

Cumulative and Secondary Impacts

Section 309 Enhancement Objective

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.

Resource Characterization

Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.

1. Identify areas in the coastal zone where rapid growth or changes in land use require improved management of cumulative and secondary impacts (CSI) since the last assessment. Provide the following information for each area:

Virginia's coastal zone continues to absorb a disproportionate amount of the Commonwealth's population growth. While the coastal zone constitutes only 24 percent of the state's land area, it contains 63 percent of Virginia's total population. According to the Virginia Profile 2009, the fact that people in Virginia are moving away from central cities to the surrounding suburban areas will likely lead to an increase in the number of metropolitan areas as well as further expansion of existing metro area boundaries. The water quality impacts of this growth are magnified by a trend toward development types characterized by an increasing impervious cover per person ratio. For example, in the Chesapeake Bay watershed, impervious cover increased at a rate five times faster than population growth between 1990 and 2000. Coastal resource management issues regarding the cumulative and secondary impacts of growth include the loss or fragmentation of identified blue and green infrastructure and the degradation of coastal waters.

In addition, waterfront development in more rural localities, although slowed somewhat by the economic downturn, continues to threaten sensitive coastal resources. Impacts include the loss of habitat and water quality protection functions provided by riparian buffers and fringe marshes. Rural land use patterns have also been affected by changes in state regulations regarding the placement of alternative (engineered) septic systems. In the absence of adequate land use controls, sensitive areas with high water tables that were previously considered unsuitable for development because of limitations of onsite wastewater treatment options are now being developed. The result is more sprawling development, often in environmentally sensitive areas.

According to the EPA report *Development Growth Outpacing Progress in Watershed Efforts to Restore the Chesapeake Bay*, there has been a shortage of up-to-date information on development patterns, meaning these factors aren't able to be taken into consideration in pollution reduction goal-setting. The same report also concluded that population growth is outpacing progress in efforts to reduce nutrient and sediment loads from developed lands.

Further, as coastal areas are experiencing dramatically increased demand for residential development in places considered attractive for retirement, such demand can result in positive effects on local economies and tax revenue, yet requires services and resources that may not be compatible with the nature and character that attracted development in the first place. In

particular, the historic industries that support the functionality of many bucolic waterfront communities are often disadvantaged by impacts of new development.

Access to resources upon which fishing, shellfish and related industries depend, is becoming more and more limited, or is being lost outright as development privatizes waterfront land. Traditional maritime occupations and industries face pressure from rising costs driven by the changing land values, which in turn are driven by new development and development potential. As real estate markets respond to these pressures, the resources needed by traditional maritime industries may be converted to other uses suited to the new development. These resources include, most importantly, access to the water itself. And since small and large maritime businesses are highly interdependent, the diminution of one may negatively impact many others.

Localities with working waterfronts face many similar challenges – such as insufficient information and organizational capacity to respond to these changes. A coordinated “Working Waterfront” strategy would focus on select coastal communities with working waterfronts. This strategy is aimed to help communities understand the long-term costs associated with loss of working waterfronts, develop new policy tools to help them manage the increasing growth pressures, and build their capacity to retain working waterfronts for future generations.

Geographic area	Type of growth or change in land use	Rate of growth or change in land use (% change, average acres converted, H,M,L)	Types of CSI
Suburban areas of Northern Virginia, Richmond and Hampton Roads	Residential and Commercial development with increased levels of impervious cover	In Northampton Co., 5,892 acres of PCAs currently fall within a non-compatible zoning type; 4,705 acres of PCAs fall within a non-compatible proposed zoning type. Similar analysis to be replicated in other coastal zone localities.	Habitat loss and fragmentation of priority conservation areas, stream degradation, water quality impacts
Rural counties with waterfront on the Chesapeake Bay and its tributaries	Waterfront Development	4,694 shoreline permit applications since 2005	Loss of riparian buffers and fringe marshes
Rural localities – Areas not served by centralized wastewater treatment	Single family residential and small commercial using engineered onsite sewage disposal	From 2000-2008, there were 1,208 engineered OSDS installed in the Middle Peninsula and 2,006 permitted	Water quality impacts, habitat loss and fragmentation, erratic land development

	systems (OSDS)	OSDS were awaiting installation.	patterns
Northern Neck, Middle Peninsula, Hampton Roads, Eastern Shore	Growth pressures on publicly accessible marinas	Number of crab licensees reporting harvests declined by 33 percent between 2003 and 2007. Shift toward part-time status as watermen need to rely on other means of income	Increased density in development patterns with more impervious surface area leading to additional loss of habitat and natural cover and greater impacts on water quality

2. Identify sensitive resources in the coastal zone (e.g., wetlands, waterbodies, fish and wildlife habitats, critical habitat for threatened and endangered species) that require a greater degree of protection from the cumulative or secondary impacts of growth and development. If necessary, additional narrative can be provided below to describe threats.

Sensitive resources	CSI threats description	Level of threat (H,M,L)
Priority Conservation Areas	Suburban development, rural development with alternative septic systems	H
Tidal Wetlands – fringe marshes	Waterfront development – shoreline hardening; sea level rise	H
Coastal waters and living inhabitants (e.g. finfish and shellfish)	Nonpoint source runoff causing water quality degradation (turbidity, hypoxia, anoxia)	H

Management Characterization

Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.

1. For each of the management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment:

Management Categories	Employed by state/territory (Y or N)	Significant changes since last assessment (Y or N)
Regulations	Y	Y
Policies	Y	Y

Guidance	Y	Y
Management Plans	Y	N
Research, assessment, monitoring	Y	Y
Mapping	Y	Y
Education and Outreach	Y	Y

2. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.

- a) **Characterize significant changes since the last assessment;**
- b) **Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and**
- c) **Characterize the outcomes and effectiveness of the changes.**

Regulations

Coastal Primary Sand Dunes and Beaches Act expansion

In 2008, legislation was passed that expanded the scope of the Virginia Coastal Primary Sand Dunes and Beaches Act from nine localities to the entire coastal zone. Research conducted and reported by the Virginia Institute of Marine Science (VIMS) informed the policy recommendations to expand the protected areas. Due to this legislation, localities now have the power to create ordinances to manage their dunes and beaches. (Section 309 CZM-driven change)

Total Maximum Daily Loads (TMDLs)

Total Maximum Daily Loads (TMDLs) are plans to restore and maintain the water quality of impaired waters. TMDL refers to maximum amount of a pollutant a waterbody can assimilate and still meet water quality standards.

In 2008, the Virginia Department of Environmental Quality (VA DEQ) released a report on the water conditions in Virginia from 2001 through 2006, the most recent report available. (VA DEQ submits a report to the US EPA every even-numbered year.) Among the key findings from the 2008 report: The impaired area in rivers and streams increased from 9,002 miles in 2006 to 10,543 in 2008, and impaired area in estuaries decreased from 2,216 square miles in 2006 to 2,182 in 2008.

The US EPA has begun the process of establishing a TMDL for the Chesapeake Bay, as its waters continue to be impaired. The target date for creating a TMDL is December 31, 2010. The Chesapeake Bay TMDL will address all segments of the Bay and its tidal tributaries that are impaired. As with all TMDLs, a maximum aggregate watershed pollutant loading necessary to achieve the Chesapeake Bay's water quality standards will be identified. This aggregate watershed loading will be divided among the Bay states and major tributary basins, as well as by

major source categories. (Non-CZM-driven change)

Stormwater Regulations

The Virginia Soil and Water Conservation Board (Board) adopted final regulations for Parts I, II and III of the Virginia Stormwater Management Program (VSMP) Permit Regulations on December 9, 2009. On January 14, 2010, the Board suspended Parts I, II and III of the VSMP in response to petitions to extend the public comment period. While the VSMP regulations remain suspended, a Regulatory Advisory Panel (RAP) was formed and met on July 23, 2010. The RAP identified five areas of the VSMP regulations that needed further evaluation. These areas were: grandfathering, offsets/credits, water quality, water quantity, and local government criteria. The RAP has created subcommittees to evaluate these areas and is presently considering proposed modifications to the regulations. The target for completion of the RAP's review and recommendations is April 2011.

Under the proposed regulatory changes, developers will have to install stormwater management features like retention ponds and rain gardens to promote infiltration. The changes would also set limits on the amount of phosphorus that can leave a site, and give localities more flexibility in setting their permit fee schedules, in order to pay for program costs. (Non-CZM-driven change.)

VDH OSDS Regulations Regarding Engineered Systems

A change in Virginia Department of Health (VDH) Sewage Handling and Disposal Regulations in 2000 allowed engineered onsite sewage disposal system (OSDS) technologies to be installed on "marginal land," or land that would not normally support a traditional gravity fed septic system. This change effectively gave the VDH power to regulate development. In 2009 the General Assembly passed House Bill 1788, and the VDH promulgated Emergency Regulations for Alternative Onsite Sewage Systems (12VAC5-610-20) which immediately preempted local-level ordinances regulating the installation, operations and maintenance of alternative systems. With no allowance of a trial period for these emergency regulations, local government authority was usurped leaving them unable to assess actual effectiveness of the new rules. (Non-CZM-driven change.)

Policy

Executive Order 13508—Chesapeake Bay Protection and Restoration

In May 2009, President Obama issued an order to protect and restore the Chesapeake Bay through shared federal leadership, planning and accountability; restoration of Chesapeake Bay water quality; agricultural practices designed to protect the Bay; reduction of water pollution from federal lands and facilities; research on climate change adaptation; expansion of public access to the Bay and conservation of landscapes and ecosystems in the Bay watershed that merit recognition for their historical, cultural, ecological or scientific values; and identification of critical living resources of the Chesapeake Bay.

Governors' Land Conservation Goals

In 2006, former Governor Tim Kaine announced his intention to protect an additional 400,000 acres of land by the year 2010. This resulted in a greatly increased rate of land protection via conservation easements. By the end of his term as governor, 427,477.84 acres had been conserved with 91,948 of these acres occurring within the Coastal Zone. Likewise, Governor Bob McDonnell has set the same goal of protecting 400,000 acres of land by the end of his term in office.

Guidance

Draft Wetlands Guidelines and Coastal Primary Sand Dunes/Beaches Guidelines (309)

The Virginia Institute of Marine Science (VIMS) produced a Section 309-funded report entitled "Recommendations to Update the Act and Complete the Oversight of Virginia tidal Shoreline" to inform Virginia's regulatory approaches to dunes and beaches. A key recommendation of this report was to expand the definition of a coastal primary sand dune by incorporating additional plant species into the Act. This report resulted in legislation that expanded dune and beach protection to all of Virginia's coastal zone, protecting an additional 1,300 estuarine beaches and 75 miles of shoreline from shoreline hardening and other coastal development. (309-driven change)

Regional Blue and Green Infrastructure and Conservation Corridor Planning Initiatives

The George Washington Regional Commission (GWRC) obtained a grant to use GIS to quantify the amount of impervious surface relative to green infrastructure, and work to with local governments to solicit public opinion on conservation efforts. The GWRC initiated a regional land use scenario planning process, which complements its strategy for defining a regional "vision" and its related plans to engage community stakeholder and citizen groups in a regional visioning process that will unfold in 2010. (306 Focal Area and 309-driven change)

Middle Peninsula PDC Alternative Septic system inventory

Middle Peninsula Planning District Commission (MPPDC) staff worked closely with VDH to collect spatial data of engineered OSDS permits from 2004-2008, which revealed that within the Middle Peninsula (from 2000-2008) there were 1,208 installed engineered OSDS and 2,006 permitted OSDS awaiting installation. While the inventory was conducted by the MPPDC, OSDS is an issue that affects Virginia's entire coastal zone. This is an important issue because these systems enable greater land development in the coastal zone, and render health-oriented land use policies ineffective. (309-driven change.)

CBPA: Checklist for Advisory Review of Local Ordinances

In December 2001, the Chesapeake Bay Local Assistance Board (CBLAB) amended the Chesapeake Bay Preservation Area Designation and Management Regulations (Regulations) to reduce CSIs and better protect the Bay's water quality and habitat. Local governments incorporated these revised regulations by December 31, 2003. The Regulatory change included

a provision that CBLAB undertake a compliance review process to be conducted on a schedule of every five years. The Compliance Review process began in 2003 and the first cycle of evaluations is nearly complete. As a result of this process, local compliance with the revised Regulations and local code provisions has greatly accelerated. In addition to conducting Compliance Reviews, the Department of Conservation and Recreation's (DCR) Division of Chesapeake Bay Local Assistance has recently initiated an Advisory Code and Ordinance Review of the 84 Tidewater jurisdictions covered by the Chesapeake Bay Preservation Act. In June of 2009, the CBLAB approved a Checklist for Advisory Review of Local Ordinances. This checklist is being used as a tool during the Advisory Review process to identify provisions that address water quality protection measures of minimizing impervious cover and land disturbance and maintaining indigenous vegetation. The checklist contains numerous examples of requirements that may be contained within a locality's land development ordinances. Based on this review, localities may choose to modify ordinances and processes to address development standards that benefit water quality. The information gained from the advisory review will also be used by DCR staff during the next formal evaluation of the local Bay Act Program implementation that occurs every five years.

The initiatives discussed above were driven by the Chesapeake Bay Preservation Area Designation and Management Regulations (Regulations). Only minimal CZM funding was provided to assist with local compliance on certain aspects of the Regulations, including funds for implementation of septic pump out programs, a grant for a PDC to work with several localities to initiate the code and ordinance review process, and a grant to a private conservation organization to assist two localities with code and ordinance reviews and recommended ordinance amendments. (Non-CZM-driven change).

Chesapeake Bay and Virginia Waters Clean-up Plan

Submitted to the General Assembly by Virginia's Secretariat of Natural Resources in 2007, this comprehensive plan addresses all sources of pollution to Virginia's waters. The plan summarizes the status of impaired waters in Virginia, sets objectives for impaired waters clean up, and enumerates several steps to achieve a quantifiable pollution reduction. (Non-CZM-driven change.)

Healthy Waters Initiative

Healthy Waters, launched in 2009, is a multi-organizational effort developed and managed by the Virginia DCR and the Center for Environmental Studies at Virginia Commonwealth University in coordination with the Virginia DEQ, the Virginia DGIF, and the Virginia CZMP. Healthy Waters assesses streams to prioritize stream protection and to integrate protection into land use decision-making and voluntary conservation efforts. Stream health is assessed using INSTAR, a dynamic and interactive mapping and data visualization application that utilizes information on fish, macroinvertebrates, and other living aquatic resources. The initiative's goals are to prevent degradation and have a positive effect on all of Virginia's water systems. It is also designed to raise awareness about the need to protect streams, creeks and other waters before they become impaired. For more information see: <http://instar.vcu.edu/> (non-CZM-driven change)

Research, Assessment, Monitoring

Living Shoreline Research and Monitoring

Living shoreline research and monitoring was a strategy identified in the previous Section 309 assessment. In 2006, the Virginia and Maryland Coastal Zone Management Programs, the National Estuarine Research Reserve Systems, and several other organizations held a Living Shoreline Summit in order to help stakeholders learn and share information about all aspects of living shorelines. VIMS has produced a large number of outreach materials on living shoreline design, implementation, and other considerations, and in October 2008, held a workshop entitled “Putting Nature To Work: How to Design and Build Living Shoreline Projects”. (CZM-driven change)

Shoreline Inventories and Evolution Studies (309)

The Shoreline Inventory Reports, formerly known as Shoreline Situation Reports, are an important resource for local and state planners and regulators of Tidewater Virginia. The data collected enhances their ability to make decisions regarding coastal construction, land use planning, and implementation of environmental legislation. The data collected for the inventory supports the development of a number of essential management tools including spatial models and shoreline management plans.

With CZM funding, VIMS has conducted research to show the evolution and morphology of the shoreline and beach/dune systems over time. VIMS produced reports for localities across the coastal zone detailing these changes, and demonstrating how human-made changes have affected shoreline evolution. (CZM-driven change)

Mapping

Blue and Green Infrastructure Mapping

In FY2008, Virginia CZM funded development of the Priority Conservation Area (PCA) dataset created through a partnership between the Department of Game and Inland Fisheries, the Department of Conservation and Recreation-Natural Heritage and VCU-Center for Environmental Studies. This dataset guides green infrastructure protection efforts by highlighting unfragmented habitat and identifying potential links between contiguous patches, exemplary aquatic communities, wetlands, habitat for rare species and/or special wildlife features. While the PCA has tiered values, all areas identified within the dataset represent important opportunities for conservation.

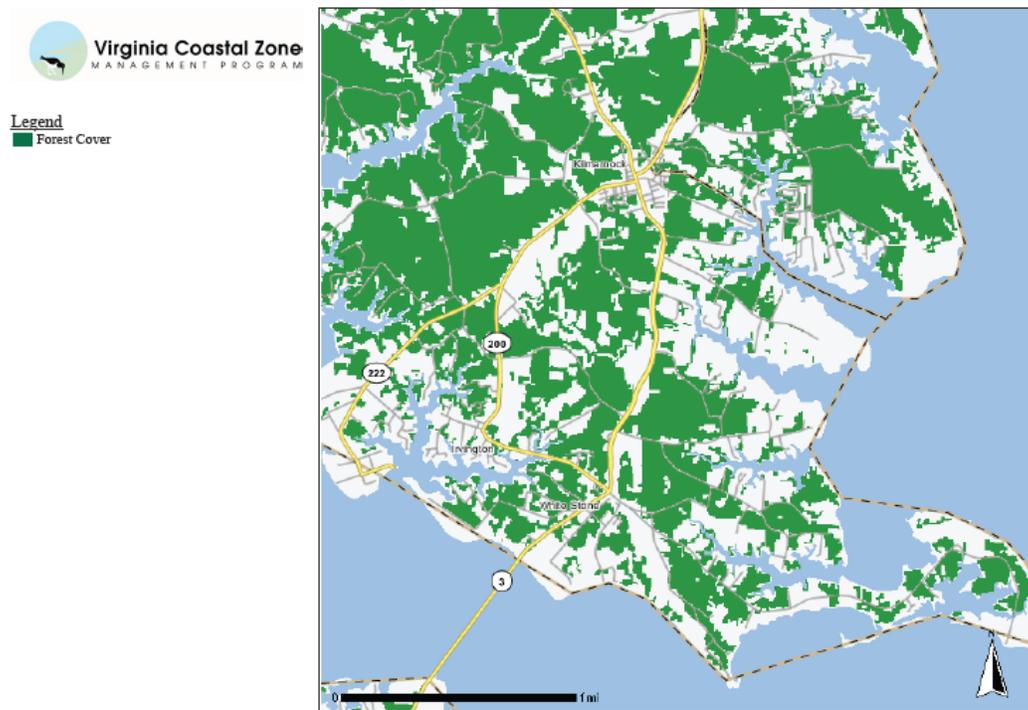
Also in FY2008, the George Washington Regional Commission (GWRC) undertook a project to create blue and green infrastructure plan for the Region. This plan served as a framework for blue and green infrastructure planning in local comprehensive plans, as well as raised local awareness of various environmental mapping systems and datasets. GWRC staff produced a series of maps to identify areas that merit local and regional conservation attention. GWRC also aided local adoption of the use of Community Viz, a popular GIS-based analytical and visioning

tool used by many local governments for evaluating alternative local land use plan. (306 Focal Area)

Coastal GEMS improvements

Led by the Virginia Coastal Program with CZM funding, the Virginia DEQ has created a powerful mapping tool that summarizes all available data layers for the coastal region. Data includes layers on water features, shoreline features, land features, wildlife, recreational features, conservation planning tools, conservation planning examples, and reference layers. This mapping tool can be accessed at: <http://www.deq.virginia.gov/coastal/coastalgems.html> (306 & 309-driven change)

Sample map of forest cover created using Coastal GEMS:



Education and Outreach

Virginia NEMO

The Virginia Commonwealth University (with funding from the VA CZMP), Virginia Department of Conservation and Recreation's Division of Soil and Water, Chesapeake NEMO (Chesapeake Bay Program), and the Virginia Cooperative Extension Program continue to lead the development and implementation of a coordinated, collaborative approach to delivering technical assistance to localities to help them achieve VDCR, VCZM and associated Bay Program goals.

The approach, called the Virginia Network for Education of Municipal Officials (VNEMO), is a request-based program to provide local decision makers with the information, tools and capacity

to make informed local land use decisions. Through the network approach, the Virginia NEMO Program assists the focus and prioritization of limited resources, taking advantage of a wide range of expertise available, and increases the reach of messaging. It helps minimize the duplication of services, competition for time in front of local boards, and conflicting messages.

VNEMO partners currently include:

- Virginia Commonwealth University;
- Virginia Department of Conservation and Recreation Divisions of
 - Soil and Water,
 - Chesapeake Bay Local Assistance,
 - Natural Heritage;
- Virginia Coastal Zone Program;
- Chesapeake Network for Education of Municipal Officials;
- National Fish and Wildlife Federation;
- Virginia Tech and the Virginia Cooperative Extension Community Viability Program;
- Virginia Department of Forestry;
- Coastal Planning District Commissions;
- Soil and Water Conservation Districts;
- Southern Environmental Law Center;
- Center for Watershed Protection;
- Watershed Groups.

The Chesapeake Bay Program Local Government Advisory Committee has partnered with the USEPA to develop a Circuit Rider Program to advance local assistance and implementation of project to improve water quality. The Circuit Rider award was given to the Center for Watershed Protection (www.cwp.org), which is partnering with the VNEMO Program to expand capacity to deliver services to communities in the Bay watershed. (310-driven change)

Living Shoreline Outreach and Training

CZMP has created outreach materials to help inform landowners, contractors and others about the problems with hardened shorelines, the value of living shorelines and options for constructing living shorelines. (309)

Priority Needs and Information Gaps

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

Gap or need description	Type of gap or need (regulatory, policy, data, training, capacity, communication & outreach)	Level of priority (H,M,L)
Protection of Identified Blue and Green Infrastructure	Policy, capacity, communication & outreach	H
Expansion of Green Infrastructure Planning	Policy, capacity, communication & outreach	H
Living Shoreline Promotion through local shoreline management plans	Policy, capacity, communication & outreach	H
Development of targeted public policy options for managing engineered OSDS (eg. Land use development tools)	Policy, capacity, data , communication	H
Public Access and Market Data (Working Waterfronts)	Data	H

While major progress has been made during the current 309 and 306 focal area initiatives, important steps remain in order to take full advantage of these gains. Much has been done to identify important coastal resources on the land and in the water (blue and green infrastructure) and to incorporate this information into local comprehensive plans. More work remains, however, in educating local officials on the local land management mechanisms available for protecting these resources.

Likewise, efforts to improve shoreline management and promote the use of living shorelines have been very successful, but there is a remaining need to develop local shoreline management plans.

Fostering improved local understanding of the available management options for OSDS, and better record-keeping on the location of systems will aid in development of public policy options that promote land use planning approaches to best protect unique and sensitive coastal resources as well as allow for locally and regionally desired growth patterns.

Improving the quality of coastal waters remains a major resource management issue. A number of significant federal, state, regional and local efforts are underway to address this topic. In addition, various Virginia CZM Program initiatives have been, and will continue to be, targeted at this issue. Given this level of on-going effort by multiple agencies and organizations, it may be more appropriate for Virginia CZM 309 efforts to focus on the other key issues identified through this assessment.

Enhancement Area Prioritization

1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?

High ✓
Medium
Low

Briefly explain the level of priority given for this enhancement area.

The interagency Coastal Policy Team reviewed and ranked this issue at its February 17, 2010 meeting according to the following criteria: feasibility; importance and appropriateness. Up to 5 points were allotted to each of the three criteria so that a maximum score would be 15. Scores from 0-4.99 are considered low priority; 5-9.99 is medium priority and 10-15 is high priority. Cumulative and secondary impacts received a score of 12.2.

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

Yes ✓

No

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

Cumulative and Secondary Impacts received the highest rank among all nine of the coastal management issues. CSI covers many concerns throughout Virginia's coastal zone and therefore, warrants several proposed strategies to address the extent of the issue. Strategies under CSI proposed in this funding cycle address the following: Shoreline Management, Land and Water Quality Protection and Working Waterfronts.

2000 Assessment

High ✓

Medium

Low

2005 Assessment

High ✓

Medium

Low

This Assessment (2010)

High ✓

Medium

Low