Authority for the region.

Budget: \$278,500

Year(s): 5

Description of activities: Finalize management plan(s)

Major Milestone(s): Finalize and consider adoption of land management and conservation policies that encourage cooperation among localities in the lower Chickahominy watershed and complement state and federal conservation priorities. Serves as a model for planning in additional coastal regions.

Budget: \$161,500

VII. Fiscal and Technical Needs

A. Fiscal Needs: NA

B. Technical Needs: NA

VIII. Projects of Special Merit (Optional)

IX. 5-Year Budget Summary for Land Conservation Strategy

Strategy Title	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	Total Funding
Leveraging Economic Benefits of Land Conservation	125,000	107,200	117,200	161,500	161,500	672,400
Working waterfronts <i>(Note: See 2nd part of the CSI strategy in separate template below)</i>	50,000	47,500	47,500			145,000
Total Funding	175,000	154,700	164,700	161,500	161,500	817,400

Cumulative and Secondary Impacts: Working Waterfronts Plan Implementation

I. Issue Area(s)

The proposed strategy or implementation activities will support the following high-priority enhancement areas (*check all that apply*):

- | | |
|--|--|
| <input type="checkbox"/> Aquaculture | <input checked="" type="checkbox"/> Cumulative and Secondary Impacts |
| <input type="checkbox"/> Energy & Government Facility Siting | <input type="checkbox"/> Wetlands |
| <input type="checkbox"/> Coastal Hazards | <input type="checkbox"/> Marine Debris |
| <input type="checkbox"/> Ocean/Great Lakes Resources | <input type="checkbox"/> Public Access |
| <input type="checkbox"/> Special Area Management Planning | |

II. Strategy Description

A. The proposed strategy will lead to, or implement, the following types of program changes (*check all that apply*):

- A change to coastal zone boundaries;
- New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
- New or revised local coastal programs and implementing ordinances;
- New or revised coastal land acquisition, management, and restoration programs;
- New or revised special area management plans (SAMP) or plans for areas of particular concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,
- New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government, and other agencies that will result in meaningful improvements in coastal resource management.

B. Strategy Goal:

This strategy will implement action items and goals identified in the Virginia Working Waterfronts Plan developed in the CSI-Working Waterfronts Strategy during the 2011-2015 Section 309 grant cycle. Since the plan is still being completed, with finalization scheduled during the FY 2015 grant cycle, development of memoranda of understanding, new policies to be proposed and action items to be implemented is now underway. The overall goal of the Virginia Working Waterfronts Plan is to protect and restore working waterfronts infrastructure because of its historical, cultural and economic value to the Commonwealth.

As the WWP will offer a selection of policy tools for localities to consider when safeguarding and/or improving working waterfronts, this proposed strategy will be able to implement

these tools locally. The policy changes will be dependent on individual locality needs as well as their interest in implementing policies.

III. Needs and Gaps Addressed

The Virginia Working Waterfronts Plan is the first of its kind in the Commonwealth as well as in the nation. It is addressing a previous information gap in Virginia through assessments in four coastal regions; specifically, Accomack-Northampton, Hampton Roads, Middle Peninsula and Northern Neck by developing an inventory of existing and critical working waterfront infrastructure. The plan also provides economic information demonstrating the significance of the working waterfront industry in four local economies. The plan aims to implement specific policy tailored to each region that will protect working waterfront businesses and preserve the significant contribution this industry makes to the overall economy of the Commonwealth.

IV. Benefits to Coastal Management

Benefits to coastal management include coordinated planning efforts between federal, state and local levels of government, as well as private sector stakeholders. Improved management of growth and development, ensuring protection of the working waterfront industry, will result from implementation of this strategy. Because Virginia's working waterfronts industry, as demonstrated through targeted economic analyses included in the state working waterfronts plan, contributes significantly to Virginia's economy, this strategy provides socio-economic benefits by serving to protect a major component of Virginia's coastal economy.

V. Likelihood of Success

The likelihood of success of this project is very high considering the fact that Accomack-Northampton, Hampton Roads, Middle Peninsula and Northern Neck, as well as industry stakeholders, have been collaborating with multiple stakeholders and entities to address this issue. Therefore, as these parties have worked together for years focused on working waterfronts, there have been extensive detailed discussions and consensus that working waterfronts are of historical, cultural and economic value to the Commonwealth. Also, since the beginning of the 2011-2015 Section 309 Strategy, the regions mentioned above have already taken actions to make changes, and they are eager to make additional changes and improvements to local policy as it relates to working waterfronts within tidewater Virginia.

VI. Strategy Work Plan

Strategy Goal:

Implement policies and action items of the Virginia Working Waterfronts Plan

Total Years: 3

Total Budget: \$240,000

Year(s): 1

Description of activities:

Working Waterfront Inventory Synthesis and Expansion – The separate inventories of working waterfront infrastructure conducted in Accomack- Northampton, Hampton Roads, Middle Peninsula and Northern Neck Planning Districts will be consolidated. These inventories will also be expanded to include public landings in which watermen currently have access, based on available public data. In addition, a coarse analysis of working waterfronts sites in the remaining planning districts in the coastal zone will be conducted as a starting point for regions that are interested in undertaking more in-depth study of working waterfronts issues.

State Legislation - Year 1 of this project will also focus on the creation of a state sponsored uninsured motorist program, but for workboats. This is needed because a majority of local watermen are not in a financial position to secure insurance coverage for their work vessels. To develop such a program and legislation, research will focus on how the uninsured motorist program (§ 46.2-710) works and how to modify it for the use of watermen. In addition to new legislation, there will be discussions, review and refinement of past bills from Delegate Harvey Morgan that included tools for protection of working waterfronts. In order to gain support for these bills there will be a concerted effort to coordinate with Legislative Services as well as Delegates. In particular, Delegates will be educated with the intent that they will support the bill as co-sponsor.

Major Milestone(s):

- Develop drafts (new and refined) of legislation to review with Legislative Services.
- Have final drafts of legislation ready for introduction to the General Assembly.
- Schedule meetings with Delegates to review legislation and inform them of purpose and importance of the legislation.

Budget: \$50,000

Year(s): 2

Description of activities: Work with Interested Localities and Introduce bills– During the 2011-2015 CSI Working Waterfronts Strategy, there were localities that expressed interest in considering and/or implementing new working waterfront tools/policies. Thus, during this project year, model local zoning language and coastal living policies will be prepared and presented to localities (i.e. Board of Supervisors and Town Councils) for consideration. While much of the work will take place locally during this project year, the legislation that was developed in year 1 of this project will be introduced to the general assembly. In conjunction with the new legislation, the General Assembly will be asked to restore the marine fuel tax (§58.1-2289 D. Disposition of tax revenue generally) to fund the repair of public working waterfront infrastructure as the tax was originally intended to do. The bill would need to review the process for the flow of funds generated from this tax revenue. Additionally, the General Assembly will be asked to adopt a state Working Waterfront Plan. Also, reintroduce and modify HB 2263 for Working Waterfronts and Commercial fisheries. This could provide for a state and local option for local tax, regulatory relief, and

preservation thereof. The bill could define working waterfronts businesses with specified NAICS codes that align with the working waterfronts definitions set forth in the Virginia Working Waterfronts Plan to specify which businesses would be eligible to receive funds [The North American Industry Classification System (NAICS) is used by businesses and governments to classify and measure economic activity in the United States, Canada, and Mexico. NAICS is a 6-digit code system that is currently the standard used by federal statistical agencies in classifying business establishments. NAICS organizes establishments into industries according to the similarity in the processes used to produce goods or services. (See: [What is a SIC Code?](#))].

Major Milestone(s):

- Research and draft model local zoning language and coastal living policies.
- Present to interested localities and encourage implementation.
- Introduce legislation to the General Assembly. Work with the General Assembly to understand the need for legislative change and impacts to coastal Virginia.
- Seek support for and education about reintroducing HB2263: State and local tax and regulatory relief for, and preservation of, working waterfronts including commercial fisheries. Provides for tax and regulatory relief for and preservation of working waterfronts by (i) including waterfront land used for commercial fisheries in property eligible for land preservation income tax credits; (ii) permitting localities to extend incentives to eligible working waterfront businesses so that they may receive relief from local license taxes, fees, and regulations; (iii) creating as a separate class of property for personal property tax rate purposes, property primarily designed for and used by working waterfronts; and (iv) establishing procedures for creating a covenant to preserve the permanent availability and affordability of real property for working waterfronts businesses.
- Seek adoption by General Assembly of the state wide Virginia Working Waterfronts Plan.

Budget: \$47,500

Year(s): 3

Description of activities: Local adoption of the state approved Working Waterfront Plan will be sought. The plan will be presented to localities in order to have Board of Supervisors and Town Councils consider the document for adoption. Adoption of the plan would assist in the continuity of policy across Tidewater Virginia.

Major Milestone(s):

1. Present plan to locality Board of Supervisors or Town Councils and encourage adoption of the Plan.
2. If needed, work with localities to understand the plan in detail.
3. Draft resolutions of support for localities that are interested in adopting the plan and develop ordinances or land use planning tools that could be adopted locally into comprehensive plans.

Budget: \$47,500

VII. Fiscal and Technical Needs

A. Fiscal Needs: NA

B. Technical Needs: NA

VIII. Projects of Special Merit (Optional) NA

Ocean Resources Strategy

I. Issue Area(s)

The proposed strategy or implementation activities will support the following high-priority enhancement areas (*check all that apply*):

- | | |
|---|---|
| <input type="checkbox"/> Aquaculture | <input type="checkbox"/> Cumulative and Secondary Impacts |
| <input type="checkbox"/> Energy & Government Facility Siting | <input type="checkbox"/> Wetlands |
| <input type="checkbox"/> Coastal Hazards | <input checked="" type="checkbox"/> Marine Debris |
| <input checked="" type="checkbox"/> Ocean/Great Lakes Resources | <input type="checkbox"/> Public Access |
| <input type="checkbox"/> Special Area Management Planning | |

II. Strategy Description

A. The proposed strategy will lead to, or implement, the following types of program changes (*check all that apply*):

- A change to coastal zone boundaries;
- New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
- New or revised local coastal programs and implementing ordinances;
- New or revised coastal land acquisition, management, and restoration programs;
- New or revised special area management plans (SAMP) or plans for areas of particular concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APC; and
- New or revised guidelines, procedures, and policy documents which are normally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government, and other agencies that will result in meaningful improvements in coastal resource management.

B. Strategy Goal:

State the goal of the strategy for the five-year assessment period. The goal should be the specific program change to be achieved or be a statement describing the results of the project with the expectation that achieving the goal would eventually lead to a program change.

Ocean Resources Goal: *Development of Policies to Protect Ocean Resources Offshore of Virginia and in the Mid-Atlantic*

Note: This strategy was revised in fall of 2018 in light of the summer 2018 revocation of President Obama's Executive Order on Ocean Policy, which was replaced with President Trump's Executive Order. Regional Planning Bodies were eliminated and replaced with a directive for federal agencies to coordinate with state-led regional ocean partnerships.

For the Mid-Atlantic region, that is the Mid-Atlantic Regional Council on the Ocean (MARCO).

This strategy will strive to improve coordination among ocean users to minimize conflicts, promote ocean ecosystem health, and plan for existing and emerging ocean uses in a sustainable manner. This strategy will address refinement and adoption of several actions outlined in the Mid-Atlantic Ocean Action Plan, which was approved by the National Ocean Council in December 2016. Federal agencies are no longer required to adhere to that plan however; MARCO plans to continue work on many of those actions and is forming a new Mid-Atlantic Ocean Forum to provide a venue for intergovernmental coordination among federal agencies, tribes and the Mid-Atlantic Fisheries Management Council (MAFMC) as well as opportunities for stakeholder engagement. As a founding member of MARCO, the Virginia CZM Program will continue to coordinate with other states, federal agencies, tribes and the MAFMC on issues such as ocean data development, integration and publication of data through MARCO's Ocean Data Portal, development of a monitoring network for ocean acidification, visualization tools to depict shifting species, and enhanced regulatory coordination. The latter will include submitting to NOAA a request to include offshore energy development activities of the Bureau of Ocean Energy Management in Virginia's list of activities it seeks to review for federal consistency. It will also include submittal of a request to NOAA to approve a "Geographic Location Description" (GLD) of important fishing resources in the Mid-Atlantic that could be affected by federal energy development activities.

The Virginia CZM Program will also seek to assist in development of a Virginia Ocean Acidification Plan announced by Governor Northam in September 2018. Development of a healthy ocean indicator "dashboard" is planned for inclusion on the MARCO Ocean Data Portal. Sea level, ocean acidification, and marine debris are likely some of the first indicators to be developed.

Marine Debris Goal: *Development and Adoption of Mid- and Long-Term Actions for the Virginia Marine Debris Reduction Plan*

Through this strategy, stakeholders at the local, state and federal level – including government and non-government organizations – will work together to develop selected mid-term actions in the Virginia Marine Debris Reduction Plan (VMDRP) into implementation strategies. The VMDRP (created in 2012-14) charts a course to measurably reduce marine debris in Mid-Atlantic coastal waters focusing on specific actions (e.g., policies, procedures, outreach campaigns) that are politically, socially, and economically feasible in Virginia that can be accomplished in the near-term, mid-term, and longer-term. Because an estimated 60 to 80% of debris items enter coastal waters from land-based sources, this strategy will include a special focus on Municipal Separate Storm Sewer System (MS4) permittees to facilitate the development and propagation of procedures and policies that will enhance floatable monitoring as well the reduction of litter and marine debris with a focus on visitors to major beaches near urban centers.

- C. Describe the proposed strategy and how the strategy will lead to and/or implement the program changes selected above. If the strategy will only involve implementation activities, briefly describe the program change that has already been adopted, and how the proposed activities will further that program change. (Note that implementation strategies are not to exceed two years.)

Ocean Resources: The MARCO Ocean Data Portal is based on user-vetted data, which support regional efforts to improve ocean management. The coordination of input from stakeholders permits an open dialogue to inform the challenges and opportunities of regional ocean planning. Regulatory processes set forth the structure to ensure single, individual uses comply with a described set of operational boundaries. Bringing stakeholders together outside of a regulatory structure through the MARCO-hosted Mid-Atlantic Ocean Forum will allow for more creative and integrated interactions among users and regulators and permit a broader identification of information gaps that limit the effectiveness of management efforts. These data may include resource information regarding important fishing areas, important habitats, energy infrastructure, water quality, adaptation/resilience, national security, navigation and commerce and socioeconomic factors. Expected strategy outcomes may include the integration of new data for the purpose of protecting key habitats, a broadened understanding of the human use interactions, characterizations of marine mammal or other protected species, refined data that reflect vessel traffic in particular areas, improved MARCO Data Portal layers to inform decision making processes and collaborative, consensus-based planning. Additionally, the Commonwealth may assist in the development of improved fish data based on the Northeast Area Monitoring and Assessment Program (NEAMAP) approach which includes fishermen’s perspectives to better depict areas that may or may not be suitable for other human uses and also updates of the “Communities at Sea” fishing maps which are vetted by the fishing community. Such data being collected with the help of the fishing industry but operating under consistent quality assurance protocols will provide for credible fisheries and habitat data in areas that may be impacted by future changes in activities. The resultant maps based on these data may indicate which areas should be evaluated for CZMA Federal Consistency purposes. Such enforceable actions may include Memorandums of Agreements with the commercial fishing community and the research community to collect and include those data to support their use in ocean planning activities as well as incorporation of these important fishing areas in the Virginia CZM Program’s approved GLDs.

Marine Debris: Just as there are multiple sources of marine debris, this strategy will have multiple approaches and reach multiple targeted audiences. The over-arching goal of the Virginia Marine Debris Reduction Plan is to reduce the amount of trash and marine debris from land-based and water-based sources in Virginia through prevention, interception, innovation, and removal for ecological, social, and economic benefits. Strategies to achieve this will require a coordinated approach that will focus on:

- Influencing individual behaviors and choices that contribute to marine debris problems.

- Fostering collaboration between agencies, local governments, researchers, manufacturers and businesses, non-profits, and citizens.
- Increasing knowledge to better understand sources, fates, impacts, and solutions to marine debris.
- Securing adequate funding to support research, coordination, behavior change campaign development, infrastructure improvements, and grants to local governments.
- Improving regulations, including incentives and disincentives, to prevent pollution.

III. Needs and Gaps Addressed

Identify what priority needs and gaps the strategy addresses and explain why the proposed program change or implementation activities are the most appropriate means to address the priority needs and gaps. This discussion should reference the key findings of the assessment and explain how the strategy addresses those findings.

Ocean: The following draft research needs were identified by the Mid-Atlantic Regional Planning Body⁴¹ but will be further refined as the Ocean Action Plan is developed in winter/spring 2016. Some of these topics could potentially be addressed by this 309 Strategy using the funds set aside each year for data development and decision support tools. Some topics such as coral exploration would likely be too costly.

i. Species and habitats

1. Refinement of methodologies for identifying past locations and future shifts in species locations
2. Coral exploration and reconnaissance work
3. Seabird and marine mammal migratory pathways and populations
4. Expand understanding of biotic/abiotic influences on seabird abundance
5. Quantify impact of nearshore fisheries on bird populations
6. Occurrence and spatial extent of harmful algal blooms
7. Offshore water quality to develop nutrient loading modeling boundary conditions
8. Improved oceanographic data to understand and respond to climate shifts and ocean acidification
9. Determine physical and biological post-construction conditions of sand and gravel borrow areas over time to determine feasibility of reuse
10. Expansion of NEAMAP surveys to focus on areas identified for renewable and non-renewable offshore energy development
11. and non-renewable offshore energy development

⁴¹ Research topics have been identified by state and federal agencies represented on the Mid-Atlantic RPB. These potential research topics have not been vetted or approved by the full RPB and should not be understood or used to represent the position of the RPB.

- ii. Energy
 - 1. Determine avian collision and avoidance rates associated with marine wind turbines
 - 2. Determine actual (not modeled) wind speeds
 - 3. Identify important areas for commercial fishing effort in and around WEAs
 - 4. Determine seismic survey impacts on marine mammals, important fish species and corals
 - 5. Determine acoustic impacts of wind turbine construction on marine mammals and important fish species
 - 6. Determine impacts associated with electromagnetic fields on species that use electroreceptors for both prey and navigation

- iii. Adaptation/resilience
 - 1. Understand the potential for offshore features to support coastal resiliency (e.g. the role of sand ridges in wave attenuation)
 - 2. Sea level rise impacts on shore side infrastructure and properties

- iv. Navigation and commerce
 - 1. Update and refine AIS and other navigation data for utility in management
 - 2. Identify navigation trends to understand traffic patterns over time and identify the necessary shore side improvements in response to post-Panamax shipping.
 - 3. Develop or add existing layers to the Portal, that depict activities and structures in nearshore and estuarine waters

- v. Socio-economic
 - 1. Navigation and commerce
 - 2. Recreation
 - 3. Geographic areas of concentrated use and/or value

Marine Debris:

A previous Section 309 Strategy (2011-2015) led to the planning of the Virginia Marine Debris Summit in 2013 (the first such summit on the East Coast). This Summit was an important first step to identifying the needs and gaps related to marine debris issues in Virginia, and led to the realization by many stakeholders that Virginia needed a plan in place to address the many sources of marine debris. In October 2014, after extensive stakeholder engagement, the Virginia Marine Debris Reduction Plan was published. At the Virginia CZM Program's Coastal Partners Workshop in December 2014, reducing marine debris was determined to be a high priority that should be combined with Ocean Resources in order to better integrate and coordinate efforts with Mid-Atlantic regional ocean planning efforts. Coastal partners agreed that there is an urgent need to move ahead on the recommendations found in the Virginia Marine Debris Reduction Plan. The Phase I (High-Level) Assessment for Marine Debris rated it as a high priority that warrants further in-depth assessment and action. A 2nd Virginia Marine Debris Summit will be held in March 2016 that will help further clarify mid and long term goals.

This strategy calls for the further development and implementation of the Virginia Marine Debris Reduction Plan. This Plan – the first of its kind on the East Coast – addressed previous information gaps in Virginia and identified more than 50 action steps that will lead to reduced marine debris through improved coordination among state natural resource agencies, local governments, researchers, and NGOs in Virginia. Further, the Virginia Marine Debris Reduction Plan calls for new policies that will support waste minimization of the most common and harmful items found as marine debris (e.g., single-use plastic bags, food and beverage packaging, balloons, cigarette butts, and microplastics).

IV. Benefits to Coastal Management

Discuss the anticipated effect of the strategy, including the scope and value of the strategy, in advancing improvements in the CMP and coastal management, in general.

Ocean:

The completion of a Mid-Atlantic Ocean Plan in 2016 defined a structure for improving coordination among state and federal agencies, tribes and ocean stakeholders. MARCO's creation of a new Mid-Atlantic Ocean Forum is expected to continue many of those efforts, especially development and intergovernmental communication and collaboration. Enhanced coordination is expected to improve efficiencies for coastal and ocean managers by identifying and addressing the most pressing ocean management issues. Clearly defined coordination mechanisms will ensure well-articulated opportunities and effective outcomes. While MARCO is guided by the shared regional priorities of climate change, renewable energy, marine habitats and water quality, the ability to address those priorities and strategies more efficiently will be addressed at the state level as well. Virginia's coastal managers now have improved working relationships with federal partners and ocean stakeholders through the regional coordination process and in some cases have developed entirely new working relationships with these partners. Through demonstrated successes and continually evolving activities to build upon those, these new working relationships will permit an increased reliance upon each party for future positive outcomes.

Marine Debris:

Coordinated reduction of marine debris will have positive impacts on coastal resources, protected species such as marine mammals and migratory birds, and economically important species such as blue crabs. Virginia's coastal communities also spend taxpayer dollars on beach cleanups, litter removal, street sweeping, and other methods to prevent or remove marine debris. This strategy aims to reduce marine debris, thereby also reducing these economic costs to coastal communities. Plastic tarps, abandoned nets and fishing gear, tires, and other debris can smother and crush sensitive ecosystems such as deep sea corals found in the submarine canyons 50 miles off Virginia's coast. Boaters' safety can be compromised when debris items – fishing line, nets, plastic bags,

and rope pieces – wrap around boat propellers or clog seawater intakes. Coordinated efforts to reduce marine debris will make significant contributions to Virginia’s coastal economy as well as protect natural resources.

In terms of scope, Virginia’s work on marine debris issues has led to a leadership role as Virginia collaborates with other Mid-Atlantic states to explore *regional level* projects that MARCO might undertake that focus on one marine debris source and create social marketing materials that are designed to resonate with the whole region and can be disseminated throughout the whole region.

V. Likelihood of Success

Discuss the likelihood of attaining the strategy goal and program change (if not part of the strategy goal) during the five-year assessment cycle or at a later date. Address the nature and degree of support for pursuing the strategy and the proposed program change and the specific actions the state will undertake to maintain or build future support for achieving and implementing the program change, including education and outreach activities.

Ocean Resources:

As a member of MARCO, the Virginia CZM Program is committed to continuing many of the actions in the 2016 Mid-Atlantic Ocean Action Plan. The Mid-Atlantic States, through MARCO, will continue to work on intergovernmental actions and ocean planning in general to help meet its four shared regional priorities of renewable offshore energy, habitat protection, water quality and climate adaptation. Working with the states and tribes on these issues still falls well within the duties and authorities of federal agencies so that the state/federal/tribal collaboration is expected to continue. Given MARCO’s and Virginia CZM’s demonstrated commitment since 2008 to developing and implementing an ocean plan that will lead to protection of ocean health and promotion of sustainable uses, the likelihood of success is high.

Ensuring that areas identified for renewable and potentially for future non-renewable energy off Virginia’s coast are consistent with state CZM goals will ensure the Commonwealth has an appropriate balance among diverse activities. This must include consideration of traditional and non-traditional, and future water-dependent uses, while preserving critical ecological systems and health.

Marine Debris:

The likelihood of success for the marine debris strategy is high given several factors:

1. The Virginia Marine Debris Reduction Plan is in place, implementation has begun on near-term actions, and initial ideas for developing mid- and long-term actions that would fit in the timeframe of this upcoming 309 cycle are generally agreed upon by the plan’s team.
2. The stakeholders who have been engaged in the creation of the Virginia Marine Debris
3. Reduction Plan continue to contribute to its success;

4. Attendees at the Coastal Partner's Meeting in December 2014 agreed on the high priority status of marine debris;
5. The Second Virginia Marine Debris Summit is scheduled to be held in March 2016 at the Virginia Institute of Marine Science (VIMS). The summit will bring together marine debris experts, state and local resource managers, community educators, and potential funding sources (including the NOAA Marine Debris Program) to review the early accomplishments of the Virginia Marine Debris Reduction Plan, share ongoing research, further develop ideas for mid- and long-term actions and explore emerging issues. While focused on Virginia, representatives from other MARCO states and DC will be invited to attend in the hopes of stimulating ongoing regional approaches to marine debris sources, impacts, and mitigation.

Both:

The degree of support for both ocean coordination actions and marine debris reduction is currently very high among most ocean stakeholders. The renewable energy, shipping, submarine cable, military, sand management, recreational and environmental NGOs as well as some fishing community reps have shown very strong support for improving ocean management through better coordination and provision of reliable, accessible data on ocean resources and uses. Nurturing relationships with the commercial fishing industry will increase the long-term support and open dialogue, especially as it relates to data collected that accurately represents the fishing activity and stock. There appears to be widespread public support for marine debris reduction, however that support can often disappear when specific regulations are proposed such as bans on plastic bags and balloon releases, which is why the Virginia CZM Program takes a "social marketing" approach to reducing marine debris. Although it is hoped that after more "outreach" through social marketing, legislative and/or regulatory solutions could gain popular acceptance.

Garnering and maintaining support for ocean coordination efforts and marine debris reduction will be through a variety of approaches using the Virginia CZM, MARCO and MARCO Ocean Forum websites, press releases, public workshops and webinars, and the efforts of the Ocean Stakeholder and Marine Debris Coordinators funded through this strategy.

VI. Strategy Work Plan

Using the template below, provide a general work plan that includes the major steps that will lead toward or achieve a program change or implement a previously achieved program change. If the state intends to fund implementation activities for the proposed program change, describe those in the plan as well. The plan should identify a schedule for completing the strategy and include major projected milestones (key products, deliverables, activities, and decisions) and budget estimates. If an activity will span two or more years, it can be combined into one entry (i.e., Years 2-3 rather than Year 2 and then Year 3). While the annual milestones are a useful guide to ensure the strategy remains on

track, OCM recognizes that they may change somewhat over the course of the five-year strategy unforeseen circumstances. The same holds true for the annual budget estimates. Further detailing and adjustment of annual activities, milestones, and budgets will be determined through the annual cooperative agreement negotiation process.

Strategy Goal: Development of Policies to Protect Ocean Resources Offshore of Virginia and in the Mid-Atlantic

Total Years: 5

Total Budget: \$495,690

Year: 1

Description of activities: The VCU Ocean Stakeholder Coordinator will focus on IJC actions primarily as they relate to fisheries. At the September 2015 Regional Planning Body Meeting, those fisheries actions were generally described as:

- Support dialogue between NOAA and State Fisheries Managers
- Collaborate on climate change studies (science/managers/planners)
- Work with the MAFMC Ecosystems and Ocean Planning Committee
- Improve collaboration with tribes
- Improve understanding of recreational fishing

More specific actions are expected to be developed in winter/spring 2016 for inclusion in the Mid-Atlantic Ocean Action Plan such that a clearer set of policies can be worked on by October 2016 when this first year of Virginia's 309 Strategy commences. A variety of MOUs or interagency agreements are envisioned to ensure stronger consideration of fishermen's knowledge of important fishing areas as well as incorporating their spatial needs into plans for other ocean uses such as shipping, habitat protection, offshore energy, etc. In addition, the Coordinator will continue efforts to ensure that fishing is maximized in and around Virginia's Wind Energy Area. Clearly defined guidance and coordination mechanisms will be identified and developed to ensure collaborative processes are open, transparent and involve the appropriate stakeholders. Consensus-based, collaborative guidance documents will assist in the de-conflicting of offshore uses (examples include: specific guidance on the buffers for navigation and commercial fishing activities in and around offshore energy projects; minimization of migratory mammal impacts and fishing pattern impacts from changes in shipping; reduced user conflicts between uses in general; and improved science-based decision making tools that have benefitted from input and vetting by fishermen.

CZMA federal consistency issues such as enhanced federal notice and making causal connections for coastal effects determinations will also be addressed from the perspective of fisheries.

Major Milestone(s): Clarification of IJC actions regarding fisheries and CZMA federal consistency issues.

Budget: \$60,000 for VCU Stakeholder Coordinator; \$32,290 for data collection or synthesis. Total = \$92,290

Year: 2

Description of activities: Acquisition of data identifying use conflicts between Commercial fishing and Shipping and offshore energy development. Thorough engagement of Commercial fishing industries to assess potential conflicts between gear types, transit and changes in shipping intensity and traffic and semi-permanent structures. Utilizing a consensus-based strategy, coordination with the Commercial fishing industry will focus on the identification of those areas most likely in conflict with current use. Adaptively manage guidance and coordination processes and documents to improve outcomes, address changing local priorities or changing political priorities.

Major Milestone(s): Development of draft maps and management change options for reducing conflicts among fishing and other ocean uses.

Budget: \$48,000 for VCU Stakeholder Coordinator; \$48,000 for data collection or synthesis. Total = \$96,000

Year: 3

Description of activities: Development of a “Geographic Location Description” of important, economically valuable fish resources to allow for automatic consistency review of federal energy development activities that may affect these resources. Development of economic data to prove potential effects and creation of a booklet describing the value of fish landed in Virginia from throughout the Mid-Atlantic. Negotiation of resolution(s) between identified use conflicts (such as fixed gear commercial fishing and changes in shipping traffic. A participatory, consensus- based process will be employed to identify possible solutions that may negatively impact associated parties. Outcomes of those resolutions will be negotiated with the appropriate Federal, State and local partners to ensure sustainability to solutions.

Development of visualization tools for the MARCO Ocean Data Portal that allow users to see and understand how various species’ ranges may be shifting seasonally and over longer time periods due to climate impacts such as higher sea temperatures.

Major Milestone(s): Submittal to NOAA for approval of a GLD of important fish resources. Species shifts visualization tool added to the MARCO Ocean Data Portal

Budget: \$48,000 for VCU Stakeholder Coordinator; \$50,000 for data collection or synthesis. Total = \$98,000

Year: 4-5

Description of activities: Re-evaluate the process and guidance set forth in Year 1 to restructure, where necessary. Emerging issues, such as a broadened understanding of the impacts of the Panamax expansion on regional shipping intensity and vessel size, may identify new data gaps and opportunities for work on conflict reduction. Refining these principles will ensure long-term success and sustainability built upon demonstrated successes in previous years. Significant climatic episodes may

dramatically adjust priorities and outcomes. Hurricane Sandy was a demonstrated example of local Coastal Manager's re- adjustment of priorities to protect coastal communities that result in changes in sand and gravel extraction, shipping and commerce and commercial fishing priorities.

If federal, state and local governments, private industry and environmental groups all agree, Accomack-Northampton Planning District Commission will build on work conducted with FY12 CZM funds to document the geology of sand movement patterns and the needs of various stakeholders. The overall recommendation of the FY12 project report is that there is strong need to continue a forum for developing a sand management plan for the Chincoteague Inlet area that all stakeholders can live with. However, as of 2015, a great deal of dissension among the parties remained and it is believed that it may take a few years before the local community is prepared to begin work on an Eastern Shore sand management plan. Thus, this work is envisioned to be postponed at least until FY 19. Attempts will be made to align this state work with the regional sand management actions of BOEM and other regional partners.

Major Milestone(s): Finalized maps, plans and agreements for conflict reduction

Budget: \$104,700 for Year 4 and \$104,700 for Year 5

Strategy Goal: Development and adoption of Marine Debris Actions for Virginia (and potentially the Mid-Atlantic region)

Total Years: 5

Total Budget: \$315,710

Year: 1

Description of activities: Support ongoing waste source reduction efforts, and facilitate collaboration and the transfer of knowledge about successful marine debris prevention programs, policies, and campaigns through the establishment of a web site and social media site (e.g., Facebook group page). Research and develop arguments (particularly economic ones) that will be compelling to build popular support for legislation and policies that will support waste minimization of the most common items found as marine debris. This research could include the costs incurred by communities, taxpayers, and individuals due to incorrect disposal of trash. Explore existing as well as potential future fee and tax structures in Virginia related to litter and recycling. Engage MS4 permittees and stakeholders in a review of current policies and practices found in MS4 permits regarding litter and debris monitoring, prevention and interception.

Major Milestone(s): Identify opportunities for new or revised policies or procedures that will reduce marine debris at the source.

Budget: \$75,710

Year: 2

Description of activities: Pursue grants to support social marketing campaigns aimed at influencing behaviors that are associated with reducing marine debris. Document and disseminate the economic costs of marine debris on tourism, community cleanup budgets, MS4 compliance, economically important species, and to farmers (e.g., impact of plastic bags on cotton crop values) as well as personal economics (e.g., costs associated with boats that are disabled due to marine debris entanglement). Continue to engage existing statewide groups (e.g., Master Naturalists, counties' litter control staff, etc.) on marine debris awareness and in implementing aspects of the Virginia Marine Debris Reduction Plan. Develop a plan to support increased enforcement of Virginia's current laws (as well as policies) regarding littering, illegal dumping, balloon releases, waste management, and stormwater runoff.

Major Milestone(s): Quantify benefits of reducing land-based litter in select Virginia coastal communities to help demonstrate the value of coordinated marine debris reduction efforts. Explore the potential for stakeholder training that would strengthen the policies and practices written into MS4 permits regarding litter and debris monitoring, prevention and interception.

Budget: \$60,000

Year: 3

Description of activities: 3rd Virginia Marine Debris Summit. Conduct a comprehensive overview of cleanup (removal) efforts. Reassess current priorities to be addressed, and then develop selected actions in the Virginia Marine Debris Reduction Plan into implementation strategies. Since the VMDRP uses an adaptive management approach to continually improve the plan based on a two-year evaluation cycle, the Advisory Committee will meet to evaluate the plan and determine which of the action items in the plan should be fleshed out to develop policies that will lead to the reduction of marine debris.

Major Milestone(s): 3rd Virginia Marine Debris Summit. Evaluation of progress of the VMDRP.

Budget: \$60,000

Year: 4

Description of activities: Further engage the MS4 and stormwater management communities in developing strategies to improve interception infrastructure and assess trash interception practices. This will include an assessment of trash interception practices in MS4 and non-MS4 permitted localities. Analyze existing stormwater management legislation and policies as they relate to litter interception. Pursue grants to support social marketing campaigns aimed at influencing behaviors that are associated with reducing marine debris.

Major Milestone(s): Assessment of trash interception practices and strategy development to improve interception infrastructure in Virginia.

Budget: \$60,000

Year: 5

Description of activities: Promote collaborative research on alternative packaging and innovative product design for commonly littered items. Develop strategies to reduce legal and administrative barriers to 1) adopting alternative materials and practices; and 2) removal of lost or derelict gear and derelict vessels. Since the VMDRP uses an adaptive management approach to continually improve the plan based on a two-year evaluation cycle, the Advisory Committee will meet to evaluate the plan and determine which of the action items in the plan should be fleshed out to develop policies that will lead to the reduction of marine debris.

Major Milestone(s): Develop policies that will lead to the reduction of marine debris and also strategies to reduce legal and administrative barriers. Evaluation of progress of the VMDRP.

Budget: \$60,000

VII. Fiscal and Technical Needs

A. Fiscal Needs: *If 309 funding is not sufficient to carry out the proposed strategy, identify additional funding needs. Provide a brief description of what efforts the CMP has made, if any, to secure additional state funds from the legislature and/or from other sources to support this strategy.*

Ocean Resources:

Regional ocean coordination is a massive effort involving multiple federal agencies, states and tribes. These 309 funds along with 306 funding for the CZM Program Manager, are a relatively small part of what is needed to continue the development and implementation of the Mid-Atlantic Ocean Action Plan, but they are critical to Virginia's continued involvement in the process. Ocean plan development had been funded by NOAA until Congressional appropriations were discontinued. Major funding currently comes from the Moore Foundation for continued support of the MARCO staff, the MARCO Ocean Data Portal and support for the Ocean Action Work Groups via facilitation contractors. Reinstatement of Congressional funding is needed.

Marine Debris:

Additional funding will be needed for many aspects of the Virginia Marine Debris Reduction Plan, including derelict fishing gear removal programs and education and outreach campaigns. NOAA's Marine Debris Program's grants are one possible source of funding. Virginia CZM Program's academic and non-profit partners are also likely to seek funding for projects that align with the goals of the Virginia Marine Debris Reduction Plan. Foundations that have supported litter- and marine debris-related work include Keep America Beautiful (Cigarette Litter Prevention Program Grants), Boat U.S. Foundation and the Chesapeake Bay Restoration Fund.

B. Technical Needs: *If the state does not possess the technical knowledge, skills, or equipment to carry out all or part of the proposed strategy, identify these needs. Provide a brief description of what efforts the CMP has made, if any, to obtain the trained personnel or equipment needed (for example, through agreements with other state agencies).*

Ocean Resources:

The Virginia CZM Program has access to many technical experts through its Coastal Policy Team, MARCO and various federal agencies. Facilitation services will be supplied by the VCU Ocean Stakeholder Coordinator as well as facilitation contractors hired by BOEM and MARCO with other federal funds and Moore Foundation funds. Equipment is generally not needed for ocean planning efforts. The MARCO Ocean Data Portal is the main planning tool for the Mid-Atlantic and Virginia CZM's Coastal GEMS portal is also available as well as the expertise in participatory and other mapping techniques available from the CZM Program's GIS Coordinator. Long term updating and maintenance of the Portal is a high priority need.

Marine Debris:

The Virginia CZM Program has access to many technical experts in Virginia, other MARCO states, and the NOAA Marine Debris Program. Faculty and staff at VIMS, the Virginia Aquarium & Marine Science Center, and Clean Virginia Waterways (CVW) of Longwood University are engaged in innovative research, program development, marine debris monitoring, trend analysis, and education and outreach activities related to derelict fishing gear and consumer waste issues. In addition, the Virginia CZM Program staff and its partners (notably CVW) are strengthening their knowledge and skills in developing and piloting outreach campaigns based on social marketing principles thanks in part to an FY 2014 grant from NOAA's Marine Debris Program.

VIII. Projects of Special Merit (Optional)

If desired, briefly state what projects of special merit the CMP may wish to pursue to augment this strategy. Any activities that are necessary to achieve the program change or that the state intends to support with baseline funding should be included in the strategy above. The information in this section will not be used to evaluate or rank projects of special merit and is simply meant to give CMPs the option to provide additional information if they choose. Project descriptions should be kept very brief (e.g., undertake benthic mapping to provide additional data for ocean management planning). Do not provide detailed project descriptions that would be needed for the funding competition.

For ocean planning, we may submit PSM proposals revolving around data gaps, data syntheses and/or decision support tools such as a healthy ocean indicator dashboard. As actions are undertaken, specific data or research needs may arise that exceed the funds budgeted (\$10- 50k per year) for data collection or decision tool development.

For marine debris, we may submit PSM proposals revolving around development of specific social marketing campaigns for either Virginia or the Mid-Atlantic region. Such campaigns can cost upwards of \$100,000. Virginia CZM and potentially MARCO will also seek funding from other sources such as NOAA’s Marine Debris Program.

IX. 5-Year Budget Summary for Ocean Strategy

Strategy Title	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	Total Funding
Stakeholder Coordination for Fisheries and Wind IJC Actions	60,000	48,000	48,000	48,000	48,000	252,000
State Forum for Sand IJC Action	0	0	0	30,000	30,000	60,000
Ocean Data Collection and/or Decision Support Tools	32,290	48,000	50,000	26,700	26,700	183,690
Marine Debris Coordinator	75,710	60,000	60,000	60,000	60,000	315,710
Total Funding	168,000	156,000	158,000	164,700	164,700	811,400

V. Summary of Stakeholder and Public Comment

In concurrence with new Section 309 Guidance issued by NOAA (January 2013), the Virginia Coastal Zone Management Program engaged partners, stakeholders and the public in the development and review of the program's draft 2016-2020 Coastal Enhancement Assessment and Strategies.

Coastal Needs Assessment and Priority Survey

The Virginia CZM Program began its 2016 - 2020 Coastal Zone Enhancement Process in fall of 2014 by distributing to its partners a *Virginia Coastal Needs Assessment and Prioritization Survey*. An invitation to participate in the survey was sent to coastal contacts via e-mail (See *Appendices A, B & C for copies of the Constant Contact e-mail distributed, copy of the on-line Survey Monkey survey and a summary of survey results*).

Virginia Coastal Partners Workshop

The results of this survey were shared at the December 2014 Virginia Coastal Partners Workshop: *Assessing Past Progress, Planning the Future* (www.deq.virginia.gov/programs/coastalzonemanagement/2014virginiacoastalpartnersworkshop.aspx). The focus of this interactive workshop was on the Coastal Enhancement Program process, and the workshop engaged partners and constituencies, including attendees from: regional, local and state agencies, academic institutions, non-governmental organizations, marine-related businesses and individuals who help manage and protect Virginia's coastal resources. Advertisement for the workshop was done via Constant Contact direct e-mail, on the Virginia CZM Program's website as well as an announcement in the Fall 2014 issue of the Virginia Coastal Zone Management magazine (See *Appendices C, D & F for a copy of the workshop announcements, agenda and a list of workshop attendees*.)

During the course of the workshop, attendees heard presentations on critical or evolving coastal resource management issues, and helped prioritize which areas should be considered the highest priorities for the Virginia CZM Program and the focus of Coastal Enhancement (Section 309) strategies for the coming 2016-2020 cycle.

Participants had an opportunity to "vote" whether the coastal enhancement area topics were a high, medium or low priority, discussed data needs for completion of Phase 2 assessments and then brainstormed ideas for 5-year strategies for high priority topics. Based on feedback from the workshop, Virginia CZM Program staff then presented recommendations to the Virginia Coastal Policy Team in February 2015 (www.deq.virginia.gov/Programs/CoastalZoneManagement/DescriptionBoundary/VirginiaCoastalPolicyTeam.aspx) (See *Appendix G for staff recommendation presented to CPT*.)

Partner Input in Draft Strategy Development

In addition to workgroups established by Virginia CZM staff to develop draft strategies, a follow-up e-mail was sent to workshop participants, and other Virginia CZM contacts. This April 2016 informed recipients that the Coastal Policy Team meeting had approved staff recommendations to develop strategies in the three areas identified as high priority: ocean management, coastal hazards and cumulative and secondary impacts of coastal development. The e-mail outlined the steps and timeline for development of the draft strategies and encouraged additional input from partners (*See Appendices H & I for copy of e-mail and recipients*).

Public Comment

Draft strategies were made available for public comment from October 30, 2016 through November 20, 2016. Notice of the opportunity to review the strategies and provide comments was made via the Virginia Town Hall website (<http://townhall.virginia.gov/L/ViewNotice.cfm?gnid=570>), an e-news to Virginia CZM contacts and on multiple pages on the Virginia CZM Program website, including the homepage, public notice web page and Coastal Enhancement issue web page (www.deq.virginia.gov/programs/coastalzonemanagement.aspx.) A pdf of these web pages and the e-news are included in Appendices J, K, L & M.

No comments were received.

VI. ACRONYMS

ARRA – American Recovery and Reinvestment Act of 2009 (“Recovery Act”)
ASMFC – Atlantic States Marine Fisheries Commission
BBNWR – Back Bay National Wildlife Refuge
BLM – Bureau of Land Management
BMP – Best Management Practices
CBF – Chesapeake Bay Foundation
CBGN – Chesapeake Bay Gateways Network
CBLB – Chesapeake Bay Local Assistance Board
CBPADMR – Chesapeake Bay Preservation Area Designation and Management Regulations
CCB – Center for Conservation Biology
CCI – Comprehensive Coastal Inventory Program
CELCP – Coastal and Estuarine Land Conservation Program
CESCF – Cooperative Endangered Species Conservation Fund
CINWR – Chincoteague Island National Wildlife Refuge
CNHT – Chesapeake National Historic Trail
CVW – Clean Virginia Waterways
CWP – Center for Watershed Protection
CZM – (Virginia) Coastal Zone Management (Program)
CZMA – Coastal Zone Management Act
DCR – Department of Conservation and Recreation (Virginia)
DEQ – Virginia Department of Environmental Quality
DFGP – Derelict Fishing Gear Program
DGIF – Department of Game and Inland Fisheries
DMA – Disaster Mitigation Act
DMME – Department of Mines, Minerals and Energy
DOI – Department of the Interior
ECM – Ecological Core Model
EIS – Environmental Impact Statement
FEMA – Federal Emergency Management Agency
FIRM – Flood Insurance Rate Maps
GCCC – Governor’s Commission on Climate Change
GEMS – Geospatial and Educational Mapping System
GIS – Geographic Information Systems
GWRC – George Washington Regional Commission
HIRA – Hazard Identification and Risk Assessment
HRPDC – Hampton Roads Planning District Commission
ICC – International Coastal Cleanup
INSTAR – Interactive Stream Assessment Resource Healthy Waters Initiative
JLARC – Joint Legislative Audit and Review Commission
JST – John Smith Trail
KVB – Keep Virginia Beautiful

LIDAR – Light Detection And Ranging
LIDATF – Low Impact Development Assessment Task Force
LNG – Liquefied Natural Gas
LWCF – Land and Water Conservation Fund
MAFMC - Mid-Atlantic Fishery Management Council
MAPP – Mid-Atlantic Power Pathway
MARAD – Federal Maritime Administration
MARCO – Mid-Atlantic Regional Council for the Ocean
MAWW – Mid-Atlantic Wetlands Workgroup
MDNR – Maryland Department of Natural Resources
MIBI – Modified Index of Biotic Integrity
MMS – Minerals Management Service
MPCBPAA – Middle Peninsula Chesapeake Bay Public Access Authority
MPPDC – Middle Peninsula Planning District Commission
MSRA – Magnusson-Stevens Reauthorization Act of 2006
NASS – National Agricultural Statistics Service
NEAMAP – Northeast Monitoring and Assessment Program
NFWF – National Fish and Wildlife Foundation
NIMBY – “Not In My Backyard”
NNCBPAA – Northern Neck Chesapeake Bay Public Access Authority
NOAA – National Oceanic and Atmospheric Administration
NPDS – National Pollutant Discharge System
NRC – Nuclear Regulatory Commission
NVRC – Northern Virginia Regional Commission
NWI – National Wetlands Inventory
OCS – Outer Continental Shelf
OCSLA – Outer Continental Shelf Land Act
ODEC – Old Dominion Electricity Cooperative
OSDS – Onsite Sewage Disposal System
OTEC – Ocean Thermal Energy Conversion
PAA – Public Access Authority
PCA – Priority Conservation Areas
PDC – Planning District Commission
PWDCA – Priority Wildlife Diversity Conservation Areas
QTP – Quality’s Waste Tire Program
RPA – Resource Protection Area
SAFETEA-LU - Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for
Users
SAMP – Special Area Management Plan
SAV – Submerged Aquatic Vegetation
SCC – State Corporate Commission
SELC - Southern Environmental Law Center
SMP – Shoreline Management Plan
SWCD – Soil and Water Conservation District

TMDL – Total Maximum Daily Load
TMI – Tidal Marsh Inventory
TNC – The Nature Conservancy
TOGA – Tidewater Oyster Gardeners Association
USDOI – U.S. Department of the Interior
USEPA – U.S. Environmental Protection Agency
USFDA – U.S. Food and Drug Administration
USACE – U.S. Army Corps of Engineers
USFWS – U.S. Fish and Wildlife Service
VaNLA – Virginia Natural Landscape Assessment
VASS – Virginia Agricultural Statistics Service
VCERC – Virginia Coastal Energy Research Consortium
VDACS – Virginia Department of Agriculture and Consumer Services
VDEM – Virginia Department of Energy Management
VDH – Virginia Department of Health
VDOT – Virginia Department of Transportation
VIMS – Virginia Institute of Marine Science
VCLNA – Virginia Conservation Lands Needs Assessment
VLPP – Virginia’s Litter Prevention Program
VMRC – Virginia Marine Resources Commission
VNEMO – Virginia Network for Education of Municipal Officials
VOP – Virginia Outdoor Plan
VRS3 – Virginia Renewables Siting Scoring Systems
VRSFF – Virginia Recreation Saltwater Fishing Fund
VSP – Virginia State Parks
VTC – Virginia Tourism Corporation
VWEC – Virginia Wind Energy Collaborative
WW – Working Waterfront

VII. Stakeholder and Public Comment Appendices

Appendix A – Invitation to participate in the Virginia Coastal Needs Assessment and Prioritization Survey --- page 131

Appendix B – Copy of Virginia Coastal Needs Assessment and Prioritization Survey --- page 133

Appendix C – Invitation to 2014 Virginia Coastal partners Workshop --- page 137

Appendix D – 2014 Virginia Coastal Partners Workshop Agenda --- page 139

Appendix E – PP Summary of results of Virginia Coastal Needs Assessment and Prioritization Survey presented at 2014 Virginia Coastal Partners Workshop --- page 143

Appendix F – 2014 Virginia Coastal Partners Workshop Attendees --- page 159

Appendix G – Virginia CZM Program staff recommended options for 2016 – 2020 strategy – presented to Virginia Coastal Policy Team --- page 168

Appendix H – Virginia CZM Program e-news update of 309 assessment and development of 309 strategies --- page 176

Appendix I – Partners who received and viewed e-news update --- page 179

Appendix J – Virginia CZM Program Homepage with link to public notice --- page 188

Appendix K - Virginia CZM Program Public Notice Webpage --- page 190

Appendix L – Virginia CZM Program Coastal Needs Assessment and Strategies Webpage --- page 192

Appendix M – Notice of public comment period on Virginia Regulatory Town Hall website --- page 194