

University of Miami
Rosenstiel School of Marine and Atmospheric Science

An Analysis of the Current Shoreline Management Framework in
Virginia: Focus on the Need for Improved Agency Coordination

by

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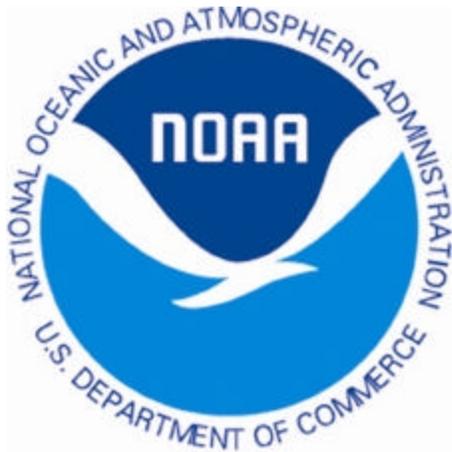
Waterfront development in Virginia's coastal zone is widespread and often involves alteration of shorelines in order to control erosion. In some cases, this activity can have the unintended consequences of degrading water quality and negatively affecting terrestrial and aquatic habitats. The Commonwealth of Virginia has a number of regulations, policies, and programs in place to protect these resources while allowing property owners to take the necessary steps to protect their land from erosion. Examples of major state regulatory efforts include the Tidal Wetlands Act, the Chesapeake Bay Preservation Act, and the Erosion and Sediment Control law. Concerns have been expressed, however, that the outcome of these efforts does not always meet the multiple objectives of these programs. It is the intent of this project to critically research and evaluate the current status of the shoreline erosion control management framework and process in Virginia. The objective of the project is to identify opportunities for improved coordination among decision-makers to ensure the best possible management of state shorelines.

Acknowledgement

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Virginia Coastal Program Support: June-October 2003

The following is a summary of tasks and duties accomplished during June-October 2003 for the Virginia Coastal Program.

Low Impact Development

- Created annotated website handout for a planning meeting scheduled 07/24
- Took notes at LID taskforce meeting 07/24. Condensed notes into meeting summary.
- Took notes at LID taskforce meeting 08/20. Condensed notes into meeting summary.

Shoreline Management

- Attended Hampton wetlands board meeting 7/22/03
- Interview with VIMS wetlands scientist 8/27/03
- Survey questionnaire to local wetland board staff 9/04/03
- Interview with VIMS wetlands scientists and local government staff from the Northern Neck (Northern Neck PDC) 9/26/03
- Site visits with VIMS wetlands scientist (Gloucester County) 10/01/03
- Interview with VMRC Habitat Management Division staff 10/02/03
- Interview with York County local government representative 10/03/03
- Attended Norfolk wetlands board meeting 10/08/03
- Attended Gloucester wetlands board meeting 10/08/03
- Interview with SEAS representative 10/09/03
- Distributed copies of VIMS *Think Green* brochure to local governments in the Virginia coastal zone

Grants Management

- Entered grants information for FY03 into DEQ grants database.
- Created 2003 file folders
- Created contract packets for FY 2003
- Checked in returned contracts.
- Form A,B email reminder sent 9/24/03, 10/08/03
- Processed incoming Forms A,B,C

Meetings/Conferences/Training

- Shoreland Planning: Phase I of project. Meeting @ VIMS June, 2003
- Coastal Zone Management Conference: Created factsheet for (3) Virginia SAMPs. Reviewed conference materials for staff. Baltimore, MD July 13-17
- Wetlands Conference: VIMS July 23, 2003
- Low Impact Development Meeting: July 24, 2003, August 20, 2003
- Coastal Partners Workshop Planning Meeting: July 28, 2003, 9/04/03
- Army Corps Scoping Meeting-Winery Project: August 19, 2003-took notes, wrote meeting summary

- NOAA 312 Evaluation: made namecards for luncheon; CBLAD Meeting-Review of Riparian Buffer Guidance, 8/26/03
- Bay Seafood Festival: Oyster Heritage Program Kilmarnock, VA 9/05/03-outreach opportunity. Talked to people about OHP.
- Water Policy Technical Advisory Committee-PRO, 9/11/03- took notes at meeting for reviewing new state regulations on water supply planning

Office Support

- Photocopying when necessary for handouts (CZ03, 312 Evaluation, Birding Festival, Urbanna Oyster Festival)
- Coordinated lunch for 312 Evaluation (Tides Inn & Garden Café)

Workshop Planning-Virginia Coastal Partners Workshop, December 3-5, 2003

- Maintained FileMaker database of registration forms for Coastal Partners Workshop
- Coordinated all workshop planning with Coastal Program outreach coordinator
- Coordinated poster and exhibit space for Workshop
- Will present findings of this report at wetlands and shoreline management pre-session on December 3, 2003.
- Will recreate Matrix document for poster to be displayed at the Workshop

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Introduction

The Commonwealth of Virginia comprises a diverse landscape including valleys, mountains, piedmont, and coastal plain. The coastal zone, encompassing 29 counties, 15 cities, and 42 incorporated towns is home to more than 60 percent of the Commonwealth's population (State of Virginia's Coast, 2001) (Map 1, Appendix A). The Virginia shoreline is approximately 5,000 miles in length and includes the four tidal rivers of Virginia (the Potomac, Rappahannock, York, and James) that drain into the Chesapeake Bay, and the Atlantic Ocean coastline. The coastal zone includes the metropolitan areas of Northern Virginia (including Fairfax, Alexandria, and Arlington) as well as the cities of Fredericksburg, Richmond, and the Hampton Roads Area (Hampton, Newport News, Norfolk and Virginia Beach).

The topography of Virginia's coastal area is diverse, consisting of flat sandy coastlines, estuaries, and tidal rivers. Major rivers and small creeks flow through the coastal zone, altering shoreline features along the way. Beaches, tidal marshes, mud flats, swamps, forested areas, and steep bluffs are seen. Areas such as Hampton Roads reveal "hard" shoreline features including bulkheads, seawalls, and riprap revetments, while along the Northern Neck (including Northumberland and Lancaster counties) unaltered shoreline can still be seen.

Unaltered shorelines play a critical role in flood and erosion control, reducing the velocity and volume of storm runoff, decreasing sediment movement, buffering wave energy, and filtering pollutants. Inappropriate shoreline development can destroy the functional values of these resources, degrading water quality and essential habitat for living resources.

As shoreline development continues so does shoreline alteration, through installation of shoreline erosion control structures. Private shoreline stabilization including bulkheads and riprap are common along the Virginia coastline. Many property owners, however, do not realize the cumulative coastal impacts associated with a single shoreline device.

Waterfront development and associated shoreline stabilization are affecting water quality in the Bay, which, as it decreases, has resulted in declining habitat for once-abundant marine animal and plant species. Virginia is at a critical point where it must promote environmental protection and enhancement while allowing for necessary and unavoidable economic development.

The process of permitting for shoreline alteration in the Commonwealth involves advisory and regulatory support from the state level, with most decisions made at the local level. Local wetlands board members are responsible for ensuring that granted local wetland permits meet environmental sustainability needs while providing for development. State agencies such as the Virginia Marine Resources Commission, the Department of Environmental Quality, Virginia Institute of Marine Science, and the Chesapeake Bay Local Assistance Department play essential roles in the permitting process, including protection of natural resources. Virginia must reach a balance between protecting coastal resources and providing for coastal development.

The purpose of this report is to critically research, analyze, and evaluate the current status of the shoreline erosion control management framework and process in Virginia. By the use of background history, interviews, and survey methods, areas for

improved coordination among involved agencies and stakeholders are identified to ensure the best possible management of state shorelines.

Waterfront Development in Virginia

Post-World War II, development in the coastal United States dramatically increased as families found themselves with disposable income and new “leisure” time. Rural waterfront land on the Chesapeake Bay was relatively inexpensive which led many Virginians to build vacation homes along the coast.

Cottage communities began springing up along Virginia’s coastline by the mid-1940s. Soon after construction many homeowners were faced with eroding shorelines threatening their property. Historic bank erosion control such as broken concrete, old cars, or tree stumps were used to maintain property and prevent homes from being lost to the waterway (Hardaway & Byrne, 1999). Original stabilization techniques were followed by more substantial projects such as wood bulkheads and groins. The downstream erosive implications of these structures are still seen today.

Over the years the rivers, creeks, and bays that were once densely forested have been converted to agricultural areas with increasing residential development. Today, the population in the Chesapeake watershed is over 15 million, with many residents living along the waterways and the Bay (Boesch & Greer, 2003). Roughly 300 people are moving into the watershed each day. Second homes and homes for retirement are increasingly being built along Virginia’s coastlines.

Erosion remains a serious problem in the Bay. Sea level rise has led to many unprotected properties being lost to adjacent waterways. In many parts of the bay cliff-like banks are seen, representative of past storm surges and sea level rise. Since the

construction of waterfront development began, numerous strategies for shoreline stabilization have been employed in hopes of lessening the degree of property loss due to erosion.

Current Shoreline Erosion Control Practices

C.S. Hardaway, Jr. and R.J. Byrne in their publication, *Shoreline Management in Chesapeake Bay* (1999), address shoreline management in a comprehensive way. They discuss shoreline erosion based on the physical parameters behind shoreline change and present solutions to management problems focusing on cost-effectiveness, sound construction, coastal hazards, property loss, habitat preservation, and water quality.

Bulkheads, riprap revetments, and groins are the most common protection strategies identified by Hardaway and Byrne. This section now reviews conventional shoreline stabilization techniques including revetments, groins, breakwaters and sills, beach nourishment, marsh fringe, headland control, bulkheads, and seawalls. Information below is primarily based on the aforementioned Hardaway and Byrne publication.

Revetments

Rock or riprap revetments have become more widely used in the past thirty years. A revetment is built over filter cloth which is then covered by bedding and armor rock of



different weights and sizes depending on the wave energy of the environment. A properly designed rock revetment requires little maintenance and can last fifty

years or more. Revetments typically require bank grading in order to obtain a stable

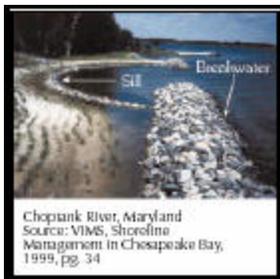
slope. These structures are excellent at dissipating wave energy. Along eroding marsh shorelines low revetments, called marsh toe revetments, can be installed.

Groins



Groins became popular between the 1950s and 1980s as a means for trapping sand to create small beach areas. Groins are typically made of wood. When these structures are constructed with a bulkhead they can have detrimental impacts on adjacent unprotected shorelines. Groins alone can also have an adverse downdrift effect alone, not just when associated with bulkheads. Because groins trap sand and impair the long shore current from adequately moving sand, the beach protected by the groin will accrete sand while down- drift shores, if not also protected, will typically erode.

Breakwaters & Sills



Offensive breakwaters have become increasingly popular in recent years. Lying offshore, breakwaters “break” wave energy before it reaches upland areas. Breakwaters reduce erosion to the beach and, when accompanied with beach nourishment, can create stable beaches and allow various species of marsh grasses

to grow.

Sills are a combination of rock revetments and offshore breakwaters. They are usually smaller than breakwaters and are typically built submerged close to shore. Along with beach nourishment, sills can provide habitat where marsh grasses flourish.

Beach Nourishment

Beach nourishment has been mentioned as a strategy that typically coincides with other means of shoreline protection. Used alone, nourishment acts as a way to create a beach while protecting fastland area. Shorelines nourished with sand usually need to be replenished with additional sand to maintain a desired beach width. Nourishment projects are quite expensive and usually are accompanied by breakwaters or groin fields.

Marsh Fringe

Along low energy shorelines planted marshes can be used to stabilize the shoreline. Marshes are often planted landward of



Marsh Grasses Planted to Protect Eroding Shoreline
Source: VIMS & VMRC, Shoreline Erosion Problems? Think Green



Same Site Ten Years Later
Source: VIMS & VMRC, Shoreline Erosion Problems? Think Green

breakwaters and sills, allowing marsh fringes to be established along higher wave energy shorelines. Establishing marsh vegetation can provide long term shoreline stabilization at a fraction of the cost of structures such as groins, bulkheads, and riprap (Barnard & Hardaway).

Headland Control

Headland control is a way to protect long reaches of shoreline in a more cost-effective manner than perhaps groin fields. This technique accentuates existing or creates permanent headlands that result in the formation of adjacent embayments. Headland control is a relatively new concept in the Chesapeake Bay, but is common practice in other parts of the world. An author-noted difficulty is coordinating funds and resources for this type of property between multiple waterfront property owners.

Bulkheads & Seawalls



Bulkheads and seawalls are often seen in the literature denoting the same type of shoreline protection structure. There is a difference, however, in that bulkheads are generally smaller and less expensive than seawalls. Bulkheads are usually made of wood and more recently vinyl. They are vertical structures designed to retain upland soils and dissipate wave energy.

Seawalls are similar structures made of poured concrete. The authors believe that with proper design and quality materials utilized bulkheads and seawalls can last twenty years. The structural integrity of these methods of stabilization is dependent on toe protection, foundation and the type of materials used, making them expensive to construct.

Hardaway and Byrne developed a table assessing shoreline protection strategies based on their impact on the environment and cost-effectiveness. The table is recreated below (Table 1):

Table 1: General Assessment of Shore Protection Strategies (Hardaway & Byrne, 1999)

Goals	Revetments/ Bulkheads	Groins	Marsh	Break- waters	Headland Control
A. Stop Erosion	1	2	1	1	1 to 2
B. Water Quality	3	2	1	1	1
C. Wetland Habitat	3	3	1	1	2
D. Access	3	2	2	1	1
E. Reach Impacts	1 to 2	3	1	2	1
F. Costs	3	2	1	2 to 3	2 to 3
Total	14 to 15	14	7	8 to 9	8 to 9
For A,B,C & D: 1-Good 2-Fair 3-Poor	For E & F: 1-Low Potential 2-Medium Potential 3-High Potential		<i>The higher the total value, the less the strategy addresses the six management goals.</i>		

This table concludes that revetments, bulkheads, and groins are expensive to construct, impair access to the waterway, and have negative impacts on water quality and wetland habitat. Groins have the greatest impact on adjacent properties. Breakwaters and headland control are also expensive to construct, but have less impact on water quality, access, and wetland habitat. Construction of a marsh is the least expensive of the strategies and has a low potential for impact on water quality, wetland habitat, and impacts to adjacent properties.

Potential Impacts of Shoreline Erosion Control on Water Quality & Habitat

Shoreline stabilization techniques such as bulkheads and seawalls are commonly seen along Virginia waterways. What is not as apparent, however, are the water quality and habitat implications of these structures. Wetland plant and animal species are integral parts of their ecosystem. Collectively, plants and animals are vital to the local foodweb. They also filter pollutants ensuring sound water quality. Shoreline erosion control techniques can have numerous potential impacts on key components of water quality and habitat, increasing nutrient load into an ecosystem and waterway, and decreasing available habitat for coastal land and aquatic species.

Reducing the amount of natural sedimentation and erosion for water quality protection is often cited as justification for structures. However, there is no scientific information available that compares the reality of this perceived water quality contribution with the adverse, incidental effects these same structures have, for example as a result of clearing bank vegetation and interrupting the natural flow of ground water (K Duhring, personal communication, October 27, 2003).

Water Quality Impacts

While pollution can be a major problem for water bodies throughout the country, the Chesapeake Bay is especially susceptible to relatively small amounts of pollution because of its estuarine-characteristic shallow depth. The bay is on average twenty feet deep and drains over 64,000 square miles of land. An increasing population coupled with a low land to water ratio results in the Chesapeake Bay processing more land-based pollution than most bodies of water (“Guide to the Bay Act”).

Filtering oyster and blue crab population decline has also had significant impact on Bay water quality. Excess nutrients from developed land find their way into Bay tributaries and eventually into the estuary itself.

The Chesapeake Bay Preservation Act was created to improve water quality throughout the Bay. Included in recommendations are resource protection areas (RPAs) to be determined by local governments. RPAs begin at mean high water and extend landward through any tidal and nontidal wetlands on site. Landward of the nontidal wetland boundary, or at mean high water, if no wetlands exist, a 100-foot buffer area is also designated. RPAs have an intrinsic water quality value. They filter pollutants out of runoff before entering the waterway. Destruction of the RPA has drastic implications for water quality, sending land-based pollutants directly into adjacent water bodies. Shoreline stabilization structures often infringe upon the RPA and 100-foot buffer areas.

Habitat Implications

Over 300 different species of invertebrates can be found living in the intertidal sand and mudflats of Virginia coastlines (Havens, 1990). These microscopic organisms

and worms are important parts of the foodweb, consuming organic matter in the mud, filtering water, and acting as food for other animals.



The mudflats and shallow nearshore waters are vital habitat for many species of small animals and submerged aquatic vegetation. Plant species such as *Spartina alterniflora* and *Spartina patens* not only contribute to the foodweb but also provide habitat for juvenile blue crab and spawning juvenile

finfish (Silberhorn, 1990). Dense strands of *Spartina alterniflora* act as a buffer keeping the shoreline from eroding. Wetland plants also filter sediments and act as nesting sites for many species of rails and other birds. Saltmeadow hay, an example of wetland flora, functions as a feeding area for muskrats and raccoons.

Loss of habitat due to shoreline stabilization is having a major impact on juvenile fish and blue crab species in Virginia waterways. Aquatic plant species have declined due to increased waterfront development and subsequent land-based nutrient loading and associated water quality/clarity impacts.

Multiple Objectives of the Current Framework for Managing Shoreline Erosion in Virginia

As waterfront development and shoreline stabilization techniques in the Commonwealth of Virginia have increased, and a decrease in water quality and habitat has become apparent along the shoreline, federal, state, and local governments have responded with relevant changes to legislation. Problems remain, however, because the

current framework for managing shoreline erosion in Virginia requires the involvement of many agencies aimed at accomplishing multiple objectives.

Private property protection is a primary concern in the Commonwealth and the number one reason that shoreline stabilization is seen. Waterfront property owners are determined to protect their investment from threats of erosion. In the declaration of policy section (repealed October 1, 1992) of the Wetlands Act the Virginia legislature explains, "...To protect public and private property...it is declared to be the public policy of this Commonwealth to preserve the wetlands...".

Marine contractors, neighbors, and local governments are typically the first contacts for property owners interested in stabilizing their shoreline. The Department of Conservation and Recreation's Shoreline Erosion Advisory Service (SEAS) promotes environmentally acceptable shoreline erosion control measures to protect private property as well.

The Wetlands Act of 1972 is state primary legislation aimed at protecting and preserving tidal and nontidal wetlands in the Commonwealth. The Virginia Marine Resources Commission is charged under this Act with managing, preserving, and preventing the despoliation and destruction of wetlands. To accomplish this task, VMRC, with advisory service from the Virginia Institute of Marine Science, developed guidelines to aid interested state and local agencies in protecting tidal and nontidal wetlands.

The Chesapeake Bay Preservation Act was passed in 1988, showing a Commonwealth-wide concern for protecting not only wetlands, but water quality in Virginia's bay and tributary rivers as well. The objective of the Bay Act is to preserve water quality via designation of resource protected areas, including vegetated buffers,

along shorelines and riverbanks. The Chesapeake Bay Local Assistance Department, local government, and local Erosion and Sediment Control officials are all interested in promoting water quality, and preserving the buffer to aid in filtering land runoff and decreasing sediment influx to the nearshore zone.

Beaches and primary sand dunes are also a primary objective of Virginia legislation and concern. The Primary Sand Dunes and Beaches Act was created to prevent primary sand dune and beach alteration. Local government regulations and the guidelines created jointly by VIMS and the Virginia Marine Resources Commission (a state regulatory body) aim to preserve these areas from destruction and development.

As previously mentioned, protection of submerged aquatic vegetation and important terrestrial and intertidal habitats is also of importance to many agencies involved in shoreline management. Plant and animal species, including intertidal habitats, are vital to the health of the Bay.

The protection of endangered species is of particular concern to the Department of Game and Inland Fisheries. DGIF promotes preservation of vital habitat for many coastal



species, including cliff swallows that would otherwise be destroyed due to bank grading for shoreline projects. DGIF plays an advisory role in the permit review process.

The Commonwealth of Virginia was a signatory to the Chesapeake 2000 regional agreement, aimed at sustaining, restoring, and protecting the Chesapeake Bay for future generations. Many established goals directly affect the shoreline permitting process.

Restoration, enhancement, and protection of finfish habitat and natural areas that are vital to the survival of living resources, including submerged aquatic vegetation (SAV) are included among Chesapeake 2000 goals. Water quality concerns are discussed, as well as sound land use, where the document proclaims, “There is a clear correlation between population growth and associated development and environmental degradation in the Chesapeake Bay system.” The Commonwealth of Virginia and other signatories are determined to meet the goals of the 2000 agreement.

As stated in the Wetlands Act, wetlands shall be preserved while accommodating necessary economic development. Stakeholders in the shoreline management process are aware of the financial benefits of living on the coast as waterfront prices have increased over the past century. The Wetlands Act, as well as local government agencies (including the wetlands board), VMRC, and VIMS all work to meet the combined objectives of preserving natural areas for environmental benefit while accommodating encroaching economic development.

The Commonwealth of Virginia and local governments have multiple objectives to achieve in protecting and preventing destruction of coastal resources. Because of the diversity of protection strategies, shoreline management in Virginia is accomplished by a coordinated effort of multiple agencies fulfilling multiple objectives. The Commonwealth must meet the demands of its multiple-objective stakeholder groups with a comprehensive review of shoreline stabilization techniques. A subsequent section will examine the current review process for shoreline erosion control measures in terms of the multiple objectives discussed.

Relevant Laws, Regulations & Policies in the Current Framework

Wetlands have been protected in Virginia since the passage of the Wetlands Act in 1972. Since then a variety of legislation has emerged to prevent the destruction of these important habitats. Virginia has a number of acts of legislation in place to protect its coastal resources. Some relevant laws, regulations, and policies are discussed here, followed by a review of the Joint Permit Application process.

Wetlands Act, Title 28.2 Chapter 13

The Tidal Wetlands Act is Virginia legislation specifically aimed at protecting vegetated and nonvegetated tidal wetlands in the Commonwealth. The goal of this law is to, "...preserve and prevent the despoliation and destruction of wetlands while accommodating necessary economic development in a manner consistent with wetlands preservation" (VA Code 28.2-1302). The Wetlands Act vests wetland regulatory authority in the hands of the local government. Virginia has separate legislation for nontidal wetlands.

The Wetlands Act created a Wetlands Zoning Ordinance that any county, city or town in Virginia may adopt to regulate the use and development of local wetlands. Adoption of the ordinance requires localities to create a wetlands board consisting of five or seven residents of the jurisdiction (28.2-1303). Board members are comprised of citizen volunteers, generally not compensated for their services. Local board jurisdiction extends from mean low water (the Marine Resources Commission has jurisdiction over bottom lands seaward of mean low water) to mean high water where no emergent vegetation exists, and to 1.5 times the mean tide range where marsh is present. The board

is charged with granting, granting with modification, or denying relevant permits for shoreline alterations which lie within their jurisdiction.

The Virginia Marine Resources Commission is required by the Wetlands Act to, “... promulgate and periodically update guidelines which scientifically evaluate vegetated and nonvegetated wetlands by type and describe the consequences of use of these wetlands types” (Section 28.2-1301). To accomplish this task, the Virginia Institute of Marine Science is charged with advising and assisting the Commission. There are currently guidelines for wetlands, subaqueous lands, and coastal primary sand dunes and beaches. VMRC also created *Shoreline Development BMP's*, a pamphlet describing the best management practices for shoreline activities impacting wetlands, subaqueous lands, dunes and beaches.

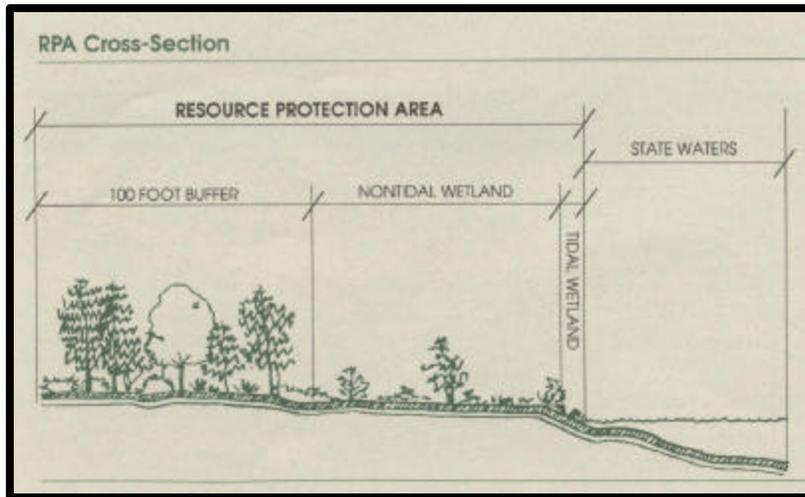
VMRC has jurisdiction over the permitting of projects within state-owned subaqueous lands. They also review proposed projects impacting wetlands, sand dunes and beaches in localities that have not adopted the Wetland Zoning Ordinance (pursuant to the Wetland Act Section 28.2-1302).

Chesapeake Bay Preservation Act, Title 10.1 Chapter 21

The Virginia General Assembly passed the Chesapeake Bay Preservation Act in 1988 in response to the regional Chesapeake Bay agreement. The purpose of the Bay Act is to improve the water quality of the Chesapeake Bay and its tributaries through measures to reduce adverse impacts of land use and development. The Bay Act established the Chesapeake Bay Local Assistance Board consisting of nine Tidewater Virginia residents appointed by the governor. The Board is required to, “. . . promulgate

regulations which establish criteria for use by local governments to determine the ecological and geographic extent of Chesapeake Bay Preservation Areas” (10.1-2107).

Local governments, under the Bay Act, are required to designate Chesapeake Bay Preservation Areas (CBPAs), and incorporate protection of water quality into their



comprehensive plans and ordinances. Many localities have adopted a model ordinance created by the Chesapeake Bay Local Assistance Department

(CBLAD) in compliance with Board regulations. The Bay Act and regulations require a 100ft. wide vegetated buffer adjacent to and landward of all tidal shores, tidal wetlands, non-tidal wetlands connected by surface flow and contiguous to tidal wetlands or along water bodies with perennial flow. The Bay Act also stipulates that all land disturbances over 2,500 square feet that occur in CBPAs are required to comply with all local erosion and sediment control regulations (E&S). This new requirement clarifies that all upland land disturbances associated with shoreline erosion control projects are not exempt from E&S requirements.

Board regulations specifically address shoreline stabilization techniques in 9VAC 10-20-130.4.a (4): “For shoreline erosion control projects, trees and woody vegetation may be removed, necessary control techniques employed, and appropriate vegetation established to protect or stabilize the shoreline in accordance with the best available

technical advice and applicable permit conditions or requirements.” To clarify this regulation, CBLAD has developed a Shoreline Erosion Control policy as part of their Riparian Buffer Manual.

Erosion & Sediment Control Law, Title 10.1 Chapter 5 Article 4

The ESC Program's goal is to control soil erosion, sedimentation, and nonagricultural runoff from regulated "land-disturbing activities" to prevent degradation of property and natural resources. The regulations specify "Minimum Standards," which include criteria, techniques and policies that must be followed on all regulated activities. These statutes delineate the rights and responsibilities of governments that administer an ESC program and those of property owners who must comply. The Department of Conservation and Recreation (DCR), the leading state agency for developing and implementing statewide nonpoint source pollution control programs and services, administers erosion and sediment control laws. Localities require a separate E&S permit.

Originally, E&S law reviewed projects over 10,000 square feet. With passage of the Chesapeake Bay Preservation Act, this threshold was amended to include projects that disturb 2,500 square feet or more land in Chesapeake Bay Preservation Areas (CBPAs). The inclusion of smaller projects now addresses relatively all shoreline erosion control projects.

Coastal Primary Sand Dunes & Beaches Act, Title 28.2 Chapter 14

The purpose of the Dunes and Beaches Act is to preserve and protect coastal primary sand dunes and beaches in a manner that accommodates necessary economic development. The General Assembly modified the Coastal Primary Sand Dune Protection Act to include “beaches” in 1989. Eight specific counties and cities are recognized as

eligible for adoption of the coastal primary sand dune zoning ordinance provided that they have also adopted the Wetlands Zoning Ordinance. Six localities have adopted the ordinance, leaving VMRC jurisdiction over Accomack County and the City of Hampton. As is the case with the Wetlands Act, the Dunes and Beaches Act gives responsibility of granting, granting with modification or denying permits to the local wetlands board.

Beaches are defined by the Act as: (1) the shoreline zone of unconsolidated sandy material; (2) the land extending from mean low water landward to a marked change in material composition or in physiographic form (for example, a dune, marsh or bluff); and (3) if a marked change does not occur, then the landward limit of the beach is defined by a line of woody vegetation or the nearest impermeable manmade structure.

The General Assembly directed the Virginia Marine Resources Commission, with advisory assistance by the Virginia Institute of Marine Science, to develop and publish guidelines. These guidelines assist project proponents and decision-makers in shaping shorefront development in a manner that preserves and protects the values of coastal primary sand dunes articulated in the Act (VMRC Guidelines, 1993).

Non-tidal Wetlands Program-DEQ Virginia Water Protection Program

The Virginia Water Protection Program at DEQ is responsible for the administration of the Section 401 water quality programs delegated to the Commonwealth under the Clean Water Act. The program also regulates impacts to state waters including wetlands as required under the State Water Control Law. The goal of VWPP is to ensure, “. . . no net loss of wetland acreage and function, protect beneficial uses of state waters, prevent degradation of valuable water resources, and to work toward the restoration of waters whose quality has been degraded” (VWPP Guidelines, 2003).

United States Army Corps of Engineers

Based on Section 10 of the Rivers & Harbors Act of 1899 and Section 404 of the Clean Water Act, the Corps is responsible for administering a permit program for construction, dredging and filling activities in tidal and nontidal wetlands. The Corps wetland definition is based solely on soil type, hydrology, and present vegetation. This differs from the Commonwealth of Virginia definition which is based on vegetation, elevation, and connectivity. Most shoreline management permits reviewed meet the requirements of Corps Nationwide Permits and do not require further review.

The Current Review Process for Shoreline Erosion Control Measures

The Joint Permit Application

Federal, state, and local agencies each play a role in the permitting process for shoreline erosion control structures. Involved agencies include, but are not limited to, the Virginia Marine Resources Commission (VMRC), the Army Corps of Engineers (Corps), the Virginia Department of Environmental Quality (DEQ), the Virginia Institute of Marine Science (VIMS), local government, and local wetlands boards. Each agency follows a specific set of laws or guidelines to promote the best management of the Virginia shoreline.

Table 2: Current Review Process for Shoreline Erosion Control Measures

- | | |
|--|---|
| 1. Waterfront property owner recognizes the need to address an erosion problem on his property | 6. Local Wetland Board public hearing and decision (if no board VMRC) to grant, grant with modification, or deny permit. Permits can also be withdrawn, and considered incomplete |
| 2. Property owner obtains information regarding possible methods for shoreline stabilization | 7. VMRC staff review all Wetland Board decisions. Appeal Period |
| 3. Property owner obtains/completes/submits a JPA to VMRC | 8. Permit Granted to applicant |
| 4. JPA is assigned a VMRC permit application number and is distributed to VIMS, local government, Corps & DEQ | 9. Completion of all other relevant local permits/inspections (if not previously completed) i.e. CBPA, E&S, land disturbing. |
| 5. Review & Public Notice including site visits/desktop review by local government followed by site visits by VIMS (with comment), VMRC, Wetland Board members (varies) and locality staff (varies). Local newspaper advertisement | 10. Project Construction |

Permits are required for proposed activities taking place in tidal and nontidal wetlands, state-owned subaqueous lands, primary sand dunes, and beaches. This report discusses the process specifically for shoreline management structures including bulkheads, breakwaters, riprap revetments, jetties and groins.

The process of shoreline management typically begins with a waterfront property owner recognizing a need to address a problem on his property. Most property owners are applying for permits to fix what actually is a flooding problem. Projects proposed solely for landscape improvements and for esthetic reasons, however, are being seen more frequently.

Typically the first source of information for stabilization comes from marine contractors. Homeowners will often contact a contractor first; however, some contractors will contact the homeowner with a suggested erosion control method. Neighbors who

also own waterfront property act as a primary source of information suggesting similar methods of stabilization in use on their property.

Following a decision to stabilize their shoreline, property owners have a decision to make. They can take the advice of the neighbor or contractor and move to the next step in the process, or they can pursue other forms of available information. Relevant information and assistance for property owners is available via a number of sources. The next section of this report details these outlets. The majority of property owners take the suggestion of their contractor or neighbor and moves forward in the process. Often local government staff are a secondary source of information and will conduct pre-application site visits and offer suggestions for ways to protect the shoreline.

Once a decision has been made to construct a shoreline stabilization structure, the applicant completes a Joint Permit Application (JPA) and submits it to VMRC. The JPA was created to simplify the permitting process in Virginia. VMRC acts as “clearinghouse,” assigning all applications an application number, which is logged into an internal database. Clerical staff then photocopy applications and distribute them to the Corps, DEQ, VIMS, and the local government. VMRC sends all applications regardless of jurisdiction to the aforementioned agencies.

The JPA is a roughly 70-page document containing everything from general information about the property owner and adjacent owners, to site specific information including drawings and site plans. Property owners usually do not view the JPA as “user-friendly” and most hire a consultant to complete the application for them. If a contractor has arranged to complete a project for a property owner, they will most likely work with

a consultant, or agent, who will fill out the JPA. Consultants charge \$300 to \$800 per application, varying by locality.

There are two permit processes, each required depending on what area of the shoreline is to be impacted. Projects affecting areas seaward of the mean low water line are considered subaqueous and fall under the jurisdiction of VMRC. The local wetlands board has jurisdiction over lands lying between and contiguous to mean low water and one and one-half times the mean tide range at the site of the proposed project in that locality. For projects impacting areas both landward and seaward of mean low water, VMRC and wetlands board permits are required. The VMRC permit fee is \$25 for projects costing less than \$10,000 and \$100 for projects over \$10,000. Wetlands board permit processing fees vary by locality. A summary of fees is included in this document (Appendix D). Projects requiring review by VMRC and the wetlands board occur independently and can be reviewed concurrently. VMRC will typically await a wetlands board decision before finalizing their permit.

Once VMRC has distributed applications to all required agencies, the submitted JPA is reviewed for completeness and site visits are conducted by the local government, VIMS, and VMRC.

The local government typically has a staff member assigned to the wetlands board. Because VMRC does not regularly review wetlands applications for completeness and determination of jurisdiction, the local staff person must first conduct a desktop review, ensuring that all requirements of the project, including proper site plans with demarcation of mean low and mean high water lines, are noted. The application must then be reviewed to determine if any portion of the project falls under the jurisdiction of

the wetlands board. Once desktop review is completed the staff person conducts site visits, takes photographs of the proposed project and in some localities writes comments to be included in a packet to be sent to the wetlands board. These packages typically contain an agenda for the upcoming meeting, a summary of each proposed project, a photograph of each project site, and relevant drawings. Some locality staff also include VIMS comments and a staff-written analysis of each project.

VIMS reviews all permits, including those falling under wetlands board and VMRC jurisdiction, impacting tidal wetlands. VIMS also must first complete a desktop review for jurisdictional determination and application completeness. VIMS then conducts site visits where GPS coordinates and photographs are taken and the various types of tidal wetlands present are assessed. A VIMS report is then completed documenting potential wetlands or subaqueous impacts. Included in the report are figures from the VIMS database of all wetlands impacted within the associated water body and the feet of shoreline that will be impacted by the proposed project. The VIMS report is written for both VMRC and the wetlands board in those cases where both tidal wetlands and subaqueous impacts are proposed.

The Virginia Marine Resources Commission (VMRC) reviews projects impacting state-owned subaqueous lands. As part of their oversight responsibility, they also visit wetlands permit sites. VMRC is also responsible for the review of all permits in localities that have not adopted the Wetlands Zoning Ordinance (Section 28.2-1302) and thus do not have a wetlands board. VMRC reviews permits impacting primary sand dunes and beaches in the two localities that have not adopted the Dunes & Beaches Ordinance (Accomack County and the City of Hampton).

Wetlands board members will sometimes visit sites prior to meetings as well. This volunteer group is not required to conduct site visits; however, roughly fifty percent of the 35 wetlands boards have at least one member who habitually visit sites. Some localities, such as York County, set a date each month when board members visit the site together.

No later than sixty days after receipt of a complete application, the local wetlands board must conduct a public meeting. Once all site visits are conducted and the required two-week advertisement in a local newspaper, the wetlands board holds a public hearing to determine whether to grant, grant with modification, or deny a proposed project. Projects can also be deemed incomplete by the board requiring further information at the next monthly meeting. Project proposals can also be tabled by the board or withdrawn by the applicant for review at future public meetings.

The board meetings are, in most localities, conducted by a locality wetland staff person who presents each permit, including applicable site maps and photographs, to board members. Some local staff also provide board members a packet of materials including written staff comments and site plans. VIMS comments and site plans. The public meeting affords the applicant, contractor (if applicable), adjacent property owners, and neighbors the opportunity to voice their comments on proposed projects.

The wetlands board then makes their decision to grant, grant with modification, or deny a permit. The board is charged primarily with granting permits that are consistent with the Wetlands Act requirement that wetlands are destroyed or despoiled only when accommodating economic development in a manner consistent with wetland

preservation. It is the charge of the wetlands board to review projects based on all material gathered, weigh out economic benefits and come to a conclusion.

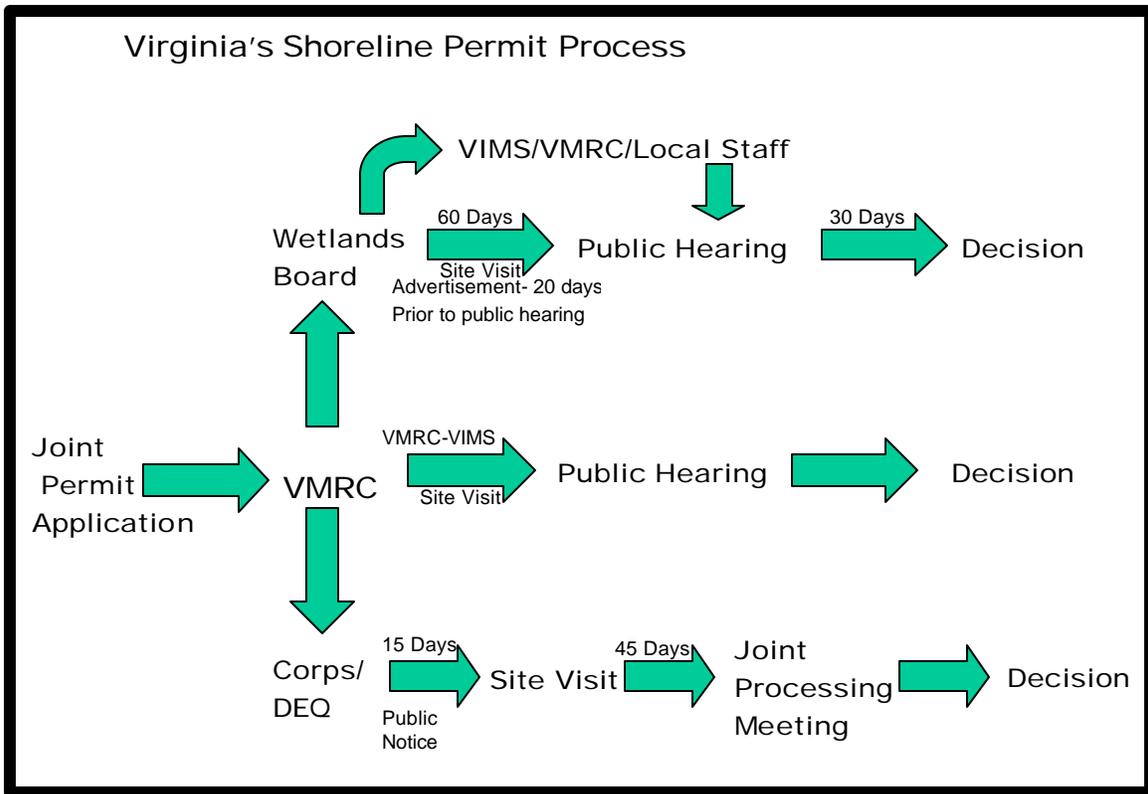
In some localities local staff acting as liaisons for both wetlands and Bay Act issues provide comments regarding Bay Act regulations during wetlands board public hearings for consideration by the wetlands board (T. Watkinson, personal communication August 14, 2002). Bay Act compliance is determined by the local government, whereas wetlands permits are issued by the citizen-based wetlands board. Although staff have the opportunity to make wetlands board members aware of Bay Act issues relating to the proposed project, the staff person reviews projects for Bay Act compliance separately from the wetlands board review. There is often a disconnect at this point in the process as wetlands require a permit while Bay Act regulations are determined solely via a review process. Local staff are often placed in a difficult position where projects approved by the JPA process do not meet Bay Act criteria. In these instances, the wetlands board in essence is permitting a project that cannot be built because projects encroach upon Bay Act jurisdictional areas and cannot be impacted. Improved coordination for this type of situation is necessary.

VIMS wetlands scientists typically do not attend wetlands board meetings to help maintain their objectivity in permit review, and thus do not always find out how their comments were utilized or what the final permit decision was. To aid in obtaining this information, VIMS attaches an "Action Report" to each of their written comments asking local government staff to send information regarding what the wetlands board permits and any comments on changes to the proposed project. Some locality staff complete and mail reports back to VIMS. Response rates vary greatly by locality.

VMRC is required to review all wetlands board decisions for consistency with the Wetlands Act, Primary Sand Dunes and Beach Act and VMRC guidelines. They accomplish this by having environmental engineers from the Habitat Management Division present at each wetlands board meeting. VMRC staff will inform the Commissioner of wetlands board decisions that should be appealed. This must occur in a 10-day period beginning after a wetlands board decision. Most appeals are based on procedural violations.

Appeals may also be presented by the applicant, the county or city where the project is located, if the VMRC Commissioner requests, or if 25 freeholders of property within the locality submit a petition to VMRC (Wetlands Act, Section 28.2-1311).

After the appeal period, the permit is granted to the applicant. In some localities, further local permits and inspections including land disturbing and Erosion and Sediment Control permits, are required. The step in the process where these permits are applied for and granted varies by locality, however most localities review for E&S and Bay Act requirements after the JPA process has occurred. After all relevant permits are granted project construction begins. Inspections during and post-construction occur, but are not required and vary greatly by locality.



In 2002 local Wetland Boards reviewed 1027 permit applications impacting tidal wetlands (Duhring, 2003). 927 of these permits were issued by local boards and VMRC. The remaining 100 applications were withdrawn, or tabled for review in 2003. Five projects were denied either partially or entirely in 2002. At least 60 applications were approved in modified form.

The Virginia Institute of Marine Science defines “impacts” as “temporary alterations and conversions from one type of marine habitat to another” (Duhring, 2003). In 2002, 74.8 acres of tidal wetlands were impacted, 14.4 miles of new shoreline hardening projects including use of revetments or bulkheads were permitted by VMRC and/or the wetlands board.

Although project construction on unaltered shorelines decreased in 2002, wetland losses doubled from previously recorded yearly impacts. Few mitigation efforts being

completed for tidal wetland impacts coupled with 99 percent granting of permits has led to a Commonwealth-wide net loss of tidal wetlands.

Technical Advice for the Applicant and Wetlands Board

The majority of waterfront homeowners are not shoreline engineers. Determining the best shoreline structure for a property can be a daunting task. The Commonwealth of Virginia has a variety of local and state sources of information to aid homeowners and wetlands board members in making the best decision for their property.

The local Planning/Zoning/Environmental office is one place a homeowner will go for advice. County staff are very knowledgeable in local laws and regulations and are acquainted with other local agencies involved in shoreline stabilization projects. Local staff will conduct pre-application consultation if requested by the property owner to explain project requirements, including local permits. The Corps and VMRC will also visit sites prior to JPA submission if requested.

Consultants or agents play an advisory role in assisting homeowners with shoreline structures as well. They provide assistance with the often-arduous task of filling out the Joint Permit Application for a fee. If contacted first, consultants will often recommend a marine contractor to the property owner.

Contractors who build structures such as riprap revetments, bulkheads, and groins are in most cases the first point of contact for a waterfront property owner. In many localities contractors approach property owners and recommend that they install a shoreline erosion control device. Although not shoreline engineers, contractors are knowledgeable on how to build certain structures and thus will be more likely to recommend these structures over other choices such as marsh vegetation. Contractors

often work closely with consultants and will have a JPA filled out on behalf of the property owner.

The Virginia Department of Conservation and Recreation (DCR) offers shoreline erosion advice via a Shoreline Erosion Advisory Service (SEAS). Created in 1980 by the Virginia Assembly, SEAS is charged with advising how to control shoreline erosion on private property in the Commonwealth. Private property is defined in Virginia Code as any shoreline that is not considered a public beach (Section 10.1-705). Based on this definition, SEAS has the authority to advise for projects owned by private property owners as well as subaqueous projects falling under VMRC jurisdiction.

SEAS is most often contacted by private property owners who are looking for advice on how to protect their property from erosion. Two field staff located in satellite offices in Tappahannock and Suffolk, Virginia will visit sites and provide written recommendations outlining the possible options for shoreline stabilization. The Commonwealth no longer offers funding for SEAS and the future of this advisory service is uncertain.

Publications on shoreline management can also be a valuable tool in assisting homeowners. The Department of Environmental Quality, Virginia Institute of Marine Science, Chesapeake Bay Local Assistance Department, the Virginia Marine Resources Commission, local governments and others provide brochures, video, and other forms of advertisement simplifying the process for the general public. A new magazine entitled, *Bay Splash* has also become an important source of information for waterfront property owners in the Commonwealth. This magazine has wide disbursement via mail and in

local grocery stores throughout Virginia's coastal zone. *Bay Splash* features articles on shoreline stabilization techniques such as riprap and bulkhead to assist homeowners.

For wetlands board members, the Virginia Marine Resources Commission has been charged by Virginia Code to promulgate guidelines to assist board members in making permit decisions. Currently, VMRC publishes Wetlands Guidelines, Coastal Primary Sand Dunes/Beaches Guidelines, and Subaqueous Guidelines to fulfill this requirement. *Wetlands Guidelines* is a pamphlet outlining wetland types and criteria for evaluating alterations of wetlands (1993). The *Coastal Primary Sand Dunes/Beaches Guidelines* describe sand dunes and beach values and offer recommendations for construction in these areas (1980). All guidelines were created by VMRC with advisory assistance from the Virginia Institute of Marine Science.

Locality staff acting as liaisons to the wetlands board is a significant source of information for board members. In some localities, these individuals also work directly with local erosion and sediment control law and Bay Act provisions, allowing for a more comprehensive review of shoreline stabilization structures.

Workshops conducted by localities, regulatory agencies, and the Virginia Institute of Marine Science are also an important source of information. VIMS conducts annual Wetland Workshops featuring a specific wetland topic and includes lectures and field work primarily for wetlands board members and local staff. The Department of Environmental Quality's Coastal Program will have a special session on wetlands at their Coastal Partners Workshop in December 2003.

Data Review

The purpose of this project is to evaluate the current status of the shoreline erosion control management framework in Virginia. In accomplishing this task, an email survey and personal interviews were conducted. Survey and interview responses aided in the drafting of a matrix document, introduced in a subsequent section. In this section, specific data and interview results are discussed.

The Wetlands Board Staff Email Survey

An eight-question survey was emailed to the local wetlands board liaison in the 35 Virginia coastal localities that have adopted the Wetlands Zoning Ordinance and have citizen wetlands boards. Survey questions focused on the role of the staff member in the shoreline permit process, resource availability within their locality, where property owners obtain information prior to JPA submission, and how CBPA guidelines are addressed at the local level. A sample survey is included in this document as Appendix B.

Fifteen of the 35 sent questionnaires were returned, providing a 43 percent response rate. All surveys were returned via email. Answers remain confidential and are summarized in this report.

Eighty percent of staff responded that they visit each project site prior to the monthly wetlands board meeting. Forty-seven percent of localities coordinate site visits with their wetlands board members, VIMS and/or VMRC each month. Forty percent coordinate with other agencies when possible.

The fact that not all locality staff liaisons visit each site prior to meetings has sometimes lead to confusion at wetlands board meetings. Wetlands board members are not required to participate in site visits and the vast majority do not visit all sites. In

instances where either staff or board members have not seen the site, they are left to make permit determinations solely on site plans submitted by the property owner and/or a photograph provided in the VIMS report. Many projects are tabled each month because the wetlands board members are not familiar enough with the proposed site to make a decision.

Uncoordinated site visits often frustrate property owners who can see as many as seven local and state representatives independently visit their site. Coordination of visits promotes interagency discussion prior to public hearing and often involves the property owner.

Eighty-seven percent of respondents indicated that, if requested, staff will discuss shoreline erosion control options and associated environmental impacts of projects prior to submission of a JPA. Local staff mentioned they would like to speak with more applicants early in the process, but feel that time constraints and lack of local resources prevents them from doing so. Two localities will recommend property owners contact SEAS for more in-depth pre-application consultation.

Eighty-seven percent of staff respondents provide written or oral comments to the wetlands board each month. Written comments are typically included in a packet of information given to board members prior to the public hearing. Oral comments are provided during the public hearing.

Responses as to where property owners obtain information prior to submission of the JPA varied greatly by locality. Sixty-seven percent of respondents indicated marine contractors as the primary source of information for property owners. SEAS and local staff were also mentioned, indicated by 53 and 40 percent of responses, respectively.

Most staff were uncertain of the current status of SEAS and mentioned that this resource has been depleted in recent years leaving a gap in the management framework for information from an engineering/shoreline design perspective.

Appendix D summarizes permit fees charged by each wetlands board. Permit fees are collected by localities to pay for staff time, site inspections, and often includes required advertisement in a local newspaper. Some localities do not cover the cost of advertisement and property owners are billed separately by the newspaper. This is noted in the Appendix. Forty-seven percent of responses indicated that the fee charged does not fully cover staff time, processing and advertising costs (if applicable) at the local level.

Seventy-three percent of staff indicated that they and the wetlands board discuss requirements of the Chesapeake Bay Preservation Act. Thirty-three percent of responses indicated wetlands boards discuss Bay Act issues at public hearings. Two localities indicated that Bay Act concerns fall under local departments not associated with the respective department in which the wetlands board falls. Eighty percent of staff that responded felt that 90 percent or more of proposed shoreline projects result in land disturbance within the RPA, typically for access or slope grading.

Wetlands board staff were also asked if they had suggestions for possible improvements to the current process of shoreline management.

Responses are summarized below:

1. Additional Bay Act guidance for wetlands board members
2. A consolidated Wetlands and Bay Act staff at the local level
3. All shoreline and Bay Act issues handled by one state agency
4. A revitalization/more funding for the SEAS program
5. Education of wetlands board on Bay Act regulations
6. An information packet to be distributed to all residents in the RPA
7. VIMS to take a greater role in discussing the appropriateness of particular shoreline erosion control structures—current reports are not helpful

8. Incorporation of Bay Act guidance and regulation into the JPA
9. Bank grading to be included as an appendix to the JPA
10. More technical guidance for the applicant—there is typically a preconceived notion of what shoreline fix an applicant wants, but it may not be the best fit for their property
11. VIMS to attend wetlands board meetings for clarification of board reports, when needed.

Personal Interviews

Personal interviews were conducted with state and local agency representatives that play a role in permit review. One representative from VMRC, two from VIMS, one from the DCR SEAS program, and local staff from three coastal localities were interviewed based on the same set of questions, provided in this document as Appendix C.

Personal interview responses aided in documenting current gaps in the process and helped offer a suite of recommendations. Of primary concern is the conflicting advice currently being offered from state representatives. Interviewees mentioned that currently the Commonwealth does not typically have one suggestion for private property protection. Rather, VIMS, VMRC, and SEAS advice has often been conflicting, leaving the property owner confused as to the best means for protecting his shoreline. It was recommended that the Commonwealth work to have “one stop shopping” for shoreline advice where a single answer addressing all sides of the issue would be available.

Increased disbursement of educational materials for property owners was a primary topic in interviews. It was suggested that by the time property owners have obtained a JPA their decision as to what type of structure to build has been made and it is no longer relevant to discuss less environmentally intrusive measures, such as marsh vegetation.

Radio, newspaper, mailings, and continuing workshops were offered as possible ways to disseminate information.

Personal interviews revealed a particular problem regarding “completeness” of applications and VMRC efficiency in distributing copies of the JPA. It was noted by nearly all interviewees that VMRC does not review applications for completeness (i.e. proper site plans, all basic requirements of the JPA included, etc) but rather makes photocopies of each application and mails one copy of each JPA to VIMS, the local government, the Corps and DEQ. Each agency must then review applications for completeness, particularly looking for description of the proposed project via a location map and/or written directions, and indication of mean low and mean high water lines on the site plan. If applications are incomplete, the agency must send the packet back to the applicant who is then required to resubmit to VMRC. VIMS, being a non-regulatory agency, cannot “require” information but will request it from applicants, local staff, contractors, and/or VMRC. This cumbersome task takes a lot of staff time and wastes a lot of paper.

Jurisdictional determination is also reviewed after VMRC has distributed packets to each agency. VMRC sends each lengthy JPA to each agency listed above. The staff must then determine if the project falls under their respective jurisdiction. If it does not, the staff is required to send a “no jurisdiction” letter to the applicant. It was suggested during interviews that jurisdiction could be reviewed for by VMRC and “no jurisdiction” agencies could receive the one page copy of receipt of a proposed project from the agency that has jurisdiction over the project. A one-page letter is much more efficient

than photocopies of unnecessary applications and still keeps each agency abreast of projects occurring in all local jurisdictions.

A building code requirement for shoreline stabilization projects was noted as the current process, unlike home building, does not require specific building requirements.

There was discussion at each interview regarding the subjective nature of many guidelines and reports. CBLAD guidance on shoreline erosion control was criticized for use of terms such as “best available technical advice” and “active detrimental erosion.” VIMS comments and VMRC guidelines were also noted as being entirely too subjective, leaving the wetlands board to make determinations of the best method for shoreline stabilization with no guidance.

“Agency blinders” were noted in one interview, referring to the inability of state agencies to look beyond their particular objectives to view the greater scope of the problem. The Commonwealth is not currently working as a united front to address shoreline erosion.

Governmental overlap was also mentioned as a problem within the current framework. One interviewee mentioned that Army Corps and wetlands board jurisdiction often overlap. This cumbersome jurisdictional dilemma has led to local conflicts. The Corps was criticized for giving tidal wetlands project review to its least-skilled staff. A suggestion was made to have the Corps relinquish the portion of their tidal wetlands jurisdiction which overlaps that of the wetlands board.

Bay Act issues were noted by interviewees as difficult to implement at the local level. Although Bay Act and E&S regulations are equal in shoreline permit review, Bay

Act regulations are more difficult to explain and enforce. One interviewee mentioned the difficulty in explaining the nitrogen implications of lawns to property owners.

Further recommendations stemmed from discussion during personal interviews. Those suggestions for possible ways to improve the current process will be discussed in-depth in a future section of this report.

Wetlands Board Meeting Attendance

One rural and two urban wetlands board meetings were attended in July and October 2003. The urban locations had more formal meetings, including specific power-point presentations of each proposed project given by local staff. Local staff also offered oral recommendations in addition to written recommendations given to board members in a packet prior to the meeting. Board packets also included specific site plans and the VIMS recommendations.

In the rural location, local staff were not involved in presentation of projects, but were on hand for clarification if requested by the wetlands board. No power-point presentations of photographs or site plans were offered.

Eight project proposals and three violations were heard in total at the three meetings attended. Of the project proposals, four were approved as is, one was approved with modification, and three projects were held for further review at the next meeting.

Each of the three violations were granted “after-the-fact” permits, requiring a permit fee that is roughly \$50 more than the typical permit fee in the locality. No civil charges were incurred. Property owners from each of the three violations reported that they were not informed of permit requirements by their contractors and did not believe they were breaking the law. The lack of contractor accountability was noted in each case.

Benchmarks prior to site visits depicting the proposed location of the project were not required by any of the wetlands boards in the localities visited. Two of the three cases were held for future review because VIMS, local staff, and wetlands board members had difficulty finding the specific location of the proposed project. Had the sites been properly staked, the wetlands board could have made a permit decision at the current meeting.

VIMS board report comments were not mailed to the property owner before the wetlands board meeting in one locality. This led to frustration on behalf of the property owner when during the meeting the wetlands board would refer to VIMS recommendations and the property owner had no way of knowing what those recommendations were.

In general, wetlands board members seemed very willing to work to grant permits for projects that property owners had submitted. Wetlands boards were more concerned with this aspect of their charge than protecting the destruction of wetlands. Environmental impacts associated with project construction and protecting property from erosion were not mentioned during any meetings attended.

Site Visits

Due to the time constraints for completion of this project, sites were only visited on one day and in one locality. Six sites were visited in Gloucester County in October 2003 (see Map 1, Appendix A). Although further site visits in varying localities would benefit research for comparison purposes, a great deal was learned doing fieldwork in Gloucester County.

Staking by the property owner prior to site visits is not required by Gloucester County. This created difficulty in some cases where the exact location of some proposed projects was unclear. It was recommended that benchmarks and GPS coordinates be a requirement of the JPA to aid all agencies that will eventually visit the site.

Most sites visited in Gloucester were for replacement structures on developed properties. Further research including site visits to less-developed areas such as the Northern Neck would be beneficial.

Matrix Evaluation

Shoreline management in Virginia is a complex process involving multiple agencies each aimed at achieving important objectives. The objectives and current review process have been reviewed in previous sections of this report. In this section the suite of objectives are evaluated as to where they are achieved in the permit process. This is accomplished via a matrix document, included in this report as Appendix E.

The matrix was developed based on answers to an email survey and personal interviews conducted with state and local government representatives who work directly with shoreline management. Data was collected June-October 2003. The 35 tidewater localities vary greatly in process and thus matrix data information is based on the majority of responses obtained. For the purposes of this matrix, procedural steps in the Joint Permit Application were removed.

The horizontal axis is representative of a time series of the current process of shoreline management. This axis is divided into three areas: the Joint Permit Application, local permit requirements, and inspections. Most localities require proposed projects to

obtain permits from the wetlands board, by way of the JPA, before other local permits such as E&S are applied for.

The vertical axis represents the multiple objectives trying to be met by the multiple agencies involved in the current process of shoreline management. The star shapes on the matrix indicate the step in the current process where an objective is fulfilled. For example, in the JPA process under “Property owner obtains information on shoreline erosion control devices,” the objectives “Protect Private Property” and “Accommodate Economic Needs” are met. This is indicated by stars in those boxes.

As mentioned, the determination of whether and where an objective is met was based on several in-depth interviews and survey results. Proposed projects and permit reviews vary greatly and thus this matrix shows a consensus of primary research collected and may not be accurate for all cases.

The matrix provides evidence that the local government, VIMS, VMRC, and the wetlands boards are accomplishing the regulatory tasks outlined in Virginia Code. The wetlands board is generally interested in accommodating the economic needs of their locality, as charged by legislation, and regulatory and advisory agencies are fulfilling their charges.

Data collected indicated gaps in the Joint Permit Application review process regarding protection of critical habitat and endangered species, water quality, protection of the RPA, and sediment control. These objectives are not adequately met until later in local processes, or not at all.

The matrix document concludes that protection of endangered species and critical habitat is not being adequately addressed in the current process. Currently the

Department of Game and Inland Fisheries receives notification of proposed projects prior to public hearing but has no way of knowing if they receive notification for all permit applications. Because environmental review at DGIF is quite understaffed, they typically review proposed shoreline projects only when requested to do so by local non-profit groups or local wetlands boards (R. Fernald, personal communication October 17, 2003).

DGIF maintains the Virginia Fish & Wildlife Information Service (VAFWIS), an online database of wildlife resources across Virginia. VAFWIS offers a geographic search option, providing the user with information on all wildlife resources within a specified longitude and latitude coordinates.

DGIF provides workshops and training sessions if requested. Currently Fish and Wildlife Service, some VMRC engineers, and the Corps have been trained on how to navigate the database. The question remains, however, how effectively these agencies are using the database. DGIF to date has never been requested to offer a training session for local staff and wetlands boards or VIMS wetlands scientists. Increased utilization of the online database would provide for endangered species and critical habitat protection within the shoreline management framework.

Local permit requirements are also discussed in the context of the matrix. These permits may be required in addition to the JPA for shoreline stabilization projects. Some localities do not have combined wetlands board/Chesapeake Bay Preservation Act liaisons and thus protection of the RPA and buffer are not addressed until after a wetlands board has approved a project.

Post-permit inspections are required by varying forms of state and local legislation and will be conducted primarily by local staff and VMRC with VIMS

sometimes providing technical assistance depending on the project and locality.

Inspections can be done during construction or after a structure has been built.

Ideally, this matrix should provide evidence that each objective is being met in the JPA review process. The matrix, representing objectives being met in the current system, does not provide this result. Some objectives are being fulfilled only to meet a regulation requirement while others are not met at all. Consistency in permit review and agency coordination would improve the current system.

Recommendations

This report has critically researched and evaluated the current status of the shoreline erosion control management framework and process in Virginia.

Recommendations to improve coordination among decision-makers and ensure the best management of shorelines have arisen from background writing and data collection.

Recommendations have been developed based on personal interviews, email survey responses, and background research. The majority of recommendations aim to improve the current process of shoreline permit review.

1. Increase Education & Outreach

Education and outreach coordination need to become a top priority in order to create a greater efficiency and consistency among the many localities and agencies involved in shoreline management in the Commonwealth of Virginia. This section is divided into specific recommendations for the various stakeholders involved in shoreline management.

A. Create New Methods of Property Owner Education

The process of shoreline stabilization should provide property owners with educational opportunities to learn more about environmental impacts and describe methods for construction of well-designed structures. It is best to provide this information prior to selection of a contractor and completion of the JPA.

i. Provide onsite consultations

Beginning the permit process with onsite consultations will greatly improve review of shoreline projects. Site visits should be offered by local staff. Optimally, pre-application site visits are best, to reach the property owner before any decisions have been made. Research has suggested, however, that requests for pre-application visits may not be in abundance as neighbors and marine contractors are the first point of contact for most homeowners. Mandatory onsite consultation with a local government representative even if accomplished after an application has been submitted would allow for a comprehensive site review and guidance for the property owner.

The local government staff person should be able to provide property owners with a quick reach assessment, including information about shoreline conditions, other structures in the vicinity (both successes and failures), as well as important aquatic and terrestrial resources that are present in the area surrounding the proposed project site.

Local staff should advise property owners of their options and assist with completion of the Joint Permit Application. With the aid of GPS technology, an online mapping tool could be developed to assist property owners and local staff with the task of selecting the best alternative for their shoreline and drawing a site plan for use in their application. VIMS has a pilot program call “SMAK” the Shoreline Managers Assessment

Kit available on their website. The software for SMAK is similar to that used to create maps for the VIMS reports.

ii. Development of an interagency shoreline management consensus document

Through a grant from the Virginia Coastal Program, VIMS will begin work on an interagency shoreline management consensus document in January 2004. This consensus document will convey best available technical advice on shoreline management. The document will be based on a consensus of the agencies involved in the process of shoreline management.

A publication will be created and made available through the internet for use by local governments and property owners. This publication will include case studies that will illustrate the best available technical advice as well as demonstrate how impacts to riparian habitat, wetlands, tidal shores, SAV, and water quality can be minimized while still protecting private property from shoreline erosion. A brochure summarizing the larger publication will be distributed with hard copies of the JPA.

iii. JPA checkbox for review of educational materials

To ensure property owner receipt of educational materials such as the interagency consensus document brochure, a checkbox and signature should be included on the JPA indicating that the applicant has reviewed and understood the attached materials.

B. Provide Cross Training for Staff Involved in the Shoreline Management Process

The current management framework involves numerous agencies from varying governmental levels fulfilling multiple objectives. It is suggested that cross training be made available to provide local, state, and federal personnel the opportunity to increase their understanding of other agency roles, objectives and procedures regarding shoreline

management. Wetlands board members, VMRC, VIMS, Corps, CBLAD, local staff, DEQ, DGIF, and any other agency or organization recognized as a stakeholder in the shoreline management process should be invited to participate. Yearly workshops may provide the best outlet to accomplish this task.

C. Develop & Market a Certification Process for Marine Contractors

To provide educational opportunities for marine contractors, a voluntary certification program should be created. The program should offer contractors advice on better site design, explanation of the permit process, and review the environmental impacts associated with each method of stabilization. It is essential to properly market the certification program to developers, contractors, and property owners to ensure public demand for a certified marine contractor. The program should be similar to “continuing education” credits with annual training workshops on various topics made available.

2. Expand the Scope of the Virginia Institute of Marine Science Application Review

Currently VIMS scientists evaluate wetlands by type and maintain a continuing inventory of vegetated wetlands and set forth consequences of use of each wetland type for VMRC and wetlands board proposed projects pursuant to the Virginia Wetlands Act. VIMS reviews should be expanded to include a more comprehensive environmental review of shoreline projects. VIMS should expand awareness and review to include low impact development criteria, riparian buffer protection, E&S, protected species, and others.

VIMS review for both environmental impacts and site design considerations, including onsite pre-application consultations as mentioned in a previous recommendation would eliminate the need for property owners to pay an agent, with little

or no site design and/or environmental impact expertise, to develop and complete a JPA. VIMS scientists would be available to help property owners by taking GPS coordinates, developing site plans, and assisting with completion of the JPA.

VIMS scientists should also attend wetlands board meetings. Scientists in attendance should present their comments and describe the environmental consequences of proposed projects during wetlands board meetings. Attendance at meetings would allow clarification of board report comments and expand the role of VIMS as an advisory agency.

3. Ensure Application Completeness by VMRC prior to Distribution

The current framework does not review applications for completion upon receipt by VMRC prior to distribution to VIMS, local government, the Corps and DEQ. The lack of review by VMRC creates inefficiency in the current process. Many applications are received without basic forms, adequate site plans, and lack location of important demarcation including mean low and mean high water lines. VMRC should ensure application completeness prior to distribution. By doing so, staff time, costs associated with mailing, and paper will be saved.

4. Draft Model Building Code Requirements for Shoreline Stabilization Structures

The current process of shoreline management is lacking in a review for site design and minimum building standards. There are, in fact, no state building code minimum standards to follow when designing and building shoreline structures such as riprap revetments, bulkheads, and groins. Providing minimum building code requirements for shoreline structures would take care of the concerns of many agencies who notice the current lack of standards, poor design, and improper construction.

Providing building requirements would allow local and state agencies as well as the wetlands board to focus on the right method of stabilization for the specific situation. They would no longer have to be concerned about rock size or proper bank grading. Building standards would also provide for engineering expertise, an important aspect of review that is very inadequate in the current process.

Incorporation of building requirements for shoreline stabilization will provide a substantial outreach outlet for local staff, wetlands boards, VIMS, and VMRC representatives who lack the engineering expertise to properly review current project proposals.

5. Develop Model Language for Incorporating Shoreline Stabilization Requirements for New Waterfront Subdivisions into Local Land Use Ordinances

Developing a subdivision-wide ordinance for shoreline stabilization projects would allow for evaluation of environmental impacts on a reach basis. The wetlands board would review a shoreline for an entire subdivision rather than for each private lot within. This would allow the board to determine the best means of shoreline protection for the entire reach of shoreline. Adoption of this new language would prevent piecemeal shoreline stabilization as is seen today. It would avoid the potential for increased erosion on unstabilized shorelines adjacent to those that are stabilized as well.

6. Provide Sufficient Resources for Education and Project Review

Many of the above recommendations will be difficult to implement within current state and local levels of funding. This recommendation provides options for sources of future funding to aid in accomplishing noted tasks.

Local governments should ensure that local wetlands board permit fees fully cover the expense of properly evaluating permit applications. Applying for a permit

should be a “user fee” where those using the service are in essence paying for the service to be provided. The majority of current fees summarized in Appendix D do not fully cover expenses associated with staff time and required advertisement. An increased fee may provide the financial support to hire additional local and VIMS staff to work with property owners.

Possible state and federal resources may also be available to local governments and VIMS. Increased funding could provide additional staff support for onsite consultation and permit review.

7. Long-term Recommendations

The above mentioned recommendations provide suggestions for ways to improve the current process of shoreline management. Long-term it is recommended that the JPA be available for completion and agency review online.

Providing the JPA in an electronic completion and submission format would streamline the permitting process. Local staff involved in onsite consultations could work directly with property owners on laptops, complete the JPA including site plans (with GPS coordinates) on location and submit the application directly to VMRC when finished.

VMRC should keep submitted applications in an online database. Staff could draft an email briefly describing what is proposed in the application and would be able to inform all interested agency and stakeholder groups via email of the submitted application. VIMS could conduct their site review, offer suggestions in board reports and maintain their comments in the same online database.

Maintaining all records online would allow for greater distribution of applications and ensure that all agencies were notified of the application in advance of the public hearing. Agencies like DGIF would be ensured of notification and would have ample time to review proposals and the opportunity to voice their concerns at public meetings if they desired.

Conclusion

Shoreline stabilization structures for erosion control on private property are having drastic impacts on shorelines throughout the Virginia coastline. Property owners primarily take the advice of marine contractors and often propose unnecessary structures to be placed on low energy shorelines. Wetlands boards base most decisions on accommodating economic needs and have permitted many unnecessary structures. The current implementation of laws, policies, and regulations is inconsistent among localities.

This report has reviewed the current process of shoreline management in Virginia. Shoreline erosion control practices were outlined and the multiple objectives of the current framework were discussed. The current process, including the Joint Permit Application and completion of other required local permits was reviewed and evaluated. Finally, recommendations were offered suggesting areas for improved coordination among decision-makers.

Shoreline management in Virginia is a complex process primarily because numerous agencies review projects for overlapping jurisdictions and have varying objectives to meet. Coordination among state agencies including VIMS, VMRC, Corps, CBLAD, DCR/SEAS, and DEQ is essential to achieve the best management of shorelines

in the Commonwealth. Improved coordination between local governments and state agencies must be achieved. Inefficiencies in the process must also be addressed.

Further research should be accomplished to understand and provide for better shoreline management. Recommendations for future study include interviews and surveys directed toward marine contractors, wetlands board members, and property owners. Due to the time constraints of this project, these stakeholder groups were not directly contacted. Comments from these groups would provide understanding of their particular concerns regarding the current process.

An economic study of permit fees would also be of use in future research. Review for the cost of staff time in reviewing and conducting site visits, mailings, advertisement, and other expenditures would provide documentation of exactly how much it costs to review one permit. Research would provide a future recommendation on what the optimal local permit fee should be.

Virginia Coastal Program Internship

This internship has provided me with real world experience dealing with shoreline management. I have had the opportunity to work with numerous federal, state, and local agency personnel that have taught me much more about the process of shoreline management than I would have learned conducting research solely as a graduate student. Being a part of a coastal program has prepared me for future employment opportunities. I plan to remain involved in shoreline management and follow this report's recommendations to fruition.

The opportunity to work with this state agency has provided me with invaluable life experience, most notably how to interact with numerous state agencies and identify

areas for improved coordination. I would recommend an internship with the Virginia Coastal Program to any graduate student interested in digging their heels in and learning first hand what it is to be a coastal manager.

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Visual Image Credits

Map 1. Virginia's Coastal Zone.

Map courtesy of Kendell Jenkins, Virginia Coastal Program.

Photograph of revetment.

Courtesy of Rich Takacs, NOAA

Photographs of groin, breakwater, marsh fringe & bulkhead.

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Photograph of Saltmeadow Hay.

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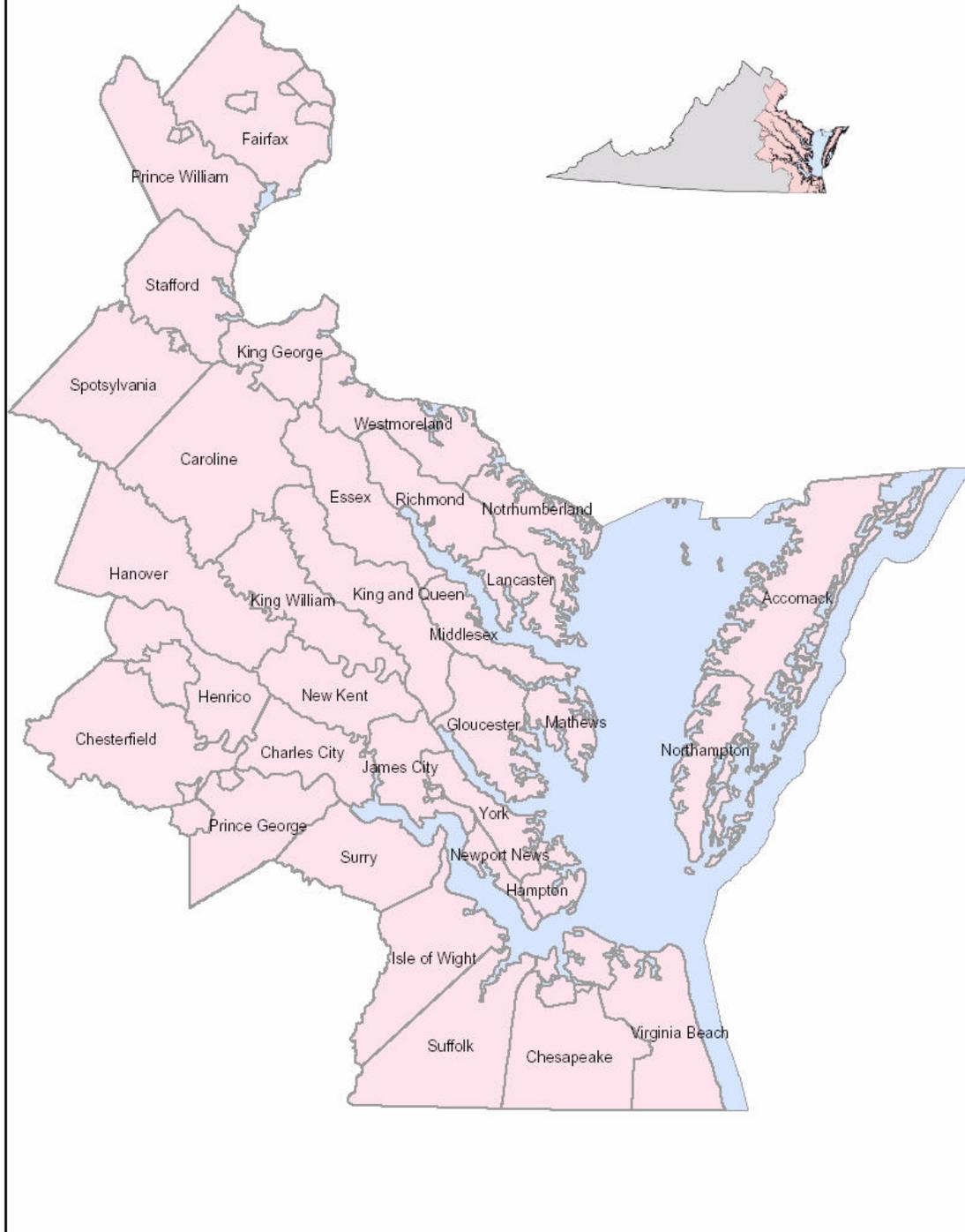
Photograph of Cliff Swallows.

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Image of RPA Cross-Section.

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Virginia's Coastal Zone



Dear Local Wetlands Board Staff Member,

My name is Krista Trono. I am interning with the Virginia Coastal Program at the DEQ working toward completion of a Master of Arts degree in Marine Affairs and Policy from the University of Miami's Rosenstiel School of Marine & Atmospheric Science (RSMAS). My graduate degree requires completion of an internship project/report sponsored by a host agency (Virginia Coastal Program).

My project's goal is to critically research and evaluate the current status of the shoreline erosion control management framework and process in Virginia. To this end I am interviewing/surveying involved agencies and stakeholders to identify opportunities for improved coordination among decisionmakers.

Your completion of the survey questions below will greatly benefit my project. All survey answers will be used for data gathering purposes only. Your name and affiliation will remain confidential. Data collected will be used to compile a final report, including recommendations that will be sent to UM-RSMAS in November 2003 for completion of my graduate requirements. My report and recommendations will also be presented to the Virginia Coastal Program's Coastal Policy Team and at the Coastal Partners Workshop this December.

Thank you in advance for your support. If you have any questions regarding the survey or the project, please email or call me (804) 698-4051. Your survey answers may be sent to me by replying to this email (kltrono@deq.state.va.us), via mail, or by fax (804) 698-4319. [Please send your answers by Friday, September 12, 2003.](#)

Questionnaire:

1. What locality do you represent? (*For summary purposes only*)
2. For shoreline stabilization projects, do you typically:
 - Visit the site? If so, is the site visit coordinated with VIMS and/or VMRC staff?
 - Talk with applicants regarding stabilization options and permitting requirements prior to JPA submission?
 - If so, do you discuss the potential environmental impacts of various stabilization strategies? (i.e.: impacts on wetlands, water quality, habitat, the RPA buffer)
 - Provide comments to your wetland board on each project? If so, are you comments written or oral?
3. In your opinion, where do property owners typically obtain information (prior to receiving a JPA) for available shoreline stabilization techniques?
4. What is your local permit fee for non-commercial projects (e.g. bulkhead, riprap)? Does this fee cover all necessary expenses including advertising, staff review and site inspections?
5. If a project requires land disturbance within the RPA buffer, are Bay Act requirements typically discussed with the applicant prior to JPA submission? Are Bay Act implications discussed with your wetland board?
6. In your opinion, what percentage of shoreline stabilization projects result in land disturbance (either for access or slope grading) within the RPA buffer?
7. Do you routinely have adequate information to consider the environmental impacts of shoreline stabilization projects? If not, what additional information would be useful to you?
8. Do you have any suggestions for improving the current process for managing shoreline stabilization projects?

Current Review Process for Shoreline Erosion Control Measures

- 1. Waterfront property owner recognizes the need to address an erosion problem on his property.**
- 2. Property owner obtains information regarding possible methods for shoreline stabilization.**
 - How do homeowners find relevant information relating to shoreline stabilization techniques and the permitting process (i.e.: Neighbors, contractors, locality, Corps, VMRC, VIMS, SWCD, etc.?)
- 3. Property owner obtains/completes/submits a Joint Permit Application to VMRC**
 - Where do most applicants obtain their JPA?
 - Do applicants typically understand the full range of issues associated w/ shoreline stabilization?
 - What percentage of JPA's are completed by a consultant?
 - What is the permit fee used for?
- 4. JPA is assigned a VMRC permit application number and VMRC distributes JPA to VIMS, local government, and (where applicable) Corps and DEQ.**
 - Do all relevant agencies obtain a copy of the completed JPA, or should it be further dispersed?
 - Is there an adequate level of staff resources dedicated to JPA review?
- 5. Review, including site visits conducted by local government, VIMS (with comment) & VMRC.**
 - Who typically visits a site prior to permit consideration by the wetlands board? (VIMS, VMRC, Corps, local wetlands board staff, wetlands board members)
 - Do local Bay Act/E&S staff currently receive a copy of VIMS comments prior to wetlands board meetings?
 - Do VIMS comments contain specific examples of wetland types/communities present on site?
 - Are VIMS scientists looking only at impacts to wetlands during review?
- 6. Local wetlands board meeting/decision (if no board, VMRC determination) to grant, grant with modification or deny permit.**
 - Are local wetlands board staff and board members typically familiar with other local ordinances related to the proposed project? (E&S, Bay Act)
 - Do local staff typically review and comment on proposed projects?
 - If so, are comments typically written or oral?
 - Are VIMS scientists informed of the final permit decision?
 - Percentage of wetlands board meetings attended by VIMS scientists? VMRC? Corps? Local staff?
 - Percentage of projects that utilize VIMS comments (does VIMS track these?)

7. VMRC reviews all wetlands board decisions. Appeal period

- What would cause VMRC staff to recommend that the Commission review a local decision? How often does this happen?
- What is the reason for most appeals heard by VMRC?

8. Permit granted to applicant

- Percentage of board reports completed and sent back to VIMS?

9. Completion of all other relevant local permits/inspections

- When in the process do applicants typically seek required permits beyond those associated with the JPA?
- Does wetland board approval affect other local authorizations if it precedes these processes?

10. Project construction

- What inspections are typically conducted during/after construction (who, how many and when?)
- What happens if compliance issues are discovered?

General Questions

- In your opinion, what locality has the most comprehensive review process?
- Is this the correct sequence of events?
- Do some of these steps occur concurrently?
- Do some steps vary by locality?
- Are the multiple objectives of shoreline stabilization project review process currently being met?

Protection of private property loss due to erosion

Protection of tidal and nontidal wetlands

Protection of important terrestrial and intertidal habitats

Maintaining the water quality protection function of the RPA buffer

Minimizing increases in turbidity resulting from stabilization

Protecting SAV

Protection of primary sand dunes and beaches

Wetlands Board Permit Fees

Locality	Fee
Accomack	\$100 + ad. + building fee
Cape Charles	\$100 + advertisement
Charles City	Advertisement costs only
Chesapeake	\$125
Colonial Heights	\$25 + advertisement
Essex	\$50 + advertisement
Fairfax	\$300
Fredericksburg	\$100
Gloucester	\$200
Hampton	\$150
Hopewell	Advertisement costs only
Isle of Wight	\$250
James City	\$100
King George	\$500
King William	\$75
Lancaster	\$100
Mathews	\$75 + advertisement (\$35)
Middlesex	\$150
New Kent	\$500
Newport News	\$200
Norfolk	\$125
Northampton	\$200 + advertisement
Northumberland	\$200
Poquoson	\$200
Portsmouth	\$50 + advertisement
Prince William	\$265
Richmond	\$200
Stafford	\$1900
Suffolk	\$250
Surry	\$100
Virginia Beach	0.25% of construction value (\$100-\$1000 max.)
Westmoreland	\$300
West Point	\$150
Williamsburg	\$25
York	\$150