Virginia Coastal and Estuarine Land Conservation Program Plan

October 2012

Virginia Coastal Zone
MANAGEMENT PROGRAM

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I. Introduction

A. Background

"It shall be the policy of the Commonwealth to conserve, develop and utilize its natural resources, its public lands, and its historical sites and buildings. Further, it shall be the Commonwealth's policy to protect its atmosphere, lands and waters from pollution, impairment, or destruction for the benefit, enjoyment, and general welfare of the people of the Commonwealth."
– Virginia Constitution, Article XI, 1950

Virginia's Coastal and Estuarine Land Conservation Program (CELCP) Plan outlines priority areas (based on ecological value) within Virginia's coastal zone for conserving its best remaining coastal lands and serves as a guide for state agencies, planning district commissions, localities, and non-profit conservation organizations to use in targeting areas for meeting conservation goals.

Virginia's CELCP Plan takes a science-based approach to identifying the most valuable remaining coastal lands by using multiple, recent scientific assessments conducted by a variety of CZM networked agencies. The Virginia CZM Program has synthesized results of these assessments in order to ensure a comprehensive approach to protecting the most significant lands first: i.e., those lands that protect water quality, aquatic life and critical habitat.

Virginia's CELCP Plan also serves as a guide for grant applicants and evaluators in the selection and nomination of conservation projects. This document outlines project eligibility requirements; other existing statewide and regional conservation programs and acquisition plans consistent with the goals of CELCP and the Virginia CZM Program; and a description of the Commonwealth's evaluation process and scoring criteria to be used by the Virginia CZM Program in ranking Virginia project applications that will be submitted annually to the National Oceanic and Atmospheric Administration for its national funding competition.

Potential loss of Virginia's Coastal Treasures

Virginia is an ideal place for humans. It was home to the first successful European settlement in North America, and the natural landscape has been altered by European culture for nearly four centuries. Even the Native Americans before them altered the landscape. However, the wealth of coastal resources found in Virginia is now becoming far more fragmented and degraded due to increasing population pressures. With only 24 percent of the state's land area housing 63 percent of the state's population, and growth expected to continue at unprecedented rates, the need to proactively protect land is paramount.

Virginia experienced a 48 percent change in population (1.6 million person increase) between 1980 and 2003, the 5th highest increase in the nation (NOAA 2004). Between 2000 and 2010 Virginia's population increased by 13 percent. The state's major predicted growth centers lie within the coastal counties, along the "Golden Crescent" transportation corridor from Washington, DC to Virginia Beach. Eleven of Virginia's coastal counties increased their population by more than 20 percent between 2000 and 2010; eight localities (James City, King

George, New Kent, Prince William, Stafford, Spotsylvania, Manassas Park and Suffolk City) experienced population increases by more than 30 percent.

The conversion of open space, agricultural and forest land is increasing faster than the population is as a whole, causing an escalation in the loss and degradation of the state's precious cultural landscapes and natural resources. Of all the development that has occurred in the past 400 years of Virginia's history, more than a quarter of it has taken place in the past 15 years (Virginia Outdoors Plan 2007). In 2006, Virginia's population was just over 7.6 million people. It is projected that by 2030 Virginia's population will grow to 9.8 million people (Virginia Workforce Connection 2010).

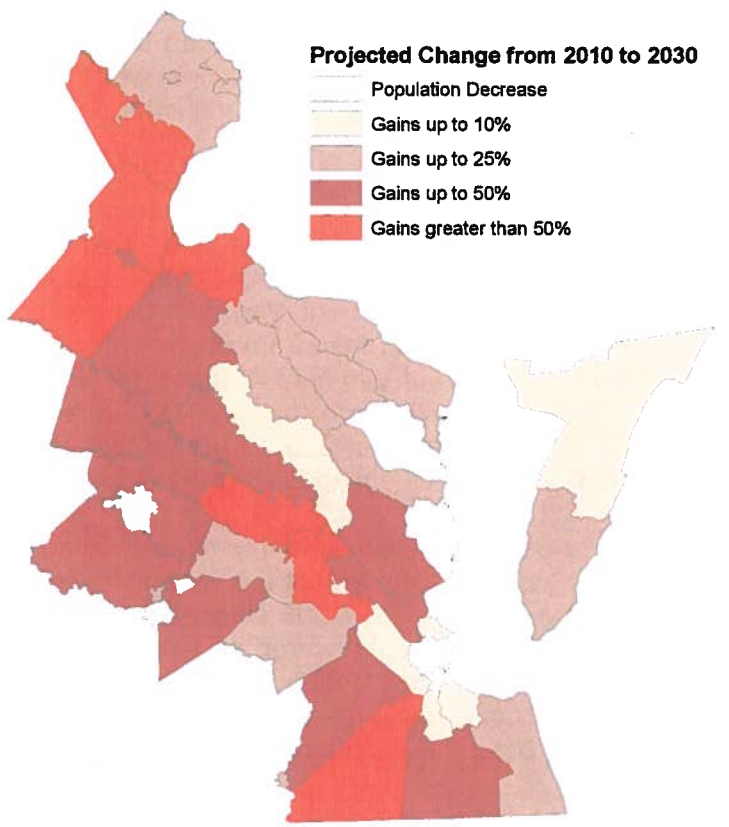

Figure 1. Projected population changes in VA coastal zone by county

Source: Virginia Employment Commission, US Census Bureau

The scattered pattern of development converts an extensive amount of land and fragments the landscape, reducess wildlife habitat and migration corridors, degrades water quality, and diminishes ecosystem function. As forests are divided and isolated, interior habitat decreases, human disturbance increases, opportunistic edge species replace interior species, genetic exchange decreases, and populations of many species become too small to persist. Sound land use planning, using tools and techniques of green infrastructure planning, , and land conservation must be applied in our localities if Virginia is to sustain its quality of life.

Changes on the land have of course caused changes to our coastal waters. Virginia has seen how the conversion of natural areas has had a negative impact on sustaining ecological function, water quality, wildlife habitat, and lands that preserve Virginia's natural heritage. The Elizabeth River in the Hampton Roads area (now a target for millions of dollars of clean-up and restoration funds) is a prime example of the cost of such neglect.

The conversion of land that Virginia is experiencing puts an overwhelming demand on the breadth of sensitive resources found throughout Virginia's coastal zone. Even the vast Chesapeake Bay has felt the unrelenting impact from increased human activities that have led to eutrophication and the loss of once abundant seafood such as oysters and crabs. The

Chesapeake Bay has been seriously degraded by excessive runoff of nutrients, sediments and toxic chemicals from millions of acres of farm land and developed land in the watershed. According to the Center for Watershed Protection, from 1990 to 2000, Virginia experienced a 45 percent increase in impervious surfaces that accompany development. The Bay has experienced an increase in algal blooms, which deplete oxygen from the water and can lead to an increase in "dead zones" in the Bay and its tributaries. Poor water quality in the Bay is also both the cause and the consequence of severely diminished submerged aquatic vegetation (SAV) beds and oyster reefs. Overfishing of both finfish and shellfish stocks have depleted a number of species as well. The Atlantic-side bays of Virginia's Eastern Shore have been relatively protected from some of the threats affecting the Bay, but this will not last without proper planning and protection of key lands.

Perhaps the single greatest, potential impact to all of these tidal systems, and to many upstream freshwater sites, is significant sea level rise. Some predictions (e.g. Wetlands Watch) say that Virginia could lose around 80 percent of its tidal wetlands by 2100, especially if shoreline hardening continues, because it precludes wetlands from migrating inland as sea level rises. An increase in the intensity and frequency of Atlantic storms and other regional weather events would also damage many natural areas and ecological systems in the coastal zone.

Virginia's Natural Resource Protection Goals

In April 2006 at the 17th Annual Environment Virginia Symposium, former Governor Tim Kaine announced a goal of preserving 400,000 acres of land by the end of the decade. This ambitious goal aimed to more than double the amount of state land conserved since 1968. This goal was spurred by the *2000 Chesapeake Bay Agreement,* an agreement Virginia made with other Chesapeake Bay states to protect 20 percent of the Bay watershed from development by 2010 and the Governor's desire to protect 1,000 acres for each of Virginia's 400 years. On January 8, 2010, Kaine announced that his goal had been met with more than 400,000 acres having been conserved since the first fiscal year of his administration in 2006. Current Governor Bob McDonnell has equally set a goal of protecting 400,000 acres during his term of office.

Another major initiative of the *2000 Chesapeake Bay Agreement* is to improve public access to the tidal waters of the Bay. This commitment calls for a 30 percent increase in enhanced or new access sites. The goal for Virginia is 66 new sites. The *2006 Chesapeake Bay Public Access Guide* serves as the baseline from which progress is measured in meeting this access commitment. As of the end of 2006, 27 sites (new and enhanced) were added in the Chesapeake Bay area, leaving the state with a gap of 39 sites to meet the 2010 commitment. Updates of this information are currently underway but not available for reporting to date.

In 2009, the Chesapeake Bay Executive Order further prioritized conservation of natural resources and public access sites by setting the goal of protecting an additional 2 million acres of land throughout the watershed that have been recognized for their conservation value and adding 300 new public access sites by 2025.

Increased funding through Virginia CELCP (along with other funding sources) would serve the dual function of addressing both *Chesapeake Bay Agreement* conservation goals and those defined at both the state and federal level. To date, funding for easements and acquisitions has come through a variety of sources including Section 306A of the CZMA, the Coastal & Estuarine Land Conservation Program, US Fish & Wildlife Service, the Virginia Land Conservation Fund, the Virginia Outdoors Fund, The Nature Conservancy, the Virginia Aquatic Resources Trust Fund, the Game Protection Fund, and Virginia's land preservation tax credit program, to name a few.

In 2001, the Trust for Public Land, Chesapeake Bay Foundation, and The Nature Conservancy found that 89 percent of Virginia's voters felt that preserving and protecting the state's open space resources should be an important state priority. The 2011 *Virginia Outdoors Survey* conducted by the Virginia Department of Conservation and Recreation, where 13,880 Virginian households were surveyed (where 23 percent were usable responses), showed that 94 percent felt it was important or very important to protect our open space resources. Awareness of conservation issues and the value of our natural resources have increased over the last five years. The survey also showed that 73 percent of Virginians surveyed support state funds being used for the protection of our natural areas. Most people prefer state funds for land protection to be expended for the outright purchase of lands from willing sellers with future provisions for public use and access. Despite these outstanding statistics and public support, spending on conservation and natural resources remains low in the Commonwealth. Former Governor Kaine's goal was met primarily through conservation easements on *private property*, so a need for future acquisition of *public lands* for state parks, natural area preserves, state forests, and wildlife management areas still exists to provide a greater *public* benefit for the Commonwealth's citizens.

B. Purpose of a Coastal and Estuarine Land Conservation Program (CELCP) Plan

The Department of Commerce, Justice, and State Appropriations Act of 2002 (Public Law 107-77), directed the Secretary of Commerce to establish a Coastal and Estuarine Land Conservation Program for the purpose of protecting important coastal and estuarine areas that have significant conservation, recreation, ecological, historical, or aesthetic values, or that are threatened by conversion from their natural or recreational state to other uses, giving priority to lands which can be effectively managed and protected and that have significant ecological value. Virginia's CELCP Plan follows the federal guidelines directing the content, development, and implementation of state CELCP plans, accessible at: http://coastalmanagement.noaa.gov/land/welcome.html

The purpose of Virginia's CELCP Plan is to outline priority areas within Virginia's coastal zone for conserving the best remaining coastal resources under the greatest threats of conversion and serve as a guide for state agencies, planning district commissions, localities, and non-profit conservation organizations to use in identifying coastal conservation priorities and meeting strategic open space/conservation goals.

Virginia's Coastal and Estuarine Land Conservation Program aims to take a science-based approach to protecting the most valuable remaining coastal lands by using recent scientific assessments conducted by a variety of CZM partners. The Virginia CZM Program has synthesized results of these assessments in order to prioritize our pursuits so that we acquire the most significant lands first, including those lands with significant benefits for protecting water quality and aquatic life and its habitat. This naturally supports the overarching goals of President Obama's *Executive Order for Chesapeake Bay Protection and Restoration*—first through state and federal collaboration in a national program for land conservation and second by identifying and protecting the most valuable lands and associated waters found in and around the Chesapeake Bay watershed.

Virginia's CELCP Plan also serves as a guide for project applicants and evaluators in the selection and nomination of conservation projects. This document outlines project eligibility

requirements; coastal zone-wide priority areas for conservation; existing statewide and regional conservation programs and acquisition plans consistent with the goals of CELCP and the Virginia CZM Program; and a description of the Commonwealth's evaluation process and scoring criteria to be used by the Virginia CZM Program in ranking Virginia project applications that will be submitted annually to the National Oceanic and Atmospheric Administration for its national funding competition.

This document shall be revised every five years, or as needed, to incorporate new or improved geospatial data on sensitive coastal resources used in the determination of priority areas for CELCP funding and to incorporate new or revised conservation goals and planning efforts of Virginia CZM Program partners and the broader Commonwealth.

The Commonwealth of Virginia has prepared this CELCP Plan in order to participate in the competitive federal grant funding program for coastal and estuarine land conservation through acquisition of fee simple or other interests in land. A federally-approved state plan is a pre-requisite for participating in the program. When CELCP funding was first available in Fiscal Year 2002 and through FY 2006, grants were awarded through Congressional earmarks. Beginning in FY 2007, funds have been awarded competitively. Several projects in Virginia have been funded since 2002:

- FY 2002: The Virginia Institute of Marine Science received $273,900 in CELCP funds to acquire about 45 acres on Taskinas Creek in James City County's York River State Park. Virginia's Department of Conservation and Recreation received $224,100 in CELCP funds to acquire 93 of1,093 acres of the Widewater parcel in Stafford County.

- FY 2005: The Virginia CZM Program received CELCP awards for the conservation of lands in the Potomac Gorge of Northern Virginia and in the Dragon Run Watershed of Middle Peninsula. The Virginia CZM Program, the Northern Virginia Conservation Trust, the Potomac Conservancy, and Fairfax County came together to place a conservation easement on the 5-acre Timblin property, which fronts the Potomac River for $207,800. Congress allocated nearly $1 million in federal funds to the Middle Peninsula Chesapeake Bay Public Access Authority to acquire parcels along the main stem of the relatively undeveloped and mostly privately-owned Dragon Run to meet public access, traditional forest use protection, and riparian corridor protection goals. These funds were used to acquire four main stem properties in King & Queen County totaling 566 acres. In addition, the Fairfax County Park Authority received $2,150,000 in CELCP funds to purchase the 35-acre Cunigan property and the 41-acre Ingersoll property in Fairfax County.

- FY 2006: The Virginia CZM Program received a CELCP award for $514,714 for the conservation of lands in Northampton County, specifically the southern tip. The Department of Conservation and Recreation (DCR), with help from the Virginia Land Conservation Foundation, CELCP funds, Virginia Coastal Zone Management funds (Section 306A) and donations from James Taylor, has acquired the 285-acre Bull Tract on the seaside of the southern tip, now the Magothy Bay Natural Area Preserve. Documented as a hemispherically important stopover habitat for migratory songbirds, this area conserves wetlands and forest and provides opportunity to convert crop lands to bird habitat. This tract connects with protected areas critical for the migrating birds. Also in FY 2006, James City County received $1,871,687 to purchase nearly 98 acres of the Jamestown Campground and Yacht Basin, a 198-acre property with valuable historical, archaeological, and recreational resources, which adjoins historical sites already protected by the National Park Service, the Commonwealth, and James City County.

- FY2009: The Virginia CZM Program received a CELCP award for $3,000,000 for the conservation of land in the Potomac River watershed in Stafford County, Virginia. The area known as Crow's Nest was purchased by The Virginia Department of Conservation and Recreation with help from Stafford County, the Northern Virginia Conservation Trust, the Virginia Land Conservation Foundation, the US Fish and Wildlife Service, the US Army Corps of Engineers, The Nature Conservancy, The Department of Environmental Quality and CELCP funds. Conservation authorities have described the Crow's Nest peninsula as the most ecologically significant tract of unprotected land in the national capital area. The property supports a large expanse of unfragmented and regionally significant coastal plain hardwood forest, hundreds of acres of tidal and non-tidal wetlands, and miles of streams and riparian habitat. It contains some of the best remaining wetland habitat on the Potomac River, and the associated upland forest represents a significant tract of mature hardwoods with two globally rare forest communities. The protection of Crow's Nest has been one of Virginia's highest land conservation priorities for more than a decade.

II. Coastal & Estuarine Land Protection Priorities

A. Geographic extent of coastal and estuarine lands within Virginia

Virginia will use its entire federally-approved coastal zone as the geographic extent of coastal and estuarine lands for the purposes of the CELCP (Figure 2 and Table 1). This area encompasses 29 counties, 17 cities, and 42 incorporated towns bordering tidal waters in "Tidewater Virginia" (*Code of Virginia §28.2-100).* More than 1,685,496 acres have been identified in Virginia's coastal zone as having either imperative or extremely high ecological significance (see section C, Identification of Project Areas). With less than 30 percent of these acres under permanent protection, Virginia's coastal zone itself presents significant need and opportunity for coastal and estuarine land conservation. Furthermore, the CELCP plan will take into account the connection of these lands to vital coastal resources within the waters of Virginia's coastal zone which includes the waters within these land areas and out to the three-mile Territorial Sea boundary. This includes all of Virginia's Atlantic Coast, the Chesapeake Bay and its tidal tributaries (Potomac, Rappahannock, York, and James) and waters connecting to the Albemarle-Pamlico Sound in North Carolina.

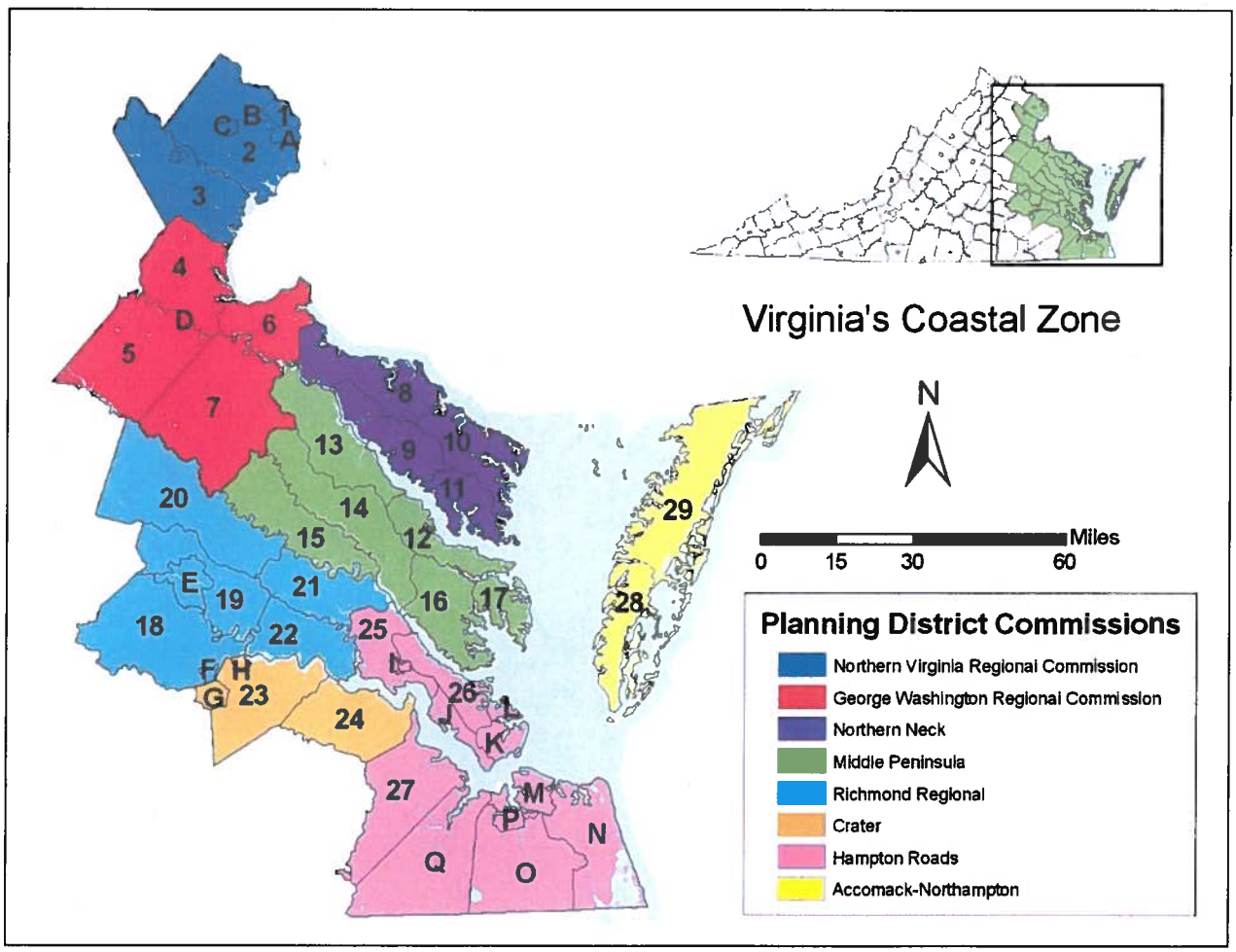

Figure 2. Virginia's jurisdictional coastal zone divided into regional planning district commissions

Table 1. Virginia's coastal zone localities.

Planning District Commission	Counties	Cities
Northern Virginia Regional Commission	Arlington (1) Fairfax (2) Prince William (3)	Alexandria (A) Falls Church (B) Fairfax City (C)
George Washington Regional Commission	Stafford (4) Spotsylvania (5) King George (6) Caroline (7)	Fredricksburg (D)
Northern Neck PDC	Westmoreland (8) Richmond (9) Northumberland (10) Lancaster (11)	
Middle Peninsula PDC	Middlesex (12) Essex (13) King and Queen (14) King William (15) Gloucester (16) Mathews (17)	
Richmond Regional PDC	Chesterfield (18) Henrico (19) Hanover (20) New Kent (21) Charles City (22)	City of Richmond (E) Colonial Heights (F)
Crater PDC	Prince George (23) Surry (24)	Petersburg (G) Hopewell (H)
Hampton Roads PDC	James City (25) York (26) Isle of Wight (27)	Williamsburg (I) Newport News (J) Hampton (K) Poquoson (L) Norfolk (M) Virginia Beach (N) Chesapeake (O) Portsmouth (P) Suffolk (Q)
Accomack-Northampton PDC	Northampton (28) Accomack (29)	

B. Lands and values to protect through Virginia's CELCP Plan

Goals and Values of the Virginia Coastal Zone Management Program

The overall values of the Virginia CZM Program, authorized in 1986, are contained in Executive Order Number Eighteen (2010), signed by Governor Bob McDonnell, under which the program operates. The Executive Order is renewed every four years by each successive governor. The Virginia Department of Environmental Quality serves as the lead agency of this networked program of state agencies and Tidewater local governments. The Virginia Coastal Zone Management Program's overall mission is to protect, restore and strengthen Virginia's coastal ecosystems and economy. State agencies and local governments having authority over the Commonwealth's coastal resources shall promote the Virginia CZM Program consistent with its ten goals:

- Goal 1: To protect and restore coastal resources, habitats, and species of the Commonwealth.
- Goal 2: To restore and maintain the quality of all coastal waters for human and ecosystem health.
- Goal 3: To protect air quality.
- Goal 4: To reduce or prevent losses of coastal habitat, life, and property caused by shoreline erosion, storms, and other coastal hazards.
- Goal 5: To provide for sustainable wild fisheries and aquaculture.
- Goal 6: To promote sustainable ecotourism and to increase and improve public access to coastal waters and shorefront lands compatible with resource protection goals.
- Goal 7: To promote renewable energy production and provide for appropriate extraction of energy and mineral resources consistent with proper environmental practices.
- Goal 8: To ensure sustainable development on coastal lands and support access for water-dependent development through effective coordination of governmental planning processes.
- Goal 9: To avoid and minimize coastal resource use conflicts through research, planning, and a forum for coordination and facilitation among government agencies, interest groups, and citizens.
- Goal 10: To promote informed decision-making by maximizing the availability of up-to-date educational information, technical advice, and scientific data including the use of new tools such as marine spatial planning.

Virginia's CELCP program is driven primarily by Goal 1, above, and secondarily by Goals 2, 5 and 6. Goal 1, to protect and restore coastal resources, habitats, and species has been especially important. The Virginia CZM Program has a long history of protecting sites of high ecological value through its "Special Area Management Plans" (SAMPs). Most of the lands acquired with Virginia CZM Program funds (Section 306A funds and CELCP funds) have been within SAMP boundaries. When SAMP areas were chosen by the Virginia CZM Program starting in 1991 (when Section 309 was authorized to fund such efforts), the priorities were driven more by "gut feeling" or anecdotal evidence rather than documented science.

For example, Northampton County was chosen for SAMP development because we knew from avid bird banders that migratory songbirds were stopping there in huge numbers. They had been banding birds there since the 1960's. The U.S. Fish & Wildlife Service, the state and The Nature Conservancy knew the tremendous value and importance of pristine barrier islands and began purchasing them in the 1960's and 1970's. The Southern Watersheds of Virginia Beach and Chesapeake were chosen for SAMP development because for a long time people were aware of the unique wind-driven marshes and bogs that provided habitat for rare species. People knew many rare plants and community types were threatened by encroaching development. The Dragon Run has long been praised by the Smithsonian Institute and the local people as one of the most pristine watersheds of the Chesapeake Bay, and a local "friends" group and the regional Planning District Commission requested the assistance of the

Virginia CZM Program to help protect it. Thus the Dragon Run was chosen for SAMP designation.

With the advent of GIS technologies and after many years of research, analysis and synthesis, we are now able to more scientifically and accurately document which areas hold the highest ecological values. All of the original SAMP areas we targeted have held up to this analysis and remain key targets for conservation. However, new analysis has shown us additional geographic areas that have very high ecological value that also deserve our attention.

Virginia's CELCP Plan draws upon the analyses and priorities of our CZM partners that are involved in protection of coastal habitats and species (Goal 1). The plan provides a comprehensive assessment of priority land conservation needs within the coastal zone. In Section II-C of this document, key partners' ecological land prioritization models and maps are are summarized and further described in Appendix A. This information has been synthesized to create the Coastal Virginia Ecological Value Assessment (VEVA) which serves as the CELCP priority conservation areas map and data set to target the most ecologically significant acquisition opportunities in Virginia's Coastal Zone.

Virginia's CELCP Plan also addresses Goals 2 (to protect coastal water quality) and 5 (to provide for sustainable wild fisheries and aquaculture). The Virginia CZM Program values high water quality that supports aquatic species and allows for sustainable industries such as shellfish aquaculture to thrive. Lands that are adjacent to and offer the function of preserving water quality for long term survival of aquatic species are a high priority. High value aquatic areas such as stream segments with high biological integrity, estuarine and marine waters with oyster reefs or SAV beds and areas that are optimal for shellfish farming are viewable through the Virginia CZM Program's Coastal GEMS Internet mapping system at www.deq.virginia.gov/coastal/coastalgems.html. Layers currently available include submerged aquatic vegetation beds, state constructed oyster reefs, commercial shellfish aquaculture sites, optimal clam and the Oyster Aquaculture Suitability/Vulnerability Models; a sampling of which can be viewed in Figure 3. Virginia's CELCP Plan values lands adjacent to these important aquatic features, or "blue infrastructure," and reflects this in the Virginia CELCP Priorities data, (Coastal VEVA, Figure 6).

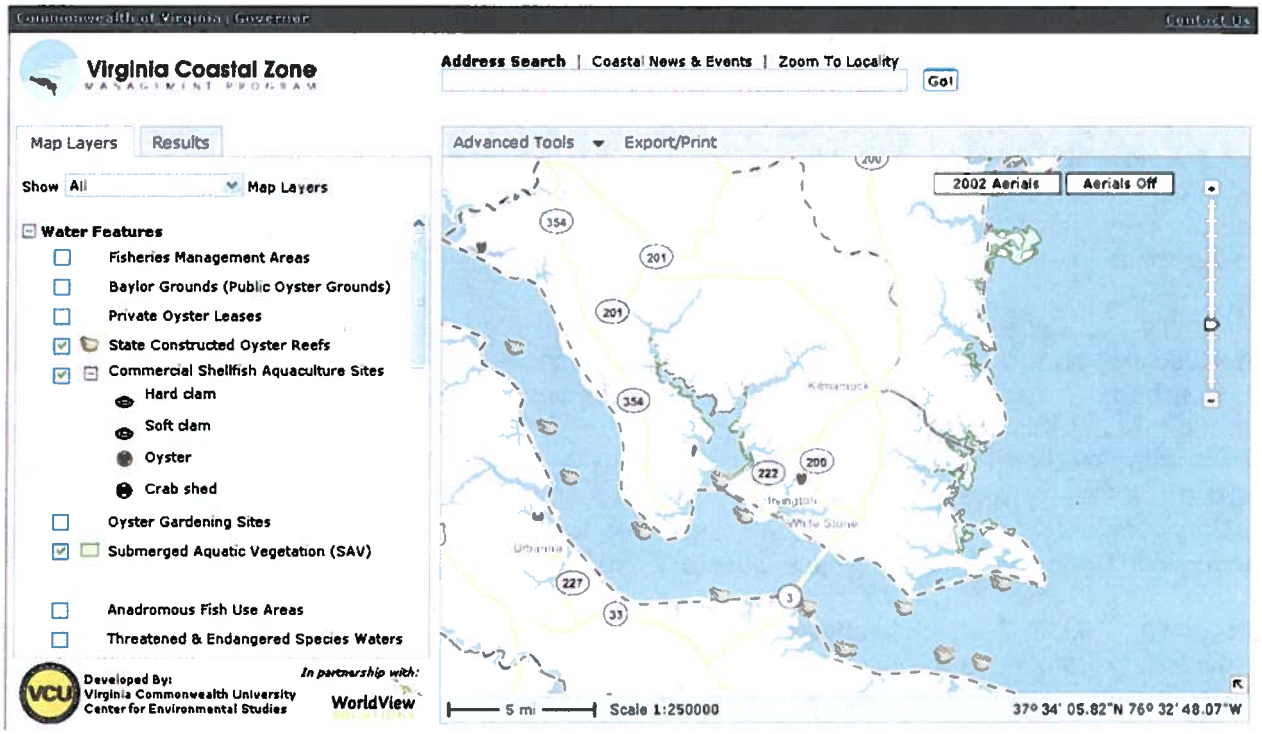

Figure 3. Sample of marine resource layers from Coastal GEMS.

Finally, Virginia's CELCP Plan addresses Goal 6: to promote sustainable ecotourism and to increase and improve public access to coastal waters and shorefront lands. The Virginia CZM Program values public access for many reasons, but key among them is the belief that people without opportunity to enjoy the coast may not be willing to help protect the coast. Clearly Virginians want access to the coast. As mentioned above, the *2011 Virginia Outdoors Survey* (VOS), showed that Virginia's citizens support the use of public funds for outdoor recreation and land conservation with 94 percent of citizens believing it is either "important" or "very important" to protect Virginia's natural and open space resources. The two highest outdoor recreation needs indicated in the survey were additional public access to Virginia's waters and trails for hiking, walking and bicycling. Funding for public recreational land acquisition is a necessary component of a comprehensive strategy because private lands protected by conservation easements rarely include public access. The Virginia CZM Program has a long history of supporting public access construction of boardwalks, nature trails, fishing piers water trails and canoe/kayak floating docks. Most of the lands already acquired with CZM and CELCP funds do afford opportunity for public access.

Supporting Values - Virginia's Coastal Conservation Needs

Taking into account priority land values discussed so far (Virginia Executive Order 18 goals 1, 2, 5 and 6), the Virginia CELCP Plan expands on this list by including the following types of lands which support CELCP priority values for protection through acquisition:

- *Virginia CZM Program Special Areas:* These are generally very large areas that may encompass an entire county (such as the Northampton County SAMP) or parts of several counties. SAMPs focus on the development of new enforceable policies to protect the coastal resources within their boundaries, but acquisition is always the strongest protection tool and is therefore needed in these special places to ensure protection in perpetuity.

- *Lands connected to or contribute to Chesapeake Bay National Estuarine Research Reserve of Virginia Sites*: CBNERRVA sites along the York River represent the spectrum of saline to freshwater wetlands. Additional acquisitions may be needed to expand or buffer these sites. As climate change causes sea level rise, the saltwater will move inland, necessitating the need to consider acquisitions upstream of the current sites.

- *Dunes & beaches*: Although dunes and beaches are managed by Virginia's recently improved Coastal Primary Sand Dunes and Beaches Act (the 2008 General Assembly included all Tidewater localities in the Act rather than just the original nine localities), only primary sand dunes and not secondary dunes are covered by the Act. Secondary dunes provide critical habitat for rare species, water quality protection and protection from shoreline erosion. The Virginia Institute of Marine Science (VIMS), through a Virginia CZM Program grant, has identified privately owned lands containing secondary dunes.

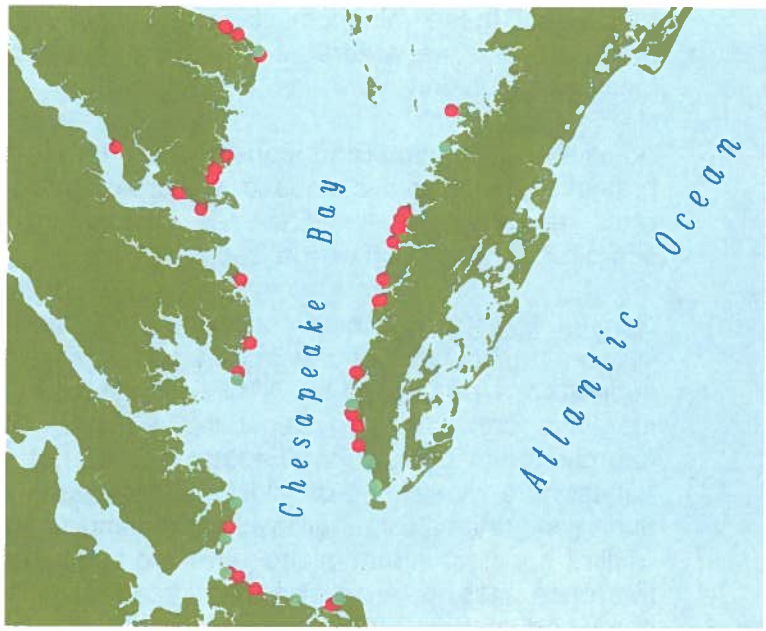

Figure 4. Secondary sand dune sites

- Figure 4 shows all secondary dune sites. Green dots indicate sites already in conservation ownership. Red dots are sites that are privately owned and currently unprotected. Primary dunes and beaches, although managed by local governments and the Virginia Marine Resources Commission (VMRC), are still vulnerable to development or shoreline hardening. Acquisition of these areas is the strongest tool for permanent protection.

- *Wetlands connected to undeveloped uplands:* Although wetlands are managed through state and federal law, it is still possible to obtain permits to impact wetlands. Undeveloped uplands adjacent to wetlands are not necessarily protected and may be very important for the inland migration of wetlands as sea level rises. Therefore, it may be necessary and valuable to acquire wetlands when connected uplands can also be acquired with them to allow for inland migration. Southeast Virginia has been identified as a major area of wetland alteration, accounting for over 80 percent of the state's loss of palustrine wetlands from the 1950's to the 1970's and over 5,000 acres converted between 1982 and 1989. Thirty percent of all of Virginia's non-tidal forested wetlands occur in three river watersheds of southeastern Virginia. Included in this acreage, primarily along the Blackwater River, are stands supporting virgin cypress trees that predate the early settlements in Jamestown. The majority of tidal wetlands occur on Virginia's Eastern Shore on the Atlantic coast and the northern part of Bayside Accomack County.

- *Riparian areas that protect water quality for aquatic species*: Regulations adopted pursuant to the Chesapeake Bay Preservation Act (*Virginia Code Section 10.1 – 2100 et seq.*) require localities in Virginia's coastal zone to designate "Resource Protection Areas" (RPAs) that

preserve perennial streams, tidal shorelines, tidal and nontidal wetlands, and a 100-foot buffer adjacent to each of these features. Research has shown, however, that more extensive buffers and headwater streams and wetlands also provide vital water quality protection. Landowners have been able to get variances from Bay requirements, and many parcels of land were "grandfathered" and are thus exempt from some Bay requirements. Targeting of these areas through CELCP for acquisition would enhance the effectiveness of the Bay Act while helping to meet CELCP objectives. Localities are granted the authority to go beyond these minimum standards by designating additional lands necessary for the protection of state waters as RPAs, thus helping to meet CELCP objectives through local land use regulation.

Additional protection and conservation of riparian areas provides critical water quality protection for sensitive aquatic resources, such as submerged aquatic vegetation, oyster reefs, and shellfish cultivation sites. The latter has become a significant economic driver in some rural areas such as the Eastern Shore.

- *Coastal forests*: Restored long-leaf pine, maritime forests, bottomland hardwoods and cypress-tupelo swamps are priority coastal forest habitats. The Virginia CZM Program has supported a project by the Virginia Institute of Marine Science to identify the remaining maritime forests in Virginia's coastal zone. Much of the maritime forest that remains unprotected is found on the Eastern Shore. Bottomland hardwood forest provides important habitat for a wide range of wildlife. Conserved forestlands will benefit neotropical songbirds during migration. Older growth bottomland stands serve as core areas for forest interior wildlife species. Bottomland hardwood habitats are ecologically complex and serve as reference sites to guide silviculture management and restoration of recently cut or young hardwood stands. Changes in ownership of forests in the South have triggered the fragmentation of large, contiguous forest blocks and put into jeopardy the numerous important public benefits that forestlands provide, such as wildlife habitat, watershed protection, fiber production, and outdoor recreation. In Virginia alone, the loss of timberland due to conversion is 20,000 acres per year. Acquisition of forested lands is regarded by many groups as a critical strategy for protecting the health of local economies, waterways, and wildlife.

- *Lands supporting natural heritage resources*: Conservation Sites and Stream Conservation Units identified by the Virginia Department of Conservation and Recreation Division of Natural Heritage (DCR-DNH) are widely regarded by governmental agencies and conservation organizations as among the highest targets for protection.

- *Habitats of wildlife species of greatest conservation need:* Essential Habitat for Species of Greatest Conservation Need identified by the Virginia Department of Game & Inland Fisheries' (DGIF) Wildlife Action Plan is widely regarded by governmental agencies and conservation organizations as among the highest targets for protection.

- *Important bird migration corridors, stopover sites, breeding and wintering areas*: The Delmarva Peninsula at the southern tip of the Eastern Shore is a critical stop-over habitat for hundreds of migratory songbird species and millions of individual birds. The Virginia CZM Program and the Commonwealth have invested millions of dollars to document and preserve these habitats on the Eastern Shore and continue to consider them a high priority for protection. In addition, the Virginia CZM Program and DGIF have invested funds to identify "Important Bird Areas" according to National Audubon Society standards. (See

Sections II-C and II-D for more information). The Partners in Flight mid-Atlantic Coastal Plain Plan notes that the impacts of an expanding human population on regional bird populations extend beyond the direct loss of habitat. For example, the increased demand for recreational activity has lead people to remote habitats that represent the only breeding areas for many species that are sensitive to human disturbance. Fire suppression programs have changed the vegetative structure of forested habitats and virtually eliminated pine savannahs from the region. Invasive plant species such as *Phragmites* now threaten species suites such as high marsh birds. Predator increases such as foxes and raccoons have reduced productivity for many beach-nesting birds. According to the College of William and Mary's Center for Conservation Biology, some of the priority species habitat suites are: pine savannahs (maritime forest), barrier and bay islands (which support 90 percent of colonial water birds), salt marsh, forested wetlands, mixed upland forest, early successional forests and fresh/brackish emergent wetland.

- *Habitats of rare, endemic, non-listed species:* Many of Virginia's rarest species have no regulatory protection through federal or state endangered species regulations, or are not accounted for by statewide conservation assessments (Natural Heritage and the Wildlife Action Plan) (Table 2). This may be due to lack of sufficient data to nominate species for listing and/or backlogs in the listing process. The DCR Division of Natural Heritage has developed a Biodiversity Assessment through Virginia CZM Program funding that identifies lands and streams with Virginia's most critically rare species and exemplary natural communities. These species and communities are high priority targets for conservation for many may be lost entirely if conservation action is not taken within the next few years. The Virginia Land Conservation Foundation (VLCF) also prioritizes land conservation projects by the extent the site supports exemplary species and natural communities with no or limited protection currently within the state.

Table 2. Protection status of globally-rare species and natural communities (i.e. species and natural communities G-ranked 1 or 2, with G1 representing the most globally rare species).

	Number of Species throughout Virginia	Number of Species in Virginia's Coastal Zone
Federal Listed G1& G2	46	5
State Listed G1& G2	28	4
Non-listed G1& G2 (No Regulatory Protection)	259	48
Total	333 (67 are natural communities)	57 (31 are natural communities)

- *Lands supporting green and/or blue infrastructure plans:* Green infrastructure planning integrates conservation lands, outdoor recreation, open space and cultural resources into ongoing planning and land use management decisions. Green infrastructure land planning supports cost effective, sound economic development in harmony with land conservation, cultural resource protection and outdoor recreation. Geographic information, such as the Department of Conservation and Recreation's Virginia Conservation Lands Needs Assessment (VCLNA) and Conservation Lands Database, help localities and conservation organizations identify areas of importance for multiple conservation benefits, and provide connections to or may expand currently protected lands. The VCLNA maps green infrastructure through seven models: ecological model, cultural asset model, recreation model, agricultural model, forest economics model, watershed integrity model, and vulnerability model (see Sections II-C and II-D for more information). Blue infrastructure planning supports protection of lands critical to ensuring the long term health of freshwater,

estuarine and marine plants and animals. Few, if any, blue infrastructure plans have been developed so far in Virginia. Coastal GEMS provides maps of green infrastructure, including the VCLNA models, and provides maps of many important aquatic resources, both of which can be used as a starting point for localities to develop blue-green infrastructure components of their local comprehensive plans.

- *Lands targeted for acquisition in a local or regional conservation plan*: As local governments and regional Planning District Commissions develop their own conservation plans, the Virginia CELCP Plan will attempt to incorporate those priorities, especially where they overlap with state identified priority lands.

- *Lands providing expansions of or buffers to existing conserved lands*: The Virginia Conserved Lands Database shows all lands in conservation ownership or protection. Virginia's Natural Heritage program at DCR compiles all conservation land acquisitions and easements from government agencies and private conservation groups to regularly update the database. This CELCP plan incorporates all conservation acquisitions and easements since December 31, 2009. The Virginia CELCP Plan values lands that would augment or buffer already protected sites.

- *Public access and nature-based recreational areas:* The two highest outdoor recreation needs indicated in the *2011 Virginia Outdoors Survey* were additional public access to Virginia's waters and trails for walking and bicycling. Currently, less than 1 percent of Virginia's shoreline is publicly owned. To meet future demand, more greenways, blueways and trails are needed. Priority sites to be acquired are riparian areas that may be suitable for land-based trail development and may be suitable access sites for water trails, swimming, fishing, and boating, but would be protective of the local environment and natural resources. To address these needs, both DCR and DGIF have placed a program emphasis on acquiring and developing new public access sites when funding and opportunities are presented. Additionally, plans for locating new state parks place emphasis on having extensive frontage on recreational waters of the state. The Virginia CZM Program seeks to maximize its investments by prioritizing the acquisition of lands that connect with the Seaside Water Trail and the Birding and Wildlife Trail. Land and water trails within the coastal zone are listed in the *Virginia Outdoors Plan*. Acquisition should support buffers and additions to these trails to enhance public recreation areas, ecotourism, and natural resource protection.

- *Protection of lands vulnerable to sea level rise impacts*: Virginia is at the beginning stages of researching the vulnerability of our coastal areas to sea-level rise and approaches for adaptation. Former Governor Kaine's Climate Change Commission produced a report in 2008 outlining the state's recommendations on how to reduce our carbon footprint and the tools needed to prepare our localities for increased storm surges, flooding and inundation from rising seas. We already know however that our coastal wetlands are at risk if they abut development along the shoreline. It is a priority of this CELCP plan to conserve shoreline and low-lying lands connected to sufficiently large undeveloped uplands so that wetlands can migrate inland.

- *Cultural landscapes with significant historical, archaeological, and cultural heritage sites*: Virginia's Department of Historic Resources maintains a database of historic, archaeological and cultural heritage sites (Virginia Landmarks Register and the National Register of Historic Places) which are significant given Virginia's 400 year history. The Virginia CELCP Plan

values ecologically important sites, the acquisition of which would also protect historic sites and structures. This is captured through the proposal review and ranking process with incorporation of specific scoring criteria for historic and cultural value (see pp. 89-90). To aid in identifying significant historic areas, the Virginia Cultural Asset Model was developed by DCR and DHR to map existing (and potentially) culturally valuable lands in Virginia as defined by the presence of Historic Resources and American Indian Areas. This data layer of valuable cultural areas is available on Coastal GEMS (Figure 5), but is not embedded as a data layer in the VA CELCP Priority Conservation Areas Map (VEVA) (Figure 6). A project's historic and cultural significance will be determined through the VA CELCP application review and ranking process (see pp.89-90).

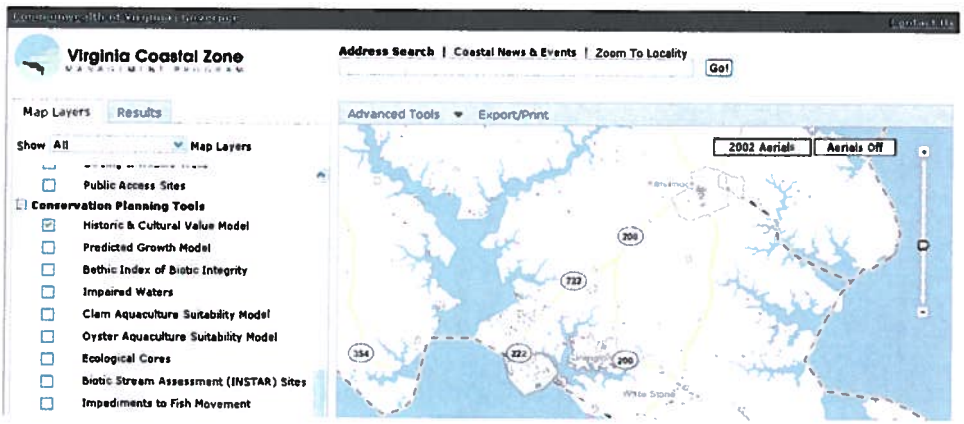

Figure 5. Sample of historic and cultural values model from Coastal GEMS

C. Identification of project areas

Virginia CZM partners developed a map of priority areas based on a detailed evaluation and synthesis of state natural resource data sets The Coastal Virginia Ecological Value Assessment (Coastal VEVA) reflects a consensus of the Commonwealth's CZM Program partner agencies in identifying priority project areas (Figure 6). VEVA identifies gaps between existing conservation lands in Northern Virginia and Southern Watersheds as well as extensive conservation potential along Chesapeake Bay rivers and tributaries. It represents the priorities for the Commonwealth's conservation strategy in the coastal zone as well as for the purposes of this CELCP Plan.

Priority areas synthesize the best available interagency ecological assessments of potential conservation areas as defined in statewide conservation plans. The method and data sets used to identify and prioritize conservation areas are described below (see also Appendix A).

Coastal VEVA was developed to synthesize important natural resource information in one geospatial layer for land use and natural resource management and awareness. It is intended to guide conservation planning and efforts and not to replace on the ground surveys or consultations with biologists as appropriate.

Of the roughly 5.7 million acres of land in Virginia's coastal zone, 342,585 acres of outstanding ecological value land and 874,750 acres of very high ecological value land remain unprotected (Table 6). Although Virginia has met former Governor Kaine's 400,000-acre state lands conservation goal, about 21 percent of which are within the coastal zone, there are about 1.3 M acres of ecologically important lands (the "outstanding" and "very high" value lands combined) in the coastal zone alone still awaiting permanent protection for the public benefit.

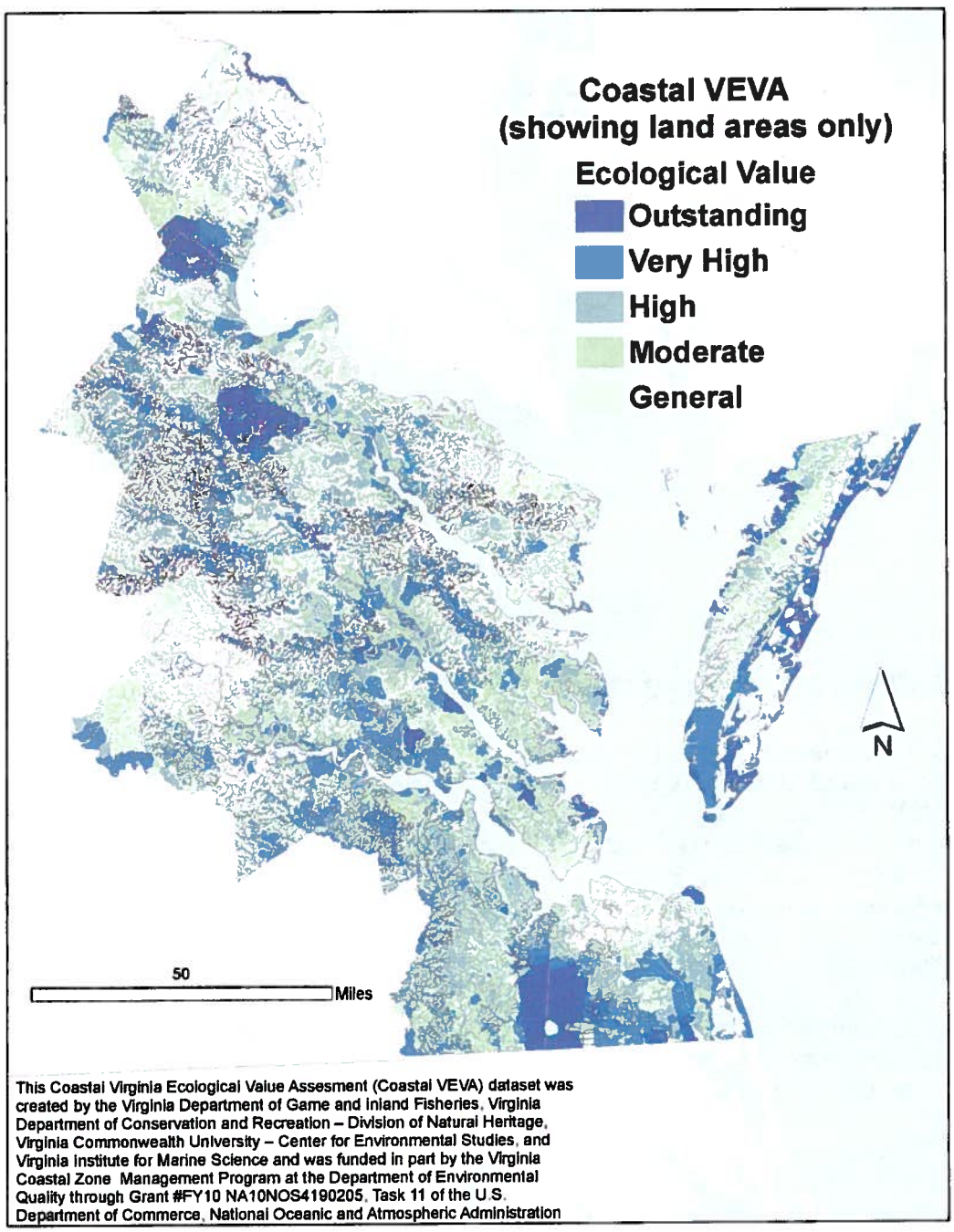

Figure 6. Virginia CELCP Priorities map, *Coastal VEVA*

Potential CELCP applicants can work with Virginia CZM staff to locate project areas within the Virginia CELCP priorities map as needed. Projects proposed for CELCP funding will be evaluated for ecological significance by their location within the Virginia CELCP Priorities map and the conservation importance that the site represents. Projects located within CELCP priorities will be scored higher than those that do not. However, applicants for CELCP funds should not be discouraged from applying if their property does not rank highly within the Virginia CELCP Priorities map (Figure 6, see Virginia CELCP Scoring Criteria on pp. 84-95). The data described here and used to rank Virginia CELCP project areas are improved and updated regularly, as public and private entities continue to define coastal areas that serve as conservation priorities. State botanists and zoologists have completed on-site assessments of ecological integrity over a small percentage (about 6 percent) of the Virginia landscape. Many treasures remain hidden on private lands, and therefore may not be taken into account nor rank highly in this assessment. Site surveys from state or contracted certified naturalists may help applicants uncover rare or threatened species, ecosystems, and/or ecological services that could increase a project's competitiveness and overall score at the state and national levels. Likewise, information from marine scientists about how a land area may help provide protection to adjacent marine resources can increase a project's competitiveness.

Step 1: Geospatial analysis to identify priority areas

The Coastal Virginia Ecological Value Assessment (VEVA) was developed by integrating key elements or attributes of several important state and federal data sets. The Coastal VEVA is defined as lands, aquatic resources and surface waters identified as important for conservation of Virginia's wildlife, plants, aquatic and natural communities. The identified lands, aquatic resources and waters can be used to prioritize areas for preservation, protection or specific management action.

The Coastal VEVA builds upon work that was previously done to identify Priority Conservation Areas (PCA) within Virginia's coastal zone, but includes several new considerations or data sets that are unique to conservation planning. The original PCA dataset did not prioritize the most ecologically valuable regions within Virginia tidal waters. Coastal VEVA incorporates an assessment of estuarine natural resources within the coastal zone recognizing that land use decisions on the upland effect water quality and habitat health in the receiving waters.

This section outlines the datasets that were used to identify Virginia's most ecologically significant lands in need of protection based on an interagency ecological assessment and in so doing created the Virginia CELCP Priorities data set and map or Coastal VEVA (Figure 6). The priority conservation areas within Coastal VEVA were ranked by level of importance based on: Priority Wildlife Diversity Conservation Areas (developed by Virginia Department of Game and Inland Fisheries); Virginia's Natural Heritage Plan (developed by Virginia Department of Conservation and Recreation Division of Natural Heritage – DCR-DNH), including priority Conservation Sites and the Natural Lands Network (DCR-DNH); Aquatic Resource Integrity data (Virginia Commonwealth University – VCU); and Aquatic/Estuarine Priority Conservation Areas (Virginia Institute of Marine Science – Center for Coastal Resources Management). A brief description of these datasets is included below. Additional detail of the methodology used for each can be found in Appendix A.

These data explicitly support the following Virginia CELCP goals:

- Goal 1-- Protect and restore coastal resources, habitats and species of the Commonwealth;

- Goal 2-- Restore and maintain the quality of all coastal waters for human and ecosystem health;
- Goal 5-- Provide for sustainable wild fisheries and aquaculture, and
- Goal 6-- Promote sustainable ecotourism and to increase and improve public access as indicated. Supported lands and values are indicated within each dataset description.

These data also support complementary conservation actions identified within the state's Wildlife Action Plan to:

- *Acquire or protect needed habitats.*
- *Protect large blocks of contiguous habitat.*
- *Create forest or upland buffers around marshes and protect wooded wetlands.*
- *Protect and establish riparian buffers.*

I. Natural Heritage Plan Components

Department of Conservation and Recreation's Natural Heritage Program (DCR-DNH)

The mission of Virginia's Natural Heritage Program is to conserve Virginia's biodiversity through the identification, protection, and stewardship of Virginia's natural heritage resources, defined as the habitat of rare, threatened, or endangered plant and animal species, rare or state significant natural communities or geologic sites, and similar features of scientific interest.

Natural Heritage data includes support for the following Virginia CELCP lands and values: dunes and beaches; wetlands connected to undeveloped uplands; riparian areas that protect water quality for aquatic species; coastal forests; lands supporting natural heritage resources; important bird migration corridors, stopover sites, breeding and wintering areas; habitats of rare, endemic and non-listed species; lands supporting blue and green infrastructure plans; and lands providing expansions of or buffers to existing conserved lands.

For the Virginia CELCP Priorities map (Figure 6), DCR-DNH prepared two data layers derived from the Natural Heritage Plan -- Virginia Natural Landscape Assessment (VaNLA) (Virginia Natural Land Network; coarse filter) and Conservation Sites (ranked by B-rank; fine filter).

A. Virginia Natural Landscape Network – Coarse Filter

The Virginia Natural Land Network (VaNLA) uses land cover data derived from satellite imagery, to identify un-fragmented natural habitats called Ecological Cores, or large patches of natural land cover with at least 100 acres of interior conditions. Cores consist mainly of upland forests and forested wetlands statewide, but also marshes, beaches, and dunes in the coastal plain.

Large, medium, and small Ecological Cores are identified, along with smaller Habitat Fragments that may be important in more urban localities. Ecological Cores provide habitat for a wide range of species, from those dependent upon interior forests to habitat generalists, as well as species that utilize marsh, dune, and beach habitats. Cores also provide benefits in terms of open space, recreation, water quality (including drinking water protection), and carbon sequestration, along with the associated economic benefits of these functions. All VaNLA cores are given an ecological integrity score of C1 – Outstanding to C5 – General, based on their relative contribution to ecosystem functions. Landscape corridors were also identified using GIS to identify the most suitable linkages between the two highest ranks of cores (C1and C2).

Portions of the VaNLA were selected to provide the coarse filter contribution to the greater coastal VEVA – see Figure 7, below. Referred to as the Virginia Natural Land Network (NLN), this subset of lands consists of a GIS layer of:

- all the highest ranked cores (C1 and C2) in the Coastal Zone, each ranked by ecological integrity,
- all landscape corridors providing linkages between these cores, and
- all cores (ranks C3 – C5) that intersect landscape corridors.

The VaNLA is considered a coarse filter for conservation planning, designed to conserve high percentages of species by conserving adequate diversity, distribution, and abundance of ecological communities and ecological land units. It is a landscape-scale GIS spatial analysis for identifying, prioritizing, and linking natural habitats in Virginia, developed by the DCR-DNH with NOAA funding from the Virginia Coastal Zone Management Program.

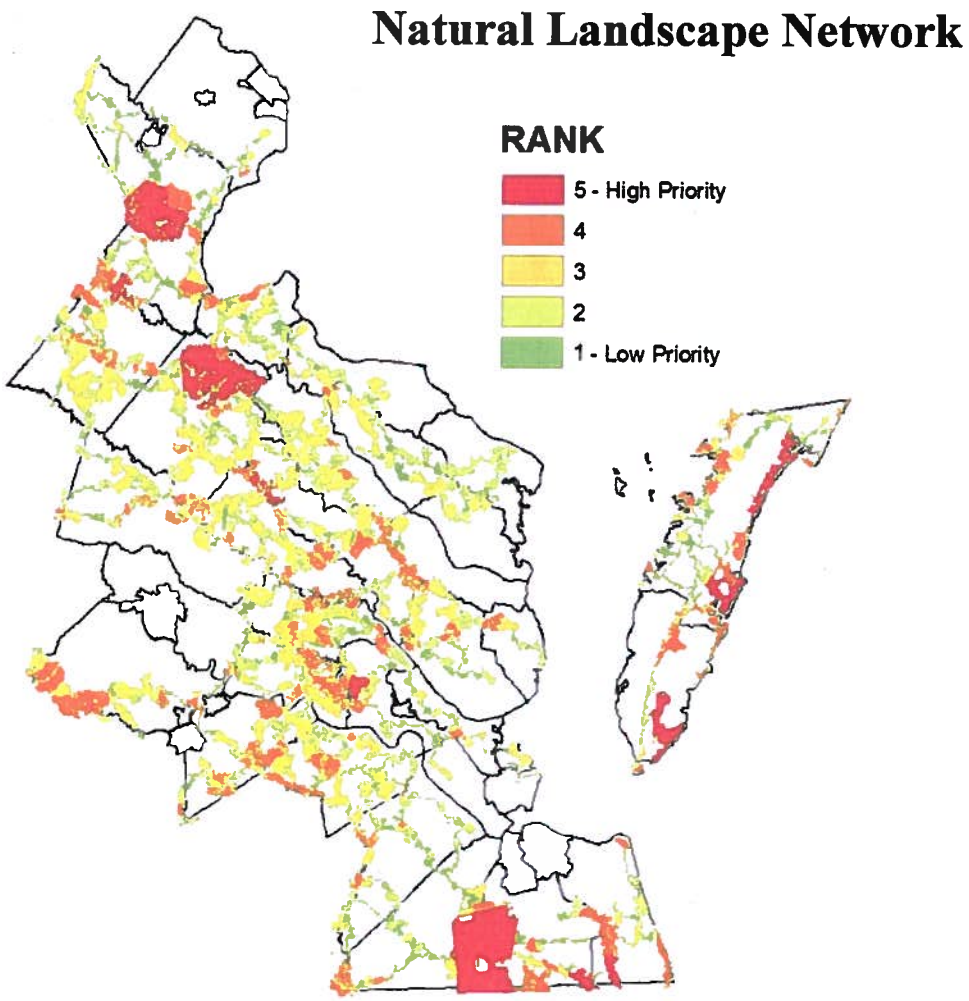

Figure 7: Virginia Natural Landscape Network for the Coastal Zone of Virginia

B. Virginia Conservation Sites – Fine Filter

The coarse filter provided by the VaNLA is complemented by a finer filter, which focuses on specific habitats of individual rare species, or species that specialize on a small and/or unique habitat type. The DCR-DNH maintains a GIS layer and database of Virginia's Conservation Sites. A conservation site is a planning boundary delineating the Virginia Natural Heritage Program's best determination of the land and water area occupied by one or more natural heritage resources (exemplary natural communities and rare species) and required to support their long-term survival. The size and dimensions of a conservation site are based on the habitat requirements of the natural heritage resources present and the physical features of the surrounding landscape. Features taken into consideration include underground and surface hydrology, slope, aspect, vegetation structure, current land uses, and potential threats from invasive species. Each conservation site is given a biodiversity significance ranking (B-rank), from 1 (low) to 5 (high), based on rarity, quality, and number of natural heritage resources it contains.

Biodiversity Ranks were calculated for all DCR-DNH Conservation Sites in the Virginia Coastal Zone based on most recent data as of January 2009. Virginia conservation sites include all of the land types and values that are identified as priority for protection in the CELCP plan. Numerous conservation sites are located either adjacent to or within close proximity of existing conserved lands and in terms of conservation acquisition can expand upon or buffer already protected lands.

Conservation Sites – With Biodiversity Ranks

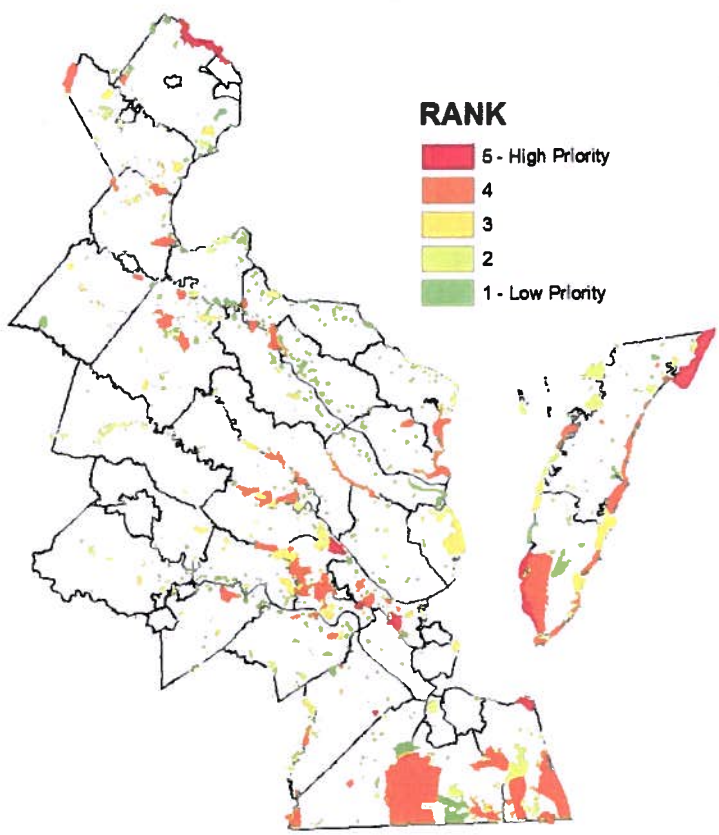

Figure 8. Conservation Sites with Biodiversity Ranks for the Coastal Zone of Virginia.

II. **Priority Wildlife Diversity Conservation Areas**

Virginia Department of Game and Inland Fisheries (DGIF)

The DGIF maintains several GIS datasets showing the location of important wildlife features, including habitats of over 250 species of greatest conservation need (Tiered Habitat). Recognizing that the datasets did not include protective buffers around habitats or identify habitats benefiting multiple species, the agency created a new GIS dataset to compile wildlife conservation areas, focused on non-game wildlife diversity, called Priority Wildlife Diversity Conservation Areas (PWDCA). In doing so, the agency determined which of the existing datasets were appropriate to represent conservation opportunities. These included: Tiered Species Habitat, Anadromous Fish Use Waters, Colonial Waterbird Database, and Virginia Important Bird Areas.

Details on the existing GIS datasets, as well as datasets used to map conservation actions, are listed below:

Anadromous Fish Use Waters: identifies river/stream reaches that are confirmed or potential migration pathways, spawning grounds, or nursery areas for anadromous fish. This dataset, which is based on the USGS National Hydrography Dataset, is maintained by DGIF and was updated in 2006.

Colonial Waterbird Database: This dataset contains known occurrences of colony nesting waterbirds in Virginia.

Virginia Important Bird Areas (IBA): The Virginia Important Bird Areas Program (IBA) was initiated to help ensure the protection of the most essential places for birds in the state by identifying those places that are critical to birds during some part of their life cycle (breeding, wintering, feeding, and migrating). These IBAs outline areas in the coastal zone (see table 3 on page 28) that provide essential habitat for bird species of concern. These habitats include emergent and forested wetlands, tidal fresh marsh complexes, salt marsh, maritime forest, upland hardwood and mixed forests, barrier islands, and beaches and dunes.

Of 19 IBAs identified in Virginia, 11 lie wholly within the coastal zone and one IBA lies partly within the coastal zone:

- Outer Coastal Plain IBAs: Back Bay, Barrier Island/Lagoon System, Chesapeake Bay Islands, Delmarva Bayside Marshes, Lower Delmarva
- Inner Coastal Plain IBAs: Culpeper Basin (portions are located in Fairfax and Prince William counties), Great Dismal Swamp, Lower James River, Lower Potomac River, Lower Rappahannock River, Mattaponi and Pamunkey Rivers, Western Shore Marshes

The U.S. IBA Committee, a panel of nationally recognized bird experts, prioritizes state IBAs as having continental or global significance. The Virginia IBA program assigned a "Recommended Status" for each IBA. IBAs of 'global' significance were weighted the highest, 'continental' second highest, and 'state' significance the least.

The U.S. IBA Committee, a panel of nationally recognized bird experts, prioritizes state IBAs as having continental or global significance. Recommendations have been provided to the Committee detailing how Virginia's IBAs meet the criteria for designation as of either 'state', 'continental', and/or 'global' significance. The Lower Rappahannock, Barrier Island/Lagoon System, Delmarva Bayside Marshes Great Dismal Swamp and Mattaponi and Pamunkey Rivers IBAs have been found to be of 'global' significance. For this analysis, the recommendations

provided to the Committee for conservation status of Virginia IBAs are indicative of each IBA's value (as of 2008) for the conservation of important bird species and habitat, and were weighted according to this status. Those status assignments are as follows with recent updates noted by asterisk.

Table 3. Status of Important Bird Areas in Virginia's coastal plain

	IBA	Recommended Status	Approved Status
Outer Coastal Plain	Back Bay	continental	state*
	Barrier Island/Lagoon System	global, continental	global
	Chesapeake Bay Islands	state*	state*
	Delmarva Bayside Marshes	global, continental	global*
	Lower Delmarva	global, continental	state*
Inner Coastal Plain	Culpeper Basin	global, continental	state
	Great Dismal Swamp	continental	global*
	Lower James River	continental	continental*
	Lower Potomac River	continental	continental*
	Lower Rappahannock River	global, continental	global
	Mattaponi and Pamunkey Rivers	continental	global
	Western Shore Marshes	continental	state

IBAs of 'global' significance were weighted the highest, 'continental' second highest, and 'state' significance the least.

DGIF's Tiered Species Habitat: Aquatic and terrestrial tiered confirmed and potential habitat layers were created as part of the Virginia Wildlife Action Plan. There are four tiers, representing levels of imperilment with tier I being the highest. All maps and information were reviewed by biologists. For more information, visit: http://bewild.virginia.org.

- *Terrestrial confirmed habitat*: This layer includes confirmed locations from DGIF's Species Observations database as well as data from DCR-DNH's Biotics Data System.
- *Terrestrial Potential habitat:* This layer represents areas with potential for supporting species. It is based on species distribution, species habitat requirements, existing spatial data and biologists' knowledge.
- *Aquatic habitat:* The aquatic layers are based on a Stream Reach Classification System using the 1:100,000 National Hydrography Dataset (NHD). Reaches in this dataset were assigned additional attributes useful for habitat evaluation such as size, gradient and elevation.
    - Confirmed habitat: Confirmed reaches have documented species occurrences.
    - Potential habitat: Potential reaches are assigned based on species distribution and the characteristics of confirmed reaches.

  Note that the DGIF's Threatened and Endangered Species Waters dataset is essentially a subset of the aquatic habitat portion of the Tiered Species Habitat, for those individual listed species. Therefore this dataset was not included on its own.

National Wetlands Inventory
The **National Wetland Inventory** is a Fish and Wildlife Service program to inventory and map all wetlands primarily for scientific purposes. The data and maps produced have been used to track gains and losses of wetlands for more than two decades. This dataset is maintained and downloaded from the USFWS. It was digitized from 1:24,000 topographic quads and attributed using the Cowardin Wetland Classification System.

National Hydrography Dataset
The **National Hydrography Dataset** (NHD) is the surface water component of The National Map for the United States. It is used to represent surface water on maps and is also used for geospatial analysis. The NHD is a digital vector geospatial dataset designed for use in geographic information systems (GIS) for these two purposes. It contains features such as lakes, ponds, streams, rivers, canals, dams and stream gages that produce 7.5-million miles of streams/rivers and 6.5-million lake/ponds.This dataset is maintained and downloaded from the U.S. Geologic Survey.

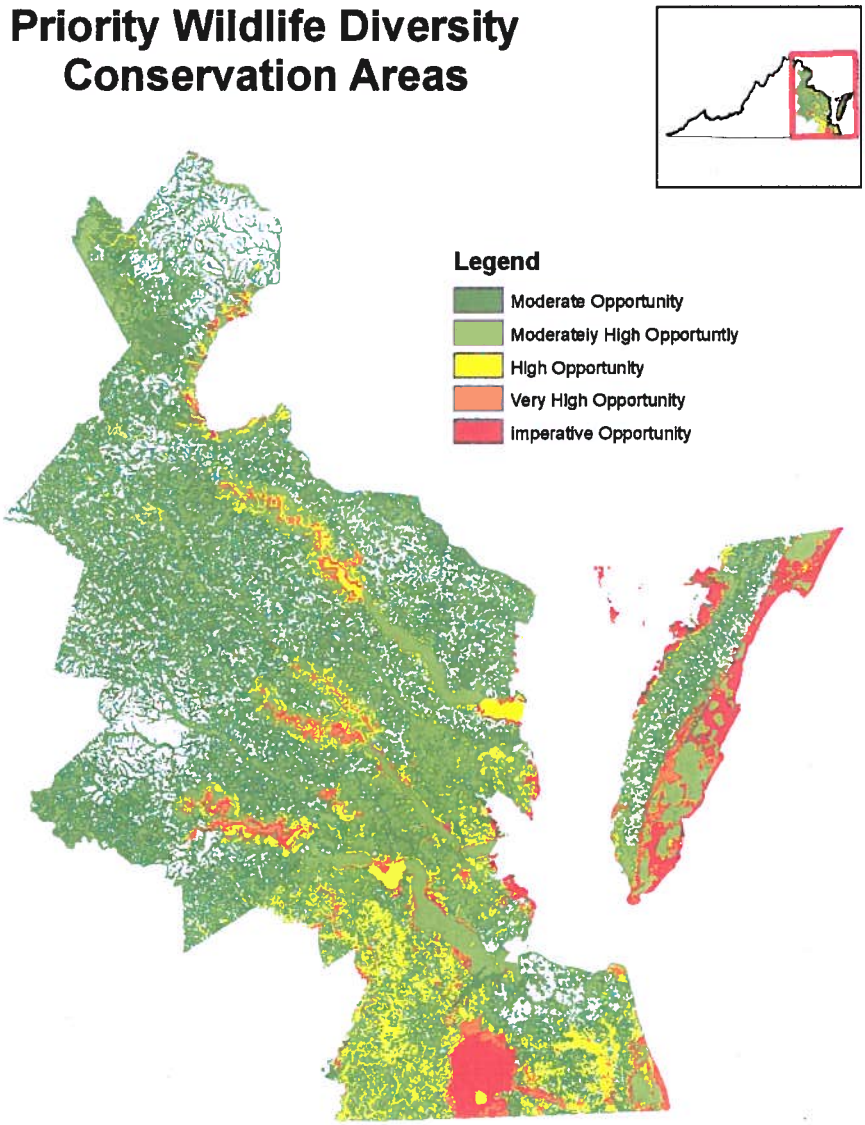

Figure 9. Priority Wildlife Diversity Conservation Areas for the Coastal Zone of Virginia.

The data sets that comprise the DGIF Priority Wildlife Diversity Conservation Areas include the following Virginia CELCP lands and values identified to be protected through this plan (see pp. 14-21): Dunes and Beaches; wetlands connected to undeveloped uplands; riparian areas that protect water quality for aquatic species; coastal forests; lands supporting natural heritage resources; habitats of wildlife species of greatest conservation need; important bird migration corridors, stopover sites, breeding and wintering areas; habitats of rare, endemic and non-listed species; and lands providing expansions of or buffers to existing conserved lands.

III. **Aquatic Resource Integrity Layer**

Virginia Commonwealth University Center for Environmental Studies

The Virginia Commonwealth University Center for Environmental Studies (VCU-CES) created an Aquatic Resource Integrity data layer to aid in characterizing stream health in the Commonwealth. This layer is a combination of both a local scale assessment and a watershed based approach to stream health. The assessment was aided by the Interactive Stream Assessment Resource (INSTAR), an interactive mapping and data visualization application allowing users to access and manipulate a comprehensive and growing database representing over 2,000 aquatic (stream and river) collections statewide. Data represent fish and macro invertebrate assemblages, in stream habitat, and stream health assessment, based on integrative, multi-metric indices at the watershed scale and stream reach scales.

Stream Reach Assessment

VCU biologists collected extensive stream community data on fishes, macro invertebrates, and stream habitat within each geo-referenced stream reach (150-200 m, depending on stream width) and compiled into a database. Data from other sources (e.g., agencies, universities) were also screened for inclusion in the database, based on stringent quality assurance criteria. The data was analyzed to assess stream health based on calculation of over 50 separate ecological metrics, including those typically generated for Index of Biotic Integrity (IBI) and Rapid Bioassessment Protocol (RBP) assessments. Stream health is calculated and placed in four categories: Exceptional, Healthy, Restoration Potential, and Compromised.

Watershed Assessment

Watershed assessments were conducted for Virginia's 1,275 sub watersheds (each averaging about 54,000 acres) using a broader range of validated *qualitative* (e.g., species lists) biotic data from various sources, including state and federal agencies than those used for the stream reach assessment. These data were used to evaluate six metrics or variables for each watershed and calculate a rating of watershed health. Watershed health is rated in four categories: Exceptional, Healthy, Restoration Potential, and Compromised.

Aquatic Resource Integrity Layer creation

The Aquatic Resource Integrity Layer was created by merging the stream reach assessment layer with the watershed assessment layer to generate a hydrology layer that combines the watershed health and stream health scores.

The data sets that comprise the VCU - Aquatic Resource Integrity Layer support the following Virginia CELCP lands and values: riparian areas that protect water quality for aquatic species; habitats of wildlife species of greatest conservation need; habitats of rare, endemic and non-listed species.

Aquatic Resource Integrity Layer

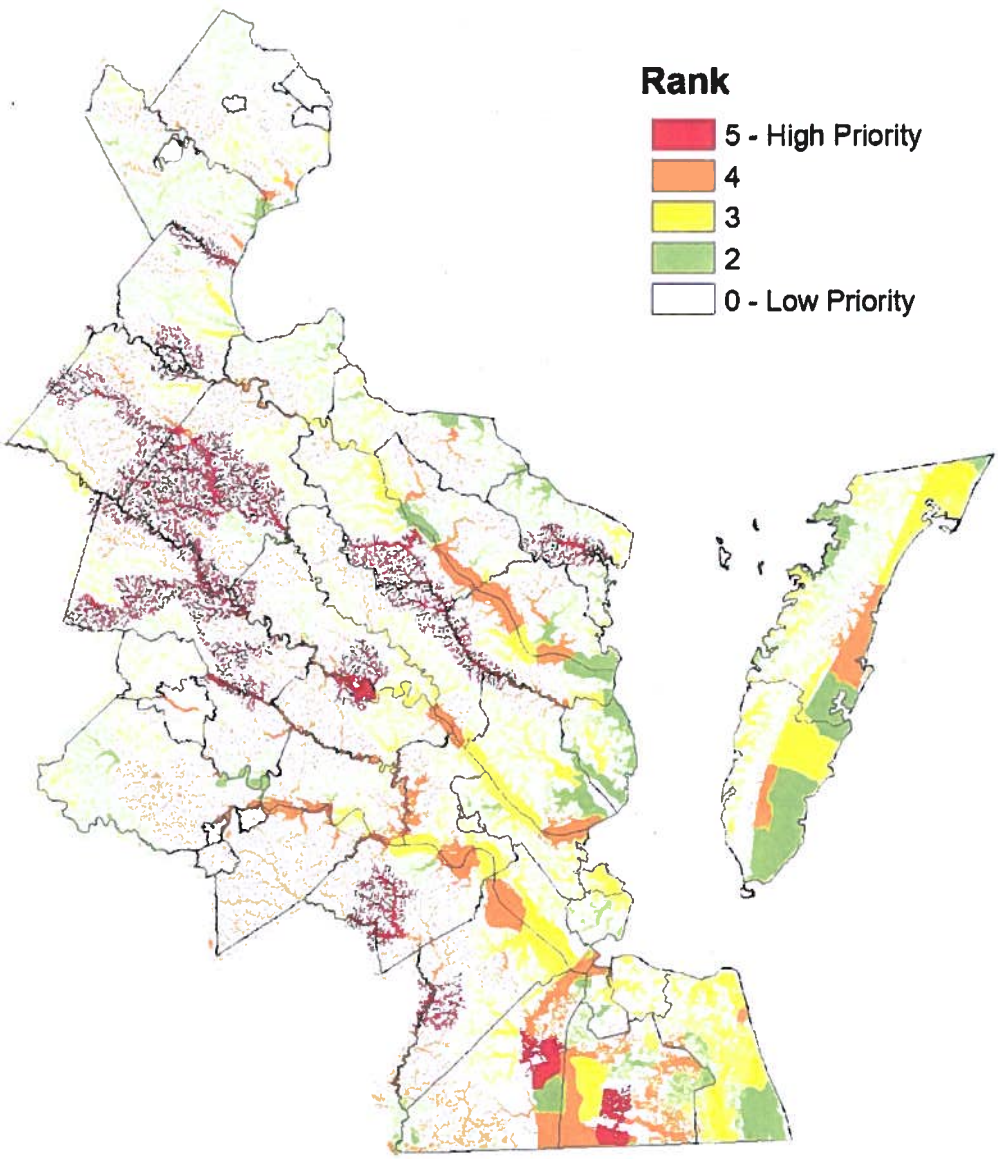

Figure 10. Aquatic Resource Integrity Layer. The raster values and health scores are as follows of 5= Exceptional, 4=Healthy, 3=Restoration Potential, and 2=Compromised.

Priority Conservation Areas – Combining Components

Data from DCR-DNH (Natural Lands Network and Conservation Sites), DGIF (Priority Wildlife Diversity Conservation Areas), and VCU-CES (Aquatic Resource Integrity Layer) form the component pieces of the Priority Conservation Areas (PCA) dataset.

The final PCA values are as follows:

1 – Moderate Conservation Value
2 – Moderately High Conservation Value
3 – High Conservation Value
4 – Very High Conservation Value
5 – Imperative Conservation Value

The results of this analysis are shown in Figure 6, Coastal VEVA, along with the additional estuarine/aquatic priority conservation areas data set.

Step 2: Geospatial analysis to identify "Threats of Conversion" to priority conservation areas

I. VCLNA Vulnerability Model

In 2005, the Virginia CZM Program funded the development of a model to predict growth and indicate potential land use change from the current use to an urban or suburban use. The original vulnerability model was developed for the Virginia Conservation Lands Needs Assessment (VCLNA), a statewide growth prediction model for the statewide Green Infrastructure assessment completed by DCR-DNH in late 2007. Four models were developed to account for different urban, suburban and rural growth pressures and rates:

- the Virginia Urban Vulnerability Model shows predicted urban growth,
- the Virginia Urban Fringe Vulnerability Model shows the predicted urban fringe, or metropolitan fringe growth,
- the Virginia Vulnerability beyond the Urban Fringe Model shows the predicted growth beyond the urban fringe (ex-urban growth), and
- the composite Virginia Vulnerability Model shows all vulnerability models integrated into one model, representing growth pressures across the urban, suburban and rural landscape (E. H. Wilson et al. 2003, R. E. Heimlich and W. D. Anderson, 2001).

The original VCLNA Vulnerability Model has now been revised to more accurately represent statistically significant growth "hot spots". The revised Vulnerability Model allows users of the PCA dataset and GIS layers to assess areas of potential growth and subsequent threat of development to high-ranked PCAs in their areas of concern, to help prioritize their conservation efforts. The composite Vulnerability Model is shown in Figure 11. Rural, suburban, urban and composite Vulnerability Models can be viewed on the DCR-DNH Virginia Land Conservation Data Explorer, an ArcIMS website, at www.vaconservedlands.org. More thorough background on the Vulnerability Model(s) can be found on the DCR-DNH website at the following URL: http://www.dcr.virginia.gov/natural_heritage/vclnavulnerable.shtml. A full report on this assessment can be obtained by contacting the DCR-DNH.

Vulnerability Analysis

The revised Composite Vulnerability Model was used to attribute the PCA with a threat value. The threat value was averaged for each polygon within the PCA to create a threat attribute in the PCA. Together, the PCA and Vulnerability Model can be used with Community Viz planning software or other planning tools to prioritize conservation efforts based on recent data and current predicted growth patterns.

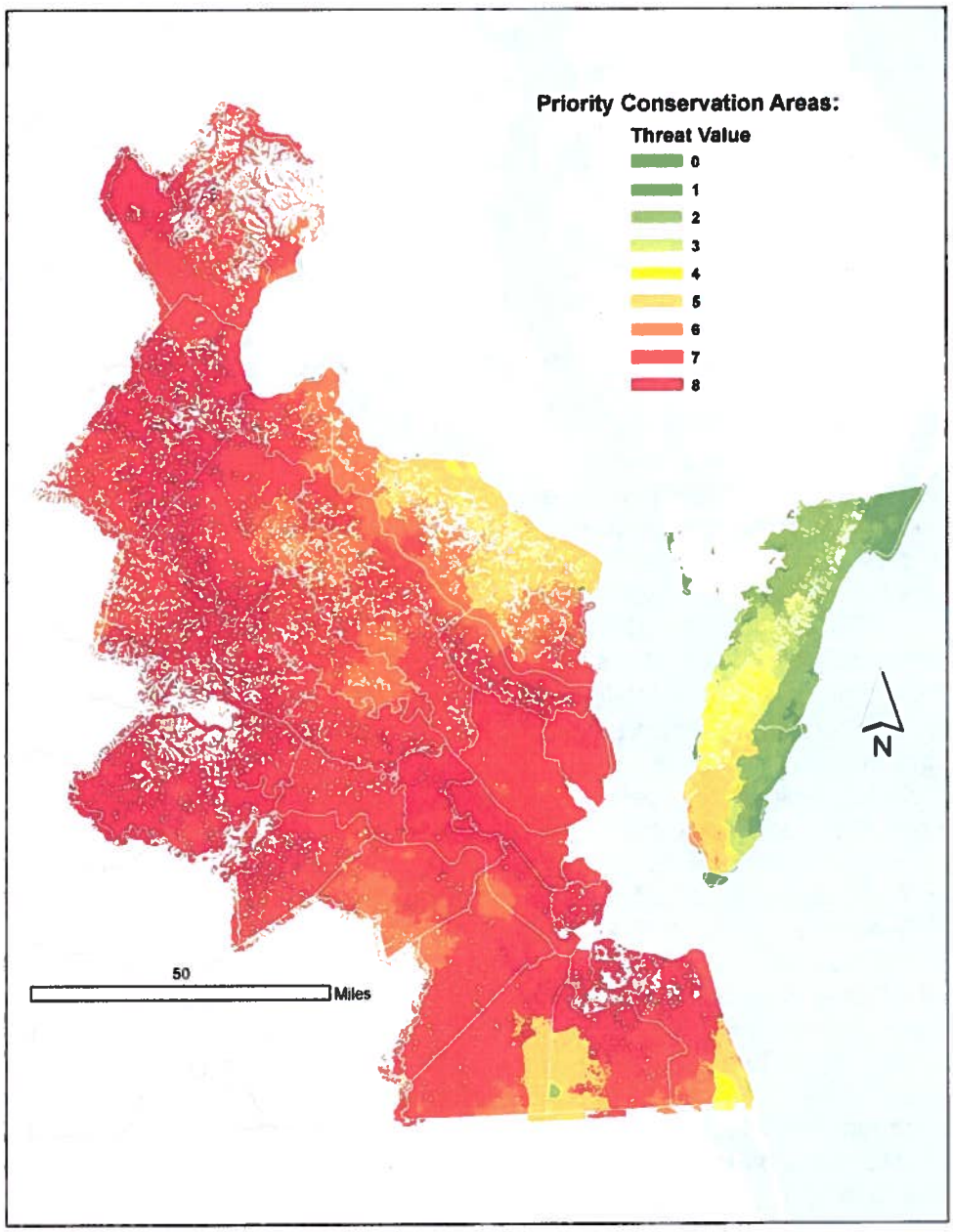

Figure 11. Revised vulnerability analysis for Virginia's Coastal Zone

II. **Estuarine/Aquatic Priority Conservation Areas**

Virginia Institute of Marine Science-Center for Coastal Resources Management

The Virginia CZM Program recognized a need to further assess its "Blue Infrastructure" by designating estuarine/aquatic priority conservation areas, and link aquatic priority conservation areas to terrestrial priority conservation areas.

The Estuarine Priority Conservation Areas project is an extension of earlier efforts by the Virginia CZM Program to build a platform for enhanced Blue and Green Infrastructure planning in two respects: First, to extend the work in Blue Infrastructure (begun as FY 2003 Task 95.02 to VIMS) and second to expand the PCA initiating the process where aquatic conservation and terrestrial conservation priorities are linked. This latter focus represents a truly integrated approach to conservation planning and offers a new capacity building model for local level conservation management. CZM grants to other state agencies have resulted in the identification of priority terrestrial areas that should be conserved. So combined with the results of the VIMS Blue Infrastructure projects, local governments and other planning entities will begin to have a seamless view of both land and water resources by downloading these layers into their own GIS or by simply viewing them through tools such as Coastal GEMS.

This project is motivated by an interest in extending statewide conservation efforts into estuarine systems and recognition that land use decisions on the upland affect water quality and habitat health in the receiving waters. Conservation and preservation of aquatic systems in estuaries was given a boost when President Obama, in May of 2009 characterized the Chesapeake Bay as a national treasure. The executive order issued by the White House states that the government should "... identify and prioritize critical living resources of the Chesapeake Bay and its watershed" for restoration and protection. To that end, this project focuses on defining where within the Virginia portion of the Chesapeake Bay we find an abundance of aquatic living resources and essential habitat to support living resources. The effort is important because it paves the way for prioritizing tributaries that are considered highly valuable, potentially vulnerable to upland land use practices, and therefore targets for conservation.

While there have been efforts within the Bay to target individual or multi-species living resources habitat, there have been few efforts strategically focused on defining aquatic areas of importance for the purpose of identifying resource sensitivity and prioritizing conservation goals. Furthermore, there have been even fewer efforts that anticipate a user audience at the local level and end products that assist local governments in conservation efforts. Local planners benefit from tools that can point to areas where resources are highly valued and potentially at risk.

Method and Approach

The initial steps to develop the Estuarine/Aquatic Priority Conservation Areas (APCA) required a review of all data within the Cumulative Resource Assessment (CRA). These data and the original CRA analysis would be the building blocks for the APCA (Figure 12). Table 4 lists all the data used in the CRA and the data originators. The data review included consultation with data developers, as well as detailed metadata reviews to address a few specific issues.

First, it was critical to insure there was no duplication or double counting of resources. Since several of the datasets were derived from analytical interpretation (e.g. Aquatic Priority Conservation Areas, Figure 12) it was conceivable that baseline data may have already been considered. This was the case in several original products considered. For these, the baseline data inputs were applied.

Second, it was important to have a complete understanding of the resource, as mapped, in order to assign a value which would ultimately represent its ecological value or ability to perform ecological services. Best professional judgment was used when ultimately assigning values to each data layer; however, only following a robust review of the dataset for clarity.

Table 4. Baseline data for the Cumulative Resource Assessment Dataset Originator

1) Colonial Waterbird Database Center for Conservation Biology, William and Mary
2) Audubon Important Bird Areas VA Department of Game and Inland Fisheries
3) Shellfish Suitability VIMS CCRM
4) Reef Restoration Sites VMRC/VIMS CCRM
5) Oyster Reefs VMRC/VIMS Eastern Shore Lab/ CCRM
6) Artificial Fishing Reef VMRC
7) Wetlands (2009) National Wetlands Inventory, US Fish and Wildlife
8) Sand/Mud Flats (2009) National Wetlands Inventory, US Fish and Wildlife
9) Seed Areas VMRC/VIMS CCRM
10) Aquaculture sites VMRC/VIMS CCRM
11) Turtle Nest NOAA Environmental Sensitivity Index Atlas
12) SAV (1999 – 2008) VIMS Submerged Aquatic Vegetation Program
13) Aquatic Confirmed Habitat VA Department of Game and Inland Fisheries
14) Aquatic Resource Integrity Center for Environmental Studies/VCU
15) Stream Conservation Areas VA Department of Conservation and Recreation
16) Threatened & Endangered Waters VA Department of Game and Inland Fisheries
17) Regulated Areas VMRC/VIMS CCRM

Expanded information on the methodology used to develop the APCA can be found in Appendix A.

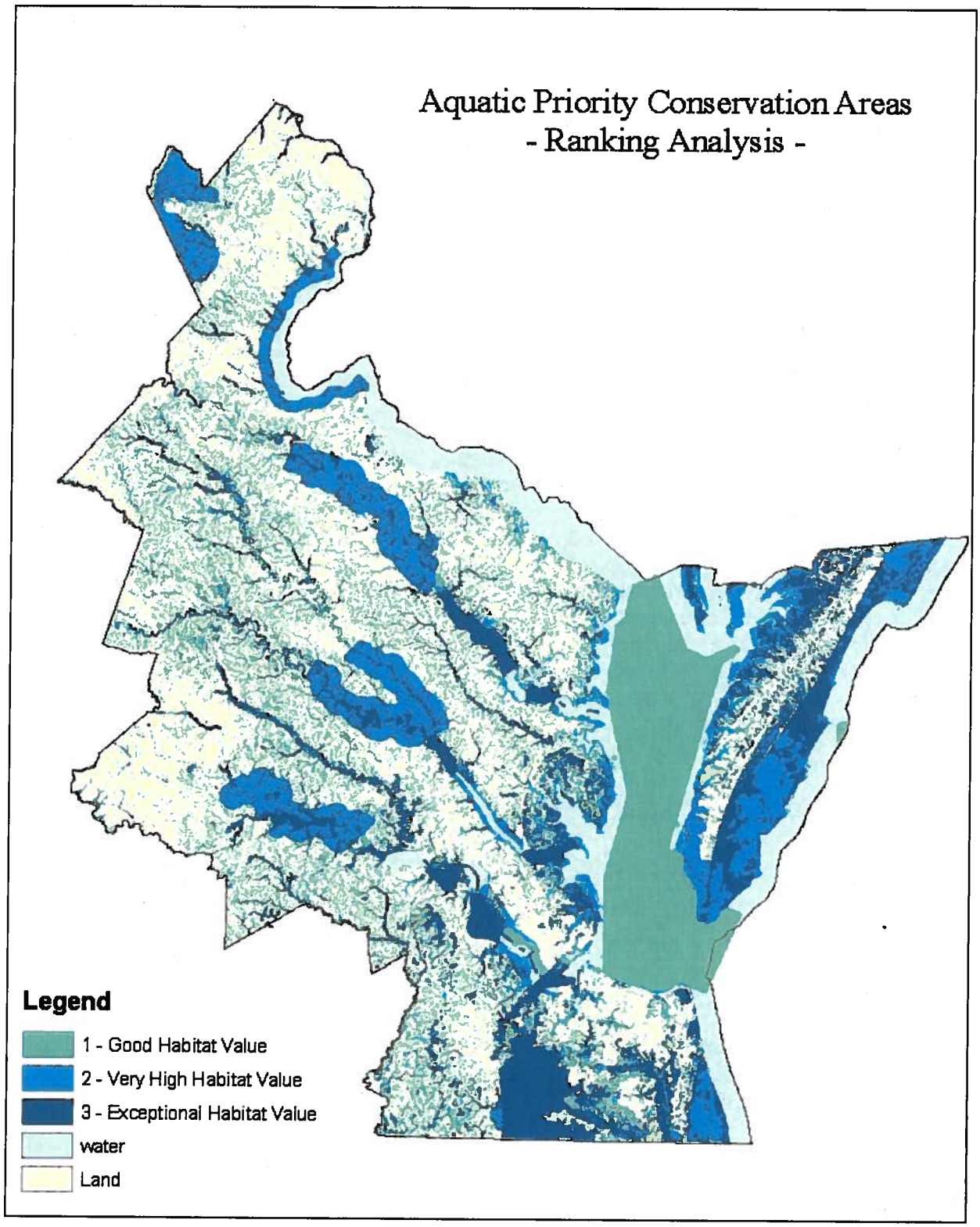

Figure 12. Aquatic Priority Conservation Areas

Step 3: Identifying Lands Already Protected

I. Lands Already Protected: Virginia Conservation Lands Database

DCR-NH maintains a database of conserved lands held by all public and private entities throughout the Commonwealth. These conserved and managed areas include National Wildlife Refuges, National and State Parks, Wildlife Management Areas, Department of Defense lands, Nature Conservancy Preserves and easements, local land trust and public access authority holdings, etc. DCR's most recent assessment of conservation holdings (data collected through December 2007), has been laid over the project areas in order to identify and focus priorities on conservation gaps, including lands fringing existing conserved areas that are of high value and potential conservation corridors between already conserved lands.

There are currently over 700,000 acres of conserved land in Virginia's coastal zone. These conserved lands are included in the VEVA conservation priorities dataset and are highlighted in Figure 13. Of these, about 22 percent are owned by Department of Defense agencies; 17 percent are privately owned lands with conservation easements; 61 percent are protected lands owned by public and private entities such as National Wildlife Refuges and Parks, State Parks and Natural Areas, State Forests, State Owned Marshes, Estuarine Research Reserves, Local Parks, Historic Parks, Nature Conservancy Preserves, Indian Reservations and NASA facilities. According to DCR's April 2010 report, 66 percent of the 91,942 acres protected within Virginia's coastal zone that applied to the 2006 statewide conservation goal have been protected through conservation easements on private lands. Thus, most of the activity occurring recently in land protection has been in conservation easements on private land rather than fee simple acquisition for conservation purposes. Most of these easements have been private donations which are sought in order to receive personal tax credits. This makes funds available from NOAA through the CELC Program even more important because we can direct those funds to the most ecologically valuable lands rather than relying on the will and location of donors.

Table 5. Conservation acreage of Virginia's ecologically valuable lands.

CONSERVATION IMPORTANCE	LAND ACRES IN COASTAL ZONE	% DISTRIBUTION*	% OF TOTAL COASTAL ZONE LAND*	ACRES CONSERVED	% CONSERVED
General	878,058	19%	15%	51,314	6%
Moderate	1,059,812	23%	19%	72,561	7%
High	969,333	21%	17%	82,097	9%
Very High	1,049,986	25%	20%	76,345	7%
Outstanding	635,510	14%	11%	292,925	46%
Total	**4,592,699**	**100%**	**81%**	**669,188**	

**For these calculations datasets were clipped by coastal zone land cover and all acreage values are GIS calculated*

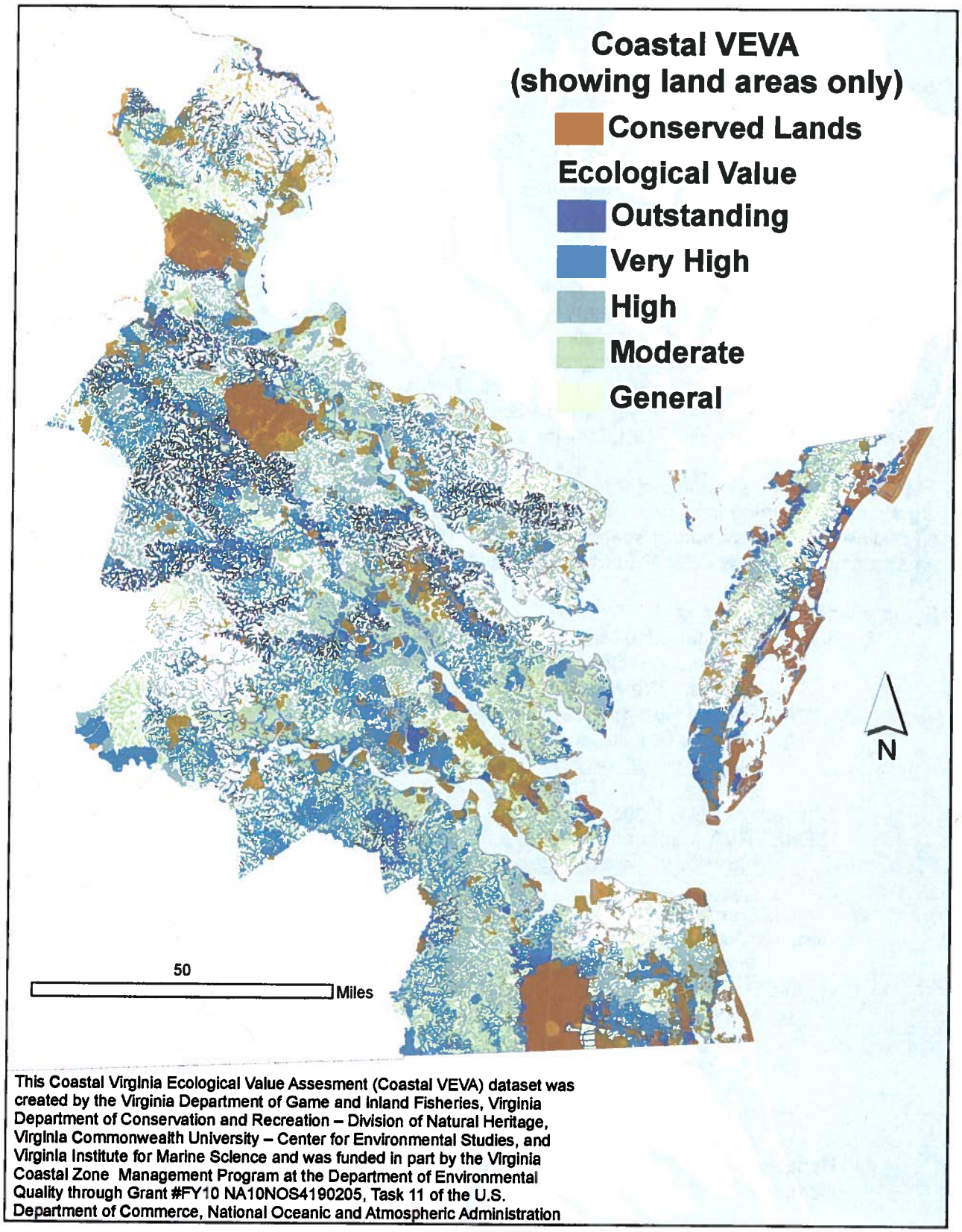

Figure 13. Conserved Lands highlighted within Coastal VEVA

D. Description of Existing Plans

Virginia's CELCP Plan builds upon numerous ongoing conservation planning efforts within the state, rather than duplicating them. The Virginia CZM Program drew upon the following programs and plans to help identify lands, values and project areas of highest importance to the Commonwealth. The existing plans and planning strategies are not static and are periodically adapted to reflect the latest assessments of conservation potential in a rapidly growing coastal zone. Similarly, this CELCP Plan must adapt and evolve along with these planning efforts that contributed to its development.

Included here are conservation strategies developed by state agencies, planning district commissions, and partnering conservation organizations with a relevance to CELCP. Local governments address land conservation priorities through their comprehensive plans. Although not included here, use of local comprehensive plans as supporting documentation for potential CELCP projects is encouraged. These plans may identify local conservation goals and objectives and address conversion trends and threats to specific tracts that have been defined as Priority Areas in Virginia's CELCP Plan.

The descriptions are organized from state-level conservation planning initiatives to conservation organization planning initiatives. Under each subheading is a summary of the program or plan, an outline of the goals and/or specific acquisition objectives that relate to this CELCP Plan, and an assessment of how CELCP funding can advance the existing program or plan.

<u>Summary of Existing Plans</u>

1. Virginia Coastal Zone Management Program - Special Area Management Plans
    a. Northampton Special Area Management Plan & the Southern Tip MOU
    b. Southern Watershed Special Area Management Program
    c. Dragon Run Special Area Management Plan
    d. Seaside Special Area Management Plan
    http://www.deq.virginia.gov/Programs/CoastalZoneManagement/CZMIssuesInitiatives/VirginiaSpecialAreaManagementPlanning.aspx
2. Chesapeake Bay National Estuarine Research Reserve of Virginia
    CBNERRVA Management Plan: 2007-2011
    http://www.vims.edu/cbnerr/docs/management_plan08/CBNERRMgt_Plan2008.pdf
3. Virginia Department of Game and Inland Fisheries
    Virginia Wildlife Action Plan
    http://bewildvirginia.org/wildlifeplan
4. Virginia Department of Conservation and Recreation
    a. Virginia's Precious Heritage (Natural Heritage Plan)
    http://www.dcr.virginia.gov/natural_heritage/vph.shtml
    b. Virginia Conservation Lands Needs Assessment
    http://www.dcr.virginia.gov/natural_heritage/vclna.shtml
    c. Virginia Outdoors Plan (2007)
    http://www.dcr.virginia.gov/recreational_planning/vop.shtml

- Hampton Roads Planning District Commission
    Hampton Roads Conservation Corridor Study
    http://www.hrpdc.org/PEP/PEP_HRCCS.asp

- The Nature Conservancy
    a. Chesapeake Bay Lowlands Ecoregional Plan
    http://conserveonline.org/library/CBYplan_070130.pdf
        - Chesapeake Rivers Site Conservation Plan
        - Virginia Coastal Reserve: Eastern Shore of Virginia Conservation Area Plan
    b. Mid-Atlantic Coastal Plain Ecoregional Plan
    http://conserveonline.org/library/mid-atlantic-coast-plain-macp-ecoregional-plan/view.html
        - Green Sea Wetlands Site Conservation Plan
        - Southern Rivers Conservation Area
- Virginia Audubon Society
    – Virginia Important Bird Areas
    http://www.audubon.org/bird/iba/virginia
- Virginia's United Land Trusts
    – Heritage Virginia
    http://www.dcr.virginia.gov/land_conservation/whereto4.shtml
- Virginia Outdoors Foundation
    - Easement Guidelines and Protocol
    http://www.virginiaoutdoorsfoundation.org/VOF_land-newease.php

1. *Special Area Management Plans (Virginia Coastal Zone Management Program)*

Since 1990 the Virginia CZM Program has been using a coastal zone management approach called "special area management planning" under the Section 309 Coastal Zone Enhancement Program of the CZMA to help solve local problems with local partners in Northampton County (on the southern tip of Virginia's Eastern Shore), the Southern Watersheds of Chesapeake and Virginia Beach, the Dragon Run Watershed (on the Middle Peninsula), and most recently on the seaside of Accomack and Northampton Counties on Virginia's Eastern Shore. These 4 locations have been long recognized as "special areas." Even before SAMPs were added to the Coastal Zone Management Act, and during the time spans of official SAMP grants, the Virginia CZM Program dedicated significant Section 306/306A funds to these four areas. Table 6 below summarizes federal CZM expenditures in these special areas through 2010:

Table 6. Virginia CZM Program expenditures on "Special Areas."

	Section 306/306a Funds	Section 309 Funds	Total
Northampton County	*1992-2001* $443,892	*1990 – 2000* $1,489,054	$1,932,946
Southern Watersheds of Virginia Beach & Chesapeake	*1992-1999* $807,771	*1996-2002* $1,130,000	$1,937,771
Dragon Run Watershed (Middle Peninsula)	*1986-2000* $236,025	*1998-2010* $728,000	$964,025
Seaside Eastern Shore	*2002-2007* $2,639,506	*2007-2010* $280,000	$2,919,506
Total	**$4,127,194**	**$3,627,054**	**$7,754,248**

Special Area Management Plans are valuable tools for managing complex conservation issues. Unlike other management options, SAMPs are unique in that they allow the program to 1) focus

on unique ecosystems, 2) integrate economic and environmental protection and 3) provide long-term continuity and stability in funding.

The Virginia CZM Program has used Section 309 funds to develop and implement special area management plans (SAMPs) in coastal areas applying the following criteria:

- areas harboring significant coastal resources (e.g., threatened and endangered species and their critical habitats, wetlands, water bodies, fish and wildlife habitat) that are being severely affected by cumulative or secondary impacts;
- areas where a multiplicity of local, state, and federal authorities prevents effective coordination and cooperation in addressing coastal development on an ecosystem basis;
- areas with a history of long-standing disputes between various levels of government over coastal resources that has resulted in protracted negotiations over the acceptability of proposed uses;
- areas where there is a strong commitment at all levels of government to enter into a collaborative planning process to produce enforceable plans;
- areas where a strong state or regional entity exists which is willing and able to sponsor the planning program.

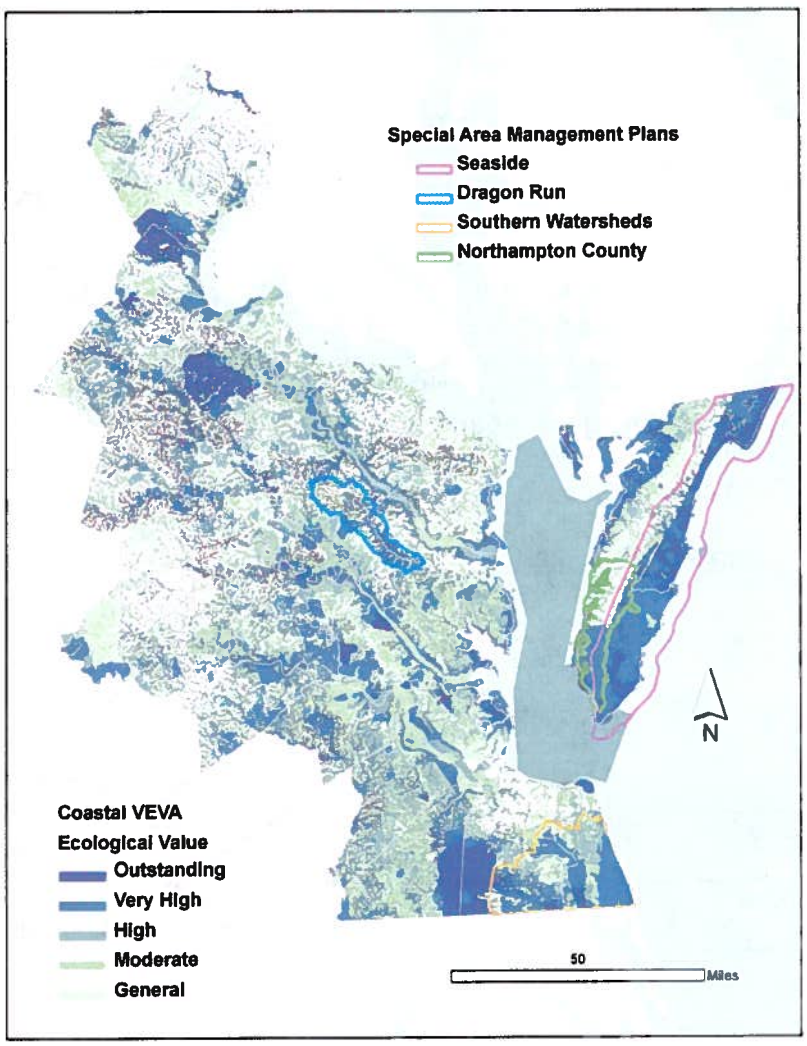

Figure 14. SAMP boundaries shown with Coastal VEVA

Though each of Virginia's SAMPs is based on the same unifying principle, each addresses different levels of development pressure, land-use issues and potential protection solutions. The policies developed under a SAMP, while tailored to a specific geographic region, contribute to the tool kit available to local and regional planners working throughout Virginia's Coastal Zone.

a. Northampton County Special Area Management Plan & Southern Tip Memorandum of Understanding (MOU)

Program Summary

In 1989 the Virginia CZM Program was approached by DCR's Natural Heritage Program and was asked for funding for a "natural heritage inventory" for Northampton County, the southernmost county on Virginia's Eastern Shore. At that time, there were no funds available through the state CZM program. But upon further discussion it was apparent that the need for "inventory" funds revolved around the issue of the impending sale of a songbird banding station that had operated since the 1960s on a private campground (now Kiptopeke State Park). The even larger issue was the need to scientifically document, for the first time ever, the existence of a mid-Atlantic coastal migration corridor and stopover habitats on the tips of the Cape May and Delmarva peninsulas.

In 1989, Section 309 of the Coastal Zone Management Act provided for about $582,000 nationally for competitive interstate grants. Although competition was fierce for this small pot of money, the Virginia CZM Program secured $165,000 to conduct a four-state study of the "neotropical coastal migration corridor" (Mabey et al, 1993). These FY1990 funds were subcontracted to The Nature Conservancy and the four state Natural Heritage Programs from New Jersey through Virginia. Scientists and volunteers counted songbirds along transects in all four states every weekend for the 13-week fall migration period. The data were so voluminous that at that time only Rutgers University had the computer capacity to analyze the thousands of pieces of data. That study verified that songbirds on Virginia's Eastern Shore were most heavily concentrated within a 0.9 mile band along the coastline and at the tips of the peninsulas.

Boundaries for what is considered "critical" and "special" stopover habitats were designated to aid the County in the development of ordinances designed to protect migratory songbird habitat. These are viewable in Coastal GEMS (Figure 15).

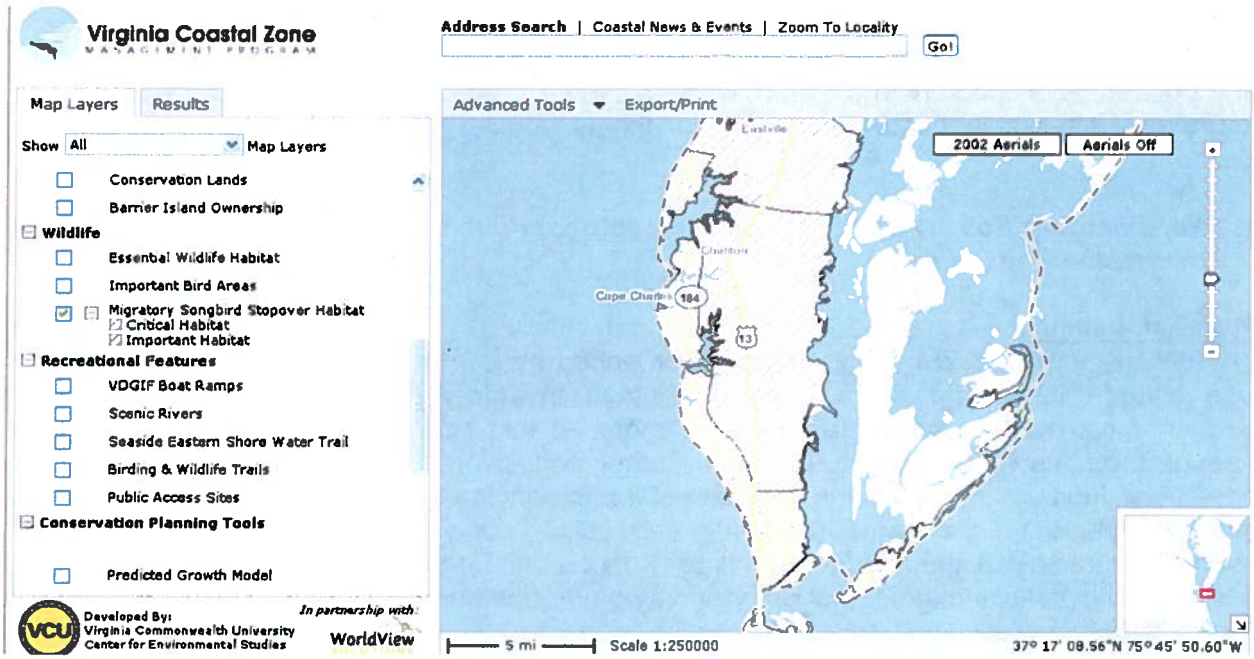

Figure 15. Critical and important migratory songbird stopover habitat

When the Coastal Zone Management Act was reauthorized in 1990, Section 309 was changed from interstate grants to "Coastal Zone Enhancement Grants" that were required to focus on development of new enforceable policies through such tools as "Special Area Management Plans (SAMPs)." The songbird migration habitat work continued through the Northampton County SAMP and further refined our understanding of the habitat requirements of these birds and the need for certain areas on the lower bayside and southern tip of Northampton County to be protected.

The Northampton County SAMP was initiated in 1991 to protect and promote three things: the globally important migratory bird stopover habitat, water quality and sustainable industries such as ecotourism and shellfish aquaculture in an area where impacts from development were gradually increasing.

Northampton County is bound by the Atlantic Ocean to the east and the Chesapeake Bay to the west. It is a rural, agricultural county suffering from a depressed economy and chronic unemployment, yet has a cornucopia of natural resources and is blessed with a vast system of barrier islands, bays and salt marshes. The intertidal and shallow subtidal areas, undeveloped beaches and marshes have supported an incredible array of waterfowl and shorebirds. The seaside of the county is recognized by the United Nations as an International Biosphere Reserve. Over 59% of the landscape is made up of woodland and wetland natural community types, which contain a variety of seasonal and permanent wildlife populations and a number of rare and threatened species. The "Southern Tip" is a critical migratory songbird stopover area. To many it seems a coastal wilderness, however, a development boom is occurring in the County. Recently two large retirement communities were constructed and more are proposed. This growth brings concerns regarding the cumulative impacts to county-wide natural systems. Northampton's proximity to Virginia Beach and Norfolk, separated only by the Chesapeake Bay Bridge Tunnel, makes it vulnerable to development pressures. Furthermore, because the local economy is dependent on agriculture, seafood industries, and increasingly tourism, protection of these resources is a high priority.

The Northampton County SAMP was a collaborative effort between Northampton County, the Virginia CZM Program and NOAA. The Accomack-Northampton Planning District Commission, Virginia Department of Conservation and Recreation's Division of Natural Heritage and Virginia Department of Game and Inland Fisheries provided technical expertise. Many local stakeholders volunteered numerous hours toward this effort. The goals of the SAMP were to:

- Develop new, enforceable policies to protect bird and fish habitats and control cumulative and secondary impacts of coastal development by maintaining maximum vegetative cover for wildlife habitat and nutrient uptake.
- Steer development away from sensitive areas through conservation easements.
- Ensure the protection and management of groundwater quality and quantity available to Northampton County.
- Develop new, sustainable industries such as heritage tourism, ecotourism and aquaculture and protect a sense of place and quality of life.
- Promote aquaculture and seafood product development by reducing water use conflicts, protecting water quality through exceptional waters designation or easements; dredge disposal plan, aquaculture siting guidelines and a stormwater ordinance.
- Promote responsible heritage tourism by protecting natural and cultural assets through agreements with major public and private landowners, ecotour guide certification, an ecotourism code of ethics and a year-round birding/wildlife viewing plan.
- Develop new, sustainable industries by redeveloping an industrial waterfront and creating a sustainable technologies industrial park.

The County made two attempts to adopt ordinances to protect habitat and groundwater that they entitled a "Sensitive Natural Resource Area (SNRA) Preservation Overlay District." Some of the Groundwater Recharge SNRA protections were adopted but the Natural Community SNRA protections were not. The maps below (Figure 16) indicate the groundwater recharge areas in blue and the natural communities in pink. Overlain, it would appear almost the entire county is "sensitive."

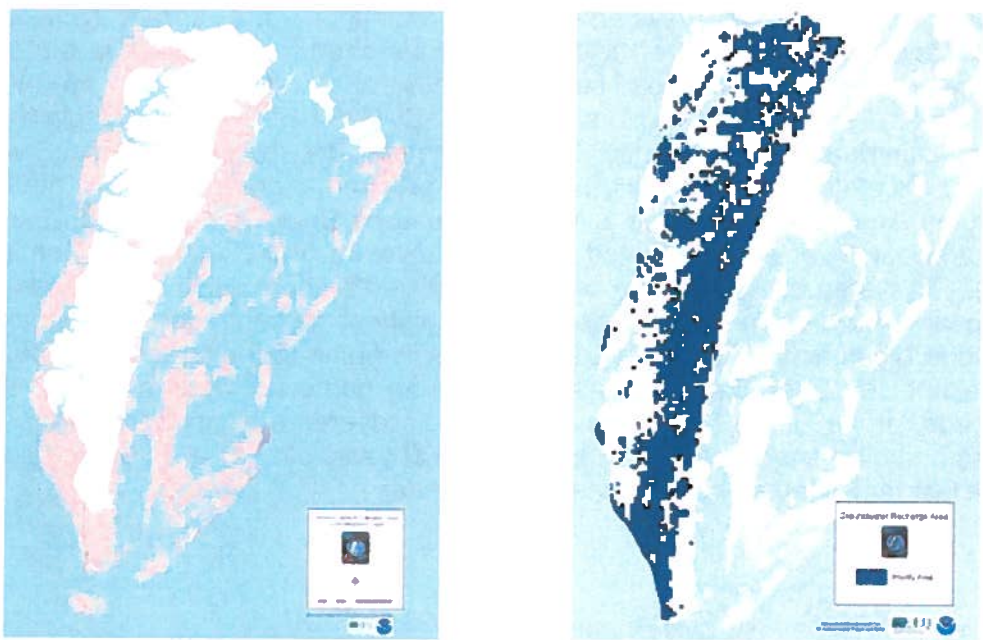

Figure 16. Northampton County's "Sensitive Natural Resource Areas"

Although an ordinance to maximize native vegetative cover has still not been adopted by the Board of Supervisors, in 2006 the "Southern Tip Memorandum of Understanding" was signed by five conservation organizations to manage and protect the migratory bird habitat of the southern tip of the Eastern Shore. The U.S. Fish & Wildlife Service, Virginia CZM Program, VA Department of Conservation and Recreation, VA Department of Game & Inland Fisheries, and the Nature Conservancy have agreed through this "Southern Tip MOU" to cooperate in the acquisition, protection and management of migratory bird habitat on the Southern Tip of the Eastern Shore in Northampton County. Specifically, the partnership will:

- Compile and annually update an inventory of conserved lands and their individual management plans;
- Determine the desired future condition of the lands for migratory bird habitat;
- Identify the tasks and resources needed to achieve the desired future condition; and
- Determine how those resources can be obtained and shared.

Relevance to CELCP

The research, priorities and results of the Coastal Migration Corridor Study, the Northampton SAMP and the Southern Tip MOU are all incorporated into Virginia's CELCP Plan. Significant data and information from these products contributed to the development of some of the primary data layers in the CELCP Priority Conservation Areas map which reflects in the southern tip of Virginia's Eastern Shore ranking at very high to outstanding ecological value (Coastal VEVA, Figure 6). Conservation of these areas is therefore a high priority for CELCP funding as they represent many of the lands and values identified for protection in this plan, including: Virginia CZM Program special areas; Lands supporting natural heritage resources (includes habitats of rare, endemic, and non-listed species); Important bird migration corridors, stopover sites, breeding and wintering areas; Dunes and beaches; Lands targeted for acquisition in a local or regional conservation plan; lands providing expansions of or buffers to existing conserved lands and public access and nature-based recreational areas.

b. Southern Watershed Area Management Program

Program Summary

The purpose of the Southern Watershed Area Management Program (SWAMP) is the development and implementation of collaborative watershed management in order to protect and enhance the natural resources, sensitive lands, and water supplies for the Southern Watershed Area. The Southern Watersheds Area (SWA) of the Cities of Virginia Beach and Chesapeake is bordered by the Atlantic Ocean on the east and the Great Dismal Swamp on the west and borders the rapidly expanding Hampton Roads metro area which is home to over one million people. The 325-square mile SWA encompasses Back Bay, the North Landing River and the Northwest River and is located in the headwaters of the Albemarle-Pamlico Estuary (Figure 17). This area contains some of the most diverse and extensive wetlands in Virginia. There are over 40 rare or endangered species, the highest concentration in any locality east of the Blue Ridge Mountains. The North Landing River is home to the largest blue heron rookery in the state and the Back Bay serves as a wintering home for waterfowl and rest stop for migratory birds. In 1996, the Nature Conservancy discovered a virgin forest in the watershed, with cypress and gum species that may be nearly 800 years old. The watershed also contains some of the last remaining stands of Atlantic white cedar.

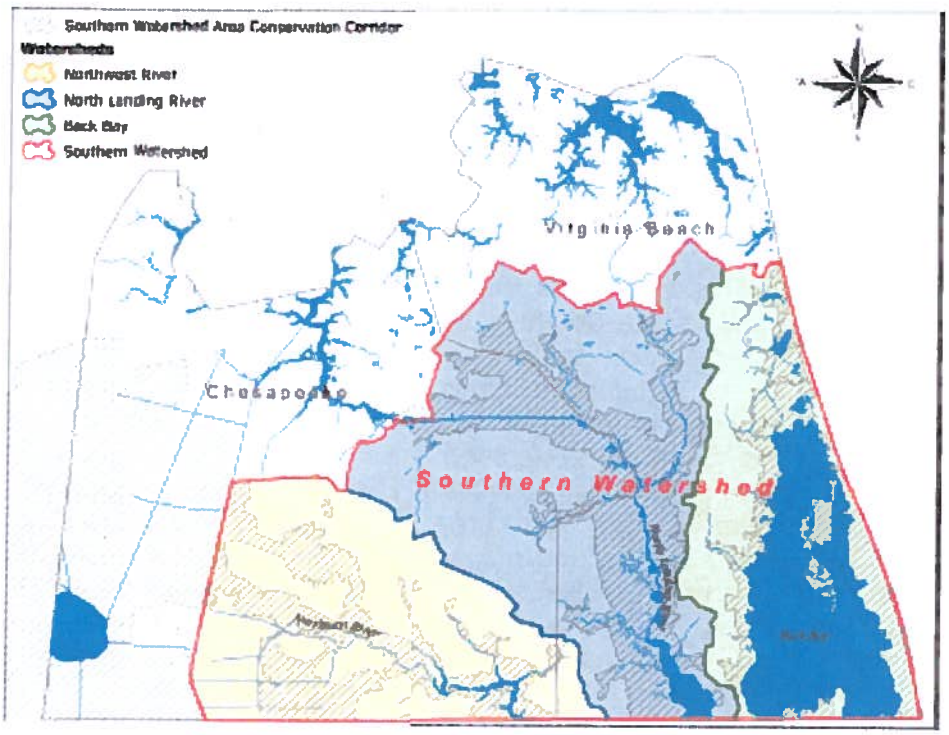

Figure 17. Southern Watershed Area of Virginia Beach and Chesapeake

The southern end of the watersheds, adjacent to the North Carolina border, is rural and contains extensive wetlands that include a variety of rare swamp, pocosin and marsh communities. Land uses in this southern area of the SWA are primarily agricultural, silvicultural and rural residential. The waters of the SWA are used for water supply, recreation, navigation, habitat support, and irrigation. Continued urban expansion from the northern end of the watershed is placing increased stress on both the aquatic and terrestrial resources of the watersheds. This urbanization has reduced the wetlands of Southeast Virginia from covering 600 square miles to only 20 square miles. The intent of SWAMP is to balance protection of the Southern Watershed's critical environmental resources with economic development opportunities.

The SWAMP is primarily a collaborative effort of the Cities of Chesapeake and Virginia Beach, the Hampton Roads Planning District Commission (HRPDC), the Virginia CZM Program and NOAA. A broad range of local, state and federal agencies, stakeholder groups and the general public also participate in the project. A number of cooperative initiatives to protect the SWA were already underway before the SWAMP was created. The SWAMP was considered a high priority in the Virginia CZM Program's 1992 Coastal Needs Assessment and Strategy and first received funding under Section 306 in 1992 to develop a framework for the cities of Chesapeake and Virginia Beach to work together. In 1994, the Local Government Advisory Committee (LGAC) was formed, consisting of local government technical resource and VA Dare Soil and Water Conservation District staffs. The LGAC developed a Memorandum of Agreement (MOA) for a coordinated watershed management program. Joint commitment to protection of the Southern Watershed was confirmed in 1995 when both Chesapeake and Virginia Beach signed the MOA. Since 1992, the Virginia CZM Program has provided nearly $2 million for SWAMP and SWAMP-related projects through Section 306 and 309 funds of the CZMA. The cities of Chesapeake and Virginia Beach and the HRPDC have made substantial matching and in-kind contributions. Virginia CZM Program SAMP funding was used primarily to

develop technical reports on water quality status and trends in the SWA, sustainability of agricultural and forestal activities, preservation of rural character, and compatibility of recreational activities and commerce with natural resource protection.

Plan for Acquisition

The need to protect the riparian buffers along these rivers for habitat and water quality preservation was recognized as a priority early in the SWAMP development process. Under the SAMP, the cities were able to catalogue the wetlands and buffers and consider options for preserving these areas. The outcome is the "Multiple Benefits Conservation Plan (MBCP) Memorandum of Agreement" for the Southern Watersheds. Under this plan, local, state and federal agencies involved in mitigation issues in the Southern Watersheds are coordinating their decisions to preserve a riparian buffer system identified as the Conservation Corridor System in the selection of a multiple benefits mitigation site when off-site mitigation is necessary. The "Conservation Plan for the Southern Watershed Area", prepared by the VA Department of Conservation and Recreation's Division of Natural Heritage, includes the development of a conservation corridor system to link critical habitats and provide support for Natural Heritage resources in the SWA and recommended management techniques for their preservation. A review committee selected one out of five corridor options for inclusion in the MBCP MOA. In 2006, the HRPDC completed a conservation corridor system for the entire Hampton Roads region through Virginia CZM Program funding (see a description of the Hampton Roads Conservation Corridor Study below). Discussions have begun to connect this corridor system to those being developed in northeastern North Carolina.

The SWAMP played a key role in developing the City of Chesapeake Open Space and Agricultural Preservation Program in 2003. HRPDC staff and the Open Space and Agricultural Preservation Program Task Force created a set of recommendations for the development and implementation of a Purchase of Development Rights program, now established. The Task Force also utilized SWAMP studies to create a map of potential conservation lands. They identified prime farmland in "Strategic Plan for Agriculture," lands falling within the medium density conservation corridor in "Conservation Plan for the SWA," and lands falling within the City's Chesapeake Bay Preservation Area Overlay District as target conservation areas. The City of Virginia Beach also created a Preservation District section of the City Zoning Ordinance in their 2003 Comprehensive Plan based on the SWAMP to advance the goal of natural resource protection, and implement the MBCP the North Landing River Water Use Conflict Memorandum of Agreement.

Relevance to CELCP

Since development of the conservation corridor system and addition of land preservation priorities into local comprehensive plans, the HRPDC and Cities of Chesapeake and Virginia Beach have continued to aggressively pursue funding for acquisition of lands along the North Landing and Northwest Rivers. The low lying area of the Southern Watershed is threatened by sea level rise, making protection of upland habitats especially critical for wetland ecosystem migration. The PDC and the two Cities must stay one step ahead of potential developers and be able to secure funding in order to protect these important upland areas from development. The highest concentration of biological diversity persists in the Southern Watershed. Without permanent protection of their current and future habitat, they may disappear from the landscape. Significant data and information from this plan contributed to the development of some of the primary data layers in the CELCP Priority Conservation Areas map which reflects in the Southern Watershed Area ranking from very high to imperative ecological importance (Coastal Veva, Figure 6). Because the Virginia CZM Program has invested a great deal of financial resources and time into the preservation and protection of this sensitive area, the

Southern Watershed Area is considered a high priority for CELCP funding and includes the following lands and values identified for protection in this plan: Virginia CZM Program special areas; lands supporting natural heritage resources (includes habitats of rare, endemic, and non-listed species); protection of lands vulnerable to sea level rise impacts; dunes and beaches; lands targeted for acquisition in a local or regional conservation plan; lands providing expansions of or buffers to existing conserved lands; cultural landscapes with significant historical, archaeological and cultural heritage sites; and public access and nature-based recreational areas.

c. Dragon Run Special Area Management Plan

Program Summary

The Dragon Run, headwaters to the Piankatank River, is a fresh and brackish water stream that flows forty miles through the Virginia Middle Peninsula counties of Essex, King and Queen, Middlesex, and Gloucester (Figure 18). The stream, along with the surrounding Dragon Run Cypress Swamp, forms an ecologically unique system with excellent water quality and numerous species of flora and fauna. The watershed is largely undeveloped and consists of 140.3 square miles of land area, of which 10% is wetlands. The Dragon Run contains the northernmost example of Baldcypress-Tupelo Swamp community in Virginia and four other natural communities (e.g. fluvial terrace woodland, tidal Baldcypress-Tupelo swamp, tidal Baldcypress-woodland/savanna, and tidal freshwater marsh) and up to 15 state rare species.

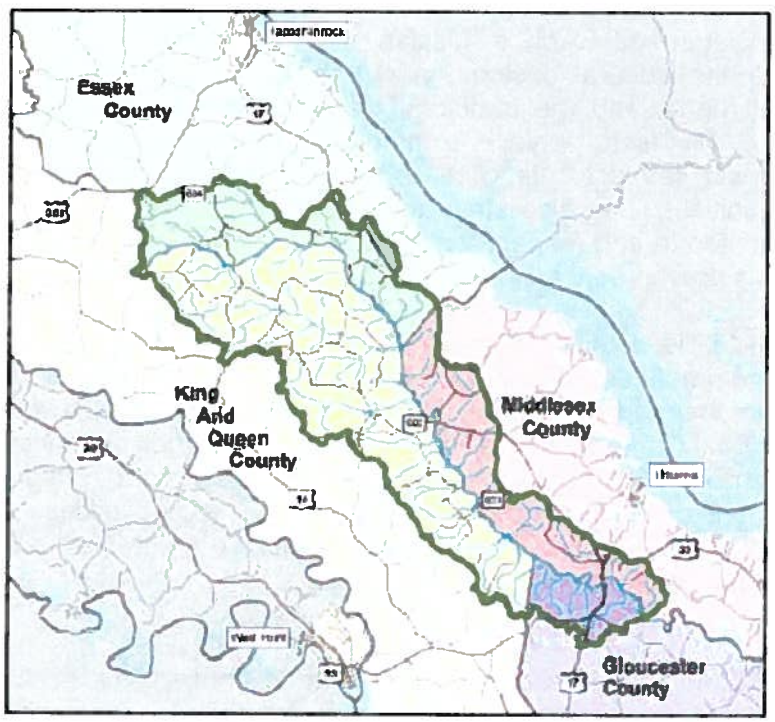

Figure 18. Dragon Run watershed. (Essex, King and Queen, Middlesex and Gloucester Counties)

The watershed has been recognized by state biologists, researchers, The Nature Conservancy and the Smithsonian Institute as a nearly pristine watershed with outstanding biological diversity. The farming and forestry operations in this rural watershed have fostered environmental stewardship in the past, but residents are becoming more concerned about forest fragmentation and the threat of development.

The Dragon Run watershed is central to the region's culture and identity. Forestry and farming are the primary land uses, while hunting, fishing, and paddling are popular recreational activities. Its pristine nature offers both residents and visitors a high quality of life and a sense of wilderness. This can largely be attributed to exemplary landowner stewardship.

As a response to encroaching development, the Dragon Run Steering Committee formed in 1985. The Committee consists of landowners and county elected officials concerned about preserving the Dragon Run's natural and economic resources. Since the Virginia CZM Program began in 1986 it has funded efforts in the Dragon Run with the very first grant given to the Dragon Run Steering Committee.

The Dragon Run Watershed Special Area Management Plan (SAMP) which began in 1998 is a partnership of the Dragon Run Steering Committee, the Virginia CZM Program and NOAA. The Steering Committee's SAMP Advisory Group includes: representatives of all four counties (landowners, county staff and elected officials), state and federal agencies, the regional planning district commission, representatives from farming, forestry, and ecotourism, educators, and nonprofit organizations.

The Dragon Run Watershed SAMP's mission is to support and promote community-based efforts to preserve the cultural, historic, and natural character of the Dragon Run, while preserving property rights and the traditional uses within the watershed. One of the policy objectives of this SAMP is to achieve communication, cooperation and consistency across county boundaries with respect to land use plans and regulations that affect farming, forestry and natural communities. They also strive to foster educational opportunities to establish the community's connection to and respect for the watershed, and promote the brand of landowner stewardship that has preserved the Dragon Run as a regional treasure.

The Dragon Run SAMP is in its final stage. All of the four watershed counties have incorporated elements of the recommended watershed management plan tailored to their needs. Developed by the Dragon Run Steering committee, the watershed plan includes a Dragon Run overlay zoning district and local Comprehensive Plan amendments. Additional activities that have been completed under the SAMP include a watershed biodiesel partnership, an estate planning network, development of land management plans and a public access code of conduct for public access lands in the watershed, an annual Dragon Run Day festival, and an educational DVD about the watershed and its values.

Plan for Acquisition

The Dragon Run SAMP has leveraged resources to collect baseline ecological information for the watershed. The plan also utilizes geographic information systems (GIS) data to map watershed features. Analysis of this information is incorporated into the planning process so that informed choices can be made to preserve the watershed's unique ecosystems and traditional uses (e.g. forestry, farming, hunting, and fishing). This data will be used by the Dragon Run SAMP partners to continue to target lands for acquisition as they become available for acquisitions or easements and as funds become available.

Relevance to CELCP

As a result of the SAMP, a 121-acre tract along the Dragon was purchased in 1999 through a Virginia CZM grant and has been incorporated into the Virginia Chesapeake Bay Estuarine and Coastal Research Reserve System. The tract includes approximately 3000 feet of riverfront, old loblolly pine forest, mixed pine-hardwood, and forested wetlands. The SAMP was also the catalyst for a $1M CELCP earmark to acquire lands in the Dragon Run area.

Conservation of areas surrounding the Dragon Run is a high priority for CELCP funding, as they ranked in the Outstanding and Very High Ecological Value categories of the CELCP Priority Areas map (Figure 6, Coastal VEVA). Furthermore, the Dragon Run SAMP addresses Virginia CZM goals 1, 2, 6 and 9: Goal 1) To protect and restore coastal resources, habitats, and species of the Commonwealth; Goal 2) To restore and maintain the quality of all coastal waters for human and ecosystem health; Goal 6) To promote sustainable ecotourism and to increase and improve public access to coastal waters and shorefront lands compatible with resource protection goals; and Goal 9) To avoid and minimize coastal resource use conflicts through research, planning, and a forum for coordination and facilitation among government agencies, interest groups, and citizens. While attributes contained in several of the data sets used to develop the Virginia CELCP priorities map naturally occur in the Dragon Run watershed, no specific data sets developed as a result of the SAMP were utilized in creating the Virginia CELCP Priorities map.

d. Seaside Special Area Management Plan

Program Summary

Between 1990 and 2001 the Virginia CZM Program invested nearly $2M in Section 306 and 309 funds in efforts to protect coastal resources in Northampton County on Virginia's Eastern Shore. In 2002, the Virginia CZM Program's Coastal Policy Team voted to fund the Seaside Heritage Program as its next "focal area" using Section 306 funds. The "Seaside Heritage" area was defined as the seaside of Virginia's Eastern Shore from Route 13 (the spine) east to the 3 mile territorial sea boundary - in other words the Atlantic coast side of both Northampton and Accomack Counties (Figure 19). This area holds tremendous potential to demonstrate appropriate management of economic development and habitat restoration within a rare and fragile ecosystem.

The program has three basic goals:

- Restore underwater grasses, oyster reefs, marshes and shorebird habitats.
- Develop sustainable ecotourism through construction of public access sites, creation of a canoe/kayak water trail and map, and an ecotour guide certification course.

Figure 19. *Seaside special area*

- Develop management tools such as a GIS inventory of natural resources and human use patterns and other public education efforts that form the basis for long term restoration and management strategies.

Virginia CZM's Seaside Heritage Program has invested nearly $3M in federal funds from NOAA to restore and protect the aquatic resources of the barrier islands, bays and salt marshes along Virginia's Eastern Shore. This includes restoration of eelgrass and oyster reefs, protection of shorebirds from mammalian predators, mapping and control of invasive *Phragmites*, study of shellfish farming impacts, development of BMPs, construction of floating docks and a wildlife observation deck. A summary of the program's accomplishments can be viewed at: http://www.deq.virginia.gov/Programs/CoastalZoneManagement/CZMIssuesInitiatives/VirginiaSeasideHeritageProgram.aspx. Development of a Seaside Special Area Management Plan (SAMP) is now underway. The Seaside SAMP is led by Virginia CZM in partnership with The Nature Conservancy, the Virginia Institute of Marine Science, the Virginia Marine Resources Commission, Accomack-Northampton PDC, the Mid Atlantic Regional Council on the Ocean, the Virginia Eastern Shorekeeper and representatives of the shellfish aquaculture industry and other stakeholders. The goals of the Seaside SAMP are (1) to map, analyze, and interpret the current status and trends in the uses, economic values, and beneficial ecosystem functions associated with state-owned and other habitats in the seaside bays of Virginia's Eastern Shore, (2) to re-evaluate these uses in light of current and projected conditions, and (3) to recommend guidelines for the allocation of resources in a manner that optimizes the environmental and socio-economic benefits derived through a marine spatial planning process.

Acquisition Plans and Relevance to CELCP

Most of the seaside's barrier island lagoon system is already in conservation ownership. However, many sites along the seaside mainland are ecologically outstanding and vulnerable to development impacts. As work progresses on the Seaside SAMP, it will likely help focus acquisition priorities on the seaside. The Virginia CZM Program was fortunate to receive a CELCP earmark for $514,714 that was used to help acquire the Bull tract on Northampton County's seaside (see page 10 for more information). Along with many other sources of funding, this 492-acre tract was acquired, and the northern portion is now the Magothy Bay Natural Area Preserve and the southern portion has been added to the Eastern Shore of Virginia National Wildlife Refuge. The signatories of the Southern Tip MOU plan to acquire as many more parcels on the lower seaside as possible. But, many sites to the north on the seaside also fall into the Very High and Outstanding Ecological Value categories on the Virginia CELCP Priorities map (Figure 6, Coastal VEVA). While attributes contained in several of the data sets used to develop the Virginia CELCP priority areas map naturally occur within the Seaside SAMP boundary, no specific data sets developed as a result of the SAMP were utilized in creating the Virginia CELCP Priorities map. Further, the Seaside Special Area Management Plan fulfills goals 1, 2, 5, 6 and 9 of the Virginia CZM program: Goal 1) To protect and restore coastal resources, habitats, and species of the Commonwealth; Goal 2) to restore and maintain the quality of all coastal waters for human and ecosystem health; Goal 5) to provide for sustainable wild fisheries and aquaculture; Goal 6) to promote sustainable ecotourism and to increase and improve public access to coastal waters and shorefront lands compatible with resource protection goals; and Goal 9) To avoid and minimize coastal resource use conflicts through research, planning, and a forum for coordination and facilitation among government agencies, interest groups, and citizens. The Seaside SAMP also supports the following Virginia CELCP lands and values: lands supporting natural heritage resources; habitats of wildlife species of greatest conservation need; important bird migration corridors, stopover sites, breeding and wintering areas; habitats of rare, endemic and non-listed species and public access and nature-based recreational areas.

2. *Chesapeake Bay National Estuarine Research Reserve of Virginia Management Plan: 2007-2011 (CBNERRVA)*

Program Summary

The core mission of the CBNERRVA is to preserve a network of reserves that represent the diversity of coastal ecosystems found within the York River estuary and its principal tidal tributaries and to manage these Reserve components to support informed management of coastal resources through estuarine research, education, stewardship, and advisory service. CBNERRVA currently owns and manages four Reserves along the York River (Figure 20): Sweet Hall Marsh (871 acres), Taskinas Creek (980 acres total, 45.4 acres acquired through CELCP in 2002), Catlett Islands (690 acres), and Goodwin Islands (777 acres).

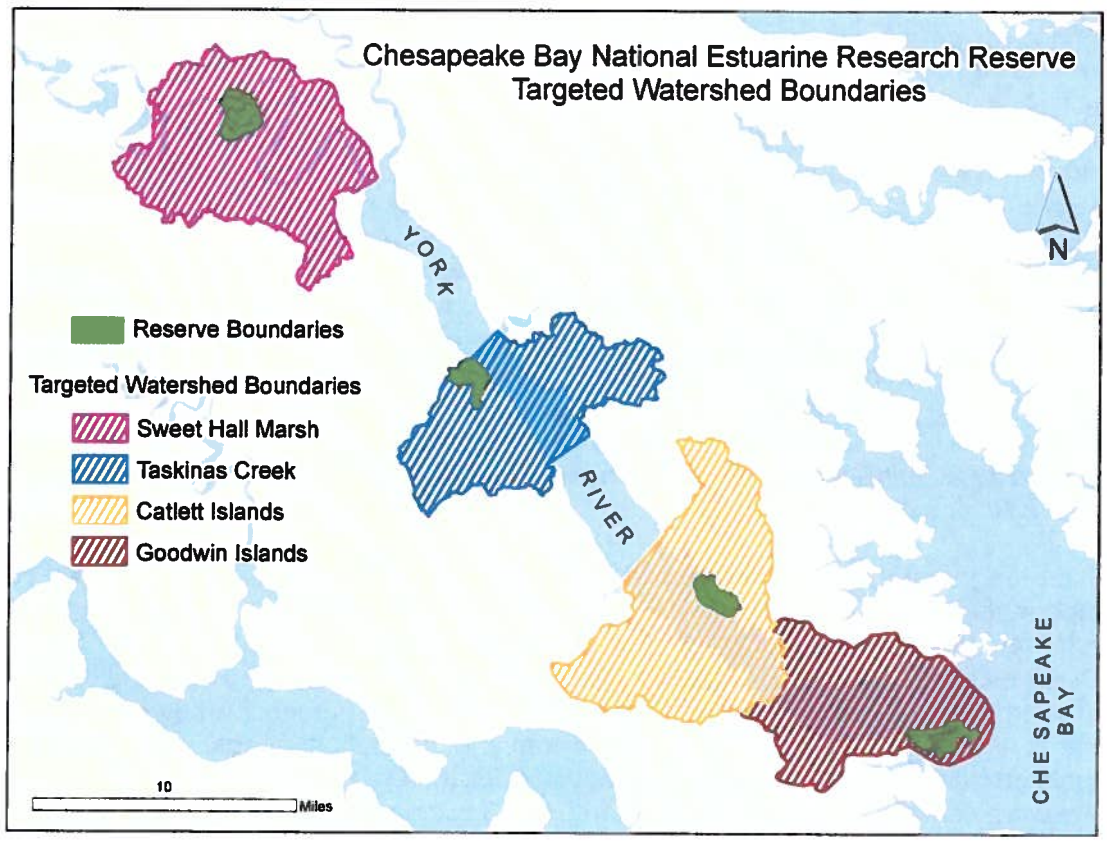

Figure 20. Chesapeake Bay National Estuarine Research Reserve Targeted Watershed boundaries on the on the York River

The initiatives of the Virginia Estuarine and Coastal Research Reserve System (VECRRS), administered by the Virginia Institute of Marine Science, are also coordinated with CBNERRVA. The VECRRS was created in 1999 by the General Assembly of Virginia (Code of Virginia 28.2-1103 and 28.1-1104). The mission of the VECRRS is to establish a system of protected sites representative of the Commonwealth's estuarine and coastal lands in which research and long-term monitoring can be conducted in support of the Commonwealth's coastal resource management efforts. CBNERRVA has been an active participant in the Dragon Run SAMP and coordinates research and education programs at a 121-acre site on the Dragon Run. VIMS and

the College of William & Mary purchased the tract with a portion of funds provided through CZMA Section 306a of the Virginia CZM Program.

Plan for Acquisition

The CBNERRVA Management Plan is based on natural resource management plans created for each of the four Reserve components, and is supported by two documents, *A National Strategy for NERRS Land Acquisition* (Wellenberger 2002a) and *A Land Acquisition Inventory of the NERRS* (Wellenberger 2002b).

To adequately protect and conserve the larger landscape ecosystem which connects with existing Reserve components, and to more fully represent the diversity of coastal ecosystems within the York River system, further land conservation efforts are required. There are four key areas where CBNERRVA will focus land acquisition efforts over the next several years:

1. *Continue towards fee-simple ownership of the Catlett Islands*

   The Catlett Islands have been essential in allowing the Reserve to meet its mission by providing near pristine wetland and shallow water habitats for exploration and study. The desired tracts comprise the core region of the Catlett Island component of CBNERRVA and consist of maritime upland forests, tidal meso/polyhaline marshes and surrounding waters. These communities have stayed remarkably free of threats posed by exotic plant species. Research conducted at the Catlett Islands has been instrumental in ecosystem-based restoration and management, and water quality investigations. The continuing effort to secure available Catlett Island land tracts through fee simple ownership is to strengthen the long-term protection, operation and management of this Reserve component in light of potential change in ownership.

2. *Identify new acquisition opportunities on lands adjacent to current Reserve components on the York River system*

   Habitat fragmentation and increased population growth continue to threaten Reserve components and nearby lands. CBNERRVA has been involved in the development of natural resource management plans for each of its four Reserve components. The purpose of these plans is to guide an adaptive management process that supports the research and education mission of the Reserve and protects natural resources. A key element of these plans is the identification of land acquisition and protection needs. In 2005, DCR-NH completed natural resource management plans for the Goodwin Islands and Catlett Islands. Plans were completed for Sweet Hall Marsh and Taskinas Creek in 2007.

   In each of the plans, acquisition of lands adjacent to the Reserve components was recommended in order to adequately protect and conserve the larger landscape ecosystems. Primarily, undeveloped marsh/upland tracts adjacent to the components are the highest priority. These areas serve as nearby foraging, nesting, and loafing habitat for many important bird species such as Bald Eagles, American Oystercatchers, Osprey, Northern Harriers, Great Blue Herons and numerous other marsh birds, shore birds, and migratory species. Protection of the upper creek watershed adjacent to the Taskinas Creek Reserve would serve to protect water quality and increase resource protection and reduce visitor impacts currently at the Reserve. In some cases, the acquisition of adjacent lands would further buffer the Reserves from the effect of nearby development, and agricultural and silvicultural practices.

3. *Incorporate a new tidal freshwater component*

   Due to issues of salinity intrusion at Sweet Hall Marsh, CBNERRVA has identified acquisition of a pristine tidal freshwater area within the York River subestuary (within either the Pamunkey or Mattaponi River) as a high priority.

4. *Pursue additional land holdings in support of the Virginia Estuarine and Coastal Research Reserve System*

5. *Acquire the Steiffen Tract Adjacent to York River State Park*
   The Stieffen tract has been identified by the Reserve as a high priority land acquisition property. Given its natural resources, large tract size (163 ha; 402 ac) and location immediately adjacent to York River State Park, the Stieffen tract would enhance the core and buffer area for the Taskinas Creek component of the Reserve which is situated within the park boundaries.

6. *Incorporate submerged bottom buffers*

   Significant subaqueous bottom buffers were proposed for both the Goodwin and Catlett Island components of the Reserve encompassing extensive SAV, oyster reefs, mud and sand flats, shallow open water and submerged mud and sand bottoms.

<u>Relevance to CELCP</u>

The reserve boundary protection and acquisition plan supports the goals of the Virginia CELCP. The plan identifies important ecological components such as habitat, land use classification, a natural heritage inventory, and a watershed build-out and habitat change analysis. It inventories archaeological, historical and cultural resources. It identifies, justifies, and prioritizes areas of concern for future acquisition efforts and identifies acquisition partners and sources of funding. Collaboration between public agencies, private organizations and private landowners who share interest in or jurisdiction over identified lands and/or resources of interest to the CBNERRVA is integral to the success of acquisition efforts. The reserve boundary protection and acquisition plan also outlines management strategies for newly acquired lands as they are developed through these essential partnerships. The CBNERRVA management plan also addresses goals 1, 2, and 10 of the Virginia CZM program: Goal 1) To protect and restore coastal resources, habitats, and species of the Commonwealth; Goal 2) to restore and maintain the quality of all coastal waters for human and ecosystem health; and Goal 10) to promote informed decision-making by maximizing the availability of up-to-date educational information, technical advice, and scientific data. Lands and values supported include: Lands connected to or that contribute to the Chesapeake Bay National Estuarine Research Reserve of Virginia sites and lands targeted for acquisition in a local or regional conservation plan.

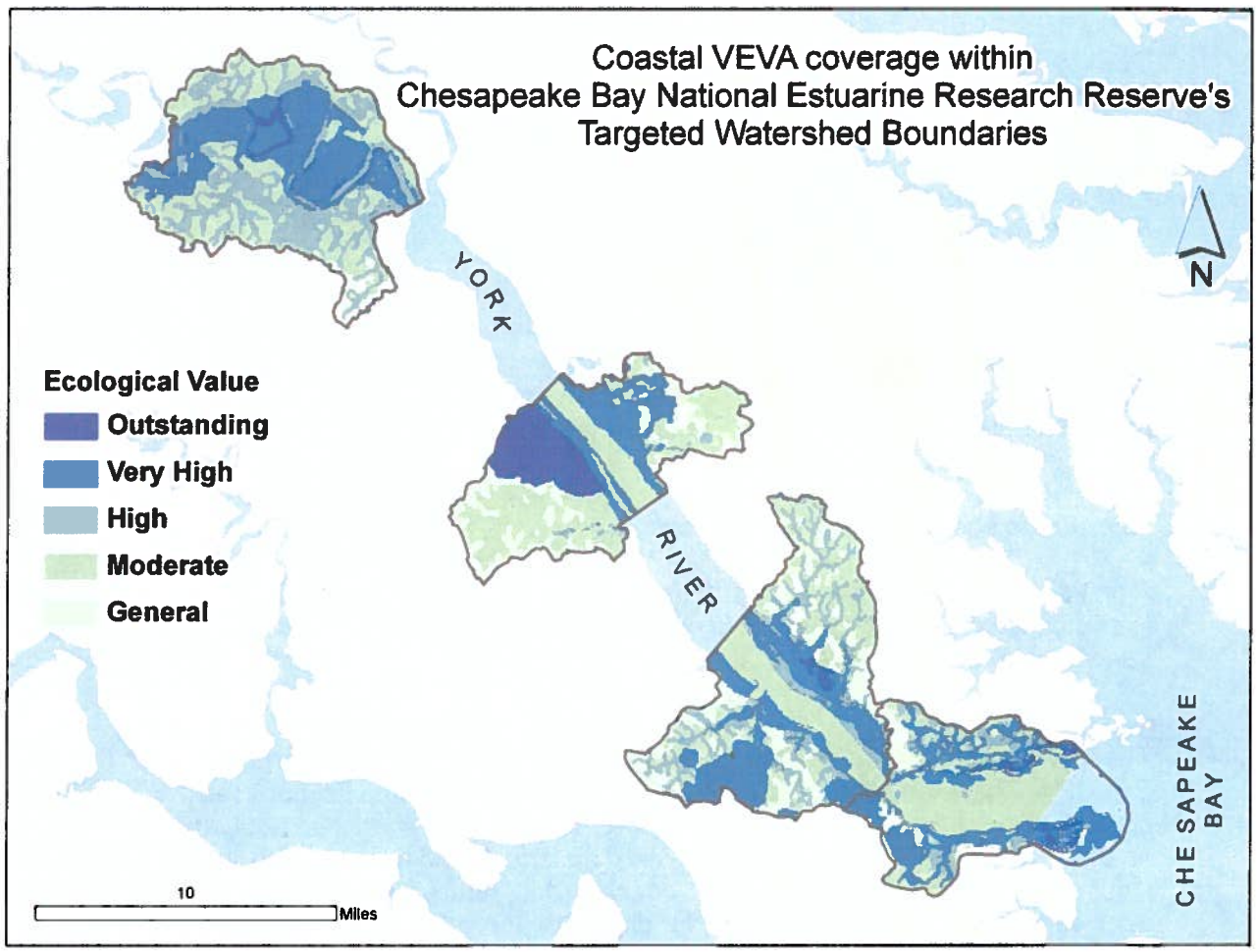

Figure 21. CBNERR targeted watershed boundaries displaying Coastal VEVA

3. Virginia Wildlife Action Plan (Virginia Department of Game & Inland Fisheries)

Program Summary

Virginia's Wildlife Action Plan (WAP) unites natural resource agencies, sportsmen, conservationists, and citizens in a common vision for the conservation of the Commonwealth's wildlife and their habitats. The Action Plan, originally the Virginia Comprehensive Wildlife Conservation Strategy when it began in 2004, was developed to fulfill a federal funding requirement. All states receiving funding from the Wildlife Conservation and Restoration Program (WCRP) and the State Wildlife Grants (WG) Program, administered by the U.S. Fish and Wildlife Service, must submit a 10-year strategic conservation plan by October 2005. The Virginia Department of Game and Inland Fisheries (VA DGIF), the lead agency in this effort, saw the opportunity to develop a common vision for wildlife conservation within the Commonwealth. Virginia's high biodiversity (due its being at the geographical crossroads of northern and southern species distributions) and large number of threatened and endangered species, species of special concern, and variety of habitats warrant the development of a strategy to document the state of wildlife and their habitats in Virginia, develop conservation

goals, determine what actions are needed to meet our conservation goals, and finally, to determine whether or not those actions are successful.

The distribution and abundance of wildlife species, including low and declining populations, are indicative of the diversity and health of the Commonwealth's natural resources. The Virginia WAP identifies 925 "species of greatest conservation need" (SGCN), which represent a broad array of wildlife. The SGCN list was created by using a selection matrix that brought together lists of species identified by other groups as imperiled, or in decline. Within the SGCN list, species are classified into four tiers that were developed to identify the relative importance of conservation need for each species (Table 7).

Table 7. Wildlife Action Plan tier descriptions (for species of greatest conservation need).

Tier	Degree of Conservation Need	Description
1	Critical Conservation Need	Faces an extremely high risk of extinction or extirpation. Populations of these species are at critically low levels, facing immediate threat(s), or occur within an extremely limited range. Intense and immediate management action is needed.
2	Very High Conservation Need	Has a high risk of extinction or extirpation. Populations of these species are at very low levels, facing real threat(s), or occur within a very limited distribution. Immediate management is needed for stabilization and recovery.
3	High Conservation Need	Extinction or extirpation is possible. Populations of these species are in decline or have declined to low levels or are in a restricted range. Management action is needed to stabilize or increase populations.
4	Moderate Conservation Need	The species may be rare in parts of its range, particularly on the periphery. Populations of these species have demonstrated a significant declining trend or one is suspected which, if continued, is likely to qualify this species for a higher tier in the foreseeable future. Long-term planning is necessary to stabilize or increase populations.

The Virginia Wildlife Action Plan also focuses on the habitats that support these species, such as caves, high-elevation forests, coastal marshes, barriers islands, grasslands, small headwater streams, vernal pools, and many others. The WAP uses an ecoregional approach to classify and manage wildlife and habitats in the Commonwealth. Wildlife in Virginia's coastal zone are classified into the Coastal Plain and Piedmont ecoregions. In addition, the WAP describes the location of key habitats essential to the most imperiled species (Tier 1 species). This process involved a review of literature, databases, and coordination with experts to identify and map essential habitat (Figure 23). Tier I essential habitat represents habitat for 86 species (53 terrestrial and 33 aquatic species) of the 93 Tier I species. These habitats are extraordinary areas for conservation opportunities.

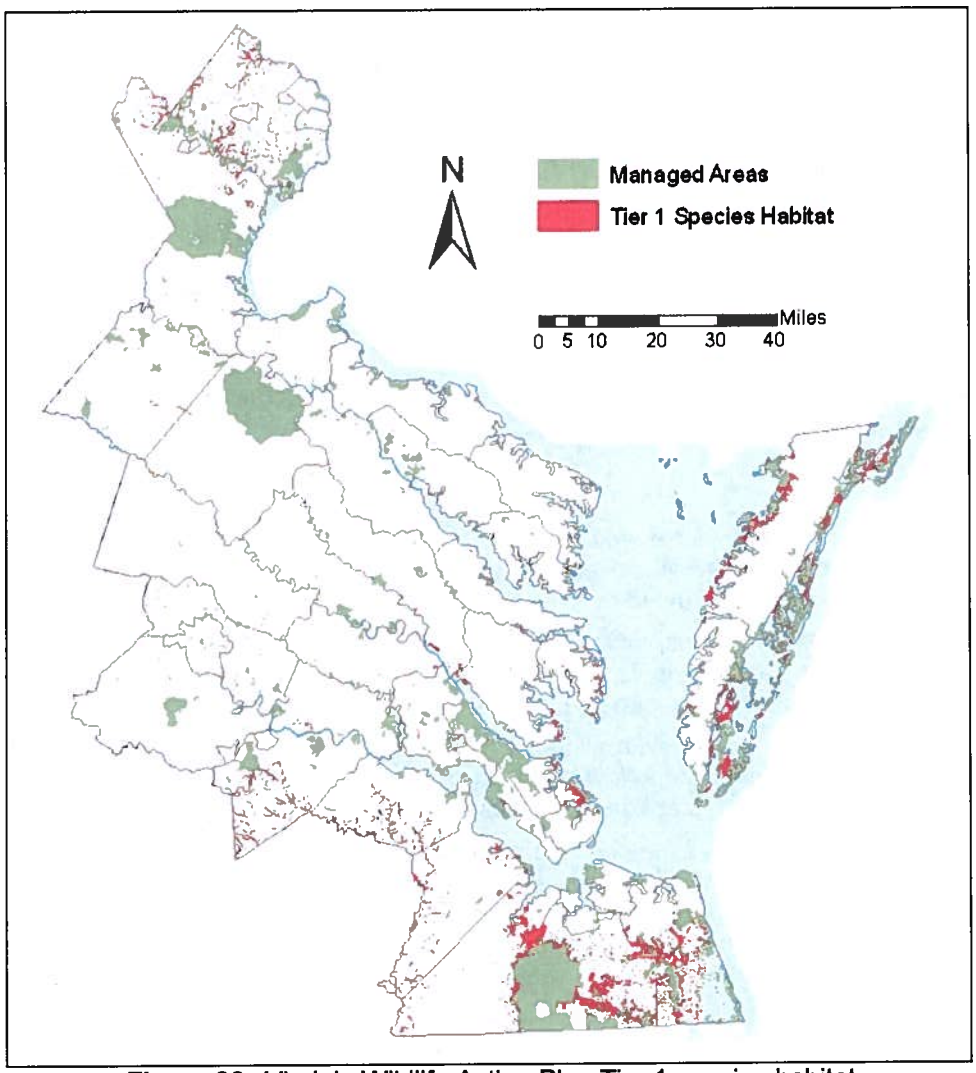

Figure 22. Virginia Wildlife Action Plan Tier 1 species habitat

Perhaps most importantly, the WAP identifies tasks needed to conserve these species and habitats on a regional basis. Not only do many of these actions include on-the-ground activities, but they also include enhancing partnerships and increasing public awareness. The WAP helps prioritize actions and spending for the greatest benefit. Although it focuses on the species and habitats of greatest conservation need, it is also a plan for the conservation of all Virginia's wildlife.

Plan for Acquisition

The Virginia Wildlife Action Plan identified and categorized eight general categories of conservation actions to address problems facing Virginia's species of greatest conservation need and key habitats: coordination; education and outreach; enforcement; habitat management; land protection; planning, regulations, policies, and law; and species management.

An objective under habitat management is to conserve (through acquisition), restore, and create important habitats and buffers to reduce habitat destruction and fragmentation from municipal development. Acquisition or protection of needed habitats (wooded wetlands, caves, riparian

buffers, large contiguous tracts of mature forest stands, upland forest buffers surrounding marshes, etc.) are land protection actions to address threats to terrestrial and aquatic species of greatest conservation need. The WAP also recommends increased investment in habitat protection as a conservation action in the Coastal Plain ecoregion. The southeastern portion of Virginia is identified by the DGIF as a region with a high concentration of potential and confirmed habitat for species of greatest conservation need, thus increased funding is essential for their protection.

Relevance to CELCP

The strategies to conserve wildlife habitat for species with greatest conservation need are consistent with the goals of CELCP. Specifically, they aim to protect riparian areas, wetlands, and upland forest buffers; preserve unfragmented habitats; and connect fragmented habitats through conservation corridor planning and acquisition to maintain the viability of threatened plant and animal species within the Commonwealth. CELCP funding will be essential in the southeastern portion of the coastal zone to aid the DGIF in conserving the most ecologically significant tracts for wildlife. Significant data and information from this plan contributed to the development of the Priority Wildlife Diversity Conservation Areas data set— one of the primary data layers in the CELCP Priority Conservation Areas map (Figure 6).

4. Virginia Department of Conservation and Recreation (DCR)

a. Virginia's Precious Heritage (Natural Heritage Plan) (DCR Division of Natural Heritage)

Program Summary

The Virginia Department of Conservation and Recreation's Natural Heritage Program's (DCR-DNH) mission is conserving Virginia's biodiversity through inventory, protection, and stewardship. The Virginia Natural Area Preserves Act (NAPA), §10.1-209 through 217 of the *Code of Virginia*, was passed in 1989 and codified DCR's authority to establish and manage a system of dedicated state natural area preserves to conserve Virginia's biological resources. DCR has established and manages the preserve system on both public and private lands. The system contains 53 preserves as of April 2008, conserving over 43,000 acres.

The Partners in Conservation Fund, a cooperative effort between DCR and The Nature Conservancy, set in motion the acquisition of biologically significant natural areas identified by the Natural Heritage Program and the creation of a Natural Area Preserves System. This was the first state land protection program specifically designed to conserve and manage Virginia's rare, threatened and endangered biological resources. The importance of protecting these biologically significant sites was endorsed by overwhelming support of the voters in the passage of the 1992 Park and Recreational Facilities Bond, which provided $11.475 million to buy at least ten additional Natural Area Preserves. The similarly supported 2002 Park and Natural Areas Bond provided an additional $20 million for natural area preserve acquisitions.

The Natural Area Protection component of DCR utilizes a number of tools for the protection of biodiversity, among which are dedication of natural areas into a legally established system of state natural area preserves, acquisition of land, acquisition of conservation easements and other partial interests, establishment of management agreements, and registry of natural areas. Priorities for protection result from the inventory and subsequent site ranking system developed by DCR-DNH.

Dedication of properties as Natural Area Preserves can be accomplished through the voluntary act of a landowner and provides strong statutory protection against conversion to alternate uses. Acquisition of Natural Area Preserves is often pursued with state appropriated or bond funds, federal grants, or donations to the Natural Area Preservation Fund and the Open Space Recreation and Conservation Fund, the latter consisting of revenues derived from voluntary contributions through a state income tax check-off.

Also under the NAPA, DCR-NHP is responsible for identifying and maintaining a statewide biological inventory database on the state's natural heritage resources for conservation planning and project review, and protecting and managing lands with natural heritage resources for the conservation of biodiversity. DCR-DNH represents the first comprehensive attempt to identify the most significant natural areas in the Commonwealth through an intensive statewide inventory of plants, animals, natural communities, and other features that are exemplary, rare, or endangered on a global or statewide basis. The inventory has identified over 1,800 Conservation Sites and over 230 Stream Conservation Units (SCUs) consisting of one or more rare species and exemplary natural communities. In 1994, and again in 2006, the Virginia Natural Heritage Program was recognized by NatureServe as the outstanding natural heritage program in the western hemisphere.

The Virginia Natural Heritage Program is part of NatureServe, an international network of Natural Heritage programs and Conservation Data Centres spanning all 50 states, Canada and 13 countries in Latin America. The network's consistent methodology allows information to be readily shared and compared for purposes of establishing conservation priorities across state and national boundaries. It ranks the rarity of species and other elements of biodiversity. Rank is determined on both a global (total range-wide) and a state (state-wide) basis. See http://www.dcr.virginia.gov/natural_heritage/help.shtml for more information on how global and state ranks are assigned.

Across Virginia are more than 32,000 native species of plants and animals. Many play an important role in the state's economy, such as forestry and fisheries. Virginia's biological diversity is subject to many significant threats. The greatest of these comes from habitat loss and habitat fragmentation as land is converted from agricultural, forest and open space uses to more intensive uses such as residential and commercial development. Virginia ranks 8th in the United States for globally rare animals and 14th for globally rare plants. Unfortunately, it is the 8th state in the nation for plant and animal extinctions. Virginia is second in the United States for dragonfly diversity. This diversity is apparent along the appropriately named Dragon Run in the coastal zone's Middle Peninsula, a high priority conservation area of the Virginia CZM Program and Virginia's CELC Program.

Virginia's Precious Heritage, also referred to as the Virginia Natural Heritage Plan, was completed in 2002 and evaluates the current status of Virginia's natural heritage resources and identifies conservation targets for the upcoming decade. Among the topics discussed are the collection, storage and analysis of natural heritage resource information, application of this information to the protection and management of significant natural areas in Virginia and development of new conservation initiatives.

<u>Plan for Acquisition</u>

Virginia's Precious Heritage identifies natural resource targets by physiographic provinces that require immediate attention for inventory, protection and stewardship. These targets are identified within the Northern Piedmont, Southern Piedmont, Northern Coastal Plain, Southern Coastal Plain, and Outer Coastal Plain physiographic provinces. Through this plan, 206 rare

species and natural communities were identified as top priorities for statewide inventory efforts. A total of 125 species and exemplary natural communities have been identified as likely to be lost from the state if specific conservation action is not taken in the next 5-10 years.

Virginia's Precious Heritage also identifies five key goals for conserving Virginia's biological diversity:

1. Secure a broad-based stable funding source for land conservation, including lands that support natural heritage resources.
2. Expand the existing network of conservation lands by securing more lands for natural area dedication, promoting more land conservation by local governments and encouraging greater investment by private conservation organizations.
    - Secure natural area preserve dedication and administrative public land designations for 200 high priority natural areas across Virginia.
    - Inform and promote land conservation at the local government level to meet the ever-increasing demand for open space lands.
3. Target conservation actions on the best opportunities and measure the success of the funds spent and actions taken.
    - Provide baselines which inform overall land conservation priorities and are a starting point to measure future progress.
    - Identify priority lands to meet current conservation needs.
    - Identify lands that meet multiple conservation goals. (part of the overlay)
4. Enhance natural resource information and expand the public awareness and understanding of natural resource conservation by expanding efforts to inventory natural heritage resources, enhancing cooperation with other conservation agencies and increasing the availability of natural heritage data for the general public, conservation organizations and government agencies.
5. Promote more biodiversity-friendly resource management on Virginia's public and private lands.

Specific uses of *Virginia's Precious Heritage* include:

- Selection of local, regional and statewide land conservation priorities
- Selection of nodes in greenway and migration corridors
- Identification of mitigation sites
- Development project planning and site selection
- Outdoor recreational planning
- Prioritization of biological survey needs
- Local comprehensive planning
- Conservation biology reference

<u>Relevance to CELCP</u>

Goals 3 and 4 of *Virginia's Precious Heritage* have been achieved through the development of the *Virginia Conservation Lands Needs Assessment* (described in more detail below). The development of VCLNA has been funded in part by the Virginia CZM Program since 1999 and is slated for completion by fall 2008. Virginia CELCP Priority Areas (Figure 6) were derived from the ecological model of the VCLNA which prioritizes lands based on their potential to protect Virginia's natural heritage resources and biodiversity. Acquisition of areas with high ecological value is a priority for the protection of the state's natural heritage resources.

Virginia's CELCP also supports Goal 2. Virginia's 2006 CELCP award was used to purchase the Bull Tract on the southern tip of the Eastern Shore, now dedicated as the Magothy Bay

Natural Area Preserve. Future CELCP funds would continue to support the protection of natural heritage resources through dedication of lands as Natural Area Preserves.

b. Virginia Conservation Lands Needs Assessment (VCLNA) (DCR Division of Natural Heritage)

Program Summary

The *Virginia Natural Heritage Plan (Virginia's Precious Heritage)* identified the need to develop an "objective, science-based analysis tool using the best statewide data currently available to rank resources according to their ecosystem values, vulnerability, geographic distribution, and their relationship to resource-based land uses that have been identified in the Virginia Land Conservation Foundation Act as needing increased conservation attention to guide decisions about future land conservation efforts." The Virginia Department of Conservation and Recreation's Division of Natural Heritage (DCR-DNH) has nearly completed this assignment. The *Virginia Conservation Lands Needs Assessment (VCLNA)*, a project initiated in 2003, is a collection of models, created using GIS (Geographic Information Systems), which identify and prioritize natural resource conservation targets across the state to support green infrastructure planning in Virginia. The methodology used to create the models builds off the Chesapeake Bay Program's Resource Lands Assessment Ecological Assessment (http://www.chesapeakebay.net/land.htm). The VCLNA was developed to assist in identifying lands that meet multiple conservation goals at the local, regional and state levels. The VCLNA allows the manipulation of issue-specific data sets that can be weighted and overlaid to reflect the needs and concerns of a variety of conservation partners.

The VCLNA models have been developed as part of a collaborative effort between DCR-DNH, the Virginia CZM Program, and the Virginia Land Conservation Foundation (VLCF). The VCLNA consists of the following issue-specific models. More information on the models can be found at www.dcr.virginia.gov/natural_heritage/vclna.shtml.

- Ecological Model: The Ecological Model is a collection of models and products including the Virginia Natural Landscape Assessment (VaNLA), DGIF's Wildlife Action Plan, and a biodiversity assessment using species and natural community information from DCR's Natural Heritage Program. The VaNLA is a landscape-scale GIS analysis for identifying, prioritizing, and linking natural habitats in Virginia. It identifies and connects the most important natural, unfragmented lands based on considerations of biological and ecological value and integrity. The effort includes the use of satellite imagery to identify large, unfragmented natural habitats (called cores) and corridors which serve as linkages between the most important cores. A Biodiversity Assessment analysis is currently being completed by the DCR-DNH through a grant from the Virginia CZM Program. This layer will integrate the VaNLA and other traditional Natural Heritage data with modeled and known locations of Species of Greatest Conservation Concern, as per the DGIF State Wildlife Action Plan. The result will be a comprehensive, single layer that will provide the final ecological model component of the VCLNA, harnessing all available state agency data in Virginia pertaining to biodiversity.

- Cultural Asset Model: The Cultural Asset Model is a statewide model showing the cultural value of lands in Virginia. The DCR-DNH worked in partnership with the Virginia Department of Historic Resources (DHR) to identify and prioritize important cultural assets in Virginia, including archaeological and architectural sites, and American Indian Lands.

These areas were weighted to reflect a specific cultural value, then summed together to represent a comprehensive cultural value.

- Vulnerability Model: The Virginia Vulnerability Model is composed of four statewide and one composite models showing predicted growth patterns across the landscape. The model uses GIS and statistical methods to analyze housing allocation, lot size estimation, growth hotspots, residential land conversion hotspots and travel time proximity in an effort to model urban, suburban (urban fringe), and rural (outside the urban fringe) growth patterns. It maps the predictive potential threat for land to be converted from its current use to an urban or suburban use.

- Watershed Integrity Model: The Virginia Watershed Integrity Model was developed to show the relative value of land as it contributes to watershed or water quality integrity. As development pressure continues across the state, remaining resources are being irretrievably lost to development. The Virginia Watershed Integrity Model is the first of its kind in the Coastal Zone, providing a statewide display of how land use patterns contribute to water quality and aquatic ecological integrity in streams at the watershed level. Virginia Natural Heritage partnered with the Virginia Department of Environmental Quality, the DCR – Division of Soil and Water, the Department of Forestry, and Virginia Commonwealth University to analyze parameters such as wetland function, land type, forest fragmentation, net primary productivity, stream density and population influences (i.e. impervious surfaces). The Watershed Integrity Model represents important terrestrial features that should be conserved for water quality integrity based on the best available data.

- Forest Economics Model: The Forest Economics Model maps the economic value of viable forest or timberland in Virginia, with the understanding that forests provide ecological and economic assets for the Coastal Zone. The DCR-DNH worked in partnership with the Virginia Department of Forestry to analyze biophysical parameters, management constraints and socioeconomic influences.

- Agricultural Model: The Agricultural, or Prime Farmlands, Model was developed to identify the value of agricultural lands throughout the state in terms of agricultural productivity and sustainability. This model was developed via partnership between Virginia Natural Heritage, the Virginia Department of Agriculture, the American Farmland Trust and Virginia Tech. The model analyzes parameters such as soil productivity and slope.

- Recreation Model: The Recreation Model was developed to map the value of lands as they contribute to recreational opportunity. The DCR-DNH worked in collaboration with the Virginia Department of Game and Inland Fisheries and DCR's Division of Planning and Recreation to assess the relative values of recreational lands throughout the Commonwealth, such as hunting, fishing, wildlife watching, parks, trails, public access, and population density influences.

Plan for Acquisition

The VCLNA was initiated as a tool to prioritize conservation lands for the Virginia Land Conservation Foundation (VLCF). The General Assembly created the VLCF in 1999 (*Code of Virginia* §10.1-1021) to more effectively focus land conservation efforts in the state. The VLCF is a grants program, providing matching grants to state agencies, local governments and land trusts for acquiring fee simple title to or other rights, interests or privileges in real property for the following purposes: (i) natural area protection; (ii) open spaces and parks; (iii) farmlands and

forest preservation; and (iv) historic area preservation. DCR helps administer, manage and protect VLCF's lands.

The VLCF administers the Virginia Land Conservation Fund. When state funds are made available to the Foundation, they are allocated to the following formula prescribed by state law: 25% is transferred to the Virginia Outdoors Foundation for providing landowner assistance grants and the remaining 75% is divided equally among the four categories outlined above. At least one-third of the grants must be used to secure easements to be held or co-held by a public body. Since 1999, grants have been awarded to 69 projects, conserving an estimated 6,756 acres of open-space land. Four historic battlefields on approximately 1,257 acres have also been protected.

The VLCF in recent years have received many more conservation proposals than it can fund. The VLCF has identified needs of $80 million per year in the foreseeable future for protection of farmland, forest, open space parks, natural areas, wildlife areas and historic lands. Virginia's generous land preservation tax credit program has been a powerful incentive for voluntary land protection. The tax credit program provides a market-based incentive for landowners to protect their lands, since it allows them to receive 40% of the value of donated land or a conservation easement as state income tax credits, up to $100,000 a year, for eleven years. Unused tax credits can also be sold on the open market. The tax credit has contributed to the substantial increase in the number of easements granted in the past few years.

Relevance to CELCP

The VCLNA can help guide effective conservation by providing tools that help both government and private organizations identify resource protection areas and that, at the local level, help planners manage growth in a balanced way. Because of the Virginia CZM Program's investment in developing the VCLNA and DCR's use of the models in prioritizing conservation targets for the VLCF, components of the VCLNA have been used extensively in identifying priority areas for CELCP (Section II-C). Scoring criteria (Section III-C) for CELCP proposals are also based on and consistent with scoring criteria used by the VLCF, a potential source of matching funds for CELCP projects.

VCLNA layers have been incorporated into three interactive mapping websites which can be used to map potential CELCP projects:

- Virginia CZM Program's Coastal GEMS
  (http://www.deq.virginia.gov/coastal/coastalgems.html)
- Virginia Natural Heritage Data Explorer
  (http://www.dcr.virginia.gov/natural_heritage/nhdeinfo.shtml)
- Virginia Natural Heritage Land Conservation Data Explorer (LCDE)
  (http://www.vaconservedlands.org/).

c. *Virginia Outdoors Plan 2007*

Program Summary

The *Virginia Outdoors Plan (VOP)* is the state's official document regarding land conservation, outdoor recreation and open space planning. Developed by the Department of Conservation and Recreation (DCR), the *VOP* helps all levels of the public and private sectors meet needs pertaining to those issues. The plan provides guidance for the protection of lands through actions of the Virginia Land Conservation Foundation (VLCF), and the plan is required in order for Virginia to take part in the federal Land and Water Conservation Fund (LWCF) program.

The 2007 edition of the *Virginia Outdoors Plan* is the ninth written in accordance with *§10.1-200* of the *Code of Virginia*.

At the more than eighty *VOP* public meetings held by Department of Conservation and Recreation (DCR) staff across the state during 2005 and 2006, citizens expressed overwhelming concern and support for protecting our natural resources and open space, for enhancing outdoor recreation opportunities, and for making our communities more livable and walkable.

Citizens support the use of public funds for outdoor recreation and land conservation. The 2006 *Virginia Outdoors Survey (VOS)*, conducted by Virginia Commonwealth University for DCR, polled over 3,000 families and reported citizen input for numerous natural resource and outdoor recreation topics. The 2006 *VOS* shows over 94 percent of citizens believe it is either "important" or "very important" to protect Virginia's natural and open space resources. It is noted that 91 percent support state funds being used for the protection of our natural resources. Most prefer state funds for land protection to be expended for the outright purchase of lands from willing sellers with future provisions for public use and access. The *VOS* was used extensively in the development of Program- and region-specific recommendations made in the *VOP* to address the way land conservation and outdoor recreation needs are generally connected and related to meeting the future needs of Virginians.

Plan for Acquisition

Provided here is a summary of the VOP outdoor recreation and land conservation recommendations. Applicants should refer to the full document for more specific objectives and details (http://www.dcr.virginia.gov/recreational_planning/vop.shtml).

Outdoor recreation

- State and federal funding is needed to help local recreation departments provide local parks that meet outdoor recreation needs.
- State and federal funding is needed for regional park authorities and public access authorities to acquire, develop and manage resources to meet regional outdoor recreation needs.

Land conservation

- Localities, state agencies, and private organizations should develop methods of targeting preservation efforts using green infrastructure modeling and land planning techniques.
- Organizations undertaking land preservation projects should endeavor to protect a range of conservation benefits that exist on lands such as scenic open space, water quality protection, historic features, habitat preservation and public access.
- Partnerships among governmental agencies, non-profit organizations, volunteer groups and the private sector should be encouraged and expanded to meet conservation goals.

Relevance to CELCP

The Virginia Outdoors plan supports the Virginia CELCP value of protection of public access and nature-based recreational areas. Public lands that offer a myriad of recreation opportunities are needed throughout the Commonwealth to meet the needs of a growing population. Citizens want additional public lands that are accessible for a variety of outdoor recreational activities and as places to experience and interact with nature. Funding for public recreational land acquisition is a necessary component of a comprehensive strategy, because private lands protected by conservation easements rarely include public access. Virginia struggles with a

lack of consistent, stable state funding. Much has been leveraged through strong public-private partnerships, as will continue with funding under CELCP.

Development of the 2013 VOP is currently underway. This section of the Virginia CELP plan will be updated upon its completion.

5. *Hampton Roads Conservation Corridor Study (Hampton Roads Planning District Commission)*

Program Summary

The Hampton Roads Conservation Corridor Study, developed by the Hampton Roads Planning District Commission (HRPDC) and funded by the Virginia CZM Program, is a green infrastructure-based approach to identifying important natural resources in the Hampton Roads region, specifically areas of high ecological value and high water quality protection value. This effort grew out of the Southern Watersheds SAMP mentioned above. Areas were identified where conservation efforts would support multiple benefits as well as opportunities for developing a linked corridor system that minimizes habitat fragmentation and protects contiguous riparian buffers throughout Hampton Roads (Figure 23). The model for identifying areas to include in the corridor was developed in GIS using data layers such as riparian areas, wetlands, land use, and ecological cores prioritized through the Virginia Natural Landscape Assessment developed by the Department of Conservation and Recreation's Division of Natural Heritage. These data can be found on the Virginia CZM Program's Internet mapping site – Coastal GEMS. The corridor system has been utilized in comprehensive planning efforts within the region.

Plan for Acquisition

The goal of the Hampton Roads Conservation Corridor Study was to identify, prioritize, and link several categories of open lands while taking into account local planning goals. Ideally, implementation of the conservation corridor system through the Multiple Benefits Conservation Plan (MBCP) Memorandum of Agreement developed under the Southern Watershed Area Management Program and acquisition of lands within the corridor by the Cities of Virginia Beach and Chesapeake will provide multiple benefits to the region, such as habitat protection, stormwater management, wetlands mitigation, and recreation opportunities. The study resulted in areas "Suitable for Conservation" and "Opportunities for Connectivity" (Figure 23).

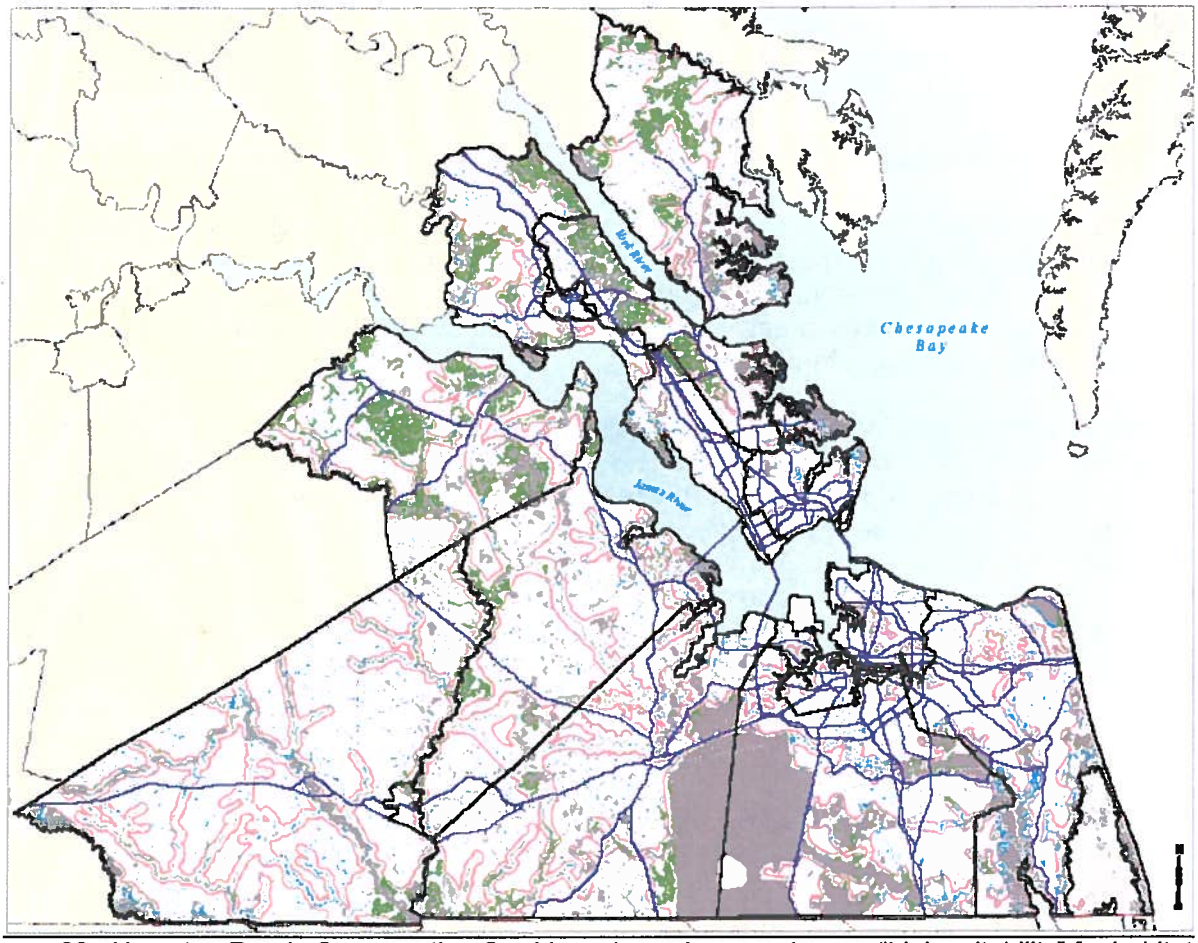

Figure 23. *Hampton Roads Conservation Corridor* - Areas in green have a "high suitability" for habitat protection. Areas in blue have a "high suitability" for water quality protection. Areas in gray are suitable to conserve for the protection of both. Areas outlined in red show opportunities to connect the highly suitable conservation areas. Existing roads are purple.

The corridor system will need to be updated periodically to include newly available digital data (such as the update to the VCLNA), updated land use and land cover data, and updated future land use plans as well as any implementation actions such as purchase of lands within the HRCCS for conservation purposes. Ideally, the HRCCS will be used to meet a variety of goals in Hampton Roads, including: conservation programs, parks, recreation, and open space planning, regulatory compliance (wetlands compensation, stormwater permitting, TMDL requirements) and, integration with local comprehensive plans, land use plans and zoning.

Relevance to CELCP

The Virginia CZM Program set aside about $315,000 in Section 309 of the CZMA to support development of similar regional conservation corridor studies in the remaining seven coastal planning district commissions in FY 2008 through FY 2010. Lands within the Hampton Roads Conservation Corridor and the regional conservation developed in the next couple of years support the Virginia CZM Program's goal of a coastal zone-wide network of green infrastructure, aim to conserve areas with high ecological values and water quality values, and therefore, are high priority areas for CELCP funding. The Hampton Roads conservation corridor study includes support for the following Virginia CELCP lands and values: Wetlands connected to undeveloped uplands; riparian areas that protect water quality for aquatic species; coastal

forests; lands supporting natural heritage resources; habitats of rare, endemic and non-listed species; lands supporting blue and green infrastructure plans; and lands providing expansions of or buffers to existing conserved lands.

6. The Nature Conservancy Eco-regional Plans

The Nature Conservancy (TNC) works to protect biological diversity and functional landscapes through land conservation. Their efforts to set ecoregional conservation priorities represent directed work toward this end. The goal of ecoregional planning is to identify regionally significant conservation target areas and diverse natural communities and ecosystems whose conservation will ensure long-term biodiversity.

Ecoregional plans do not include specific acquisition objectives or actions. These are specific to the functional landscape site and can be found within landscape management plans. Functional landscapes are simply large, complex, multi-scale and relatively intact conservation areas in which ecological processes are sufficiently intact to sustain focal species and natural communities over the long term. Through the Chesapeake Bay Lowlands Ecoregional Plan and the Mid-Atlantic Coastal Plain Ecoregional Plan, the Nature Conservancy has identified four priority landscapes within Virginia in which to develop landscape management plans and put conservation strategies into action: Chesapeake Rivers, Green Sea, Southern Rivers, and Virginia Coast Reserve (Figure 24). Conservation objectives and relevance to CELCP are described below.

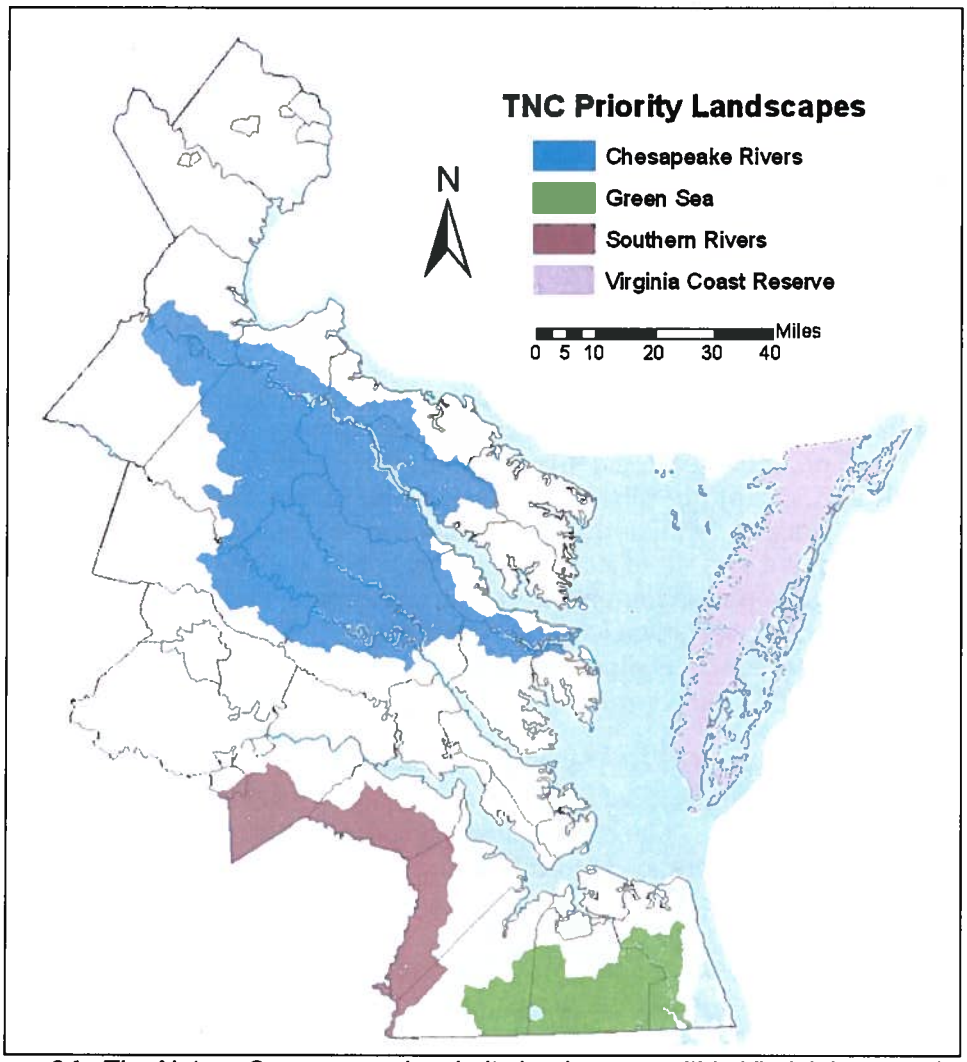

Figure 24. *The Nature Conservancy's priority landscapes within Virginia's coastal zone*

a. Chesapeake Bay Lowlands Ecoregional Plan

TNC representatives from Delaware, Maryland and Virginia, and representatives from state Natural Heritage Programs launched the Chesapeake Bay Lowlands (CBY) ecoregional planning effort in January 2000. The *Plan*, completed in June 2002, centers the CBY ecoregion on the Chesapeake Bay and includes most of Delaware, all of the coastal plain of Maryland and the District of Columbia, and coastal Virginia south to the James River. Five major types of conservation targets were identified in the ecoregion's ten-year conservation portfolio (until 2012), many of which are threatened by poor water quality due to agricultural runoff and urban/suburban runoff:

1) matrix forest blocks – 20 matrix forest blocks, defined by Ecological Land Units,
2) aquatic ecosystems – 11 stream and river system types,
3) significant conservation areas in tidal waters (for estuarine, coastal and marine targets) - 10 species and 4 habitat types including submerged types (SAV and oyster reefs), emergent types (tidal wetlands) and terrestrial types (dune and beaches).
4) natural communities – 113 targets in 18 vegetation groups,
5) species – 58 plant and animal species (including 15 federally listed as threatened or

endangered) selected as primary targets, and 46 secondary species targets.

- ***Chesapeake Rivers Site Conservation Plan (Chesapeake Bay Lowlands)***

Program Summary

The Chesapeake Rivers site has been a conservation priority for TNC-VA since 1986. This *Chesapeake Rivers Site Conservation Plan,* completed in October 2001, aims to protect a project area totaling roughly 1,152,000 acres (1,800 square miles). This area encompasses the tidal freshwater portions of the Mattaponi, Pamunkey, and lower Rappahannock river systems as well as the non-tidal blackwater river, Dragon Run. These largely unaltered rivers and tributaries are home to some of the most pristine and extensive tidal freshwater marsh and swamp communities remaining in the coastal plain of the Chesapeake Bay, providing unique habitat for federally-listed, globally rare species, critical nursery habitat for native anadromous fishes, and nesting grounds for resident and migratory birds. Although still largely rural, population growth and sprawl from the Hampton Roads, Richmond, and Fredericksburg urban centers continue to place a high demand on open space and freshwater resources in this project area. The top five threats to conservation targets identified in the Chesapeake Rivers project area are development, incompatible forestry practices (i.e. clear-cutting, high grading, conversion to pine plantations), invasive and non-native plant and fish species, sea level rise and water management (i.e. water withdrawals, dam/reservoir construction, etc.).

Plan for Acquisition

The *Plan* states it is TNC-VA's mission to conserve all biodiversity in this area, using landscape scale strategies to also address freshwater conservation, restoration of degraded ecological systems, and land protection. Overall biodiversity health and viability is ranked "fair" and reflects the severe and widespread degradation, fragmentation and destruction of the upland forest communities.

TNC selected seven conservation targets to best capture the biodiversity and ecological processes in the Chesapeake Rivers project area. Tidal freshwater systems and upland terrestrial systems capture the gamut of critical ecological functions and the characteristic native biota within the project area at multiple scales, for rivers and uplands. High quality Bald cypress forests found exclusively on the Dragon Run, cryptic fluvial terrace woodland communities on elevated islands in river floodplains, calcareous forests, and seepage wetlands of the headwaters of the inner coastal plain, and land which would protect anadromous shad and herring fish species nursery areas.

TNC's conservation strategy identifies working with partners (DCR, USFWS, etc) to protect viable occurrences of conservation targets through acquisition or conservation easements as well as working with priority localities to promote land use policies or incentive based land protection programs. Additionally, TNC aims to restore connectivity of matrix forests through restoration, and evaluate current and future effects of sea level rise on species and communities in the Coastal Plain to determine conservation actions that will best safeguard identified conservation targets.

Relevance to CELCP

One of the key action steps identified in the conservation strategies to meet TNC Chesapeake Rivers and CELCP goals is the identification of important conservation areas most vulnerable to residential sprawl. Protection of key tracts along the Dragon Run, Rappahannock, Pamunkey and Mattaponi rivers; additions to the Rappahannock Valley National Wildlife Refuge; and

protection of high quality upland forest, forest cores, and forest linkages are highlighted as priorities in TNC's conservation strategy and match priorities identified in this CELCP Plan.

- ***Virginia Coast Reserve - Eastern Shore of Virginia Conservation Area Plan (Chesapeake Bay Lowlands)***

Program Summary

The Nature Conservancy has had an extensive presence on the Eastern Shore since the 1950's. By 1975 TNC had purchased 14 of the Eastern Shore's barrier islands and established the Virginia Coastal Reserve (VCR). TNC manages and monitors the resources of their barrier islands and monitors the coastal bays, marshes and the colonial waterbirds, shorebirds, and waterfowl that inhabit them.

After the initiation of the Chesapeake Bay Lowlands ecoregion planning in 2000, which places the Eastern Shore in a larger, regional context and addresses all ecological systems, communities and species of conservation importance on the Shore, the Conservancy broadened its focus to account for the many diverse habitats and ecological systems that extend beyond the barrier islands of the Shore. To this end, the *Eastern Shore of Virginia Conservation Area Plan* was completed in June 2003, and TNC's new organization-wide Marine Initiative recognized the Eastern Shore as a significant priority for coastal and marine conservation.

Since then, TNC's focus have been on three new conservation areas associated with the Eastern Shore of Virginia, while still making the barrier islands, lagoons and marshes a priority:

- The western coast of the Shore along the Chesapeake Bay (or the "bayside"), including the marshes, tidal creeks and shoals of the estuary and other coastal habitats.
- The near shore marine system which extends 65 miles from the mainland to the Continental Shelf.
- Migratory songbird and raptor stopover habitat on the mainland, with special emphasis on the Southern Tip of the Delmarva Peninsula.

The most highly ranked threat to conservation targets is incompatible development, specifically high-density residential development. Development impacts several conservation targets through destruction or conversion of habitat, degradation of water quality and alteration of surface and ground water hydrology. Development also causes groundwater depletion due to an increased demand for drinking water. Since the groundwater is a sole source aquifer, there is a finite and vulnerable supply of fresh water on the Eastern Shore.

Plan for Acquisition

One overarching goal of this planning process is to build and promote the Eastern Shore of Virginia as a platform site for the study and conservation of marine systems and migratory birds. The Nature Conservancy and partners will implement several conservation strategies on the Eastern Shore to abate the most severe threats to conservation targets and improve their viability throughout the project area:

- Protect priority land and coastal waters through acquisition or conservation easement
- Secure zoning, land use policies and incentives within localities that will protect conservation targets and/or their habitat.
- Enhance and restore forest habitats to provide adequate food supply and stopover habitat for migratory land birds.

- Participate in the development and implementation of the Virginia Coastal Zone Management Program's Seaside Heritage Program which includes restoring oyster beds and SAV beds. Conservation of adjacent important drainages to waters with these sensitive resources will increase the success of restoration projects.
- Evaluate current and future effects of sea level rise on species and communities in Coastal Plain to determine compensatory conservation actions to protect conservation targets.

Relevance to CELCP
See discussion under the Northampton SAMP and the Seaside SAMP above.

b. Mid-Atlantic Coastal Plain Ecoregional Plan

Between 1996 and 2001, representatives from TNC chapter and regional offices, and Natural Heritage Program staff from Virginia, North Carolina, and South Carolina worked to develop a comprehensive conservation plan for the Mid-Atlantic Coastal Plain (MACP). The goal of this ecoregional plan was to identify a portfolio of sites that would, if conserved, probably ensure the survival of the ecoregion's native plants, animals, natural community types, and critical ecological processes. The MACP occupies 26 million acres east of the fall line between the Piedmont and Atlantic Coastal Plain, south of the James River in Virginia and north of Charleston Harbor in South Carolina. Global rankings, G1 and G2, species and natural community elements as defined by state Natural Heritage Programs were selected as conservation targets. The MACP Ecoregional Plan established goals for 561 targets (97 animal species, 224 plant species, and 240 community types). Crude polygons that enveloped these conservation targets and significant natural heritage areas were drawn, taking into account where protection strategies might cohere. Ninety 'portfolio conservation sites' were selected for immediate conservation planning and implementation. Landscape management plans have been developed for 'action conservation sites,' or functional landscapes, which identify threats and stressors to the landscape, and also outline a process for identifying conservation priorities within these action sites, including acquisitions.

- ***The Green Sea Wetlands Site Conservation Plan (Mid-Atlantic Coastal Plain)***

Program Summary
The Green Sea, located in the northernmost portion of the Albemarle-Pamlico estuary in southeastern Virginia and northeastern North Carolina, is among the best-developed embayed wetland environments of the outer Mid-Atlantic Coastal Plain Ecoregion. The Green Sea is predominately a freshwater environment, influenced by wind rather than lunar tides, and is characterized by a diversity of endemic, rare, and often fire-dependent wetland species and communities, many of which reach their northernmost distribution here. The *Site Conservation Plan,* completed in February 2001, selects seven focal conservation targets that best capture the biodiversity and ecological processes in the Green Sea. Riverine and basin swamp forest, the coarsest scale target, represents and aggregation of several swamp forest community types that connect the river corridors of the landscape, capturing the core functionality of the landscape. Freshwater wind-tide marshes along the Northwest and North Landing rivers are globally rare, unique emergent wetland communities endemic to the embayed estuarine landscape. They are considered the finest remaining examples of this habitat in the world. Non-riverine wet hardwood forest, canebrake, pyrophytic low pocosin/pond pine woodland and

Atlantic white cedar swamp forest capture the range of historically characteristic, now rare and threatened, interior palustrine wetland community types. Finally, mesic mixed hardwood forest is indicative of the formerly widespread upland forest type of the Green Sea. The Virginia least trillium, eastern big-eared bat, and canebrake rattlesnake are just a few of the imperiled species giving this area Virginia's highest concentration of rarities east of the Blue Ridge. The top five threats identified in the Green Sea responsible for degradation of the conservation targets' viability are road construction, development, fire suppression, incompatible forestry practices (i.e. clear-cutting and high-grading), and hydrologic alteration (i.e. ditching, draining, dykes, and diversion systems).

Plan for Acquisition

Despite its proximity to a major metropolitan area, this region supports an exceptional array of over 100 rare plants, animals, and natural communities. The human populations of Chesapeake and Virginia Beach are rapidly growing and expanding southward, however, increasing demand for land and resources that in turn threaten the natural landscape in a myriad of ways. The top priority protection strategy in the Green Sea is to continue to aggressively pursue the protection of high quality riparian tracts along the North Landing River and Northwest River corridors via acquisition and easements to combat the destruction and degradation of target habitat due to rampant residential development and road construction in south Chesapeake. Since the early 1970s, the Conservancy has worked closely with the U.S. Fish and Wildlife Service to protect the 130,000-acre Great Dismal Swamp, one of the largest contiguous forests in the eastern U.S. The Conservancy is working with individuals and public agencies to expand the protection of Great Dismal Swamp. Over the last decade, the Nature Conservancy has succeeding in protecting close to 28,000 acres of the Green Sea wetlands across both the Virginian and North Carolinian conservation area. More than 10,000 acres have been protected alone along the North Landing River by the Conservancy and the Commonwealth of Virginia. The Conservancy also helped develop a Purchase of Development Rights program to protect thousands of acres of open space and forested areas that promote watershed health, and thwart urban sprawl in the Cities of Virginia Beach and Chesapeake.

Relevance to CELCP

Freshwater wind-tide marshes and riverine basin swamp forests are considered to be viable and intact ecological systems with great conservation value due to their extensive size and exemplary condition. These wetland systems of the Green Sea have the highest concentration of rare species in anywhere east of the Blue Ridge Mountains. About half of the rare plants found here are at or near their northern limit, making conservation critical. On the contrary, the mesic mixed hardwoods and non-riverine hardwood forests are diagnosed as having the poorest viability due to their fragmented distribution, typically degraded condition and proximity to altered upland areas. Preservation of the last remaining viable forests coupled with restoration is also a priority for this area.

Conservancy staff, working with state and other partners, considers protection of these rare and sensitive habitats along the North Landing River and Northwest River corridors to be the top priority of the Green Sea Program. The Northwest River also provides drinking water to about 60% of the City of Chesapeake making riparian corridor protection even more of a priority for conservation. These two freshwater river systems, along with the Blackwater, Nottoway and Meherrin rivers, are not only important wildlife corridors, but they collectively support a third of the state's non-tidal wetlands. Conservation of these areas is therefore a high priority for CELCP funding, as they ranked in the Outstanding and Very High categories of the CELCP Priority Areas map (Coastal Veva, Figure 6).

- ***Southern Rivers Conservation Area (Mid-Atlantic Coastal Plain)***

Program Summary

The Southern Rivers Conservation Area spans much of southern Virginia into northern North Carolina covering much of the Chowan River Basin. Roughly 3 percent of the basin's 2.6 million acres are protected. The 4,000-square mile area remains largely undeveloped, with 27 percent of the land in agricultural production, 59 percent as upland forest, and 10 percent as wetlands. The Virginia portion of the Southern Rivers Conservation Area lies between the growing metropolitan areas of Hampton Roads and Richmond, a threat to the large blocks of contiguous forest, ecologically intact rivers and streams, and strong rural heritage and landscape.

The Nottoway, Meherrin and Blackwater rivers are the lifeblood of the Southern Rivers Conservation Area, a top priority for the Conservancy. This predominately rural and forested area, known as the "pine belt" of Virginia, contains expansive swamps harboring centuries-old cypress trees and the northernmost examples of longleaf pine savannas. The Mid-Atlantic Coastal Plain Ecoregional Plan has identified these pine savannas and bottomland hardwood forests along the Blackwater, Nottoway, and Meherrin rivers as very high priority conservation targets.

The Southern Rivers Conservation Area supports an exceptional breadth of biological diversity with over 100 rare plants, animals and natural communities, including the northern-most occurrence of the endangered red-cockaded woodpecker and neotropical songbirds. The Nature Conservancy has identified the Nottoway River in particular as one of the most biologically intact river systems in the South Atlantic Basin. The Blackwater River, a favorite among paddlers, is a classic example of a slow-moving coastal river system flowing through remote, deep swamp forests. The river, which separates Virginia's Coastal Zone from the rest of the Southern Rivers Conservation Area, supports stands of Baldcypress that predate the early settlements in Jamestown. It stretches for 105 miles from its headwaters south of Petersburg to the North Carolina state line, where it meets the Nottoway and forms the Chowan River. Collectively, the Nottoway, the Meherrin and the Blackwater rivers support some of the best concentrations of freshwater mussels in the entire Atlantic slope drainage basin (extending from Virginia to Georgia), a federally endangered fish species (Roanoke logperch) and excellent runs of native shad and herring. Across the region, the predominance of forestland, including working forests, is one of the key reasons the Southern Rivers remain healthy and intact relative to other aquatic systems. Still, these exceptional habitats and resources continue to be threatened by forest fragmentation, altered fire regimes, incompatible development, and invasive species.

Plan for Acquisition

The Nature Conservancy seeks to protect and restore important blocks of upland pine forest and bottomland hardwood forests along the Nottoway, Meherrin, and Blackwater rivers and their tributaries, including habitat for the endangered Roanoke logperch, imperiled freshwater mussels and migratory fish such as herring and shad. Along the Blackwater River alone, the Conservancy aims to protect close to 4,800 acres. Acquisition projects, in addition to forestland conservation and endangered species recovery, also propose to meet the objectives of increased public access for outdoor recreation and water quality protection.

The Nature Conservancy is also working to restore southeastern Virginia's historic long-leaf and loblolly pine forests and the variety of life (rich diversity of life) they support. Using science-based methods, the Conservancy partners with state and federal agencies to restore natural fire

regimes. The Conservancy uses fire and timber management to restore pine savannas, a rich globally rare habitat, driving the recovery of the endangered red-cockaded woodpecker, Virginia's rarest bird. The Conservancy is also working to restore forested wetlands through the Virginia Aquatic Restoration Fund and other funds to establish strategically located wildlife corridors.

Relevance to CELCP

The forests of the Southern Rivers Conservation Area capture an extensive cross-section of biological diversity that can contribute significantly to the protection of Virginia's natural heritage elements. Conservation of these forests will secure feeding opportunities and will increase long-term habitat protection for waterfowl, waterbirds, and neotropical migratory songbirds that use this area during migration, wintering, and breeding. Preserving the abundance of forest cover across the landscape is key to maintaining high quality aquatic habitats in the Blackwater, Nottoway, and Meherrin river systems. Acquisition of land along these river corridors is also beneficial to the protection of water quality in the Chowan Basin and the Albemarle-Pamlico Sound in North Carolina.

Maintaining watershed forest cover is recognized across the country as a highly effective approach to avoid higher water treatment costs. Watershed protection, through preservation of the landscape, will benefit the cities of Norfolk and Chesapeake, who withdraw several millions of gallons of water each day from the Nottoway and Blackwater Rivers for drinking water supply.

7. Virginia Important Bird Areas Program (National Audubon Society)

Program Summary

The Important Bird Areas Program (IBA) is a global effort to identify and conserve areas that are vital to birds and other biodiversity. As the U.S. Partner for BirdLife International, the National Audubon Society has the responsibility for identifying and working to conserve a network of IBAs throughout the U.S. This network of sites is comprised of state level IBAs that are prioritized as continentally or globally significant by the U.S. IBA Committee, a panel of nationally recognized bird experts. (The criteria for assigning continental or global significance conservation status by the U.S. IBA Committee can be found at the following website: http://www.audubon.org/bird/iba/criteria.html) This effort to prioritize sites as globally or continentally significant will greatly enhance overall efforts to focus conservation actions. Audubon's goal is to interest and activate a broad network of supporters (Audubon chapters, landowners, public agencies, community groups and other non-profits) to ensure that all IBAs are properly managed and conserved.

By definition, Important Bird Areas are sites that support:

1. Species of conservation concern (e.g. threatened and endangered species)
2. Range-restricted species (species vulnerable because they are not widely distributed)
3. Species that are vulnerable because their populations are concentrated in one general habitat type or biome
4. Species, or groups of similar species (such as waterfowl or shorebirds), that are vulnerable because they occur at high densities due to their congregational behavior

Virginia has a remarkable diversity of habitats which supports an equally impressive diversity of bird life. The Virginia Important Bird Areas Program was initiated to help ensure the protection of the most essential places for birds in the state. The Virginia Audubon Council partnered with

the Virginia Society of Ornithology, the Virginia Department of Game & Inland Fisheries, and the National Audubon Society to establish the program in 2002. The goal was to identify those places that are critical to birds during some part of their life cycle (breeding, wintering, feeding, and migrating). Rapid destruction, fragmentation, and degradation of bird habitat may cause populations of many Virginian birds to decline to dangerously low levels. The Virginia CZM Program awarded about $60,000 in FY2003 and FY2004 through Section 309 funds to the College of William and Mary's Center for Conservation Biology to document the IBAs in Virginia's coastal zone.

An IBA Technical Committee was created to facilitate the nomination and review of potential IBAs throughout the state. Members on this committee and other important partners represent over 15 different conservation and management groups. The Center for Conservation Biology maintains more than 200 historic databases on birds of conservation concern, making them one of the largest producers of bird information resources in the mid-Atlantic. To date, over 400 bird species have been recorded and the Virginia IBA Technical Committee has recognized 19 IBAs that span the broad diversity of habitats across the state. These sites cover more than 6 percent of the Commonwealth and support over 100 at-risk species. Identification of new IBAs will be an ongoing process as more information about potential sites is gathered from conservation partners and citizen scientists.

Plan for Acquisition

Eleven of the nineteen IBAs identified in Virginia lie fully within the coastal zone. The Culpeper Basin IBA lies partly within the coastal zone with portions located in Fairfax and Prince William counties (Figure 25).

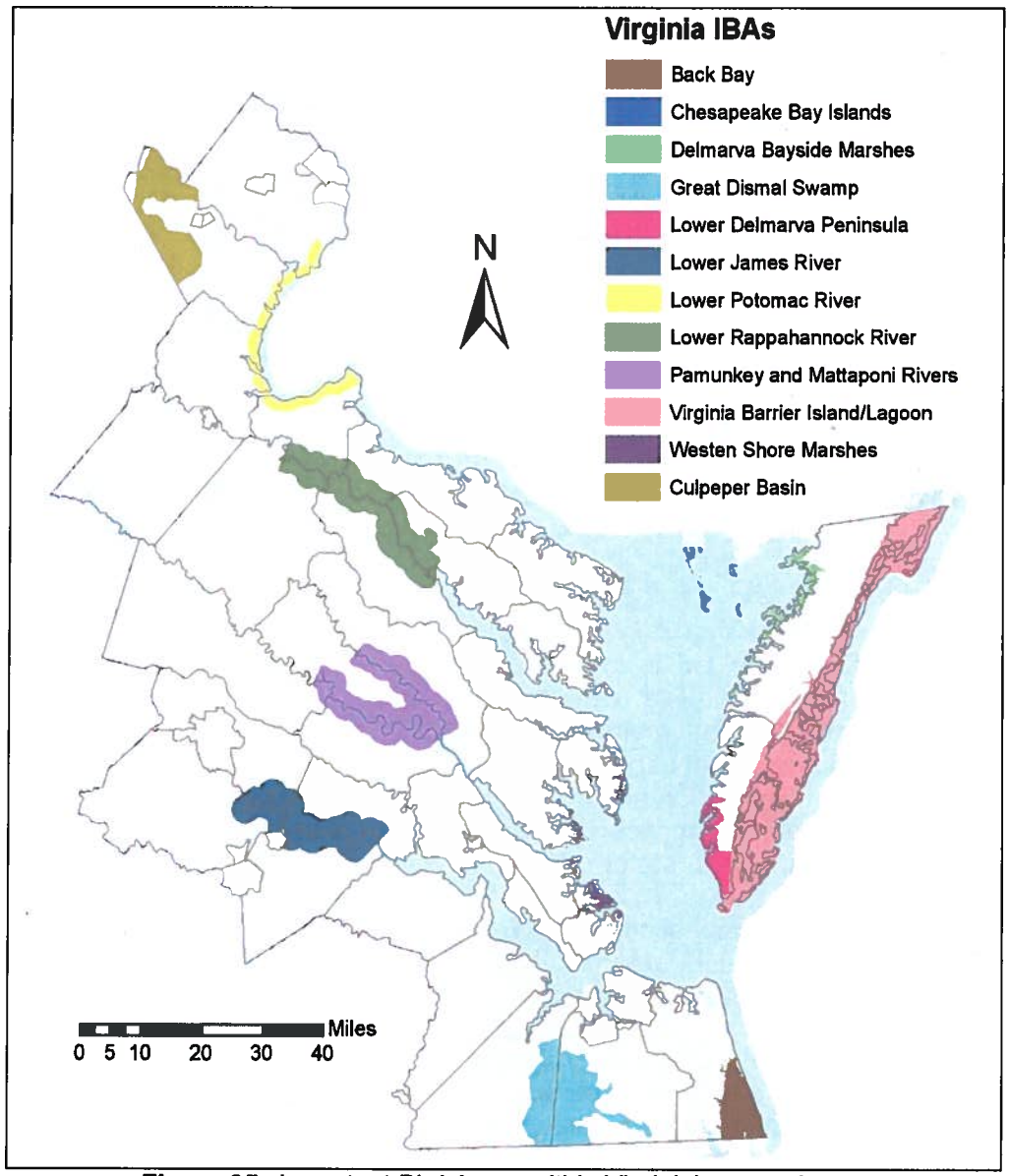

Figure 25. Important Bird Areas within Virginia's coastal zone

There are many state and federal agencies, and conservation organizations already involved in the protection of these vital bird habitat areas. Much of the Back Bay and Barrier Islands/Lagoon System IBAs are already protected. The Southern Tip partners are actively working on the Lower Delmarva. Important parts of the Lower James River, Lower Potomac River, and Lower Rappahannock River IBAs are protected; however, there is threat of conversion of land in these IBAs from agricultural or open space to subdivided residential lands. The Lower Rappahannock River IBA has been identified as an acquisition target for the U.S. Fish and Wildlife Service and The Nature Conservancy. Much of the Delmarva Bayside Marshes and Mattaponi and Pamunkey Rivers IBAs remain in private ownership, but due to the extensive marshes, these areas are relatively inaccessible and some landowners already manage their lands for bird habitat. Still in other IBAs such as the Chesapeake Bay Islands or Western Shore Marshes, there is relatively little development threat, but because of the importance of the habitat, the lands are becoming increasingly protected.

In all of the IBAs, despite the exemplary conservation efforts thus far, the threat of species decline and habitat loss is still great. Collectively, the Coastal Plain IBAs are threatened by conversion of the landscape to residential uses; contaminants in the water and in fish that are eaten; predation; loss of habitat due to the expansion of invasive common reed into important bird habitats; expansion of boating access areas to sensitive shoreline habitats; sea level rise; and disturbances to bird behavior caused by human presence.

Relevance to CELCP

Important Bird Areas are identified because species of concern and their habitat are vulnerable to the impacts of human disturbance, and therefore by definition alone, are relevant to the goals of the CELCP and are a high protection priority for the Virginia CELCP.

8. *Heritage Virginia: A Strategic Plan for the Conservation of the Commonwealth's Natural and Cultural Resources (Virginia's United Land Trusts)*

Program Summary

Virginia's United Land Trusts (VaULT) organized in 2000 to address the growing interest and number of organizations involved in land conservation. It represents about 30 private land conservation organizations in Virginia. The group's goals are

- to promote land conservation efforts statewide;
- to create or build land trust capacity;
- to foster greater coordination and communication between land trusts in Virginia;
- to coordinate private land conservation efforts with those of public sector agencies thus better enabling effective statewide conservation planning and green infrastructure promotion; and
- to promote high professional standards for land trusts in Virginia.

A directory of land trusts that work in Virginia's coastal zone is available from the DCR Office of Land Conservation website at www.dcr.virginia.gov/land_conservation/whereto4.shtml.

Heritage Virginia, completed in 2003, is VaULT's conservation plan identifying strategies and actions which land trusts and their partners in state and local government, business and industry, and hometown communities can undertake to achieve the land conservation goal envisioned by the Commonwealth's leadership. It documents regional priorities for land conservation in Virginia, regional and statewide strategies for building "green infrastructure," and defines opportunities for public-private partnerships. The plan was developed in cooperation with the Virginia Department of Conservation and Recreation and the Virginia Department of Forestry. Six public workshops were held across Virginia in 2002 to gather input from land conservation interests. Using regional information and recommendations of the *2002 Virginia Outdoors Plan,* VaULT wrote the comprehensive *Heritage Virginia* plan to help organizations target their resources and efforts.

Plan for Acquisition

Regional information collected from workshop participants helped craft a picture of statewide priorities that made it possible to prepare comprehensive strategies for land conservation actions and the linkages between local, regional and statewide initiatives. Priority resources identified include:

1. Natural areas – protection of Virginia's extraordinary wealth of globally, nationally and regionally significant natural areas; protection of large undeveloped tracts for biodiversity and watershed protection;

2. Farms and forests – these lands are integral to retaining community character;
3. Water corridors (greenways, blueways, riparian buffers and scenic rivers) – acquiring easements adds value to the Commonwealth's efforts to protect the quality of state waters;
4. Parks and trails – public parklands are important natural and cultural resources, and provide environmental education and outdoor recreation opportunities;
5. Scenic resources – easements can protect scenic vistas, scenic highways and byways;
6. Historic resources – significant historic places, events, personages, landscapes and archeological sites are important to protect from loss to communities

VaULT developed five interrelated strategies with accompanying action recommendations for the General Assembly, state and local government agencies, and private conservation organizations. These strategies represent a consensus of what resources are needed to achieve the land conservation goals to which the land trust community is committed:

A. Build a Virginia land conservation system

   Virginia's land trusts, localities, and the Commonwealth should work together to protect and manage Virginia green infrastructure as determined by the Virginia Conservation Lands Needs Assessment (natural, cultural, recreational, and historical resources), support local land use planning and zoning that incorporates green infrastructure principles along with social and economic development principles, and coordinate federal funding sources to focus on priority land conservation projects.

B. Educate the stakeholders

   Virginia's land trusts, localities, and the Commonwealth should work together to design and implement an educational/marketing campaign for land conservation, sponsor local conservation workshops, and share tools and data for use by private and public planners.

C. Strengthen the capacity of land trusts

   Roughly 80% of conserved lands over the past decade have resulted from private conservation actions in Virginia. Virginia's land trusts, localities, and the Commonwealth should work together to strengthen local planning efforts; provide technical assistance such as GIS data and planning tools, to local land trusts, especially in rural areas; and encourage state agencies to co-hold conservation easements with private land trusts.

D. Build partnerships

   Creating partnerships for effective land conservation and resource protection is a core principle underlying the establishment of VaULT. A key element of that principle is to build a continuum of public and private organizations, each working on their own priorities, that link together local, regional and state land conservation efforts. Virginia's land trusts, localities, and the Commonwealth should work together to develop partnerships that focus on a particular natural resource or regional interest.

E. Funding

   The gains in land protection statewide over the past decade have come primarily through private land conservation efforts rather than through the investment of public funds, but these efforts alone cannot keep pace with the rate at which open space is being converted to other more intensive land uses. Funding is urgently needed for meeting the *Chesapeake Bay Agreement* commitment; preservation of threatened and endangered wildlife habitats; water quality improvement; protection of archaeological and historic resources; state parks, state forests, and wildlife management areas that provide recreational opportunities.

Specific conservation needs and acquisition priorities within planning districts as identified by workshop participants are outlined in Appendix B of the *Heritage Virginia* plan and also in Appendix H of the *2007 Virginia Outdoors Plan.*

Relevance to CELCP

Eligible land conservation organizations, as defined by the Virginia Conservation Easement Act (*Code of Virginia* §10.1-1009 through 10.1-1016), may co-hold a conservation easement with another land holder that meets the CELCP eligibility requirements. Land conservation organizations can, as they have in the past, serve as valuable partners in identifying willing landowners, negotiating deals, and purchasing properties upfront that are under threat of conversion to non-conservation uses until funds become available through CELCP. The resource priorities identified by land conservation organization partners are consistent with the priorities of the CELCP, with the exception of preservation of farms and working forest lands which are ineligible uses of CELCP funds.

9. Conservation Easement Guidelines and Evaluation Protocol (Virginia Outdoors Foundation)

Program Summary

The *Code of Virginia* §10.1-1800 establishes that it is in the public interest for the Virginia Outdoors Foundation (VOF) to promote the preservation of open-space lands and to encourage private gifts of money, securities, land or other property to preserve the natural, scenic, historic, scientific, open-space and recreational areas of the Commonwealth. Created in 1966 under the Virginia Open Space Lands Act (§10.1-1700-1705), the VOF accepts donations or conveyances of open-space easements that preserve and protect in perpetuity a wide variety of natural resources including wetlands, riparian corridors, wildlife habitat, biological diversity, unique species, historic settings, scenic views, priority watershed areas, public drinking water supplies, lands adjacent to public parks and preserves, and others. At the end of 2006, VOF held easements on 2,066 properties throughout the Commonwealth on more than 405,000 acres in 99 local jurisdictions. Most of the conservation easements in the state are held by VOF.

Most of the foundation's operating expenses come from annual appropriations by the General Assembly, but public demand for conservation easements in recent years has exceeded the funds and staff resources available at VOF. The Virginia Open-Space Lands Preservation Trust Fund was established by the General Assembly in 1997 to help landowners with costs of conveying conservation easements and to purchase all or part of the value of the easements.

Plan for Acquisition

In order to help meet Governor McDonnell's 400,000-acre goal and provide the greatest public benefit, proposed projects greater than 100 acres and demonstrating strong resource protection values receive first priority, however proposed projects of lesser acreage that demonstrate multiple, significant conservation values and offer the highest level of resource protection will also be considered.

In general, open-space easements must have the following characteristics:

- significantly benefits the public and the Commonwealth, which may include the uniqueness of the property, likelihood that its development would degrade the scenic, natural or historic character of the area, preserves a local or regional landscape for scenic or tourism benefit, or contributes to a public or private conservation program;
- open-space characteristics, geographic location and proximity to designated statewide resources are important conservation values to be protected by the easement, particularly in the context of the intensity of the surrounding development and the role that the property plays in the cultural geography of the area; and

- compliance with governmental policy, such as through identification of the property in a statewide planning document such as the *Virginia Outdoors Plan* or local Comprehensive Plan.

The Board of Trustees of the VOF may designate areas as Special Project Areas, which are particular geographic regions of the Commonwealth where protection through easements is especially warranted, and where the Foundation expects to concentrate resources. One or more of the following factors may aid in justifying the designation of Special Project Areas:

- the area is of statewide natural, scenic, historic, scientific, open-space, or recreational significance;
- local landowners have indicated their support;
- a local land trust, conservation group, other organization, or State or Federal agency has expressed an interest in working with VOF to encourage protection of the area; and
- the local government has indicated an interest in protection of the area through easements.

Relevance to CELCP

The conservation values and open-space characteristics the VOF promotes and preserves through easements are consistent with the conservation lands and priority conservation needs identified in this CELCP Plan. Although most VOF easements are on private lands, and in most cases not permitting public access, those CELCP projects in which VOF is a partner must demonstrate a public access benefit. The VOF also promotes conservation of agricultural and working forest lands, which are not the focus of CELCP and would need to be evaluated according to current program guidelines.

III. State Process for Implementing the CELCP

A. Identification of state lead agency

The Virginia Coastal Zone Management Program at the Virginia Department of Environmental Quality shall serve as the state lead program/agency. Authorized in 2010 under Executive Order 18, Governor Bob McDonnell identified the Virginia CZM Program as the coordinating agency for management of coastal resources.

B. Agencies eligible to hold title to property acquired through the CELCP

Entities eligible to hold fee title to property acquired through the CELCP are those types of agencies listed in NOAA's CELCP Final Guidelines, June 2003. In Virginia, these are government entities qualified to accept land for conservation purposes include those state agencies having authority to acquire land for a public use, or any county or municipality, any park authority, any public access authority, any public recreational facilities authority, or any soil and water conservation district. Regardless of the type of public agency, all lands acquired with CELCP funds are required to be managed consistently with CELCP guidelines. Eligible Virginia entities include:

- Virginia Department of Conservation and Recreation
- Virginia Department of Game and Inland Fisheries
- Virginia Department of Historic Resources
- Virginia Institute of Marine Science – Chesapeake Bay National Estuarine Research Reserve of Virginia (CBNERRVA)
- Virginia Outdoors Foundation *(Code of Virginia §10.1-1800 et seq)*
- All cities, counties, and incorporated towns in "Tidewater Virginia" (*Code of Virginia §28.2-100)* (Figure 1, Table 1)
- All Economic and Industrial Development Authorities established at the county level
- Chesapeake Bay Public Access Authorities
  - Middle Peninsula Public Access Authority *(Code of Virginia §15.2-6600 et seq.)*
  - Northern Neck Public Access Authority *(Code of Virginia §15.2-6626 et seq.)*
- Regional park authorities (Virginia Park Authorities Act – *Code of Virginia §15.2-5700 et seq.)*
- Public recreational facilities authorities (Virginia Public Recreational Facilities Authorities Act – *Code of Virginia 15.2-5600 et seq.)*
- Soil and water conservation districts (Soil and Water Conservation – *Code of Virginia §10.1-500 et seq)* within "Tidewater Virginia"

Land trusts and other non-profit conservation organizations are not eligible to be grant recipients or to hold fee title to properties or conservation easements acquired with CELCP funds.

However, private entities may be eligible to hold secondary or stewardship easements on publicly-held lands that were acquired with CELCP funds. Qualified private entities can also be the fee owner to lands for which CELCP funds were used by an eligible entity to acquire a conservation easement. Conservation nonprofits can also be title holders for CELCP match properties. Nonprofit organizations in Virginia qualified to accept land for protection are defined (pursuant to the Virginia Conservation Easement Act, §§ 10.1-1009 through 10.1-1016 as being a charitable corporation, charitable association, or charitable trust that has been declared exempt from taxation pursuant to 26 U.S.C.A. § 501 (c) (3) and the primary purposes or powers of which include retaining or protecting the natural or open-space values of real property; assuring the availability of real property for agricultural, forest management, recreational, or open-space use; protecting natural resources; maintaining or enhancing air or water quality; or preserving the historic, architectural or archaeological aspects of real property).

C. State nomination process

Solicitation of Projects

Based on notification from NOAA that a competitive funding opportunity is open, the Virginia Coastal Zone Management Program will publish a notice of funding opportunity in the Virginia Register and/or the Virginia Regulatory Town Hall as submission requirements coincide with NOAA's funding opportunity announcement. The Virginia CZM Program will post this notice on its website and distribute the notice to a maintained list of conservation partners. The interagency Coastal Policy Team, or a subcommittee thereof, may, at their discretion, focus the annual project solicitation toward specific priorities or areas identified in the approved CELCP Plan. Prospective applicants will be notified of this intention in the funding opportunity notice. The notice will set forth the timelines for proposal submission to the Virginia CZM Program, review by the Virginia CELCP Evaluation Committee, and submission of the top-ranked proposals (no more than three) to NOAA.

Submission of Applications

Eligible applicants are required to submit proposals to the Virginia Coastal Zone Management Program at the Department of Environmental Quality by the deadline published in the notice of funding opportunity to appear in the Virginia Register or Virginia Regulatory Town Hall and Virginia CZM Program website. Following a review period, those proposals selected will be submitted by the Virginia CZM Program to NOAA. Applicants will be notified and given an appropriate amount of time for application revision if their proposal has been selected to move forward into the national funding competition.

A project proposal that includes several separate and distinct phases may be submitted in phases, but any succeeding phases must compete against other proposals in the year submitted. In addition, proposals that are not selected or funded in a given year may be re-submitted for consideration in subsequent years.

The Virginia CZM Program requires all applicants to submit completed applications in a digital format (following guidelines posted in the annual NOAA Funding Opportunity Notice) that can be edited. The application can be placed on CD and mailed to the Virginia CZM Program or it can be emailed to the following address: Laura.McKay@deq.virginia.gov

All applications must include maps showing the geographic location of the proposed project on aerial imagery or a topographic map. An ArcGIS shapefile of the project area should also be included when the applicant has the ability to do so. All photos and images and their captions must fit within an 8.5" x 11" sized paper at a resolution that produces a clear image at this scale when printed in color or black and white. The complete application file size, including all images, should be no larger than 10 MB.

State Review and Scoring

1. Proposal acceptance

The Virginia Coastal Zone Management Program will determine whether a proposal submitted by the deadline published in Virginia Register should be accepted for consideration on the basis that it is complete and eligible under the criteria identified in NOAA's Notice of Funding Availability. If the application is incomplete, the Virginia CZM Program may provide an opportunity for applicants to submit any information that is missing if deadlines permit.

2. Proposal review and ranking

The Virginia Coastal Zone Management Program will convene a working group comprised of members of the Coastal Policy Team, or their designees to evaluate proposals. At a minimum, this CELCP Evaluation Committee will include the following agencies and programs:

- Virginia Department of Environmental Quality (DEQ)
  - Virginia Coastal Zone Management Program – Program Manager
- Virginia Department of Conservation and Recreation (DCR)
  - Office of Land Conservation – Manager
  - Planning and Recreation Resources – Director
  - Natural Heritage Program – Director
- Virginia Department of Game and Inland Fisheries (DGIF)
  - Wildlife Diversity Division – Director
  - Fisheries Management – Director
  - Office of Capital Programs – Director
- Virginia Marine Resources Commission (MRC)
  - Habitat Management Division – Chief
  - Fisheries Management Division – Chief
- Virginia Department of Historic Resources (DHR)
  - Office of Preservation Incentives – Easement Program Coordinator
- Virginia Department of Forestry (DOF)
  - Resource Management Division – Director
- Virginia Institute of Marine Science (VIMS)
  - Chesapeake Bay National Estuarine Research Reserve in Virginia (CBNERRVA) - Director

The CELCP Evaluation Committee will review and prioritize project applications in accordance with the process described in this CELCP Plan. Projects will be reviewed for significance of resource protection, the applicant's ability to finance (match) and manage the project, and the multiple conservation benefits which can be brought to the citizens of the Commonwealth. Projects will be ranked by their averaged total score, one that is reflective of the degree to which a project meets the goals of this Virginia CELCP Plan. All application materials for the top three

projects (in the event that more than three proposals are submitted in response to the funding notice) will then be submitted by the Virginia CZM Program to NOAA for consideration at the national level.

Virginia has adapted NOAA's project eligibility and proposal ranking system, and the Virginia Land Conservation Foundation (VLCF) scoring criteria for use in evaluating and ranking CELCP proposals at the state level. It is expected that only Scoring Category VI will change from year to year as determined by the interagency Coastal Policy Team (changes will be published with the Virginia CZM Program notice of funding opportunity in the Virginia Register or Virginia Regulatory Town Hall), and all other evaluation factors will remain static until the Plan undergoes revision.

Project Eligibility

These factors will be considered in determining whether a project is eligible to compete for CELCP funding. Projects that are determined to be eligible will be ranked and selected based on the evaluation factors described in the following section. To be eligible, the proposed project must:

- be geographically located within the area described in the State's approved coastal and estuarine land conservation plan;
- match federal funds with non-federal funds or other in-kind contributions at the ratio stipulated in the request for proposals;
- name an eligible public entity (as listed in Section III B) to both receive funds and hold ownership to acquired lands and provide conservation in perpetuity;
- provide for access to the general public, or other public benefit, as appropriate and consistent with resource protection;
- protect important coastal and estuarine areas that have significant conservation, ecological, historical, aesthetic, or recreation values, or that are threatened by conversion from their natural or recreational state to other uses;
- be able to be effectively managed and protected;
- directly advance the goals, objectives, or implementation of the State's approved CELCP plan, coastal zone management program, or NERR management plan;
- be consistent with the State's approved coastal zone management program.

Scoring Criteria

This section describes the evaluation factors and scoring system that the Virginia CZM Program will use to review and rank projects. Applicants should familiarize themselves with this scoring system and the points that may be allocated to different aspects of their proposed projects. Each project will be evaluated on its own merit and given a total score, and these scores will determine which proposals will be selected for submission to the national competitive program. The maximum score that a project can receive is 100, summarized as follows:

Scoring Category	Maximum Score
I. Primary Purpose (Ecological Values and Threat)	30
II. Secondary Purposes (Conservation (8), Recreation (6), Historic/Cultural (3), Aesthetic (3))	20
III. Technical/Scientific Merit	20
IV. Qualifications of the Applicant(s)	10

V. Project Costs		15
VI. Other Specified Factors		5
	TOTAL	100

I. Primary Purpose (Ecological Values and Potential for Conversion) (0 – 30 points)

a1) Ecological Value (Virginia CELCP Priority Areas). (0 – 20 points)

Proposed projects that fall within Virginia's Priority Areas (Figure 6) will be scored higher than those that do not. Coastal GEMS can be used to map a proposed project within the priority areas (www.deq.virginia.gov/coastal/coastalgems.html). Applicants are encouraged to provide this map, indicating the project's ecological value score based on the point system presented below.

These mapped areas were selected through their ability to protect VA's CELCP ecological priorities listed in section II-C, including species diversity, habitat quality, linkages with ecological corridors or unfragmented habitat, water quality, habitat for threatened and endangered species, and ecosystem functions (see Section II-C for a description of the state ecological assessments which were used to create Virginia's CELCP Priorities). Projects should address a protection need and describe the rarity of natural heritage and wildlife resources targeted for conservation (Global and State ranks and WAP Tier). Projects should also convey the degree to which the natural heritage and wildlife resources on the property are currently protected, not protected, or inadequately protected on public or private conservation lands.

How well does the project rate for ecological purpose?

- Outstanding.....20 points
- Very high 18points
- High.....16points
- Moderate 14points
- General.....12points
- Does not fall within Virginia's ecological priority areas..... 0 points

The Virginia CZM Program recognizes that a proposed projects may not fall entirely within one Ecological Value level (imperative, extremely high, very high, high or moderate), or may lie *directly* adjacent to or *partially* within a Priority Area without being inside the mapped bounds. Projects such as these will be brought before the Evaluation Committee. The Committee will collectively determine the appropriate score for this criterion based on the applicant's description of the resources and values to be protected, and how priorities as defined in this CELCP Plan are addressed.

a2) Contribution to the protection of ecological values. (0 – 10 points)
*(*A project will only be scored using this measure if it does not fall within the Virginia CELCP Priority Areas)*

How well does a project contribute to the protection of ecological values?

Significant contribution.....7 - 10 points
Moderate contribution..... 4 - 6 points
Limited contribution..... 1 - 3 points
No contribution..... 0 points

b) Likelihood of conversion. (0 – 10 points)

Likelihood of conversion will be evaluated by the degree to which the property could potentially be converted from its natural or recreational state to other uses. Applicants should describe local/regional development trends in the project area, a site's development potential based on local zoning or development plans and/or regulatory agencies, and imminent actions pending, such as whether or not the current owner has expressed an interest in developing or received an offer to develop the parcel. Likelihood of conversion will also be evaluated against the Virginia Vulnerability Assessment Model. This model is a growth prediction model that shows areas at greatest risk of being lost or degraded due to urban and suburban sprawl and other types of development. The model is used here to identify potential risk of conversion of Virginia's ecologically important natural landscape to an urban or suburban use. Coastal GEMS can be used to determine the predicted vulnerability of a project to conversion pressures. Applicants should provide a description of any imminent actions pending or local/regional conversion trends as they relate to the proposed project. See Section II-D for more information on the Vulnerability Model.

To what degree is the property likely to be converted from its natural or recreational state to other uses?

High.....4 – 5 points
The proposed tract has received a purchase offer, or has development plans approved by a local governing body and regulatory agencies.

Moderate..... 2 – 3 points
Regional development trends are high, the property is on the market (listed for sale), and development plans have gone to local governing bodies and regulatory agencies for approval

Low.....0 – 1 point
Regional trends don't indicate much of a threat, the site is not readily developable, and if the site has potential for development, plans have not been made for the property.

To what degree may the property be at risk of being lost or degraded due to urban or suburban development and sprawl? (Scores based on 'the Virginia Vulnerability Model)

Very High (Value 7 or 8).....5 points
High (Value 6).....4 points
Moderate (Value 5).....3 points
Low (Value 4).....2 points
Limited (Value 3).....1 point
Minimal (Value 1 or 2)..... 0 points

II. Secondary Purposes (0 – 20 points)

Strong proposals will document multiple public benefits to be gained from the long-term protection and management of the proposed property. These benefits may be protection of more than one type of resource on the property, such as ecological resources, historical resources, or recreational resources. Other benefits such as connection of the property to other conserved areas as part of a coordinated conservation planning strategy, community education, research, or access to coastal resources will also strengthen a proposal.

This factor evaluates proposals by their conservation value, historic/cultural values, and recreational/aesthetic values, or secondary purposes. Applicants are encouraged to fully describe how their project will protect or enhance these values within their proposals in order to maximize their score for this section.

a) Conservation Value. (0 – 8 points)

This criterion evaluates whether acquisition of the property supports the goals of federal, state, regional or local conservation plans and resource protection plans identified in this CELCP Plan, even if it doesn't exhibit high ecological value (such as regional or local conservation corridors, buffers, setbacks), or is likely to support ecological values if restored. Is the site(s) adjacent to or in close physical or functional proximity to other conservation lands and would it expand the protection of natural heritage or wildlife resources, and multiple conservation goals? The applicant should describe how the project fits within a larger conservation plan, strategy, or initiative as designated by either a government or non-governmental entity and is strategically linked to enhance previous conservation investments (public and private). Excerpts from conservation plans or resource protection plans, and/or maps showing strategic linkage of the site(s) to existing conservation lands should be included within the application where appropriate.

How well does the project meet the conservation goals of the Commonwealth?

High..... 6 – 8 points

Meets landscape-scale, multi-state or regional, goals and acquisition Priorities; e.g. the Virginia Chesapeake Bay NERRS target watersheds; occurs within a SAMP boundary; provides a corridor connection for heritage and wildlife resources of exceptional quality as identified in a regional or local conservation corridor plan (e.g. Chesapeake Bay EO)

Moderate.....3 – 5 points

Meets goals and acquisition priorities identified in a local conservation plan or focused conservation strategy; has the potential to provide corridor connections

Low..... 1 – 3 points

Site is not a significant conservation candidate or conservation elements are not present

None..... 0 points

b) Recreational Value. (0 – 6 points)

This criterion evaluates a project's contribution to coast-dependent or nature-based recreation, including priority needs identified in this CELCP Plan, and the degree to which the property will be accessible to the public. The applicant should describe how the site(s) expand and protect state recreational interests (as identified in the Virginia Outdoors Plan) or supports local and regional plans for parks, open space, or other recreational interests.

How well does the project meet the recreational goals of the Commonwealth?

High.....5 – 6 points

Provides excellent opportunity for access to coastal resources, particularly in areas of high need (water access or geographic location with limited public lands available for recreation)

Moderate.....3 – 4 points

Provides access or recreational opportunities on a portion of the site, or on a seasonal basis; recreation and public access opportunities exist, but the need is not high

Low.....1 – 2 points

Access is limited due to protection measures needed for threatened or endangered species; easement purchase allows limited public access to the site

None.....0 points

c) Historic and Cultural Value. (0 – 3 points)

This criterion evaluates whether a project contains significant historic, cultural, or archaeological features, particularly those related to use of the coastal environment, giving priority to sites listed in or eligible for a national or state register of historic places. Preservation of the resource may complement or enhance other cultural or historic resources or preservation activities, or represents a unique cultural resource opportunity within the geographical area. Protection or preservation of the resource may further other public interests, such as education, research, recreation, heritage tourism promotion.

High.....3 points

Preserves a significant national historical, cultural, or archaeological features that are designated as a National Historical Landmark or Virginia Historical Landmark, or area listed on the National Register of Historic Places or Virginia Register of Historic Places; represents a unique cultural resource opportunity in a geographic area

Moderate.....2 points

Preserves resources that have potential for designation as a National Historical Landmark or Virginia Historical Landmark, or area listed on the National Register of Historic Places or Virginia Register of Historic Places; contributes to the integrity, enhances the setting, or provides a buffer for a property that is listed on the Register

Low.....1 point

The site contains evidence of features that have not been formally evaluated to receive designation, or the site does not have evidence of historically or culturally significant features.

None..... 0 points

d) Aesthetic Value. (0 – 3 points)

This criterion evaluates whether a project protects sites adjacent to, or in the viewshed of, areas designated as scenic byways or scenic rivers, or other state or locally designated cultural landscapes.

High..... 3 points
Scenic vistas present throughout the year; complements nationally designated scenic programs (such as American Heritage Rivers)

Moderate.....2 points
Scenic vistas are seasonal or limited; complements Virginia's Scenic Rivers, Scenic Roads and Byways; supports local or state scenic route, trail, or water trail programs

Low..... 1 point
Limited scenic or aesthetic quality at time of purchase although restoration potential may exist

None..... 0 points

III. Technical/Scientific Merit (0 – 20 points)

This factor ascertains whether the approach is technically sound and/or innovative, if the methods are appropriate, and whether there are clear project goals and objectives. Projects will be reviewed and ranked according the degree in which they can be effectively managed and protected over the long-term (in terms of land stewardship and/or restoration) to conserve their ecological, conservation, recreational, historic and cultural, or aesthetic values and can be executed within the performance period.

a) Manageability of the site. (0 – 6 points)

To what degree can the site be effectively managed and protected over the long-term to conserve its ecological, conservation, recreational, historic and cultural, and aesthetic values?

High..... 4 – 6 points
Land is currently in the desired state consistent with the intended purpose(s), (e.g. land with ecological value does not require restoration, control of non-native species, or remediation), and surrounding land uses are compatible with long-term protection of the site's values.

Moderate..... 2 – 3 points
Current condition of the site is consistent with protection goal but has some impacts, such as from previous management activities, non-native species, etc., and will require some active management or minor restoration to achieve the desired state.

Low.....0 – 1 points
Land has been converted or actively managed historically in a manner not consistent with long-term conservation goals

and/or contains hazardous materials or contamination that have not been removed/remediated. Restoration will be necessary and arduous.

b) Long-term use of the site. (0 – 8 points)

To what degree are proposed long-term uses of the site compatible with long-term conservation or the site's ecological, conservation, recreational, historic and cultural, or aesthetic values?

High.....6 – 8 points

Proposed uses of the site (or portion of site being acquired with CELCP funds) are compatible with the primary purpose for which the land is being protected and will maintain or improve the ecological, conservation, recreational, historic, or aesthetic values present on the site.

Moderate.....3 – 5 points

Existing uses will be continued or new activities are proposed on the site that are generally consistent with the primary purpose for which the land is being protected, and will not result in additional impacts to the values present on the site or result in conversion of lands from their natural or recreational state to other uses.

Low.....0 – 2 points

Existing or proposed uses of the site may (or are likely) to result in additional impacts to the values present on the site or conversion of lands from their natural or recreational state to other uses.

c) Project Readiness. (0 – 6 points)

Does the project have clearly stated goals and objectives that can be achieved during the performance period?

High..... 4 – 6 points

Site(s) have been identified, negotiations with landowner have resulted in purchase/sale agreement; survey, appraisal, title opinion, and other documentation have been completed.

Moderate.....2 – 3 points

Site(s) have been identified, property is on market and/or discussions with landowner are likely to result in a purchase/sale agreement; appraisal, title opinion and other documentation can be produced within award period.

Low.....0 – 1 points

Preliminary contacts with landowner have been made and discussions are underway; or site has uncertainties (willingness to sell, litigation, or other liens or judgments, etc.) that are not likely to be resolved within the award period.

IV. Qualifications of the Applicant(s) (0 – 10 points)

This evaluation factor ascertains whether the applicant possesses the necessary experience, training, facilities, and administrative resources to accomplish the project. Specifically, applicants will be evaluated according to the degree to which they can effectively manage over the long-term in terms of their capacity (staffing, resources, authority and expertise). Applicants will also be rated on their expected ability to complete the acquisition, and to manage the property for long-term protection consistent with CELCP guidelines and Virginia coastal management program policies.

a) Ability to acquire land. (0 – 5 points)

Does the applicant have the proven capacity and/or experience, based on available funding, staff, authority and expertise, to execute the land transaction consistent with CELCP guidelines?

High..... 4 – 5 points
CELCP recipient has funding, personnel, expertise, legal authority and demonstrated success for acquiring lands, or interests in lands, for long-term conservation purposes.

Moderate.....2 – 3 points
Funding or personnel appears to be limited; and/or state or local recipient appears to have a high caseload relative to resources

Low.....0 – 1 points
Applicant has not identified, or does not have, the personnel, funding resources, or authority to execute the project or to provide necessary assurances for long-term conservation.

b) Ability to manage the site. (0 – 5 points)

Does the applicant have the proven capacity and experience, based on available funding, staff, authority and expertise, to manage property for long-term conservation of coastal and estuarine lands consistent with CELCP guidelines?

High..... 4 – 5 points
Applicant has funding and personnel or a partnership/stewardship agreement in place to manage new tract and has demonstrated success in managing other properties for conservation purposes, and has had success in monitoring and enforcing terms of easements. Applicant has satisfactory history with previous grants.

Moderate..... 2 – 3 points
Funding or personnel appears to be limited; and/or state or local recipient appears to have a high caseload relative to resources; funding, partnerships or stewardship agreements have been tentatively identified.

Low.....0 – 1 points
Applicant has not identified, or does not have, the personnel or funding resources to accommodate the needed management of the tract.

Project Costs (0 – 15 points)

This evaluation factor determines if the project budget is realistic and commensurate with the project needs and timeframe. Specifically, the budget is evaluated to determine if land acquisition costs are based on an independent appraisal or other assessment of fair market value, if the source of matching funds is consistent with CELCP guidelines and is likely to be available within the performance period, and if direct and indirect costs for implementation of the project are reasonable and consistent with CELCP guidelines.

a) Land acquisition costs. (0 – 6 points)

Are land acquisition costs based on an independent appraisal or other assessment of fair market value? Do the costs account for any continuing streams of revenue derived from ongoing uses for the property or will such revenues be applied to long-term stewardship of the property?

Yes..... 4 – 6 points

Acquisition costs are based on a recent, independent appraisal by a qualified individual. Project costs account for continuing streams of revenue derived from ongoing uses of the property. Revenues will be applied to long-term stewardship of the property.

Somewhat..... 2 – 3 points

Acquisition costs are based on an informal assessment of fair market value. Proposal does not account for revenue from existing or anticipated use of the property.

No.....0 – 1 points

Acquisition costs are not based on either an appraisal or other assessment of fair market value.

b) Matching funds. (0 – 6 points)

Are the sources of matching funds reasonable, consistent with CELCP guidelines (cash contribution, donated land or land value from properties with similar coastal and estuarine attributes, and in-kind services such as restoration), and likely to be available within the performance period? Are there any sources that appear inconsistent (such as Federal funds, funds previously used or proposed as match for another Federal grant)?

Yes..... 4 – 6 points

Source of matching funds has been identified, are consistent with CELCP guidelines, and will be available at the time of closing or by the end of the award's performance period.

Somewhat..... 2 – 3 points

Source of matching funds has been identified and appears consistent with CELCP guidelines, but it is difficult to determine whether costs are reasonable (e.g., value of in-kind services, inadequate documentation for donated land or land value). Matching funds are contingent on receipt of other non-Federal funding (such as state or local bond funds), agreement with owner of "donated land", or otherwise subject to uncertainty at the time of closing or by the end of the award's performance period.

No.....0 – 1 points

Source of matching funds is not consistent with CELCP guidelines.

c) Other costs. (0 – 3 points)

If associated costs for executing the land transaction, such as appraisal, title opinion, site assessment, etc., are requested, do they appear reasonable for the scope of the project? Are requested funds for salaries and fringe benefits only for those personnel directly involved in implementing the proposed project?

Yes..... 2 – 3 points
Associated costs appear reasonable for the scope of the project; funds for administration are directly related to the project.

No..... 0 – 1 points
Direct costs appear high for the scope of the project; funds for administration do not appear to be directly related to the project.

V. Other Specified Factors (0 – 5 points)

The Virginia CZM Program, as the lead agency for Virginia's CELC Program, reserves the right to annually add additional evaluation criteria to the state scoring process. These criteria will be determined by the Coastal Policy Team and will be published with the annual Notice of Funding Opportunity. These criteria may reflect changes in the Governor's priorities, coastal zone management priorities, or to achieve a fair distribution of land protected throughout the Commonwealth's coastal zone.

SUMMARY OF PROPOSED SCORING SYSTEM

I. Primary Purpose (Ecological Values and Threat)		**0 – 30 points**
a1) Ecological value (Virginia CELCP priority focus areas).	(0 – 20 points)	
a2) Contribution to the protection of ecological values.	(0 – 10 points)	
b) Threat of conversion.	(0 – 10 points)	
II. Secondary Purposes		**0 – 20 points**
a) Conservation value.	(0 – 8 points)	
b) Recreational value.	(0 – 6 points)	
c) Historic and cultural value.	(0 – 3 points)	
d) Aesthetic value.	(0 – 3 points)	
III. Technical/Scientific Merit		**0 – 20 points**
a) Manageability of the site.	(0 – 6 points)	
b) Long-term use of the site.	(0 – 8 points)	
c) Project readiness.	(0 – 6 points)	
IV. Qualifications of the Applicant(s)		**0 – 10 points**
a) Ability to acquire land.	(0 – 5 points)	
b) Ability to manage the site.	(0 – 5 points)	
V. Project Costs		**0 – 15 points**

a) Land acquisition costs. (0 – 6 points)
b) Matching funds. (0 – 6 points)
c) Other costs. (0 – 3 points)

VI. Other Specified Factors **0 – 5 points**
(To be published with the annual notice of funding opportunity)

MAXIMUM SCORE **100 points**

IV. Coordination and Public Involvement

A. Interagency coordination during plan development

In September 2003, the Virginia CZM Program convened a Virginia CELCP Plan Development Team (PDT). This team consisted of representatives of the Virginia Coastal Policy Team, various federal and local governments and conservation non-profits. CELCP Plan development was put on hold for several years as work continued on developing the data and analyses required to prioritize areas for acquisition under the CELC Program.

In the summer of 2006, a CELCP Plan Development Team was reconvened. This group consists of the following government entities and organizations:

- Chesapeake Bay National Estuarine Research Reserve of Virginia
- VA Department of Conservation and Recreation
  - Office of Land Conservation
  - Division of Natural Heritage
  - Division of Recreation Planning
- VA Department of Game and Inland Fisheries
- VA Department of Forestry
- VA Department of Historic Resources
- Virginia Outdoors Foundation
- The Nature Conservancy
- Trust for Public Land
- Hampton Roads Planning District Commission
- Middle Peninsula Planning District Commission
- Northern Virginia Planning District Commission
- NOAA

The PDT met on August 15, 2006 to review and discuss a preliminary draft of the Plan. The Virginia CZM Program solicited input from the group on ways to identify priority areas for future funding, priority conservation needs within the coastal zone, and an evaluation process for proposals at the state level. The group also reviewed NOAA's evaluation criteria for proposals at the national level and began to discuss how Virginia might amend them to reflect Virginia's priorities. The group also agreed to assist the Virginia CZM Program with plan development by providing geospatial data essential to determining priority areas (Section II-C) and information on current conservation plans and acquisition priorities (Section II-D).

The PDT met again on May 30, 2007 to review a revised version of the draft CELCP Plan. The PDT provided comments on the priority area analysis and furthered their discussion on how to amend NOAA's national scoring criteria for Virginia's state-level proposal evaluation.

Full versions of the priority areas analysis and the Virginia evaluation process and scoring criteria were presented by Virginia CZM Program staff at the October 10, 2007 Coastal Policy Team meeting for comment. These were revised based on the comments of the CPT. The CPT also recommended the Virginia CZM Program use the "Other Specified Factors" scoring criterion to give greater priority to future proposals that aim to protect significant upland areas and adjacent shoreline or low-lying areas for water quality protection and for the purpose of wetlands migration in the event of future sea level rise.

B. Public involvement in plan development

The Virginia CZM Program provided the public several opportunities to comment on draft CELCP Plan over the course of its development. A presentation was first given at the 2007 Environment Virginia Conference on April 6, 2007 during the "Tools for Targeting Land Conservation" session. An overview of the CELCP and determination of Virginia's priority areas were presented and comments were received from conference attendees. A second presentation was given at the 2007 Virginia Coastal Partners Workshop on December 6, 2007. Again, an overview of the CELCP and determination of Virginia's priority areas were presented. Comments were received from conference attendees following the presentation and a printed version of the draft Plan was available at the Virginia CZM Program exhibit for written comments.

A full draft of the Virginia Coastal and Estuarine Land Conservation Program Plan was released for public comment on April 14, 2008. A notice of this 30-day comment period was published in the April 14, 2008 issue of the Virginia Register and Town Hall. A notice of this comment period was also sent by email to a Virginia CZM Program distribution list of conservation partners. Comments received in response to the comment period have been incorporated into this version of the CELCP plan.

V. Certification and Approval

The Virginia Coastal Zone Management Program certifies that the plan is consistent with the state's approved coastal management program and that the plan does not conflict with any of the program's enforceable policies.

The Virginia Department of Environmental Quality Office of Environmental Impact Review concurs with VA CZM certification:

Ellie Irons, Environmental Impact Review Program Manager, VA Department of Environmental Quality

Approval of the plan by designated official of state lead agency:

David Paylor, Director of the VA Department of Environmental Quality

VI. References

For further information on the programs and conservation planning initiatives mentioned within this report, please refer to the following web links:

Barrier Island Avian Partnership, 2006. Conservation Action Plan for the Avian Communities in the Virginia Barrier Islands System. A report to NOAA and the Virginia Coastal Zone Management Program, Grant # NA37OZ0360-01. Accessible at www.deq.virginia.gov/coastal/vshp/documents/consactplan.pdf

Chesapeake Bay Agreement. 2000. http://dnrweb.dnr.state.md.us/bay/res_protect/c2k/index.asp

Chesapeake Bay Lowlands Ecoregional Plan. 2002. The Nature Conservancy.

Chesapeake Bay National Estuarine Research Reserve of Virginia. www.vims.edu/cbnerr/reservesites/index.htm

Chesapeake Rivers Site Conservation Plan. 2001. The Nature Conservancy.

Coastal Geospatial and Educational Mapping System (Coastal GEMS). 2008. www.deq.virginia.gov/coastal/coastalgems.html

Code of Virginia. http://leg1.state.va.us/000/src.htm

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Eastern Shore of Virginia Conservation Area Plan. 2003. The Nature Conservancy.

Green Sea Wetlands Conservation Plan. 2001. The Nature Conservancy.

Hampton Roads Conservation Corridor Study. 2006. Hampton Roads Planning District Commission. www.hrpdc.org/PEP/PEP_HRCCS.asp

Heritage Virginia: A Strategic Plan for the Conservation of the Commonwealth's Natural and Cultural Resources. 2003. Virginia's United Land Trusts. www.dcr.virginia.gov/virginia_land_conservation_foundation/documents/vaultplan.pdf

Important Bird Areas Program. 2007. National Audubon Society. http://iba.audubon.org

Mabey, S. E., J. McCann, L. J. Niles, C. Bartlett, and P. Kerlinger. 1993. The neotropical migratory songbird coastal corridor study: Final Report. A report to NOAA and the VA Dept. of Environmental Quality. VADNH 92-8, Division of Natural Heritage, Dept. of Conservation and Recreation, Richmond, VA.

Mid-Atlantic Coastal Plain Plan. 1999. Partners in Flight. www.partnersinflight.org/bcps/pl_44sum.htm

Mid-Atlantic Ecoregional Plan. 2001. The Nature Conservancy – North Carolina Chapter.

National Oceanic and Atmospheric Administration. 2004. Population Trends Along the Coastal United States: 1980-2008. http://stics.noaa.gov

Northampton County Special Area Management Plan. www.deq.state.va.us/coastal/samp.html

Seaside Special Area Management Plan. http://www.deq.virginia.gov/coastal/vshp/

Southern Rivers Conservation Area Plan. The Nature Conservancy. http://www.nature.org/wherewework/northamerica/states/virginia/preserves/art15066.html

Southern Watershed Special Area Management Program. www.deq.virginia.gov/coastal/samp.html and www.hrpdc.org/PEP/PEP_SWAMP.asp

Virginia Conservation Lands Database. 2008. www.dcr.virginia.gov/natural_heritage/clinfo.shtml

Virginia Conservation Lands Needs Assessment. 2003-2008. Virginia Department of Conservation and Recreation. www.dcr.virginia.gov/natural_heritage/vclna.shtml

Virginia Employment Commission. www.vec.virginia.gov

Virginia Important Bird Areas. 2007. www.audubon.org/bird/iba/virginia/

Virginia Outdoors Plan. 2007. Virginia Department of Conservation and Recreation. www.dcr.virginia.gov/recreational_planning/vop.shtml

Virginia Outdoors Survey. 2006. Virginia Department of Conservation and Recreation. www.dcr.virginia.gov/recreational_planning/documents/vopsurvey06.pdf

Virginia Wildlife Action Plan. 2006. Virginia Department of Game and Inland Fisheries. www.bewildvirginia.org

VOF Easement Guidelines. 2007. Virginia Outdoors Foundation. www.vofonline.org/VOF_documents.php

Wellenberger. 2002a. A National Strategy for NERRS Land Acquisition.

Wellenberger. 2002b. A Land Acquisition Inventory of the NERRS.

Wetlands Watch. www.wetlandswatch.org

Wilson, I.T. and T. Tuberville. 2002. Virginia's Precious Heritage: A Report on the Status of Virginia's Natural Communities, Plants, and Animals, and a Plan for Preserving Virginia's Natural Heritage Resources. Natural Heritage Technical Report 03-I5. Virginia Department of Conservation and Recreation, Division of Natural Heritage, 217 Governor Street, 3rd floor, Richmond, Virginia. 82 pages plus appendices. Accessible at www.dcr.virginia.gov/natural_heritage/vph.shtml

VI. Appendices

Appendix A – Expanded Description – Coastal VEVA Components

VaNLA Cores

This data layer was created and distributed by the DCR-DNH for the Virginia Conservation Lands Needs Assessment, as part of the Virginia Natural Lands Network. It was published in 2006 and represents areas of un-fragmented natural habitat ranging in size and corresponding conservation value.

Once the initial GIS input layers were gathered, it was necessary to determine how they should be processed and prioritized. The list of relevant layers and habitat features was sent to 13 DGIF Wildlife Diversity biologists with broad questions in-mind including: *What areas in Virginia should be preserved?; What are the priority that should be managed in a specific way?; What areas should localities protect through local zoning or planning?; How should the Wildlife Diversity section prioritize land for acquisition?* The biologists reviewed the list of mapped wildlife features, suggesting priorities for features, buffer distances and buffer priorities where appropriate. Priorities were on a scale of 1 to 10, with 10 being the highest. In addition, biologists identified any other features that should be included in the model. Specific areas were identified as having additional value as being unique terrestrial or aquatic features.

Input was received from all 13 biologists. The results of this survey were averaged. However, input from those biologists with specific taxonomic expertise was considered more appropriate than similar input from non-experts for individual taxa features. For example, avian biologists determined the priority rankings of Important Bird Areas and tiered bird species habitats while aquatic biologists had more input on riparian buffers rankings. Initial input was compiled and draft buffer distances and priorities were determined. A second round of input on these draft results followed.

The features, buffer distances, and priority ranks were used to combine the GIS datasets into Priority Wildlife Diversity Conservation Areas. All geoprocessing was done using ESRI ArcGIS ArcInfo version 9.2.

The riparian areas were identified using line and polygon features from the NHD. Waterbody types of Sea/ocean pipeline were removed. Remaining features were buffered by 100m and assigned weights. Wetland areas were selected from the USFWS National Wetlands Inventory Data for wooded (types EFO, PFO) and non-wooded (types E2EM, E2SS, PSS, PEM and PUB) areas. Wetland polygons were buffered appropriately. Riparian and wooded polygons were unioned and dissolved resulting on the maximum value for each polygon

Important Bird Areas were not altered from original dataset; weights were assigned accordingly.

VaNLA Cores from DCR-DNH were not altered, only assigned weights. Unique terrestrial areas were selected from DCR-DNH's Conservation Lands layer and from DCR's Jurisdictions layer. DGIF Biologists drew the peninsula area representing canebrake rattlesnake habitat. Unique aquatic layers were selected from the NHD.

For terrestrial and aquatic tiered data, confirmed and potential locations were buffered and assigned weights according to tier. Layers were unioned to identify areas of overlap. Data were

imported into MS Access where duplicate species were removed and final weights were calculated for each polygon. Final weight was calculated as the highest weight, plus half the total of the additional weights in each polygon. Because Tiered Species Habitats had such a high priority, there was a danger of these data overshadowing other wildlife features. The use of highest species weight plus half the weights of additional species occurring at the same location reduced the overall influence of sites where several tiered species co-occur.

All layers were compiled and converted from vector polygons to a raster dataset according to final weight. The raster layers were summed to get a total score for all locations. Using the Standard Deviations classification method, the combined raster was broken into 5 categories, with 1 being lower priority and 5 being the highest conservation priority.

The data sets that comprise the DGIF Priority Wildlife Diversity Conservation Areas support the following Virginia CELCP lands and values: Dunes and Beaches; wetlands connected to undeveloped uplands; riparian areas that protect water quality for aquatic species; coastal forests; lands supporting natural heritage resources; Habitats of wildlife species of greatest conservation need; important bird migration corridors, stopover sites, breeding and wintering areas; habitats of rare, endemic and non-listed species; and lands providing expansions of or buffers to existing conserved lands.

Priority Conservation Area layers – Combining Components

All input layers were scaled to a 100-meter cell size using a resample with the nearest neighbor resampling technique. Data were ranked on a scale of 5 to 1, where 5 was the highest value using the reclassify function of Spatial Analyst. The final priority conservation area was developed using the Spatial Analyst cell statistics to pull out the maximum cell value of all input datasets to create the final grid. The final grid was filtered to smooth the data. The Spatial Analyst Majority Filter was used with the options set to four neighbors, majority replacement threshold.

One concern when combining components was not to introduce redundancy. Several partners used the same or similar inputs, but with different methods and with different priorities. Furthermore, it was the desire of the project team to retain areas identified as the highest priorities by any single partner. For these reasons, it was decided to use the majority filter method of combining datasets rather than an additive or averaging approach.

VCLNA Vulnerability Model

Background and methodology for the Vulnerability Model will not be provided here but are available via the links below. For the Priority Conservation Areas analysis, the original Vulnerability Model (2006) was reconfigured based on revised methods resulting in an enhanced model for use with the PCA outputs.

One improvement was the inclusion of more parcel data for estimating a locality's mean lot size. Parcel data are not available in GIS format for all localities in Virginia. Thus, in the original and revisions of the Vulnerability Model, a linear regression was used to correlate road density with mean lot size in localities where parcel data were available and to use output from this analysis to predict mean lot size for localities statewide. In the original Vulnerability Model, the regression was run using parcel data for 9 localities. In the revision for the PCA analysis, the mean lot size regression was run using parcel data for 35 localities, allowing a stronger prediction of mean lot size for all localities.

Tighter fit of the data in the regression model removed "noise" in the data which had resulted from hotspots being identified as statistically significant due to the regression model mean lot size

prediction (over-representation of hotspots). In the previous version, hotspots could be seen dispersed throughout the state. The revised model resulted in a stronger statistical identification of hotspots in Virginia and removed much of that noise. As a result, in the model revision used in the PCA, fewer tighter clusters of hotspots are clear. This can be generally summarized in a comparison of numbers of hotspots between Versions 1 and 2 of the Vulnerability model, in all development types:

Layer	*Version 1 Count*	*Version 2 Count*
Urban hotspots	6135	2797
Suburban hotspots	11681	8916
Rural hotspots	12798	9673

Method and Approach to developing the Estuarine/Aquatic Priority Conservation Areas

The initial steps to develop the Estuarine/Aquatic Priority Conservation Areas (APCA) required a review of all data within Cumulative Resource Assessment (CRA). These data and the original CRA analysis would be the building blocks for the APCA (Figure 12). Table 4 lists all the data used in the CRA and the data originators. The data review included consultation with data developers, as well as detailed metadata reviews to address a few specific issues.

First, it was critical to insure there was no duplication or double counting of resources. Since several of the datasets were derived from analytical interpretation (e.g. Aquatic Priority Conservation Areas) it was conceivable that baseline data may have already been considered. This was the case in several original products considered. For these, we turned to the baseline data inputs.

Second, it was important to have a complete understanding of the resource, as mapped, in order to assign a value which would ultimately represent its ecological value or ability to perform ecological services. We used best professional judgment when ultimately assigning values to each data layer; however, we did so only following a robust review of the dataset for clarity.

Table 4. Baseline data for the Cumulative Resource Assessment Dataset Originator

1) Colonial Waterbird Database Center for Conservation Biology, William and Mary
2) Audubon Important Bird Areas VA Department of Game and Inland Fisheries
3) Shellfish Suitability VIMS CCRM
4) Reef Restoration Sites VMRC/VIMS CCRM
5) Oyster Reefs VMRC/VIMS Eastern Shore Lab/ CCRM
6) Artificial Fishing Reef VMRC
7) Wetlands (2009) National Wetlands Inventory, US Fish and Wildlife
8) Sand/Mud Flats (2009) National Wetlands Inventory, US Fish and Wildlife
9) Seed Areas VMRC/VIMS CCRM
10) Aquaculture sites VMRC/VIMS CCRM
11) Turtle Nest NOAA Environmental Sensitivity Index Atlas
12) SAV (1999 – 2008) VIMS Submerged Aquatic Vegetation Program
13) Aquatic Confirmed Habitat VA Department of Game and Inland Fisheries
14) Aquatic Resource Integrity Center for Environmental Studies/VCU
15) Stream Conservation Areas VA Department of Conservation and Recreation
16) Threatened & Endangered Waters VA Department of Game and Inland Fisheries
17) Regulated Areas VMRC/VIMS CCRM

Task 1. Aquatic Priority Conservation Area Designation
Since the CRA output already eliminated resource starved areas from the analysis (CCRM, 2010), the classification for the APCA reflects a relatively healthy spectrum of each attribute. In other words, low density or regions void of a specific resource have already been eliminated from the analysis, and therefore, the classification does not need to be expanded to low end conditions. In the ranking or valuation analysis, each data raster was coded with a value based on best professional judgment (Table 5). The classes assigned to the APCA and their corresponding values are as follows:
- Exceptional Habitat Value: 3

- Very High Habitat Value: 2

- Good Habitat Value: 1

Using the ArcMap® tool set "Mosaic to New Raster Tool (Mosaic Method: Maximum)" rasters were superimposed and combined by cell (30m cell size). Using this technique, the output raster retains the maximum cell value on each overlapping cell. Therefore an area with only two resources that score a value of 3 each is not outweighed by an area with 4 resources with values of 1 each. Finally, this raster set was divided into 3 categories (excluding 0) to reflect the proposed classification. The results of this analysis are illustrated in Figure 12.

Task 2. Linking Aquatic Priority Conservation Areas to Terrestrial Priority Conservation Areas
We understand that conservation of important aquatic systems may begin with upland based management practices. We also understand that conservation of "isolated" areas; whether they are aquatic or terrestrial systems, does not necessarily meet conservation goals of reducing habitat fragmentation and loss. The next task in this analysis begins the process of establishing connection between terrestrial areas identified for conservation and highly valued aquatic systems prioritized for conservation.

Since the interaction between terrestrial and aquatic based ecosystems is complex and a full study is beyond the scope of this project, the analysis here focuses strictly on geospatial relationships between the two only. Why might this be useful? First, and generally speaking, a healthy aquatic system is most likely found adjacent to a well managed, natural terrestrial landscape. Given this, sustainability of a highly valued aquatic system may be more attainable if geographically connected to an upland area set aside for conservation purposes. Our analysis therefore seeks to identify those areas where this may occur.

Table 8. *Summary of ecological value scores*	***SCORE***
LAYER	
1) Colonial Waterbird Database	3
2) Audubon Important Bird Areas	2
3) Shellfish Suitability	2
4) Reef Restoration Sites	3
5) Oyster Reefs	3
6) Artificial Fishing Reef	1
7) Wetlands (2009 NWI)	3
8) Sand/Mud Flats (from 2009 NWI)	2
9) Seed Areas	1
10) Aquaculture sites	2

11) Turtle Nest	3
12) SAV (1999 – 2008)	3
13) Aquatic Confirmed Habitat	3
14) VCU Aquatic Resource Integrity	3
15) Stream Conservation Areas	2
16) Threatened & Endangered Waters	3
17) Regulated Areas	1

Using the terrestrial based component of the Priority Conservation Areas (PCAs) identified by DGIF (2009) and output of the APCA conducted here and described above, areas of spatial adjacency or geographic juxtaposition have been identified. In other words, the spatial connectivity between the terrestrial component of the PCA and the APCA is based on where both data sets overlap or touch. For this demonstration we have decided to use only those areas classified in the APCA as "exceptional" and only the top two highest ranked upland priority areas in the PCA ("imperative opportunity" and "very high opportunity").

Overlap between the terrestrial PCA and the APCA occurs primarily within analytical buffers conducted in the independent analyses originating from the CRA. These buffers, which varied depending upon the resource (25m-300m), represent areas within which a resource logically migrate or within which the resource can be affected by external measures.

Some buffers were used merely to create polygons from features originally mapped as points or lines (e.g. artificial reef locations or nontidal wetland areas). In only one instance was the overlap generated as a function of duplication between datasets. Both the Terrestrial PCA and the APCA use non-tidal wetlands from NWI. Within the APCA the nontidal wetlands make up an important component of the stream conservation units.

PCA upland areas defined as "imperative opportunity" and/or "very high opportunity" that were not coincident with, but adjacent to an aquatic region valued as "exceptional", were also highlighted.

The areas highlighted in Figure 12 may assist local governments in filtering out the absolute best areas to target for conservation. Ideally these areas would reflect upland areas identified for conservation that are coincident with or adjacent to important aquatic systems. The analysis does not consider constraints that may arise due to land ownership, regulatory restrictions, or limitations on the capacity of local governments to implement conservation policy. This would be a valuable piece for further study.

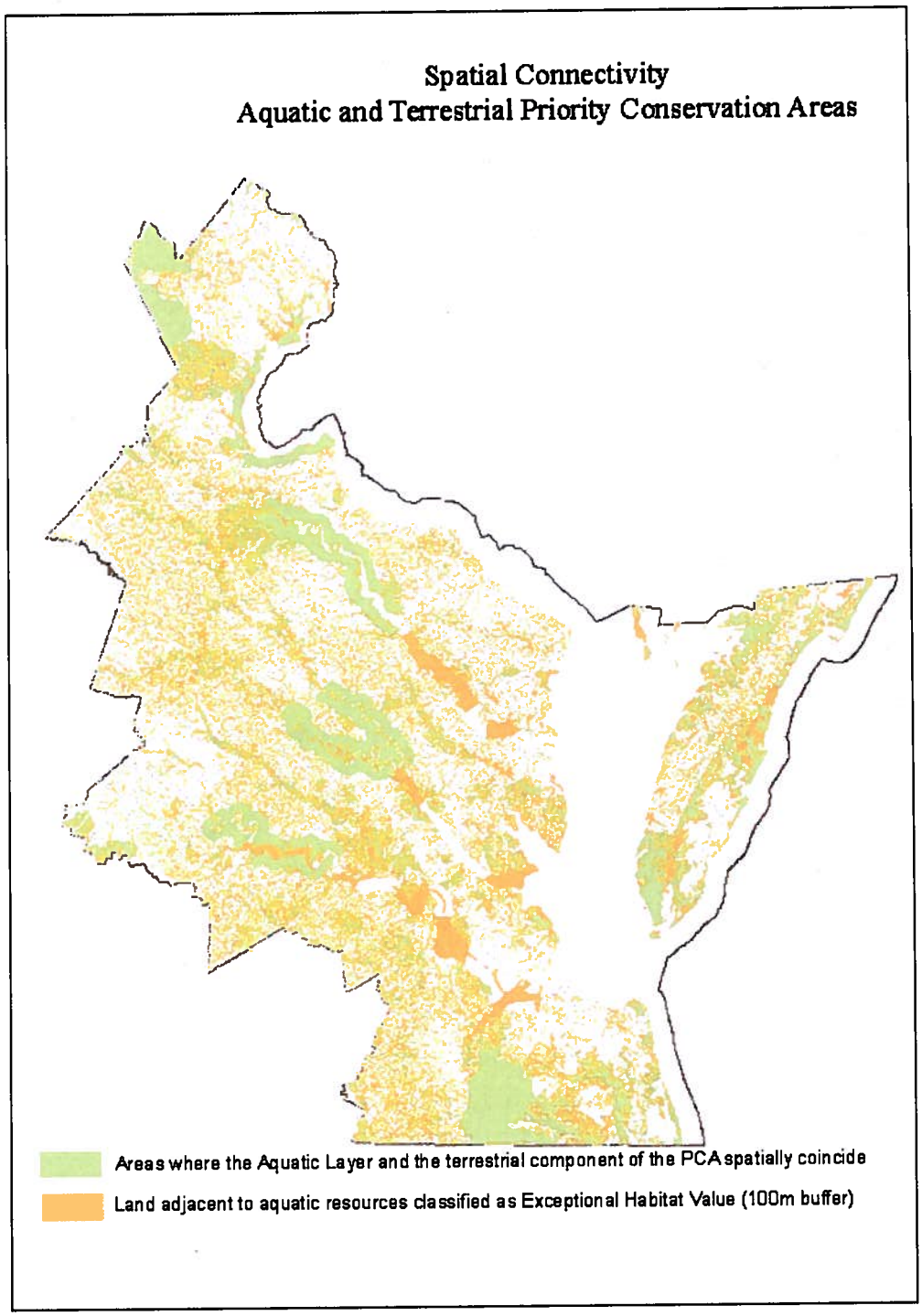
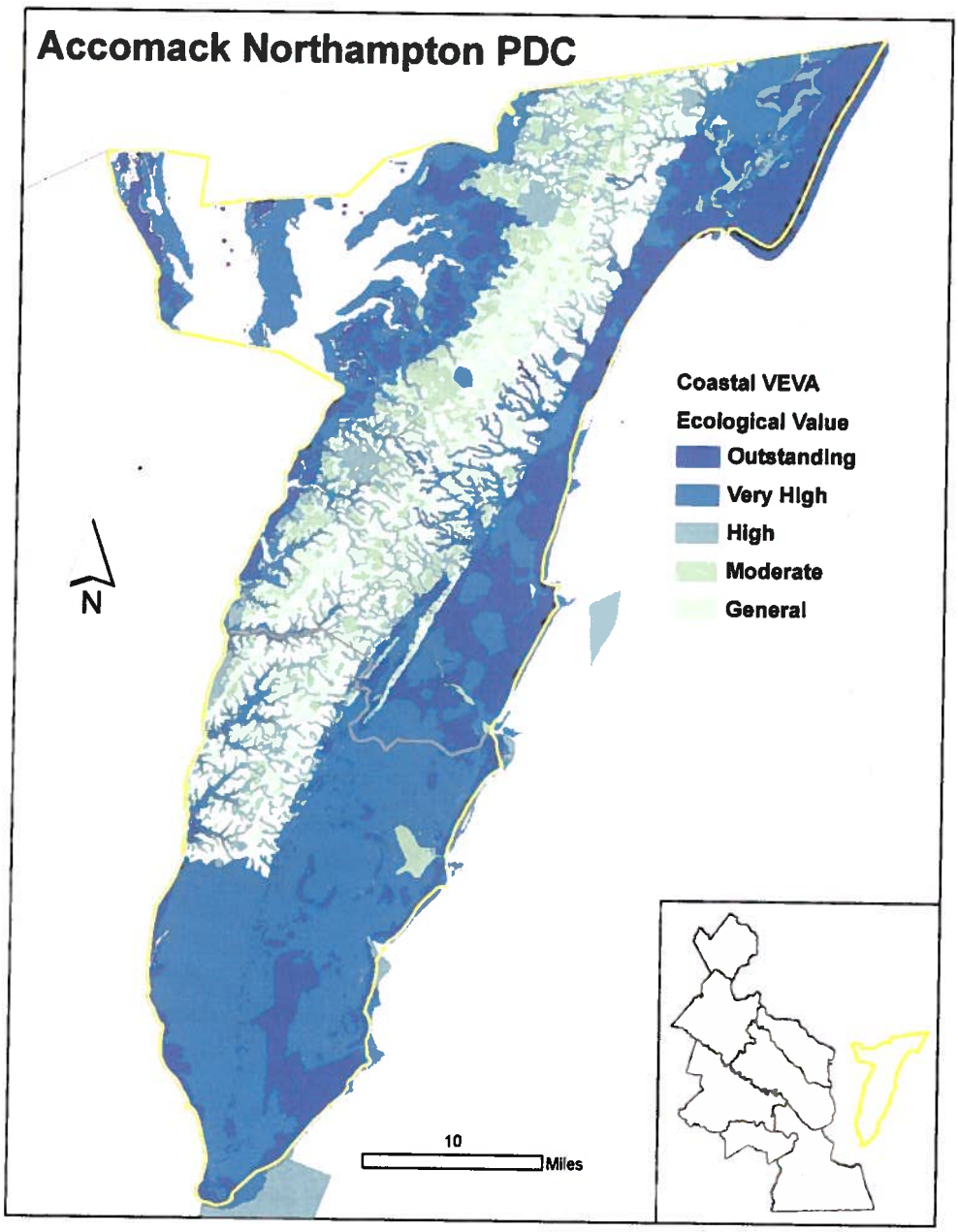
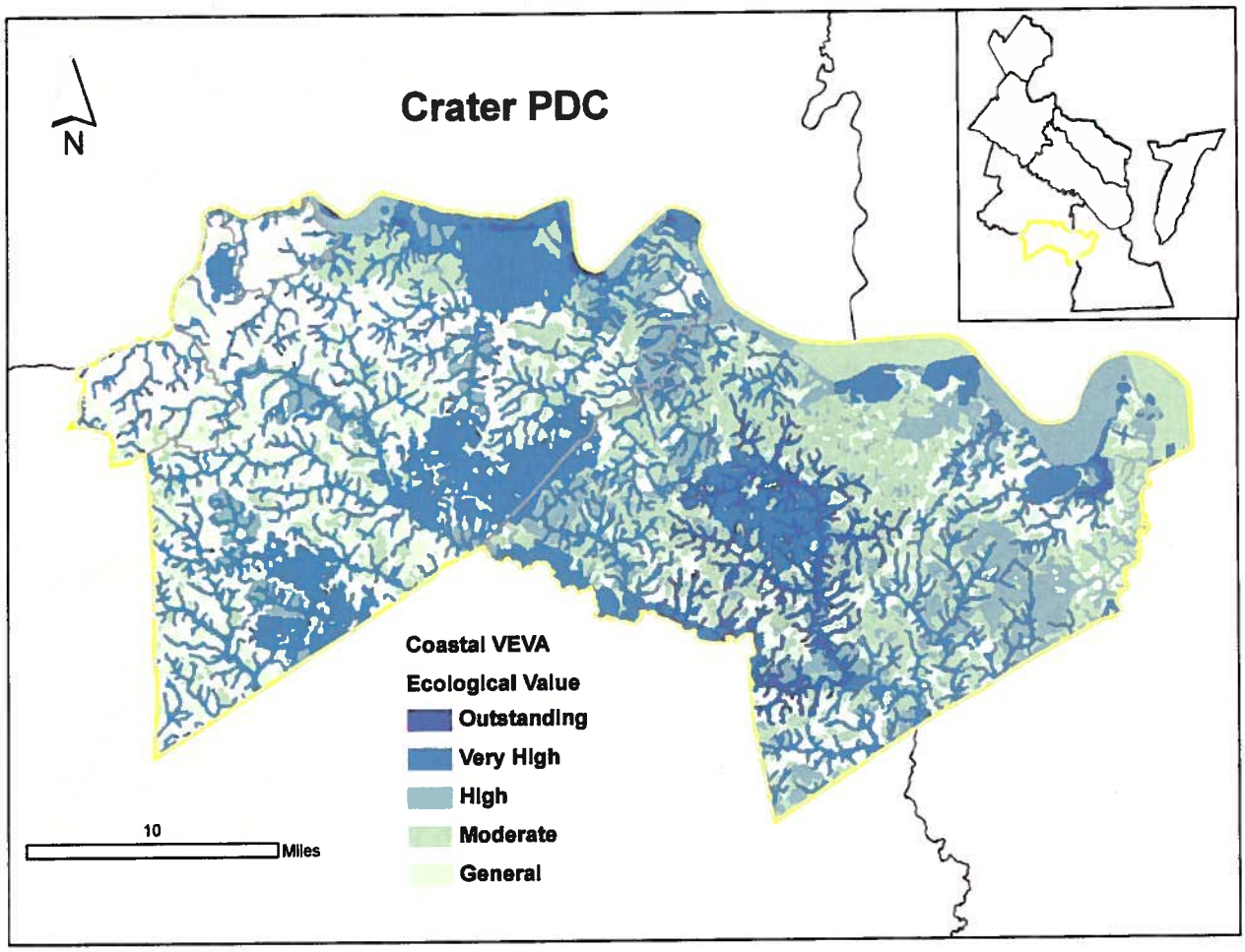
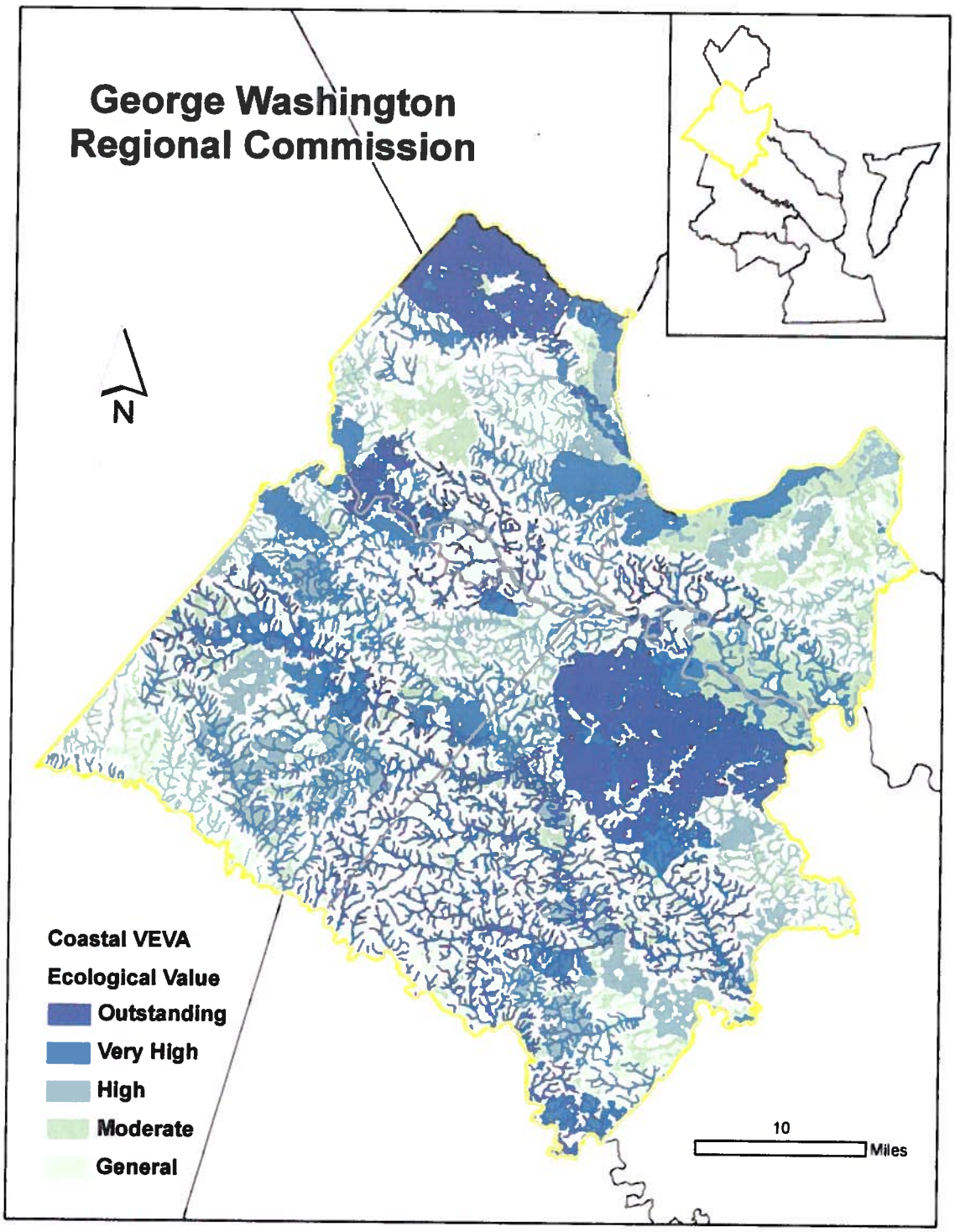


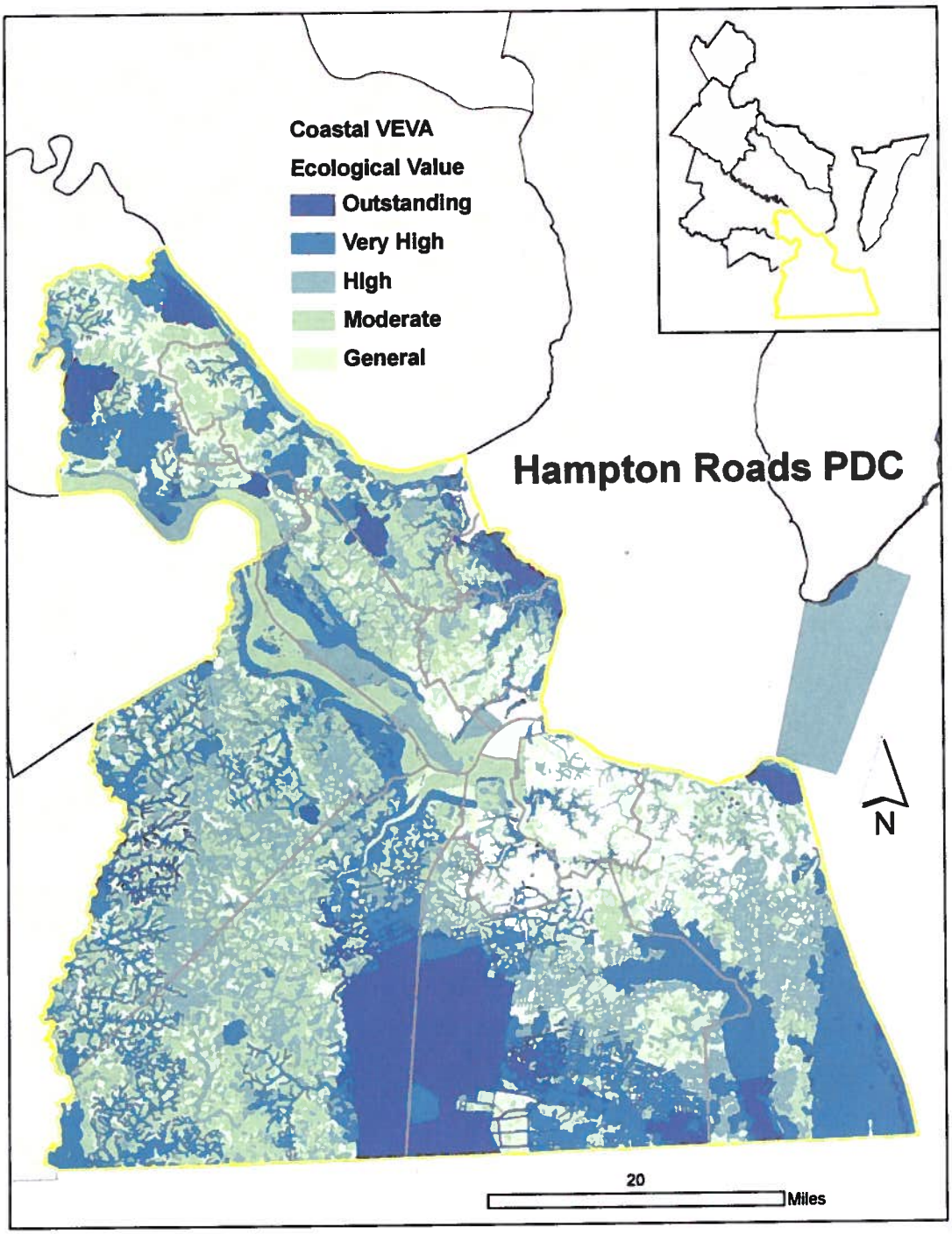
Figure 26. Observed linkages between highly ranked terrestrial conservation areas and aquatic zones of exceptional value.

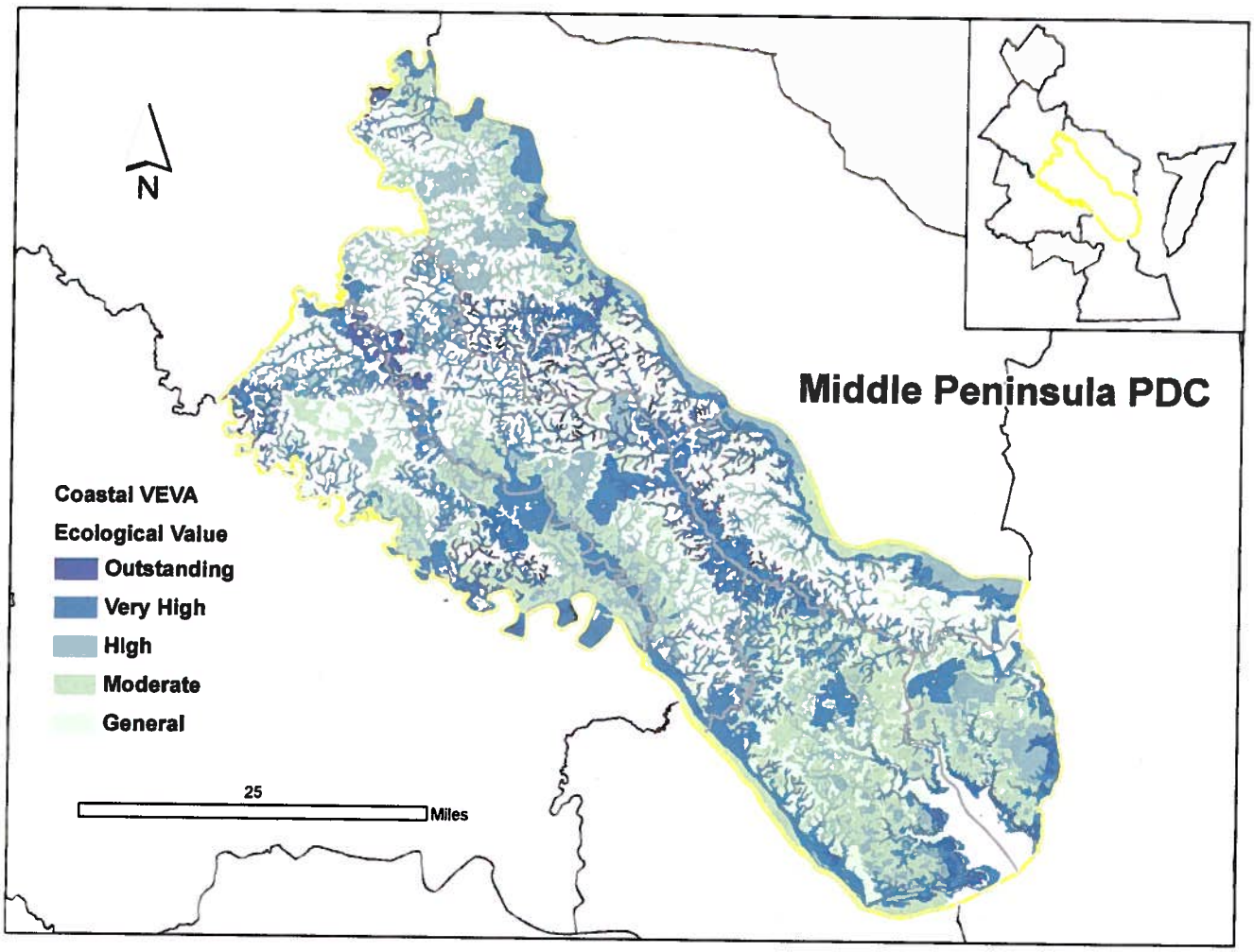
Appendix B. Regional PDC maps of Virginia showing CELCP Priorities, Coastal VEVA

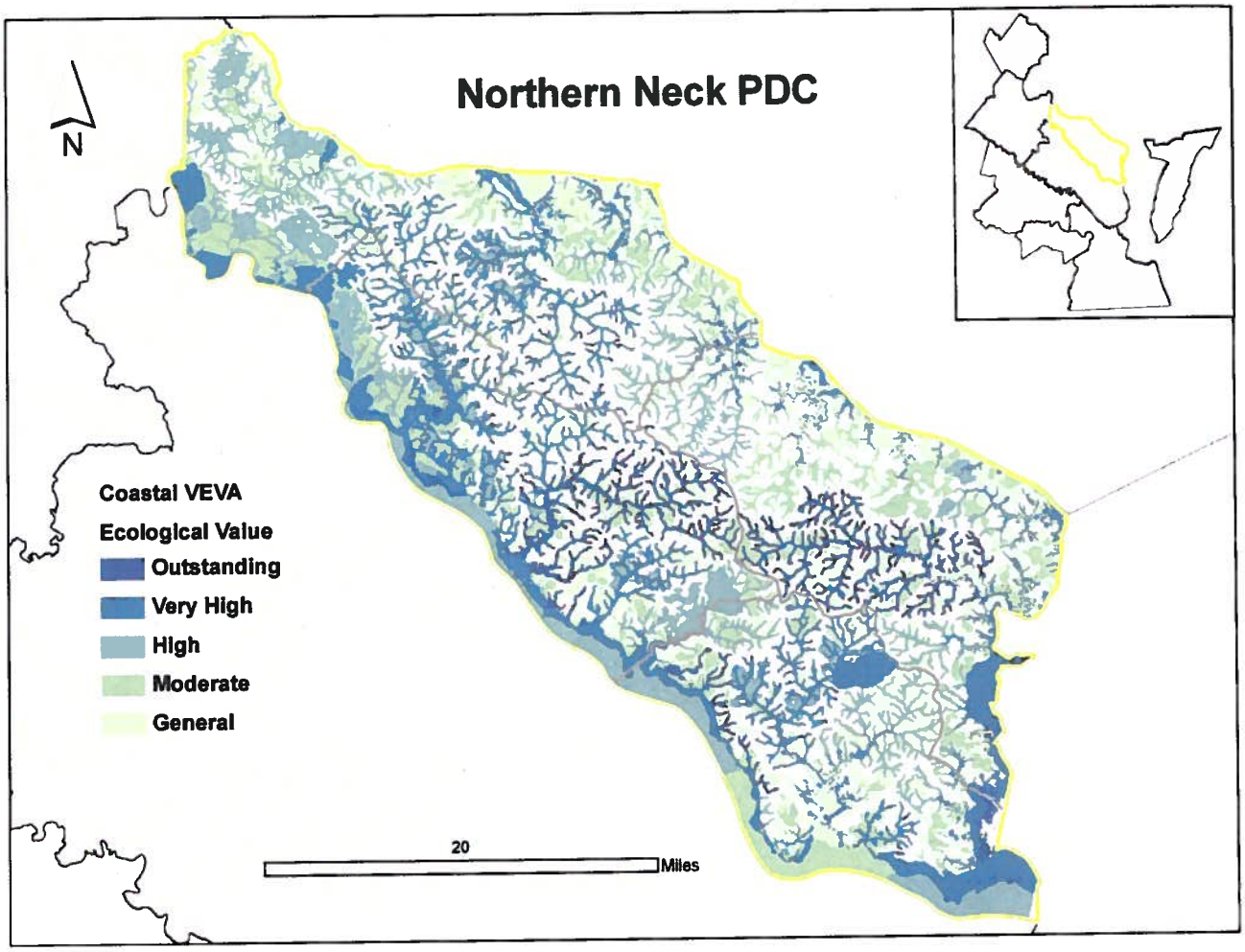


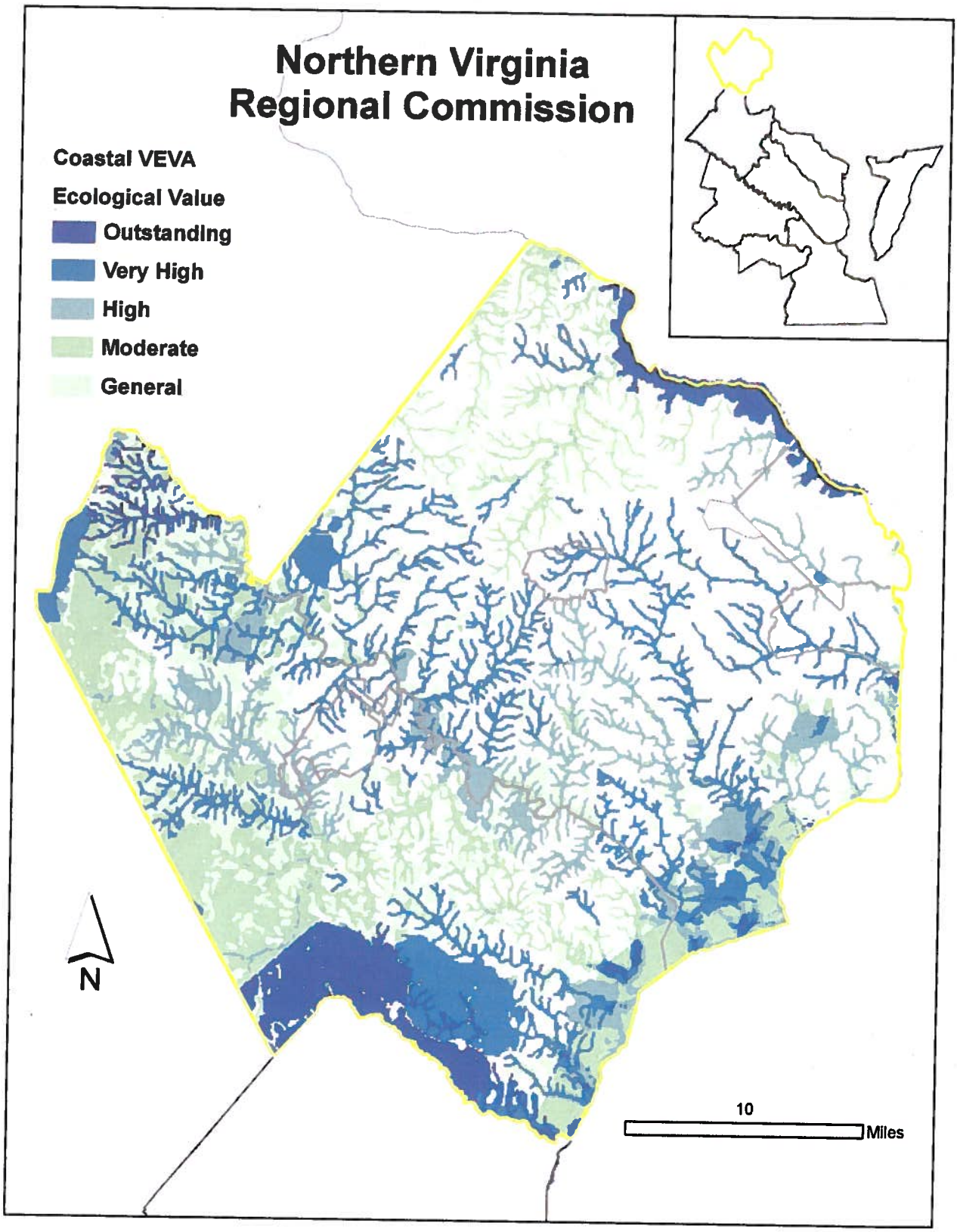

Crater PDC
N
Coastal VEVA
Ecological Value
Outstanding
Very High
High
Moderate
General
10
Miles

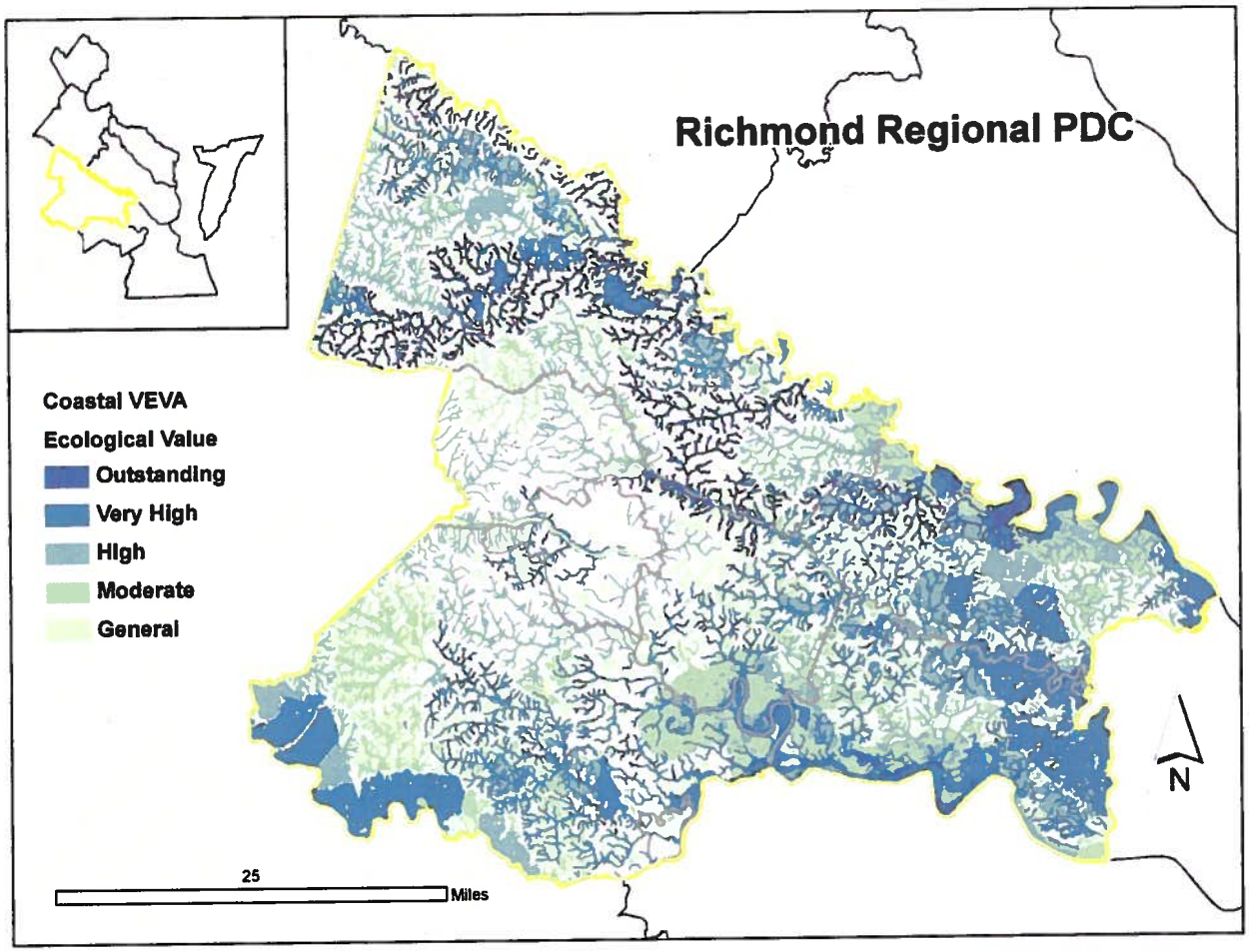

George Washington
Regional Commission
N
Coastal VEVA
Ecological Value
Outstanding
Very High
High
Moderate
General
10
Miles


Coastal VEVA
Ecological Value
Outstanding
Very High
High
Moderate
General
Hampton Roads PDC
N
20
Miles


N
Middle Peninsula PDC
Coastal VEVA
Ecological Value
Outstanding
Very High
High
Moderate
General
25
Miles


Northern Neck PDC
N
Coastal VEVA
Ecological Value
Outstanding
Very High
High
Moderate
General
20
Miles


Northern Virginia
Regional Commission
Coastal VEVA
Ecological Value
Outstanding
Very High
High
Moderate
General
N
10
Miles


Richmond Regional PDC
Coastal VEVA
Ecological Value
Outstanding
Very High
High
Moderate
General
25
Miles
N