

# Tidal Wetlands Management Technical Support

---

Center for Coastal Resources Management  
Virginia Institute of Marine Science  
Grant #NA15NOS4190164, Task #6

10/15/2016



**Virginia Coastal Zone**  
MANAGEMENT PROGRAM

*This project was funded, in part, by the Virginia Coastal Zone Management Program at the Department of Environmental Quality through Grant # NA15NOS4190164 of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended. The views expressed herein are those of the authors and do not necessarily reflect the views of the U.S. Department of Commerce, NOAA, or any of its subagencies*

# Table of Contents

## Product 1: General Technical Guidance

Summary.....	4
Details of Advisory Requests .....	5
Living Shoreline Requests Details.....	6
Joint Permit Application Review Summary & List .....	8
VIMS Report Summary & List .....	8
Example VIMS Tidal Shoreline Management Recommendation with CCRMP .....	15
Example VIMS Tidal Shoreline Management Recommendation with Decision Tree .....	18

## Product 2: Education / Outreach

Tidal Wetlands Workshop Summary .....	20
Agenda .....	21
Participants List .....	23
Presentation 1 – Workshop Objectives.....	26
Presentation 2 – Virginia’s Tidal Wetlands: Managing for Resilience.....	47
Presentation 3 – The Tidal Wetlands Act Legal Framework .....	68
Tidal Wetlands Act Handout .....	81
Presentation 4 – The Role of VMRC in the Wetlands Board Process.....	84
Presentation 5 – Shoreline Management: Assessing the Need for an Enforceable Policy .....	115
Presentation 6 – General Assembly & Other Updates.....	123
Interactive Experiences – Station Descriptions.....	134
Activities Map.....	135
Shoreline Application Review Exercise.....	136
Additional Training Summary .....	140
Publications Summary .....	141
e-News December 2015 .....	142
e-News February 2016 .....	146
e-News June 2016 .....	150
e-News September 2016.....	152
Rivers & Coast, Summer 2016.....	155

# Product 1: General Technical Guidance

The Center for Coastal Resources Management (CCRM) routinely receives and responds to requests from the public, regulators, NGO's and others for advice on coastal resources issues. General advice is provided via phone, email, and/or when feasible on-site. In response to requests for shoreline advice on-site, we focus on projects that involve proposed living shorelines and those from more rural localities. We also receive advisory requests for Joint Permit Application (JPA) Reviews on large, complicated, unusual or protested projects that impact the marine environment. Advice draws heavily from routinely used data and tools including on-line resources at CCRM/VIMS, from other coastal partners and agencies, aerial imagery, decision tools and decision models.

The Wetlands Program routinely produces a VIMS Tidal Shoreline Management Recommendation for all JPA's involving shoreline erosion control projects advertised on local wetlands boards' agendas (these do not need to be requested). This VIMS report identifies the preferred shoreline best management practice as determined from the Comprehensive Coastal Resource Management Portal (CCRMP) for completed localities and/or the applicable CCRM Decision Trees, without regard to the specific project. The reports are made available on CCRM and VMRC's permit websites in addition to being emailed to the local wetlands board members and staff, property owner, agent, and contractor.

The Center continues to populate a database to track our advisory work to enable adaptation of our guidance development and outreach program to address issues identified through data analysis.

In summary, The Center provides two categories of advice 1) requested, including general technical guidance and JPA Reviews and 2) systematically provided, VIMS Tidal Shoreline Management Recommendations.

## **Requested Advice:**

121 Technical Advisory and General Information

2 JPA Reviews

123 Total Responses

## **Provided Advice:**

310 VIMS Tidal Shoreline Management Recommendations

**Total Technical Guidance Provided: 433**

## Details of Advisory Requests:

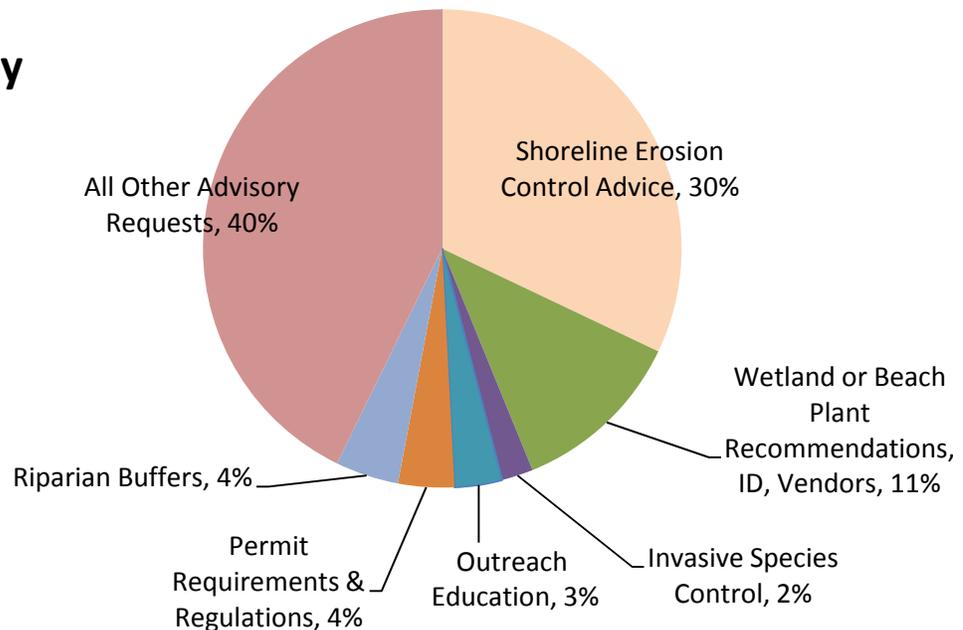
### Type of Advice Requested:

• Erosion Control Advice (30 of these specific to living shorelines)	37
• Wetland/Beach/Dune Plant Recommendations, ID, & Vendor Info	15
• CCRMP/Decision Trees	7
• Permit Requirements/Regulations/Process	6
• Riparian Buffers	5
• Outreach Education	5
• Database information	5
• <i>Phragmites</i> /Invasive Species Control	4
• Floating Wetlands	3
• Joint Permit Application (JPA) Reviews	2
• Violations	2
• Mitigation/Compensation	2
• Miscellaneous (SAV, habitat, stormwater management, MHW, etc.)	30

### Advice Requested From:

• Citizen/Property Owner	47
• Local Government & Wetland Board Staff or Member & Elected Officials	29
• Community/Non-Profit/NGO/Master Gardener/Naturalist	13
• Other State Agencies	12
• Academic/Research	10
• Marine Contractor	5
• Consultant	3
• VMRC Staff	2
• Other (agent & attorney)	2

## Total Advisory Requests

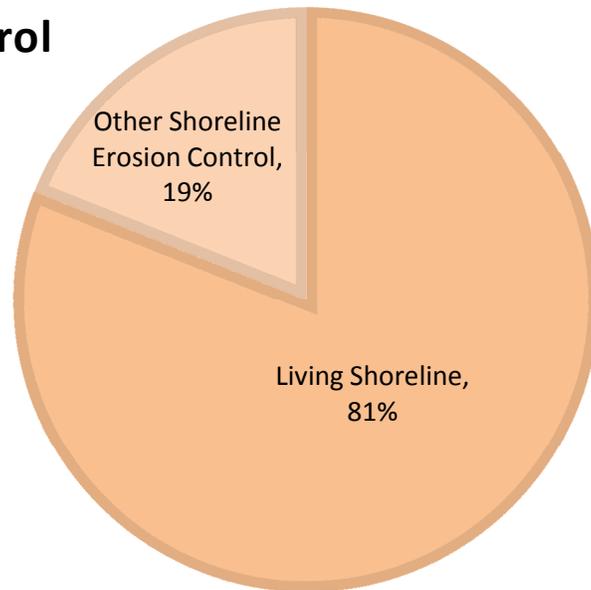


Shoreline erosion control topped the list for the most requested category of advisory service this grant period.

### Living Shoreline Requests:

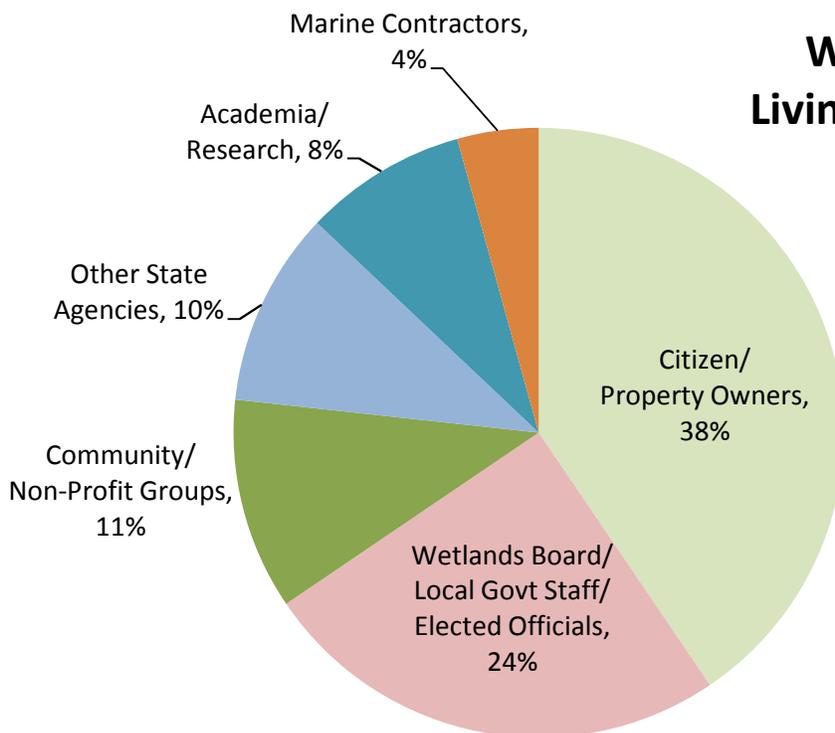
Of the advisory requests associated with shoreline erosion control (above), 81% were related to the living shoreline management approach: an increase from the previous year's 75%.

### Shoreline Erosion Control Advisory Requests



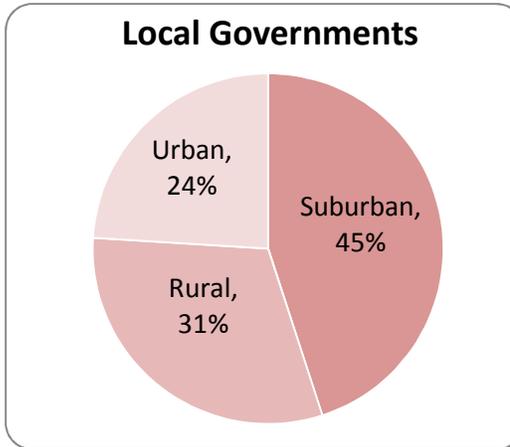
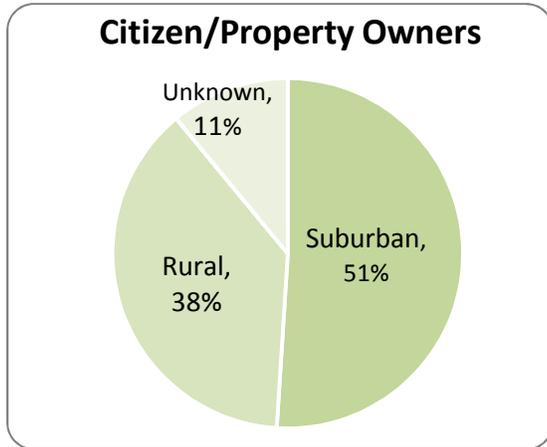
Of those requesting information on living shorelines (81% above), citizen and property owners were the largest group with local government coming in close second:

### Who is Requesting Living Shoreline Advice?



**Locality Type of Living Shoreline Advice Requested:**

This grant period, living shoreline requests from citizens/property owners came primarily from suburban areas; slightly increased in rural areas; and remained zero for urban designated localities. The majority of local governments (represented by local government staff, wetlands board, and elected officials) requesting living shoreline advice also came from suburban localities with the remainder closely shared between rural and urban.



\*Locality designation was defined by housing unit density; Rural tracts = less than 64 units per square mile, Suburban tracts = 64 to 1,600 housing units per square mile, and urban tracts = greater than 1,600 housing units per square mile. Housing density information obtained from the U.S. Census.

**Living Shoreline Advisory Requests Summary:**

24% of all advisory requests received during this grant period were in reference to living shorelines compared to 21% last grant period and 16% the year previous to that. Overall the total number of living shoreline related requests from citizen/property owners this grant period was similar to last grant period, but there was a decrease in requests from local governments. Interestingly, there was an increase of requests from out of state governments. Site visits were conducted for 6 living shoreline advisory requests. Not all requests warrant a site visit.

LOCALITY	LIVING SHORELINE ADVICE REQUESTED BY:			Total	LOCALITY TYPE
	Citizen	Local Gov't	Other		
Out of state			5	5	NA
Hampton	1	2	1	4	Suburban
Virginia Beach	1	2	1	4	Suburban
Gloucester	2		1	3	Suburban
Lancaster	2		1	3	Rural
Middlesex	2			2	Rural
Accomack	1			1	Rural
Chesapeake	1		1	1	Suburban
Isle of Wight	1			1	Rural
King George	1			1	Rural
Mathews			1	1	Suburban
Newport News			1	1	Urban
Norfolk			1	1	Urban
Westmoreland			1	1	Rural
	<b>11</b>	<b>4</b>	<b>14</b>	<b>29</b>	

## Joint Permit Application (JPA) Reviews:

JPA Reviews are VIMS reports written upon special request for joint permit applications that involve activities that impact the marine environment such as dredging, marina expansion, community piers, boat ramps, and utility crossings. These reports provide advisory comments from an integrated coastal management perspective to avoid or reduce adverse impacts to coastal resources in response to the activity being proposed. VIMS JPA Reviews were written for the following proposed projects.

PERMIT	NAME	LOCALITY	PROJECT
16-0750	Kerry Bierma	Chesapeake	Marsh with coir log
16-1222	Susan Wheeler	Norfolk	Riprap

## VIMS Tidal Shoreline Management Recommendations:

The VIMS reports are based on VIMS comprehensive coastal resource management guidance which provides recommendations for the preferred shoreline stabilization approach to preserve and maintain tidal wetland ecosystems in the face of coastal development and sea level rise.

The goal of the recommended approach is to foster the sustainability of shoreline resources using living shoreline designs where appropriate and applying traditional shoreline hardening only in areas where site conditions make them necessary. These recommendations reflect the Commonwealth's preferred approach for shoreline stabilization using living shoreline treatments whenever adequate erosion control can be achieved.

There are two types of reports. For the twenty-two localities where a Comprehensive Coastal Resources Management Portal (CCRMP) has been developed a geo-spatial model is used to determine the preferred shoreline management recommendations. The model is based on the comprehensive coastal resource management guidance and incorporates the data on the natural resources and physical characteristics of a shoreline collected during the VIMS shoreline inventory. <http://ccrm.vims.edu/ccrmp/index.html>

For the localities where a CCRMP has not yet been developed, the CCRM Decision Trees, also based on the coastal comprehensive resource management guidance, are used to determine the preferred shoreline management recommendation using natural resource and physical characteristics of a shoreline obtained from the CCRM Shoreline Assessment Mapper (SAM) tool, Google Earth, joint permit applications, property owners, and other sources. <http://ccrm.vims.edu/decisiontree/>

VIMS Tidal Shoreline Management Recommendations were provided for the following proposed projects advertised on local wetlands boards' agendas.

PERMIT	APPLICANT	LOCALITY	DATE
13-0851	Leonard Bennett	Isle of Wight	10/01/2015
15-1174	Peter Kardok	Virginia Beach	10/01/2015
15-1242	John Monaco	Virginia Beach	10/01/2015
15-1251	Michael Gardner	Virginia Beach	10/01/2015
15-1324	Jim Keenan	Virginia Beach	10/02/2015
15-1347	Gertrude Neff	Virginia Beach	10/02/2015
15-1389	Robert Poitras	Essex	10/02/2015
15-1287	Randolph Fisher	Essex	10/02/2015
15-1360	Thomas Kalil	Accomack	10/02/2015

15-0858	Bruce Iseman	Accomack	10/02/2015
15-1402	Chandra Ward	Accomack	10/05/2015
15-1442	Mark-Haven Villa Associates	Essex	10/05/2015
15-1441	J.H. Morris	Richmond County	10/06/2015
15-1306	David Williams	King and Queen	10/07/2015
15-1505	Alvin Treadwell	Mathews	10/28/2015
15-1259	Robert Fischer	New Kent	10/28/2015
15-1455	Eric Keck	New Kent	10/29/2015
15-1477	John Britt	New Kent	10/29/2015
15-1530	James Burch	Northumberland	10/29/2015
15-1422	Steven Greber	Northumberland	10/30/2015
15-1531	Sheryl Loop	Northumberland	10/30/2015
15-1456	Salvatore Nuara	Northumberland	10/30/2015
15-1460	Richard Yasky	York	10/30/2015
15-1468	John Holston	York	11/02/2015
15-1341	Robert Ripley	Gloucester	11/02/2015
15-1451	John Saunders	Gloucester	11/02/2015
15-1450	Mark Guillory	Gloucester	11/02/2015
15-1385	Dan Steiner	Gloucester	11/02/2015
15-1430	David Michaud	Virginia Beach	11/02/2015
15-1439	Benjamin Tayloe	Westmoreland	11/05/2015
15-1473	James Robertson	Westmoreland	11/05/2015
15-1474	Anthony Loconti	Westmoreland	11/06/2015
15-1282	Richard Finocchiaro	Lancaster	11/09/2015
15-1386	Richard Sutton	Lancaster	11/09/2015
15-1436	O. Crowther	Lancaster	11/09/2015
15-1601	Betty & Mark E. Anderson, Et Al Trustees	Mathews	11/10/2015
15-1630	Alan Tsui	Essex	11/10/2015
15-1628	Mary Ann Smith	Essex	11/10/2015
15-1603	Edwin Smith	Essex	11/12/2015
15-1506	Ken Parsons	James City	11/16/2015
15-1431	W. H. (Hank) Norton	Middlesex	11/16/2015
15-1658	William Dean	Northumberland	11/18/2015
15-1655	E. Duke	Northumberland	11/18/2015
15-1650	John Dutton	Northumberland	11/19/2015
15-1609	Alene Robinson	Northumberland	11/19/2015
15-1620	Donald Stone	Northumberland	11/19/2015
15-1610	Alan Bittman	York	11/23/2015
15-1458	Michael Koeppen	Gloucester	11/23/2015
15-1631	Robert Beckstoffer	Gloucester	11/23/2015
15-1452	James Hazel, Highland Park Civic League	Norfolk	11/23/2015
15-1119	Karl Schmidt	Hampton	11/23/2015
15-1676	Donna Lankford	Essex	12/07/2015
15-1670	Timothy (& Karla) Gill	Virginia Beach	12/07/2015
15-1581	Joseph Darden	West Point	12/07/2015
15-1616	Dr. Jawwad (& Teresa Tan) Kahan	Newport News	12/08/2015
15-1671	Mark (& Teresa) Talbert	Westmoreland	12/08/2015
15-1625	James (& Christine) Blandford	Westmoreland	12/09/2015
15-1570	James Noe, Ebb Tide Beach Community Center	Westmoreland	12/09/2015
15-1623	Kevin Hyde	Westmoreland	12/09/2015

15-1740	Atack Properties, Inc.	Richmond County	12/09/2015
15-1688	Sami (& Mary Joe) Sbitani	Westmoreland	12/10/2015
12-1362	Bryon Mobley, US Trust - Bank of America	Richmond County	12/14/2015
15-1745	Dave Valenta	Mathews	12/14/2015
15-1687	Harvey (& Marie) Lloyd	Middlesex	12/17/2015
15-1748	Joseph Heyman	Middlesex	12/17/2015
15-1752	Frances C. Ward Revocable Trust	Middlesex	12/17/2015
15-1760	Kevin (& Belinda) Humphreys	Middlesex	12/17/2015
15-1765	Ray (& Brenda) Sickal	Mathews	12/17/2015
15-1629	Win Vaughn, ANPAT-WINCO, Inc.	New Kent	12/18/2015
15-1636	Chester Vaughan, Vaughan Properties	New Kent	12/18/2015
15-1755	Cheapeake Beach Civic Club	Northumberland	12/22/2015
15-1774	Lewis (Catherine M.) Courtney	Northumberland	12/22/2015
15-1725	Juergen Hauber	Northumberland	12/22/2015
15-1778	Scott Nichols	Northumberland	12/22/2015
15-1744	Mark Powstanski	Northumberland	12/22/2015
15-1759	Michael Wallo	Northumberland	12/22/2015
15-1801	Mike Rohde	Mathews	12/22/2015
15-1343	Michael (Jodi) Luken	Norfolk	01/12/2016
15-1791	Matthew Isenhower	Virginia Beach	01/12/2016
15-1796	David Earl	Virginia Beach	01/12/2016
15-1802	Eugene Loving	Virginia Beach	01/12/2016
14-1044	James Reynolds	Accomack	01/14/2016
16-0001	Tanya (John) Press	Essex	01/14/2016
16-0018	Anne Warner	Richmond County	01/15/2016
16-0028	Hank Furniss	Mathews	01/15/2016
15-1707	Graylend Horn, Horn Holdings LLC	West Point	01/19/2016
15-1768	Alfred Hales	King George	01/19/2016
15-1721	Virginia Sigismondi	Middlesex	01/19/2016
15-1739	Henry Miller	Middlesex	01/20/2016
15-1784	J Luck	Middlesex	01/20/2016
16-0067	Richmond Dugger	Northumberland	01/20/2016
16-0061	Judy (James) Jones	Northumberland	01/22/2016
16-0068	Preston Perrin	Northumberland	01/22/2016
16-0063	Reginald Ray	Northumberland	01/22/2016
15-1806	John Warren	Northumberland	01/28/2016
15-1805	John Warren	Northumberland	01/28/2016
16-0059	Clarence Davis, Washington Auto Club, Inc.	Northumberland	01/28/2016
16-0004	Roger & Ellen East	Gloucester	01/28/2016
15-1667	Jonathan Hocker, Norfolk Southern Railway Co	Norfolk	01/28/2016
15-1820	Paul Gillooly	Norfolk	01/29/2016
15-1818	Ellen Elliott	York	01/29/2016
15-1819	Thierry Chaney	York	01/29/2016
16-0029	David Wescott	York	02/01/2016
16-0120	Rod & Susan Rogge	Virginia Beach	02/01/2016
15-1747	Craig Chwojdak	Lancaster	02/10/2016
15-1800	Charles & Georgia Dunfee	Lancaster	02/10/2016
15-1812	Janet Winter	Lancaster	02/10/2016
15-1813	Mary Guerrant	Lancaster	02/10/2016
16-0091	Martha Peterson	Lancaster	02/10/2016

16-0093	Peter Field	Lancaster	02/10/2016
16-0105	R. Waller	Lancaster	02/10/2016
15-1514	Kurte & Alana Woerpel	Westmoreland	02/11/2016
16-0118	Mark Conklin	Accomack	02/11/2016
16-0109	Edward Gemmel	Accomack	02/11/2016
16-0138	James & Susan Lehman	Richmond County	02/12/2016
16-0166	Marsha Carlton	Mathews	02/12/2016
16-0092	Jerry & Nancy Smither	Mathews	02/12/2016
16-0170	Jim Hudson, Godsey Homeplace, LLC	Mathews	02/12/2016
16-0165	Foster Jennings	Mathews	02/16/2016
16-0189	George Watkins	Portsmouth	02/16/2016
16-0033	Paul Nunnally	Middlesex	02/16/2016
16-0127	Pam Spence	Gloucester	02/18/2016
16-0150	Michael Koeppen	Gloucester	02/18/2016
16-0196	Joseph Cunningham	Norfolk	02/18/2016
16-0211	Sandra Brisentine	Northumberland	02/19/2016
16-0149	Danny Crabbe	Northumberland	02/19/2016
16-0204	Mark & Teresa O'Brien	Northumberland	02/19/2016
16-0115	John Rider	Northumberland	02/19/2016
16-0217	Lloyd & Ashlin Smith	Northumberland	02/19/2016
16-0220	Robert Spell	Northumberland	02/19/2016
16-0177	Clint Welch, White Sand Harbour POA	Northumberland	02/19/2016
16-0117	Andrew Deas	York	02/19/2016
16-0248	St. Martin, LLC	Virginia Beach	03/03/2016
15-1807	Doug Brewer, U.S. Fish & Wildlife Service	Virginia Beach	03/03/2016
15-1841	Gary & Sally Powell	Hampton	03/03/2016
10-1552	CSX Transportation, Inc.	Stafford	03/03/2016
16-0153	Austin & Patricia Magill	Westmoreland	03/03/2016
16-0307	Vernon Lingenfelter	Mathews	03/04/2016
16-0320	James Carreras	Richmond County	03/07/2016
16-0219	Rosemary Wilson	Accomack	03/07/2016
15-1815	Don & Dana Griffin	Accomack	03/09/2016
16-0255	Captains Cove Golf & Yacht Club	Accomack	03/09/2016
16-0279	Mary Tobin, Trustee	Mathews	03/11/2016
16-0344	Michael Lundberg	New Kent	03/18/2016
16-0352	Clay Smith	New Kent	03/18/2016
16-0125	Patrick & Lee Holder	James City	03/18/2016
16-0207	George Amory, Chickahominy Haven Citizen As	James City	03/18/2016
16-0313	Henry Branscome	James City	03/18/2016
16-0314	Brian Harriss	James City	03/21/2016
16-0409	Nina Bhat	Northumberland	03/24/2016
16-0414	George Butler	Northumberland	03/24/2016
16-0394	Joseph Drake	Northumberland	03/24/2016
16-0406	William & Jenifer Holmes	Northumberland	03/28/2016
16-0304	Reece Jackson	Northumberland	03/28/2016
16-0347	Ronald Jenkins	Northumberland	03/28/2016
16-0421	Donna Shomo	Northumberland	03/28/2016
16-0260	Theodore Taylor	Northumberland	03/28/2016
15-0985	Shep Miller	Middlesex	03/29/2016
16-0201	Lawrence Haywood	Gloucester	03/30/2016

16-0293	Joseph Leming	Gloucester	03/30/2016
16-0309	Cuong Vu	Gloucester	03/31/2016
15-1790	Brian LaRoche	Virginia Beach	04/05/2016
16-0206	William & Joan Branch	Virginia Beach	04/05/2016
16-0367	Jack & Ann Sanford	Westmoreland	04/05/2016
16-0408	Nancy Rosenberg	Westmoreland	04/05/2016
16-0386	Daun Frankland	Westmoreland	04/05/2016
16-0366	Robert & Jean Poole	Lancaster	04/05/2016
16-0239	James & Sallie Puffenberger	Hampton	04/07/2016
16-0294	Dennis Motsko	Middlesex	03/29/2016
16-0419	Darryl Lilliston	Accomack	04/13/2016
16-0474	Ramon Breeden	Mathews	04/19/2016
16-0322	Helen Graves	Charles City	04/20/2016
16-0540	Dorothy Spiggle	Mathews	04/20/2016
16-0541	Teresa Raynes	Mathews	04/20/2016
16-0384	Gary Massie, RiverBank Acres POA (RBAPOA)	Middlesex	04/20/2016
16-0385	Don & Pia Steinbrugge	Middlesex	04/20/2016
16-0416	Ken Odell, Velo Limited Partnership	Middlesex	04/20/2016
16-0497	Joe Lewis	Middlesex	04/21/2016
16-0566	Jerry & Theresa Ferrell	Mathews	04/25/2016
16-0587	Gwen Keane	Northumberland	04/26/2016
16-0588	James Landrum	Northumberland	04/28/2016
16-0601	Jerry & Carolyn Patterson	Northumberland	04/28/2016
16-0529	Raymond Michelini, Potomac Bay Estates POA	Northumberland	04/28/2016
16-0249	Brendan Walsh	Norfolk	04/28/2016
16-0542	Timothy Witlatch	York	04/28/2016
16-0553	W. Cuddihy	York	04/28/2016
16-0454	Ronald Duke	Gloucester	04/29/2016
16-0471	James Wesson	Gloucester	04/29/2016
16-0524	Chris Chapman	Gloucester	04/29/2016
16-0525	Edward Walker	Gloucester	04/29/2016
16-0526	Greg Thayer	Gloucester	04/29/2016
16-0457	Jim Conway	Virginia Beach	05/01/2016
16-0463	Kenneth Calise	Virginia Beach	05/01/2016
16-0531	Sagie Doran	Virginia Beach	05/01/2016
16-0578	Mary Mladinich-Spain	Virginia Beach	05/01/2016
16-0579	Mark Gibson	Westmoreland	05/01/2016
16-0581	William & Beverly Horn	Westmoreland	05/02/2016
16-0486	Michael Kirchgessner	Westmoreland	05/09/2016
16-0544	Steve Miller	Accomack	05/10/2016
16-0632	Michael Davis	Richmond County	05/10/2016
16-0543	Ken Odell	Middlesex	05/11/2016
16-0627	William Hargrove	Portsmouth	05/11/2016
16-0740	Peter & Pamela DeLisle	Mathews	05/12/2016
16-0509	Linda Willett	Mathews	05/12/2016
15-0939	Kenneth Campbell	Chesapeake	05/12/2016
16-0565	John Catterton	Middlesex	05/17/2016
16-0571	Lud & Frances Kimbrough	Middlesex	05/17/2016
16-0589	Robert Barnes, Chick Cove Marina	Middlesex	05/17/2016
16-0654	Mary Ross Hutcheson	Middlesex	05/17/2016

16-0711	Jimmy Meredith	Middlesex	05/17/2016
16-0723	Robert & Ameer McKim	Middlesex	05/17/2016
16-0736	James & Katherine Alexander	Middlesex	05/18/2016
16-0737	Donald & Margaret Johnson	Middlesex	05/18/2016
16-0620	Harry Stokes	Gloucester	05/24/2016
16-0719	John Gillis	Gloucester	05/25/2016
16-0096	Mount Vernon Country Club Inc.	Fairfax	05/25/2016
16-0102	Svinder & Nadia Toor	Norfolk	05/26/2016
16-0316	Albert Cook, Moran Towing of Virginia Beach	Norfolk	05/26/2016
16-0693	Richard Morse	Norfolk	05/26/2016
16-0694	Sharon Darrell	Norfolk	05/26/2016
16-0700	Susan Treyz, Elizabeth Myers Byse Trust	Norfolk	05/26/2016
16-0094	Christopher Baughman	Norfolk	05/26/2016
16-0845	George Lyon, Lyon Shipyard	Norfolk	05/27/2016
16-0856	John Ayres	Northumberland	05/27/2016
16-0767	James Handlon	Northumberland	05/27/2016
16-0837	Gerald Irvin	Northumberland	05/30/2016
16-0768	Jennings Family Limited Partnership	Northumberland	05/30/2016
16-0847	Linda Quilter	Northumberland	06/10/2016
16-0609	Raymond Webb	Lancaster	06/12/2016
16-0780	Charles Thomas	Lancaster	06/12/2016
16-0782	Matthew & Kaarin Gordon	Lancaster	06/12/2016
16-0773	Janice Volpini	Westmoreland	06/12/2016
16-0827	J.A. Byrd	Virginia Beach	06/12/2016
16-0839	Graveyard Cove Dredge LLC	Virginia Beach	06/12/2016
16-0805	Resource Building Corporation	Virginia Beach	06/14/2016
16-0464	James Tucker, Tucker's Boat Rental & Storage	King and Queen	06/17/2016
16-0680	Steven Russell	King and Queen	06/17/2016
16-0727	Craig Turlington	King and Queen	06/20/2016
16-0775	Clifton Ogg	King and Queen	06/20/2016
16-0941	Robert Schepker	Mathews	06/23/2016
16-0705	Andrew Anderson	Middlesex	06/23/2016
16-0823	Harvey Hill, Hill Marina/Clark's Marina	Middlesex	06/23/2016
16-0902	Ernest & Julia Cashwell	Middlesex	06/24/2016
16-0933	Jeffrey & Eraina Benson	Northumberland	06/24/2006
16-0986	Michael Craddock	Northumberland	06/27/2016
16-1004	Lawrence & Rebecca Elston	Northumberland	06/28/2016
16-0890	James & Brenda Gianiny	Northumberland	06/28/2016
16-0987	Richard Loving	Northumberland	06/28/2016
16-0410	Lynn Schoenbaum	Virginia Beach	06/29/2016
16-0557	William & Chrys Morris	Virginia Beach	06/29/2016
16-0889	Michael & Nikki Foster	Virginia Beach	06/29/2016
16-1030	Mary Regan	Virginia Beach	06/30/2016
16-1029	Mary Jones	Virginia Beach	06/30/2016
16-0863	George Arnold	Norfolk	06/30/2016
16-0981	Gary & Barbara Laws	Norfolk	06/30/2016
16-0945	Louis Kemp	Westmoreland	07/06/2016
16-0920	James & Mardrey Amery	Westmoreland	07/06/2016
16-0803	William & Yvonne Ann Wilson	Westmoreland	07/06/2016
16-0909	Andrew & Pamela Promisel	Westmoreland	07/06/2016

16-0954	C. Fletcher, Flemer Leedstown Corporation	Westmoreland	07/06/2016
14-0230	Joe & Marta Rose	Northampton	07/06/2016
16-0718	Maurice Chesley	Lancaster	07/06/2016
16-0842	Mark & Katherine Fonnville	Lancaster	07/06/2016
16-1052	Arthur & Eda Grothouse	Accomack	07/07/2016
16-1074	Stephen Mallette	Accomack	07/07/2016
16-1063	Mark Dennin	Accomack	07/08/2016
16-0860	John & Beth Calder	Cape Charles	07/24/2016
16-0701	Mark & Martha Adrian	Prince George	07/24/2016
16-0961	Mark Motley	Mathews	07/24/2016
16-1110	Clark Richardson	Mathews	07/29/2016
16-1109	Rick Shaheen	Mathews	07/29/2016
16-1111	Leonard Simpson	Mathews	07/29/2016
16-1126	Jimmy & Kim Williams, Short Lane Ice Cream	Mathews	07/29/2016
16-1127	Michael & Berit Hammond	Mathews	08/01/2016
16-0901	Douglas & Deborah Stoughton	Middlesex	08/01/2016
16-1057	Robert Tyler	Middlesex	08/01/2016
16-1166	Stuart Nibley	Northumberland	08/02/2016
16-1099	Dean Short	Gloucester	08/02/2016
16-1195	John & Ann Schmidt	Virginia Beach	08/02/2016
15-1834	Richard & Lisa Klein	Virginia Beach	08/02/2016
16-0834	Susan Pender	Virginia Beach	08/02/2016
16-0679	Brian Mullins, BC Marina, LLC	Suffolk	08/09/2016
16-1105	Robert & Khrysti Uhrin	Westmoreland	08/10/2016
16-1170	Lloyd & Anne Hall	Westmoreland	08/10/2016
16-1098	Jeff & Barb Jewell	Westmoreland	08/10/2016
16-0586	Phillip Spottswood	Lancaster	08/12/2016
16-1181	Kathy Perkins	Lancaster	08/12/2016
16-1182	Carson & Teresa Rogers	Lancaster	08/12/2016
16-1050	Edward & Christine Richardson	Accomack	08/12/2016
16-1164	Trevor Nitz	Mathews	08/12/2016
16-1265	Raymond Faircloth	Suffolk	08/16/2016
11-1129	Francis & Shirley Ryan	Mathews	08/19/2016
16-1320	Jean Case	Mathews	08/19/2016
16-1364	Jeanne Bell	Northumberland	08/29/2016
16-1087	William Smith	Middlesex	08/29/2016
16-1212	Dorothy Hilbush	Middlesex	08/29/2016
16-1044	Michael Jones, Navy Region Mid-Atlantic	Norfolk	08/30/2016
16-1222	Susan Wheeler	Norfolk	08/30/2016
16-1233	James & Barbara McCarthy	Lancaster	08/30/2016
16-1253	Vincent & Irene Russo	Lancaster	08/30/2016
16-0658	Robert Lincoln	Virginia Beach	08/31/2016
16-1093	Cynthia Rickman	Virginia Beach	08/31/2016
16-1351	John Murrell	Virginia Beach	09/01/2016
16-1346	Ashby Horner, J. Horner Trust	Virginia Beach	09/01/2016
16-1344	James & Carol Flynn	Virginia Beach	09/01/2016
16-1332	Edward Augustine	Virginia Beach	09/01/2016
16-1281	James & Joan Shannon	Essex	09/01/2016
16-1373	G. Hopkins & Elizabeth Guy	King and Queen	09/06/2016
16-1396	Mark & Christine Bilowus	Westmoreland	09/09/2016

## VIMS Tidal Shoreline Management Recommendation

(VMRC # 16-1222)

**Applicant:** Susan Wheeler

**Address:** 840 Jamestown Crescent, Norfolk, VA

**Waterbody:** Lafayette River

**Date:** August 30, 2016

### *Preferred Options for Shoreline Management*

The shoreline best management practices recommended in this report reflect the preferred approach for shoreline stabilization from a broad coastal ecosystem viewpoint, and are based on VIMS comprehensive coastal resource management guidance to preserve and maintain tidal wetland ecosystems in the face of coastal development and sea level rise. **The goal of the recommended approach is to foster the sustainability of shoreline resources using living shoreline designs where appropriate and applying traditional shoreline hardening only in areas where site conditions make them necessary.** These recommendations reflect the Commonwealth's preferred approach for shoreline stabilization using living shoreline treatments whenever adequate erosion control can be achieved.

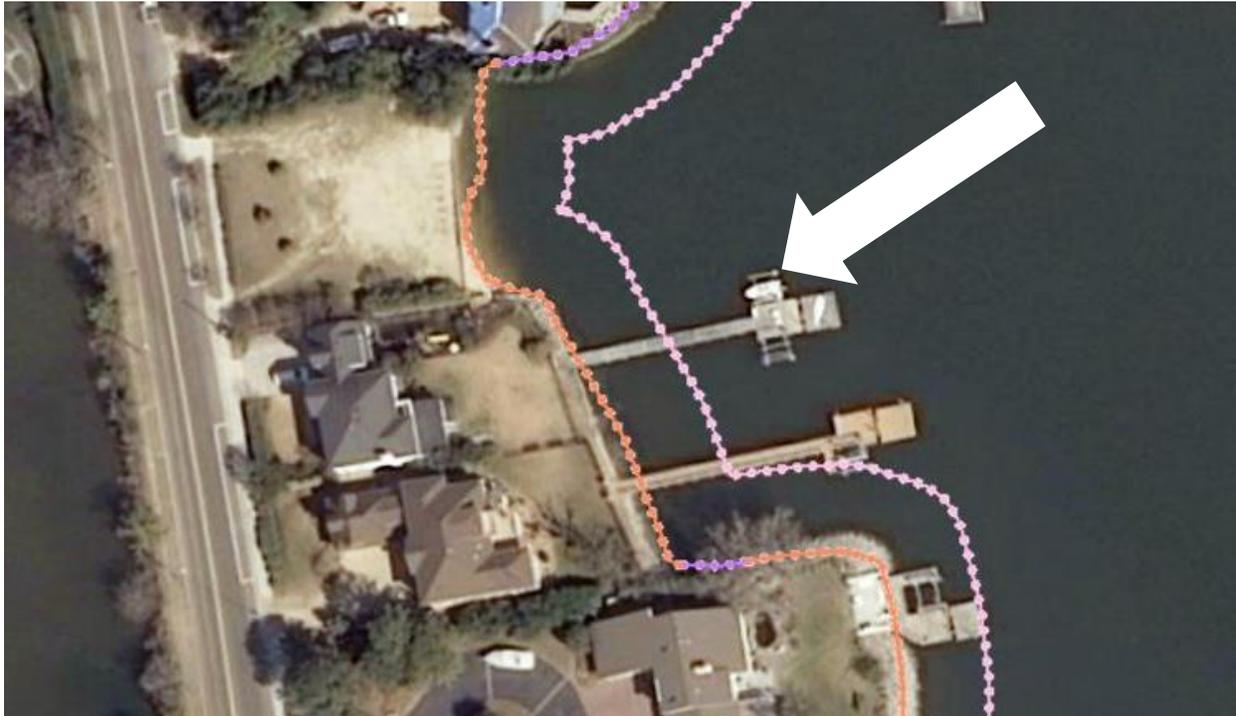
The comprehensive coastal resource management guidance recommendation is based on the natural resources and physical characteristics of the shoreline and is not dependent upon the project being proposed.

Information on the natural resources and physical characteristics of a shoreline is collected during the VIMS shoreline inventory conducted as part of the development of each locality's Coastal Comprehensive Resource Management Portal (CCRMP). The VIMS shoreline inventory includes data such as: bank condition, nearshore depth, fetch, bank height, presence of beach and/or wetlands, location of primary structures, existing shoreline structures, and bank cover. The data is collected via observations made from a small vessel on the water or remotely at the desktop using high resolution imagery. Every attempt has been made to ensure that these data are reliable and accurate. However limitations such as inability to access a shoreline, tide stage, image quality, as well as changes to shorelines occurring post inventory, affect the data accuracy.

A geo-spatial model that is based on the comprehensive coastal resource management guidance is used to determine the preferred shoreline management recommendations. An interactive Comprehensive Map Viewer delineating the preferred approaches for your locality can be accessed at <http://ccrm.vims.edu/ccrmp/index.html>.

The ecosystem scale of the model is not specifically detailed to individual parcels. In some instances, conditions of a parcel such as the presence of existing erosion control structures, narrow lot size, and proximity of primary buildings to the shoreline may cause the larger scale ecosystem based approach to be difficult to achieve. In these cases, the shoreline management recommendation derived from the CCRM Decision Tree Tools may be an alternative option and if so will be provided at the end of the report. To access the Coastal Management Decision Tree Tools go to: <http://ccrm.vims.edu/decisiontree/>.

## Coastal Ecosystem Based Recommendation Details (16-1222)



If active erosion is occurring along this shoreline, ***the preferred approach for erosion control to preserve and maintain tidal wetland ecosystems is to:***



It would be beneficial to the tidal shoreline ecosystem to restore the connection between the upland and the intertidal area by removing the existing revetment and bulkhead if feasible and allowing the natural processes and functions to occur at this ecologically critical intersection between land and water, increasing the probability that tidal shoreline ecosystems will be sustained in the future.

### ●●●●● Grade Bank

After removal of the revetment and bulkhead, the bank may need to be graded in select areas to achieve a gradual slope to dissipate wave energy up the bank and to facilitate the growth and establishment of vegetation on the bank.

Grading should only be conducted as necessary, where essential, and done as minimally as possible to achieve the necessary slope. Banks that are graded should be stabilized with a variety of native plants placed at appropriate elevations.

**Riparian Buffer Area (RPA):** The RPA along this shoreline currently appears to be primarily in mowed turf lawn.

To provide erosion control benefits to this shoreline, the Riparian Buffer Area (RPA) should be planted and maintained in a variety of native deep-rooted grasses, shrubs, and small trees within 100 feet (minimum) from the top of bank.

- Minimize the amount of waterfront lawn area in the buffer;
- Minimize the amount of routine mowing.

## ●●●●● Plant Marsh with Sill

- Plant marsh grass along this shoreline to slow wave energy down, collect sediment and raise the elevation of the shoreline over time, and increase the distance of the upland bank from tidal wave action. The planting area for marsh vegetation should extend from mid-tide to an elevation 1.5 times the tide range above mean low water.
  - Planting new marsh may require the placement of sand fill to achieve elevation appropriate for marsh grass.
  - Overhanging tree limbs may need to be pruned to allow sunlight to reach the marsh grass and allow it to grow.
  - Periodically monitor marsh for signs of damage and dead plants, especially after installation and after a storm.

Place a properly designed and constructed rock sill channelward of the existing or planted marsh fringe to hold the sand in place and provide a wave break to the wetland plants and the upland bank.

The site suitability for a sill must be determined, including bottom hardness, navigation conflicts, construction access limitations, orientation and available sunlight for plants.

*"Living shoreline" means a shoreline management practice that provides erosion control and water quality benefits; protects, restores or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials.*

It is our opinion that the proposed patens planting box is not providing shoreline erosion control and would not meet the definition of a Living Shoreline.

It would better benefit the tidal shoreline ecosystem for the wetlands compensation design to include grading the bank to a gradual slope to integrate the riparian buffer with a high marsh, low marsh and the tidal waterway; and eliminating the proposed planting box approach that severs the wetland area from the upland.

Implementing the preferred approach, marsh with sill, along this shoreline would eliminate the need for compensation.

## VIMS Coastal Ecosystem Management Recommendation

(VMRC #16-1281)

**Applicant:** James Shannon

**Site Address:** 328 Cottage Row, Tappahannock, VA

**Waterbody:** Rappahannock River

**Date:** September 1, 2016



A replacement bulkhead is proposed along the high energy, sandy shoreline of the Rappahannock River. Currently, there is an existing bulkhead and timber groins situated along the project shoreline with a house located approximately 65 feet from the bulkhead.

Bulkheads sever the connection between the upland and the intertidal area interrupting the natural processes and functions that occur at the ecologically essential intersection between water and land, limiting the ability of the natural systems to perform vital tidal shoreline functions and reducing the probability that tidal shoreline ecosystems and resources will be sustained in the future.

To maintain the connection between upland and intertidal area, breakwaters with beach nourishment are generally preferred along high energy, sandy shorelines such as this site. Breakwaters by design help to control shoreline erosion by dissipating incoming wave energy and affecting littoral drift creating wide pocket beaches to protect the shoreline. However, these effects are best achieved if a system of breakwaters is designed for a reach of shoreline and not just along the shoreline of a single property owner. In addition, decisions already made on the shoreline such development of narrow lots, installation of the existing erosion control structures

and the construction of a house in close proximity to the shoreline make implementing the preferred approach difficult.

An alternative management approach to this shoreline is to remove the existing bulkhead and construct a properly designed riprap revetment landward of beach impacts. Riprap dissipates wave energy better than bulkhead. If grading is an issue on this site, constructing a riprap toe channelward of the existing bulkhead is acceptable for site conditions.

To provide additional erosion control benefits to this shoreline, planting the riparian buffer area (extending a minimum 100 feet inland from the shoreline structure) in a variety of deep-rooted native shrubs, grasses, and small tree plantings is recommended.

It appears the riparian area on this site is currently primarily in mowed turf lawn. Waterfront lawn area should be minimized in the riparian buffer area (RPA) and routine mowing in the buffer reduced to allow vegetation to establish. Mowing to the edge of the shoreline reduces the erosion control ability of the shoreline.

### ***Preferred Options for Shoreline Management***

The shoreline best management practices recommended in this report reflect the preferred approach for shoreline stabilization from a broad coastal ecosystem viewpoint, and are based on VIMS comprehensive coastal resource management guidance to preserve and maintain tidal wetland ecosystems in the face of coastal development and sea level rise.

**The goal of the recommended approach is to foster the sustainability of shoreline resources using living shoreline designs where appropriate and applying traditional shoreline hardening only in areas where site conditions make them necessary. These recommendations reflect the Commonwealth's preferred approach for shoreline stabilization using living shoreline treatments whenever adequate erosion control can be achieved.**

The comprehensive coastal resource management guidance recommendation is based on the natural resources and physical characteristics of the shoreline and is not dependent upon the project being proposed.

Since a Comprehensive Coastal Resources Management Portal (CCRMP) has not yet been developed for your locality at this time, the Decision Tree Coastal Management Decision Tools have been used to determine the environmentally preferable approach for management of this shoreline. The Decision Trees are a tree-like graph of questions and answers about shoreline characteristics that lead to the environmentally preferable approach. To access the Coastal Management Decision Tools go to: <http://ccrm.vims.edu/decisiontree/>.

In the future, the preferred shoreline management recommendation for your locality will be determined using a geo-spatial model, a component of the CCRMP, that accounts for the observed shoreline conditions such as bank condition, nearshore depth, exposure to waves, and location of primary structures (e.g. homes) collected during a VIMS inventory of your locality's shoreline. The model is based on the comprehensive coastal resources management guidance developed by VIMS.

# Product 2: Education / Outreach

## Tidal Wetlands Workshop

### Legal Authority, Roles & Responsibilities of Local Wetlands Boards

The Center for Coastal Resources Management staff planned, organized, and presented at our annual Tidal Wetlands Workshop on May 05, 2016. There were 130 workshop participants representing 23 local governments, 4 state agencies, 10 non-profit organizations, and 15 marine related businesses. CCRM personnel and guest speakers shared their legal expertise and advice with the audience and a panel of local government staff representatives shared their experiences with administration of tidal shoreline regulations. An interactive discussion with Local Wetlands Board members in the audience further explored some of the many legal issues and challenges encountered during the shoreline permit application review process. Following the morning session, workshop participants engaged in interactive outdoor experiences related to legal issues at the VIMS Teaching Marsh & VIMS Beach. Listed below, all presentations and other workshop materials are available online: [http://ccrm.vims.edu/education/workshops\\_events/spring2016/Spring2016.html](http://ccrm.vims.edu/education/workshops_events/spring2016/Spring2016.html)

#### Presentations

- Workshop Objectives
- Shoreline Management: Working toward coastal resilience
- Tidal Wetlands Act Legal Framework
- Virginia Marine Resources Commission Roles & Responsibilities
- Implementing Sustainable Shoreline Management in Virginia: Assessing the need for an enforceable policy
- General Assembly and Other Updates

#### Local Government Staff Perspectives and Experiences Panel

#### Local Wetlands Board Members Perspectives & Experiences

#### Interactive Experiences

- Shoreline Application Review
- Tidal Marsh Research
- Beach & Dune Review
- CCRMP Orientation & Hands-on Computer Stations
- Shoreline Management Tools

**Legal Authority, Roles & Responsibilities of Local Wetlands Boards**  
Thursday May 5, 2016  
Virginia Institute of Marine Science  
Gloucester Point, VA

**AGENDA**

**8:00 – 9:00** *Check-in & Coffee - Watermen's Hall Lobby*

**9:00 – 10:15** *Presentations in Watermen's Hall Auditorium*

**Workshop Objectives & Logistics** *Karen Duhring, VIMS-CCRM*

**Shoreline Management: Working toward coastal resilience** *Pamela Mason, VIMS-CCRM*

**The Tidal Wetlands Act Legal Framework** *Cindy Hall, Deputy City Attorney, Norfolk City Attorney's Office*

**10:15 – 10:30** *Break*

**10:30 – Noon** *Presentations in Watermen's Hall Auditorium (continued)*

**Virginia Marine Resources Commission Roles & Responsibilities**

*Tony Watkinson, Chief of Habitat Management, Virginia Marine Resources Commission*

**Local Government Staff Perspectives & Experiences**

*Panel session moderated by Karen Duhring, VIMS-CCRM*

*David Imburgia, City of Hampton*

*Melissa Burgard Kellam, Northampton County*

*Brian Barnes, Lancaster County*

*Michael Woolson, James City County*

**12:00 – 12:45** **LUNCH** *included for registered participants*

Box lunches served in lobby, seating in classrooms A, B, & C and outside (weather permitting)

**12:45 – 2:15** *Presentations in McHugh Auditorium, Watermen's Hall (continued)*

**Local Wetlands Board Members Perspectives & Experiences**

*Interactive discussion moderated by Karen Duhring, VIMS-CCRM*

**Implementing Sustainable Shoreline Management in Virginia: Assessing the need for an enforceable policy** *Marcia Berman, VIMS-CCRM*

**2016 General Assembly & Other Updates**

## AGENDA *continued*

**2:15 – 2:30** *Break & transition to Interactive Experiences*

**2:30 – 3:30** ***Interactive Experiences***  
Choose from outdoor & indoor stations with activities designed to illustrate legal issues and implementation tools (*see handout for additional information*)

**Shoreline Application Review** at VIMS Teaching Marsh  
*Christine Tombleson & Pamela Mason, VIMS-CCRM*

Outdoors  
@ VIMS Boat Basin  
rain or shine

**Tidal Marsh Research** at VIMS Teaching Marsh  
*Robert Isdell, VIMS-CCRM*

courtesy shuttles  
available

**Beach & Dune Review** at VIMS Beach  
*Julie Bradshaw & Molly Mitchell, VIMS-CCRM*

---

**CCRMP Orientation & Hands-On Computer Stations** VIMS Technology Classroom  
*Karina Nunez & Tamia Rudnicky, VIMS-CCRM*

Indoors  
@ Watermens Hall

**Shoreline Management Tools** Auditorium  
*Marcia Berman, VIMS-CCRM*

**3:30** **Adjourn**  
*Please complete & turn in Workshop Evaluations at registration table or mail in*

## Participants List

---

Keith Abernathy	Portsmouth Wetlands Board	<i>ncshagger@gmail.com</i>
Eric Ancarrow	York County Wetlands Board	<i>eric.ancarrow@ferguson.com</i>
Nils Bahringer	Virginia Beach Wetlands Board	<i>nils5@verizon.net</i>
Brian Barnes	Lancaster County	<i>bbarnes@lancova.com</i>
Jason Barney	Virginia Beach Wetlands Board	<i>jbarney@barneyenvironmental.com</i>
Steven Barnum	City of Suffolk	<i>steven.barnum@hydromts.com</i>
Bronco Bayless	Gloucester Wetlands Board	<i>bronco3030@yahoo.com</i>
Margie Beane	Northern Neck Master Gardeners	<i>margieb1121@gmail.com</i>
Amanda Beck	Suffolk Wetlands Board	<i>abeck@suffolkva.us</i>
Pam Boatwright	Elizabeth River Project	<i>pboatwright@elizabethriver.org</i>
Glenda C. Booth	Fairfax Wetlands Board	<i>gbooth123@aol.com</i>
Louis Bott	City of Newport News	<i>lbott@nnva.gov</i>
Nathan Bowman	Norfolk Wetlands Board	<i>nathan.bowman@norfolk.gov</i>
David Boyd	Northampton Wetlands Board	<i>dboyd351@verizon.net</i>
Sandra Brinson	Integrity Environmental, Inc.	<i>integrityenvinc@gmail.com</i>
Bill Brown	Friends of Back Bay	<i>wpbrownmd1@cox.net</i>
Molly Brown	Virginia Beach Wetlands Board	<i>psmith@vbgov.com</i>
Melissa Burgard Kellam	Hampton Wetlands Board	<i>mkellam@co.northampton.va.us</i>
China Burton	Hampton Wetlands Board	<i>1mercemee@gmail.com</i>
Rachel Chieppa	Charles City County	<i>rchieppa@co.charles-city.va.us</i>
Bill Clarke	Poquoson Wetlands Board	<i>theclarkee@gmail.com</i>
Sherry Coffey	City of Poquoson	<i>sherry.coffey@poquoson-va.gov</i>
David Compton	City of Virginia Beach	<i>dcompton@vbgov.com</i>
Christine Conrad	C2 Environmental, Inc.	<i>cconrad@c2environmental.com</i>
Gayle Cozzens	Hampton Wetlands Board	<i>cozzenjr@cox.net</i>
Kate Daniel	The Wetlands Project	<i>kcdaniel@thewetlandsproject.org</i>
Melanie Davis	James City County	<i>melanie.davis@jamescitycountyva.gov</i>
Anna Drake	York County	<i>drakea@yorkcounty.gov</i>
Richard English	Richmond County	<i>renglish@co.richmond.va.us</i>
Jackie Ferriter	Master Gardener Water Steward	<i>jackieef@aol.com</i>
Joseph Fiorello	Stafford County	<i>jfiorello@staffordcountyva.gov</i>
John Fisher	VA Department of Environmental Quality	<i>john.fisher@deq.virginia.gov</i>
Linwood Fisher	Norfolk Wetlands Board	<i>lfisher88@cox.net</i>
David Gallagher	Richmond County	<i>drgallag@verizon.net</i>
Vanelia Gallagher	Richmond County	<i>trichardejr@gmail.com</i>
Eric Garner	WPL	<i>eric@wplsite.com</i>
Carole Garrison	Hampton Wetlands Board	<i>garrisoncarole.wetlands@gmail.com</i>
Tim Getek	Accomack Wetlands Board	<i>wbrdgetek@gmail.com</i>
Juliette Giordano	Angler Environmental	<i>jgiordano@anglerenvironmental.com</i>
Melody Goodwin	Mathews Wetlands Board	<i>mgoodwin@kmh-cpa.com</i>
Andrew Griffey	City of Hampton	<i>apgriffey@hampton.gov</i>
Greg Gruner	Richmond County	<i>ddunaway@co.richmond.va.us</i>
Happ Hadd	Lancaster Wetlands Board	<i>haphadd@lancova.com</i>

## Participants List

---

Cindy Hall	Norfolk Deputy City Attorney	<i>cynthia.hall@norfolk.gov</i>
Richard Harr	City of Newport News	<i>rharr@nnva.gov</i>
Arne Hasselquist	Hampton Wetlands Board	<i>ahassel@cox.net</i>
Cindy Hawks	Virginia Beach Wetlands Board	<i>cindyhawks@kw.com</i>
Page Henley	Lancaster Wetlands Board	<i>pagehenley@lancova.com</i>
Geoffrey Hinshelwood	Suffolk Wetlands Board	<i>geoff@universallaboratories.net</i>
Max Hlavin	James City County	<i>maxwell.hlavin@jamescitycountyva.gov</i>
Karen Holloway	City of Poquoson	<i>karen.holloway@poquoson-va.gov</i>
Janine Howard	VA Department of Environmental Quality	<i>janine.howard@deq.virginia.gov</i>
Shereen Hughes	Wetlands Watch	<i>shereen.hughes@wetlandswatch.org</i>
Kim E. Hummel	Isle of Wight County	<i>khummel@isleofwightus.net</i>
David Imburgia	City of Hampton	<i>dimburgia@hampton.gov</i>
Denise James	Fairfax County Planning & Zoning	<i>denise.james@fairfaxcounty.gov</i>
Bob Janeski	Lancaster Wetlands Board	<i>bobjaneski@lancova.com</i>
Thomas Jenkins	Mathews County	<i>tjenkins@co.mathews.va.us</i>
Loreida Jennings	City of Suffolk	<i>ljennings@suffolkva.us</i>
Emiliee Jessen	City of Virginia Beach	<i>emjessen@gmail.com</i>
Ken Jobe	VB Beaches & Waterways, Green Ribbon Comm.	<i>kejo425@aol.com</i>
Mike Johnson	Virginia Marine Resources Commission	<i>mike.johnson@mrc.virginia.gov</i>
Mike Lane	Lane Environmental Consultants	<i>lanewmike@gmail.com</i>
Sarah Lindemann	Wetland Studies and Solutions, Inc.	<i>slindemann@wetlandstudies.com</i>
Susan Lindsey	NNMG: Shoreline Evaluation Program	<i>kingdon@kaballero.com</i>
Cecil Little	Lancaster Wetlands Board	<i>cecillittle@lancova.com</i>
Melissa MacIntyre	James City County	<i>melissa.macintyre@jamescitycountyva.gov</i>
Mary Mahoney	EnviroScience	<i>mmahoney@enviroscienceinc.com</i>
Susan Manes	Michael Baker International	<i>smanes@mbakerintl.com</i>
Richard Marshall	Mathews Wetlands Board	<i>Richard.Coke@gmail.com</i>
Betsy Martin	Fairfax Wetlands Board	<i>betsy@folhc.org</i>
Rachael Maulorico	Virginia Marine Resources Commission	<i>rachael.maulorico@mrc.virginia.gov</i>
Seamus McCarthy	City of Norfolk	<i>seamus.mccarthy@norfolk.gov</i>
Charles McKenna	City of Virginia Beach	<i>cmckenna@vbgov.com</i>
Veronica Meade	City of Hampton	<i>vmeade@hampton.gov</i>
Bill Minnick	Gloucester Wetlands Board	<i>benabill@yahoo.com</i>
Shep Moon	Virginia CZM Program	<i>shep.moon@deq.virginia.gov</i>
Chip Neikirk	Virginia Marine Resources Commission	<i>chip.neikirk@mrc.virginia.gov</i>
Laura J.C. Nusz	City of Newport News	<i>lnusz@nnva.gov</i>
Randal Owen	Virginia Marine Resources Commission	<i>randy.owen@mrc.virginia.gov</i>
Ron Owens	Gloucester County	<i>rowens@gloucesterva.info</i>
Roya Pardis	King William County	<i>rpardis@kingwilliamcounty.us</i>
David Parks	City of Suffolk	<i>dparks@suffolkva.us</i>
Bert Parolari	VA Department of Environmental Quality	<i>bert.parolari@deq.virginia.gov</i>
Ammie Pascua	Virginia Beach ESO	<i>apascua@vbgov.com</i>
Ken Paulson	Norfolk Wetlands Board	<i>2eovbeach@gmail.com</i>
Lee Perkins	City of Norfolk	<i>lee.perkins@norfolk.gov</i>

## Participants List

---

Kathryn Peterson Lambert	W.E.E.D	<i>triplam747@aol.com</i>
Sarah Picking	Ann P. Stokes Landscape Architects	<i>spicking@apsla.net</i>
Andy Pineau	Stafford Wetlands Board	<i>andypineau@aol.com</i>
Stacy Porter	Portsmouth Planning	<i>porters@portsmouthva.gov</i>
Phil Prisco	Poquoson Wetlands Board	<i>priscop@verizon.net</i>
Betty Pugh	SBH Construction Co., Inc.	<i>sbhbetty@yahoo.com</i>
Steve Pugh	R & W Marine Construction, Inc.	<i>rwmarineconstruction@gmail.com</i>
Scott Rae	Gloucester County	<i>srae@gloucesterva.info</i>
Sarah Richardson	New Kent County	<i>sarah.richardson.nk@gmail.com</i>
Phil Russell	City of Hampton	<i>prussell@hampton.gov</i>
Rick Scarper	City of Virginia Beach	<i>rscarper@vbgov.com</i>
Karl Schrass	National Wildlife Federation	<i>schrassk@nwf.org</i>
Casey Shaw	Elizabeth River Project	<i>cshaw@elizabethriver.org</i>
Diane Short	York County Wetlands Board	<i>basketmakr@aol.com</i>
Paul Siegel	Friends of Little Hunting Creek	<i>paul@folhc.org</i>
Lena Simmons	Portsmouth Wetlands Board	<i>lsimmons954@gmail.com</i>
Maurice Simmons	Lancaster Wetlands Board	<i>mauricesimmons@lancova.com</i>
Michael Sisson	Richmond County	<i>mapackett@co.richmond.va.us</i>
Hunter Sledd	NNMG: Shoreline Evaluation Program	<i>unc1971@gmail.com</i>
Donald Smith	Portsmouth Wetlands Board	<i>donald.smith@pps.k12.va.us</i>
Nathalie Smith	NNMG: Shoreline Evaluation Program	<i>jcntsmith@gmail.com</i>
Lane Stokes	James Madison University	<i>stokestl@dukes.jmu.edu</i>
Scott Strickland	Norfolk Wetlands Board	<i>strick9585@cox.net</i>
David Stromberg	City of Hampton	<i>dstromberg@hampton.gov</i>
Christiana Tambone	New Kent Environmental Planner	<i>cmtambone@newkent-va.us</i>
Elizabeth Taraski	Nansemond River Preservation Alliance	<i>etaraski@gmail.com</i>
Scott J Thomas	James City County	<i>scott.thomas@jamescitycountyva.gov</i>
Troy Thompson	Hampton Wetlands Board	<i>troythompson@hampton.k12.va.us</i>
Will Towles	Lancaster Wetlands Board	<i>willtowles@lancova.com</i>
Randie Trestrail	Clean Water Advocate	<i>randiesue@gmail.com</i>
Mike VanLandingham	DCR - SEAS Program	<i>mike.vanlandingham@dcr.virginia.gov</i>
Richard Vroman	Suffolk Wetlands Board	<i>rvroman@suffolkva.us</i>
Tony Watkinson	Virginia Marine Resources Commission	<i>tony.watkinson@mrc.virginia.gov</i>
Herman Weaver	Portsmouth Wetlands Board	<i>doc.weaver60@gmail.com</i>
Julia Wellman	Virginia DEQ	<i>julia.wellman@deq.virginia.gov</i>
Mary Ann Welton	Fairfax County Planning & Zoning	<i>mary.welton@fairfaxcounty.gov</i>
Robin Wilder	Henrico County	<i>wil47@henrico.us</i>
Becky Wilk	Kerr Environmental Services, Corp.	<i>bwilk@kerrenv.com</i>
Denise D Williams	Charles City County	<i>dwilliams@co.charles-city.va.us</i>
Karla Williams	City of Suffolk	<i>kcwilliams@suffolkva.us</i>
Clyde Williams	Concerned Citizen	<i>bubbasue1@cox.net</i>
Beverly Wilson	City of Virginia Beach	<i>bkwilson@vbgov.com</i>
Sally Young	Master Naturalist	<i>yo-sal@cox.net</i>

# Legal Authority, Roles & Responsibilities of Local Wetlands Boards

Workshop Objectives & Logistics

Karen Duhring

Workshop Moderator

**May 5, 2016**

**Tidal Wetlands Workshop**

This PDF version includes [web site links](#) for more information. Look for blue underlined text.

# Welcome To



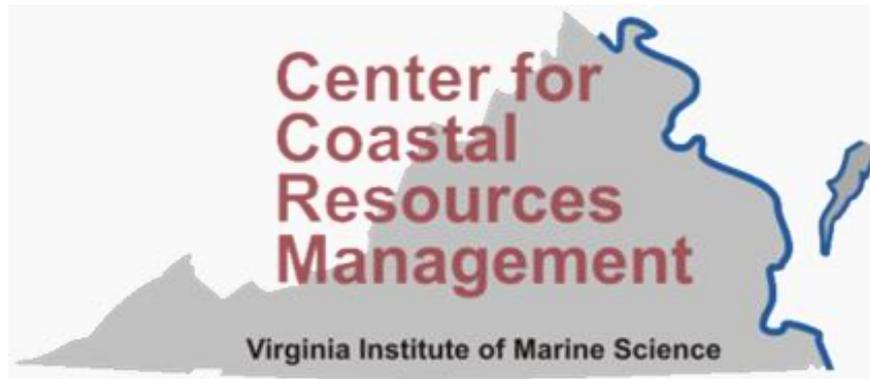
**Sign up for VIMS e-news at Receptionist Desk**

**Visit the Gift Shop**

**Come to Marine Science Day & Other Public Events**

*Saturday May 21, 2016*

**[www.vims.edu](http://www.vims.edu)**



# Supporting Integrated & Adaptive Management of Coastal Zone Resources

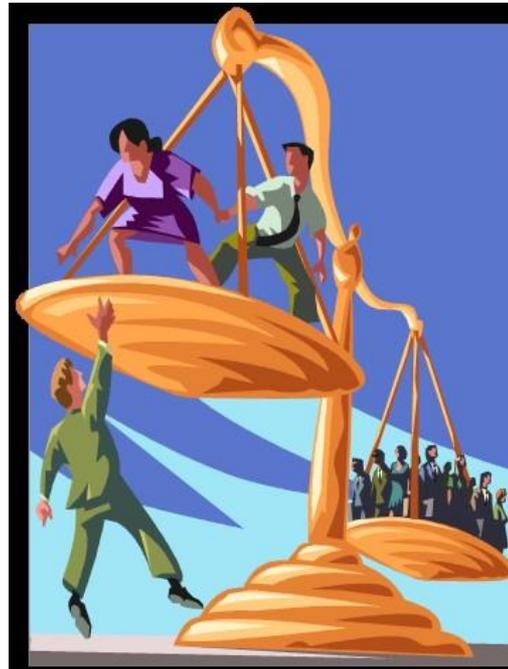
[ccrm.vims.edu](http://ccrm.vims.edu)



*Dr. Carlton Hershner*  
Director

# **MAY 5 WORKSHOP**

## **LEGAL AUTHORITY, ROLES & RESPONSIBILITIES OF LOCAL WETLANDS BOARDS**



## Wetlands Act

## Coastal Primary Sand Dune & Beaches Act

- Unique management system among coastal states
- Virginia has a long standing tradition of maintaining land-use decisions in the hands of the locality
- Local option to adopt model zoning ordinances
  - Secretarial, clerical, legal, and consulting services must be provided by locality for Board operation

**How are localities managing this administrative responsibility?**

*In fulfilling its responsibilities under this ordinance, the board shall **preserve and prevent the despoliation and destruction of wetlands** within its jurisdiction while **accommodating necessary economic development in a manner consistent with wetlands preservation.***

Article 9 Chapter 1302 of 28.2 of the Code of Virginia



**Benefits**

**Detriments**

**Benefits**

**>**

**Detriments**



Project Approval may be in order

**Benefits**



**Detriments**



Deny the project or

Require that the project be modified or

Approve the project with compensatory mitigation  
(always last option)

**How do Boards know what should be considered?**

# **What About Tidal Wetlands?**

**Do we know where they are located?**

**Are we preserving & preventing their despoliation & destruction?**

**What are the benefits & detriments to wetlands?**

**Are we accommodating necessary development in a manner consistent with wetlands preservation?**

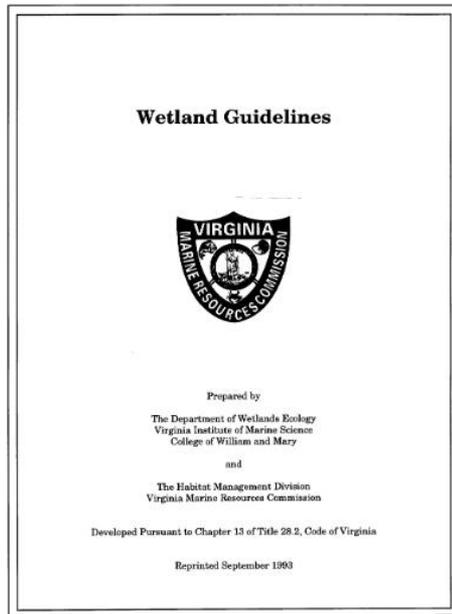
**Is the wetland mitigation & compensation policy being applied correctly?**

# Utilization of Wetlands Guidelines

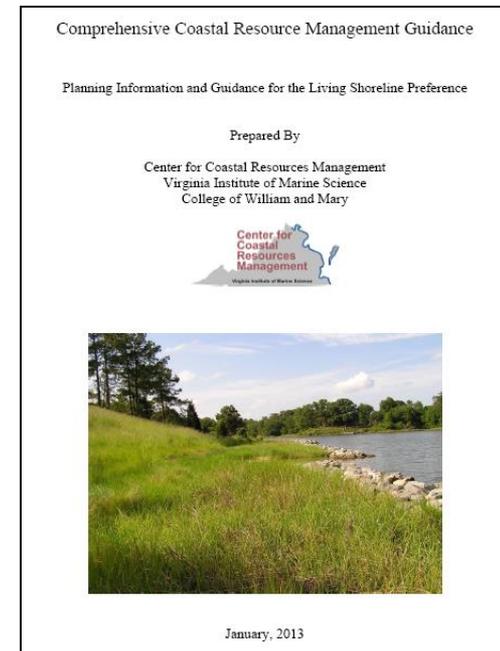
Promulgated Guidelines shall be considered.....

Are the Boards legally bound by the 1993 guidelines?

Can the Boards consider more recent guidelines based on current scientific understanding?



1993



2013

# Virginia Marine Resources Commission

## Review of Wetlands Board Decisions

What are VMRC's oversight roles ?

How much advice are they allowed to give if they may have to hear an appeal?

How does VMRC manage dual roles of wetlands oversight & submerged lands management?

## Past Workshop Evaluations:

What topic(s) would you like to see future workshops cover?

*What wetland boards can legally tell an applicant what they can & can't do*

*Have workshops more often related to Wetlands Board issues and concerns*

*Getting Boards on equal footing, 'sameness' throughout state with regards to laws, processes, regulations, etc.*

*The wetlands board and its functions and responsibilities*

*Wetland board issues, living shoreline mandates, local interpretations of regulations*

*More discussion, advice on practical problems of considering applications & More*

# Past Workshop Breakout Sessions:

## Legal challenges identified

*Wetlands Board roles/responsibilities aren't clear*

*The notion that we cannot (are not really allowed) to tell people what they can or cannot do on their property*

*It's hard to overturn a recommendation of a contractor and/or staff on a proposal of any type*

*Feel burden of proof is on the board, not the applicant*

*Original laws/regulations haven't changed, kept up with times, outdated*

*Multiple overlapping agencies – conflicts in regulations, it's not my agency's problem/pass the buck*

*Wetlands Board needs stronger way to require living shorelines*

**& More**

# Workshop Objectives

- Explore legal framework of tidal shoreline management
- Hear from legal experts
- Reveal legal challenges & potential strategies to improve programs
  - *Do local governments, Wetlands Boards & VMRC have the resources they need?*
- Networking opportunity
  - *Meet & learn from each other*

**Who Is Attending this Workshop?**

*Registered  
Participants*

**Local Government Representation**

		Wetlands Board	Staff
	<b>23</b>	<b>17</b>	<b>21</b>
Northern VA	Fairfax County	X	X
	Stafford County	X	X
Northern Neck	Lancaster County	X	X
	Richmond County	X	X
Western	Henrico County		X
	New Kent County	X	X
	Charles City County		X
Middle Peninsula	King William County		X
	King & Queen County	X	
	Gloucester County	X	X
	Mathews County	X	X
Peninsula	Hampton	X	X
	Poquoson	X	X
	York County	X	X
	James City County		X
	Newport News		X
Southside	Virginia Beach	X	X
	Norfolk	X	X
	Portsmouth	X	X
	Suffolk	X	X
	Isle of Wight County		X
Eastern Shore	Accomack County	X	
	Northampton County	X	X

# State Agencies & Universities

Virginia Marine Resources Commission VMRC

Department of Environmental Quality DEQ

DCR Shoreline Erosion Advisory Service SEAS

Virginia Coastal Zone Management Program CZM

College of William & Mary

James Madison University

# Private Companies

Angler Environmental  
Ann P. Stokes Landscape Architects  
C2 Environmental, Inc.  
EnviroScience  
Integrity Environmental, Inc.  
Kerr Environmental Services, Corp.  
Lane Environmental Consultants  
Michael Baker International  
Mulberry Creek Technologies, LLC  
R & W Marine Construction, Inc.  
SBH Construction Co., Inc.  
Stokes Environmental Associates  
W.E.E.D  
Wetland Studies and Solutions, Inc.  
WPL

# Non-Governmental Organizations

Elizabeth River Project

Friends of Back Bay

Friends of Little Hunting Creek

Nansemond River Preservation Alliance

National Wildlife Federation

Northern Neck Master Gardeners Shoreline Evaluation Program

Virginia Master Naturalists

The Wetlands Project

Wetlands Watch

Private Citizens

# Workshop Agenda

- Morning presentations & panel discussion *Auditorium*
- Box lunches *seating in classrooms & outside*
- Afternoon discussion & presentations *Auditorium*
- Interactive Experiences *weather dependent*
  - Outdoors at VIMS Boat Basin
  - Indoors in Watermens Hall
  - See handout for more information
  - Plan B for heavy rain
- Turn in or mail Workshop Evaluations



# Post-Workshop

- Participant List *opt out with Dawn Fleming*
- Workshop summary & presentations posted to [CCRM Workshops](#) web site
  - Previous workshop information also available
- Workshop evaluations reviewed





For More Workshop Information

Contact

Karen Duhring

CCRM Outreach Coordinator

[karend@vims.edu](mailto:karend@vims.edu)

804-684-7159

# Virginia's Tidal Wetlands: Managing for Resilience



Pam Mason

# PAST: City of Norfolk shallow water and wetlands Fill.

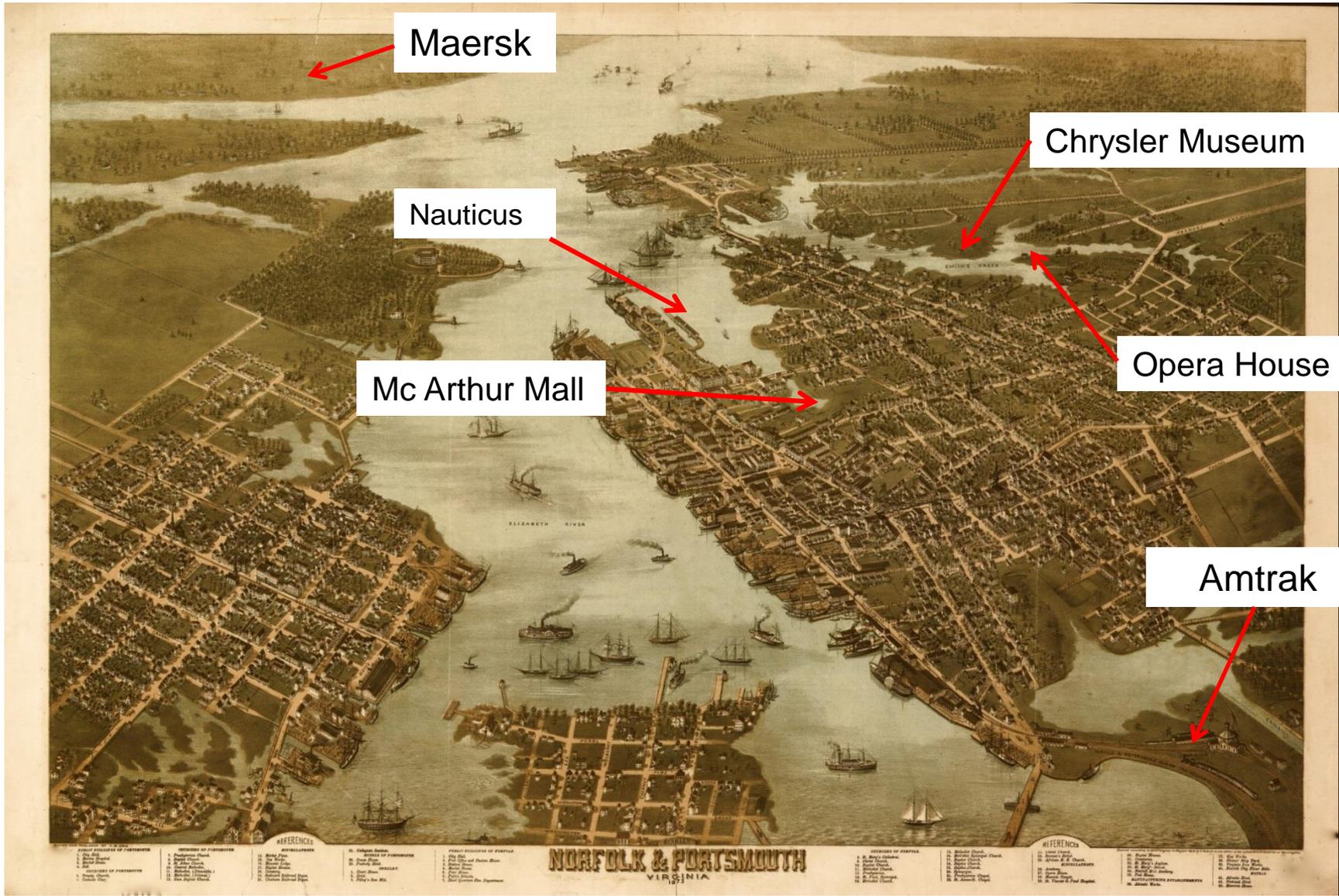
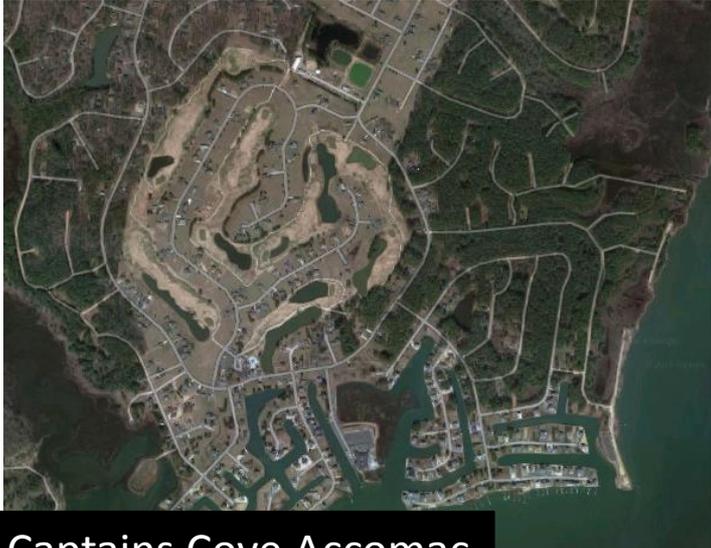


Image: Skip Stiles, Wetlands Watch

# Not Just Norfolk..



Captains Cove Accomac



Virginia Beach

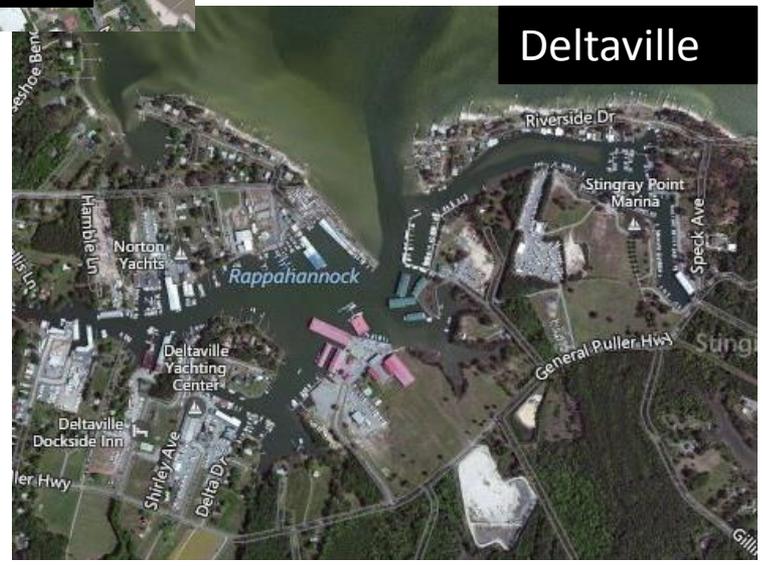


Tappahannock

Dredge and Fill Losses



Chickahominy Haven



Deltaville

# Permit Losses: by the numbers

**1993-2011**

JPAs for shoreline erosion: 9,587

Total Wetlands fill: 5,578,781 or (128 acres).

Total vegetated wetlands filled: 3,021,769 or (69.3 acres)

Average permits/ year: 532.6

Average annual non-vegetated fill: 7.1 acres

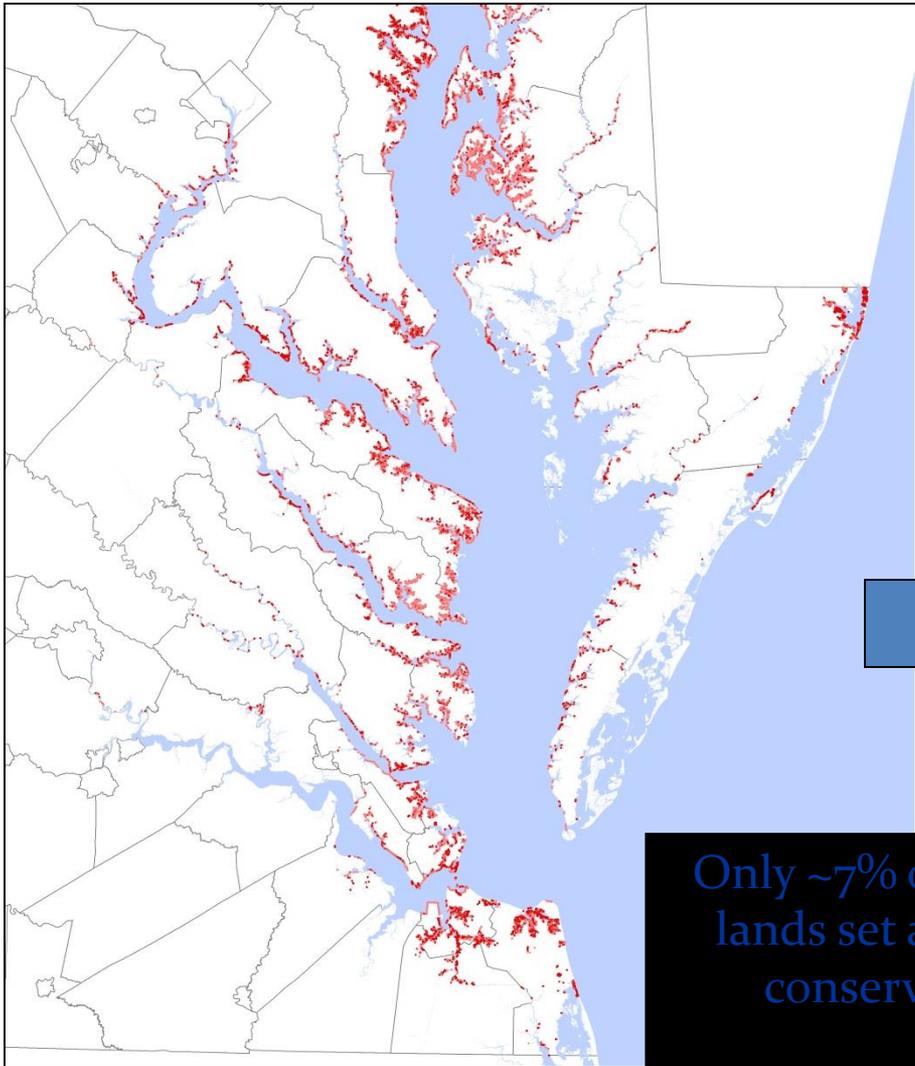
Average annual vegetated wetlands fill: 3.85 acres

Average Per permit impacts

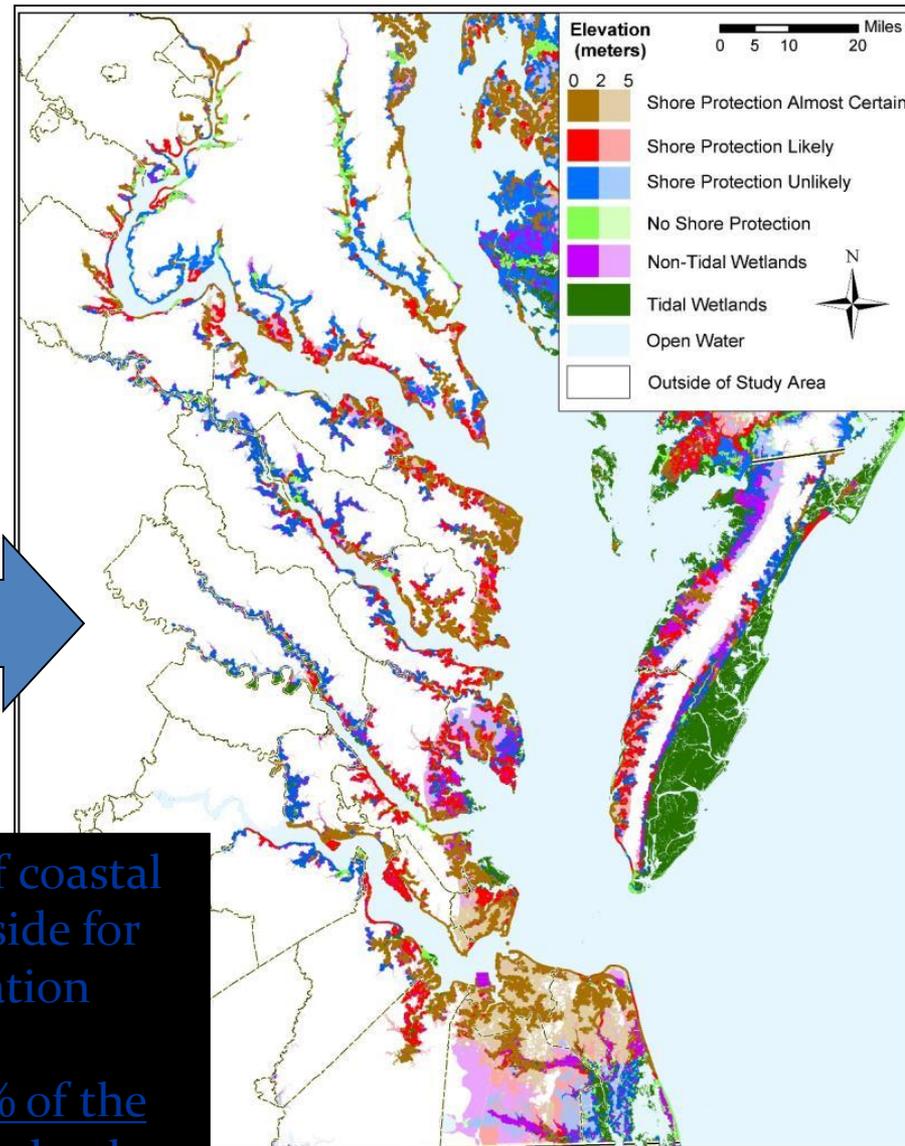
Non-vegetated: .0133 acres or 579 ft<sup>2</sup>

Vegetated wetlands: .007 acres or 305 sq. ft.

# Projected Coastal Development: Status and Trends



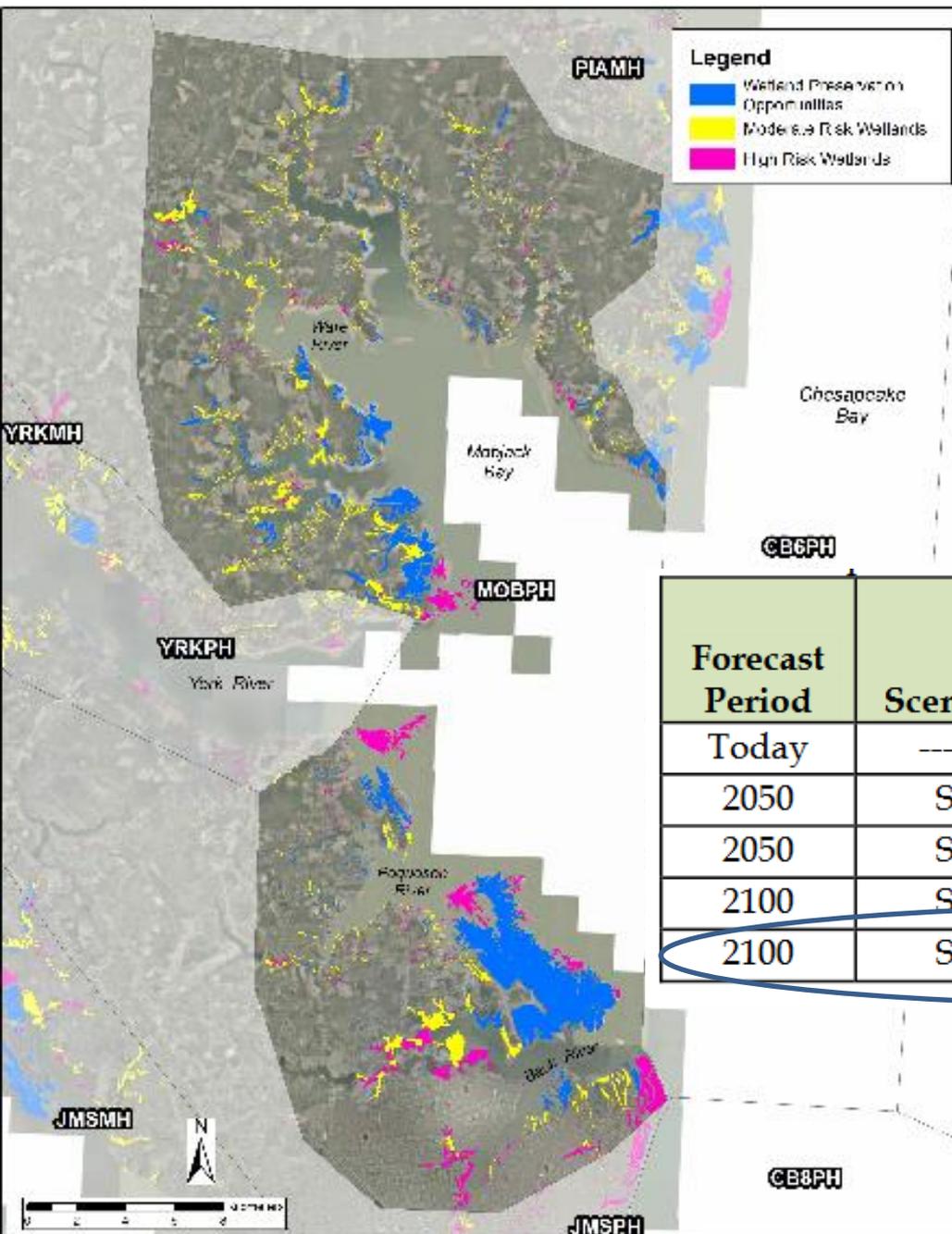
Map source: D.M. Bilkovic



Map source: Titus et al. 2009

Only ~7% of coastal lands set aside for conservation

Almost 45% of the land expected to be developed



FUTURE:  
 Projected Wetlands Loss  
 Sea level rise  
 AND  
 Wetland retreat limitations  
 due to development

Forecast Period	Scenario	Tidal Wetland Habitat (km <sup>2</sup> )	Change in TW (km <sup>2</sup> )	Change in TW (%)
Today	-----	397	--	--
2050	S1	348	(49)	(12)
2050	S2	311	(86)	(22)
2100	S1	302	(95)	(24)
2100	S2	191	(206)	(52)

# Wetlands at Risk

- Upland issues
  - Population growth
  - Shoreline hardening
  - TMDL / Storm water
- Coastal Issues
  - Sea level rise
  - Increased Storminess (erosion)
  - Shoreline Hardening

# Tidal Wetlands Resilience

How to address wetlands risk?

Eliminate permitted losses

AND

Counter natural and historic human losses

# Counter Losses: Water Quality

- TMDL credits: Tidal Wetlands Creation
  - CBP nutrient and sediment removal
- Green Infrastructure



Recommendations of Expert Panel on Shoreline Management (version date is 07/13/15)

**Recommendations of the Expert Panel to Define Removal Rates for Shoreline Management Projects**

Submitted by:  
Nathan Forand, Kevin DuBois, Jeff Halka, Scott Hardaway, George Janek, Lee Karrh, Eva Koch, Lewis Linker, Pam Mason, Ed Morgeweth, Daniel Proctor, Kevin Smith, Bill Stack, Steve Stewart, and Bill Wolinski

Accepted by Urban Stormwater Work Group: April 15, 2014  
Approved by Watershed Technical Work Group: February 13, 2015  
Approved by Water Quality Goal Implementation Team: July 13, 2015

Chesapeake Bay Partnership

Prepared by:  
Sadie Drescher and Bill Stack (Chair), Center for Watershed Protection, Inc. and EPA Chesapeake Bay Program Office (CBPO) Sediment Reduction and Stream Restoration Coordinator

# CBP TMDL credits: Tidal Wetlands Creation

## Approved nutrient and sediment removal credits

Protocol	Name			
2	Denitrification	Pounds/ year	Total N (TN)	Measured TN removal for denitrification rate associated with vegetated area 85 lbs TN/acre/yr
3	Sedimentation	Pounds/ year	Sediment and Total P (TP)	Measured TSS and TP removal rates associated with vegetated area 6,959 lbs TSS/acre/yr 5.289 lbs TP/acre/yr
4	Marsh Redfield Ratio	Pounds	TN, TP	Measured TN and TP removal rates associated with vegetated area Note that this is a one time credit 205 lbs TN/acre 9 lbs TP/acre

# Counter Losses: Habitat

- Chesapeake Bay Program
  - Wetlands Restoration Goal 85,000 acres wetlands
  - 150,000 functional gain
- National Estuaries Program (EPA)
- Landscape Conservation Cooperatives (LCCs)



# Counter Losses: Community Resilience

- Community Rating System
- VIMS Adaptation Portal
- SAGE/ Engineering with Nature
- Hurricane Sandy Projects
- Rockefeller 100 Resilient Cities
- Rebuild by Design/ Housing and Urban Development
- Blue Carbon

# Community Rating System

- Reduce flood damage to insurable property
- Strengthen and support the insurance aspects of the NFIP
- Encourage a comprehensive approach to floodplain management
  - Wetland Protection/Mitigation Banks
  - Beaches, Dunes, and Erosion

# CRS Open Space (e.g. Wetlands Protection)

## CRS Credit Opportunities: Protecting Wetlands in a Natural State as Open Space

### Probable Credit

Activity 420a, Open Space Preservation (OSP)

Up to 1,450 points

*(CRS Manual, 420-3)*

### Creditable Activity

- Protecting open land in the floodplain

### Requirements

- Land must be part of regulatory floodplain as defined by locality's floodplain ordinance (wetlands will most likely be located in a floodplain)
- Development, filling, and materials storage must be prohibited by adopted policy or agreed to in writing by the property owner

### Additional Information

- Federally-owned lands are not eligible for credit
- Credit is determined by the ratio of the area of open space to the area of the Special Flood Hazard Area & the regulatory floodplain
- Existing buildings necessary for the prescribed use of the land are acceptable for parcels greater than 10 acres
- Impervious surfaces must be subtracted from the credited acreage (except for trails/sidewalks)
- Additional credit is available if the land is subject to a deed restriction (Activity 420b), preserved in or restored to its natural state (Activity 420c), or if it is subject to additional flood hazards (Activity 420d)





## Blue Carbon

Tidal wetlands sequester carbon and mitigate climate change

## Hurricane Sandy Coastal Resiliency Grants

City of Norfolk  
Living Shorelines

**Developing a Green Infrastructure Plan and Network for the Lafayette River Watershed**  
*City of Norfolk, Virginia*

Grant Award:	\$4,640,000
Matching Funds:	\$257,343
<b>Total Project Funds:</b>	<b>\$4,897,343</b>

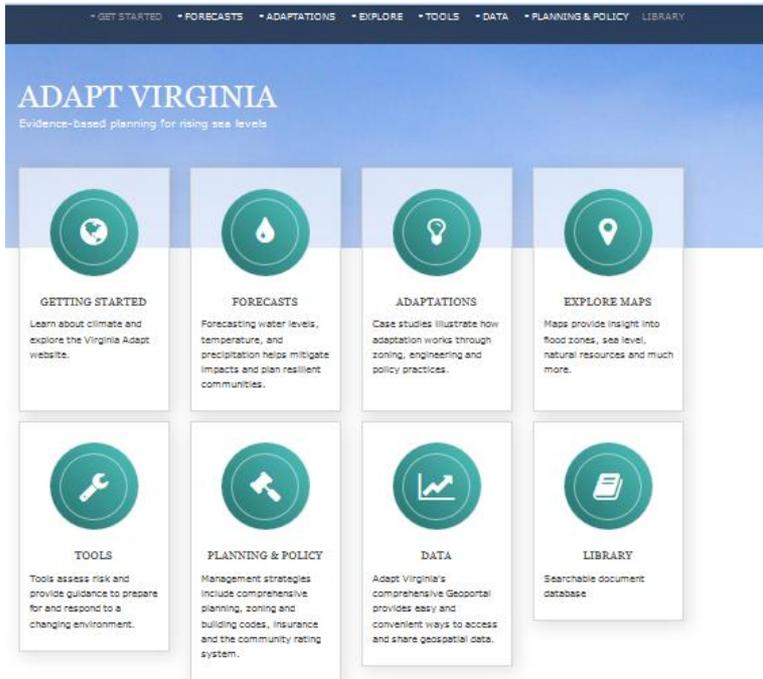
*Project Description:* Implement eight shoreline restoration projects and develop a green infrastructure plan and framework for the Lafayette River watershed in Norfolk, Virginia. Project will strengthen the watershed's resiliency, engage 40 veterans in a green infrastructure training course, and involve 160 high school students in hands-on projects.

## Rebuild by Design

Living Breakwater Project  
Incorporates tidal wetland creation



# VIMS Adaptation Portal



- Under development

- Partners:

Virginia Coastal Policy Center, WM  
Thomas Jefferson Public Policy Program,  
WM

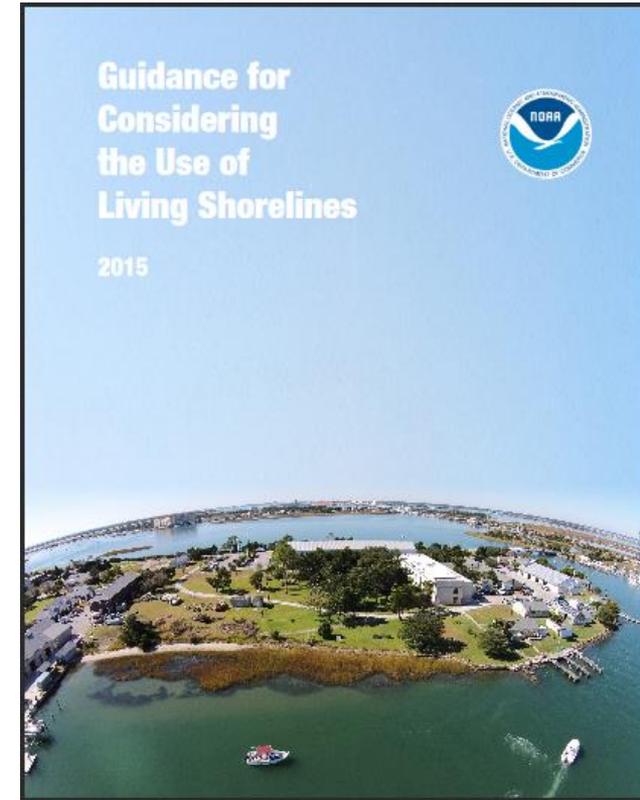
Wetlands Watch

Department of Conservation and  
Recreation

- Include information on natural resources/ wetlands for adaption
  - Flood and erosion risk

# Stem the tide: Non-Regulatory

- Federal/ Regional Initiatives
- Partnership agreements
- Non-profit Efforts
- Communication/Outreach
- Grants and Alternative Funding
- BMPs and other incentives
- Living shorelines Initiatives



# Stem the tide: Regulatory

- Eliminate wetland loss from permits (no loss)
  - Avoid, minimize, compensate.
  - USE in lieu fees to create wetlands
- Eliminate limits on wetland retreat (No loss-Likely gain)
  - Ensure ample distance between wetlands and upland appurtenances
  - Avoid onshore bulkheads/ revetments
- Employ Living shorelines (net gain)



Past  
Development

Present  
Management



Future  
Coastal Resilience?

# Coastal Issues

Sea level rise

Increased Storminess (erosion)

Shoreline Hardening

You Are Here



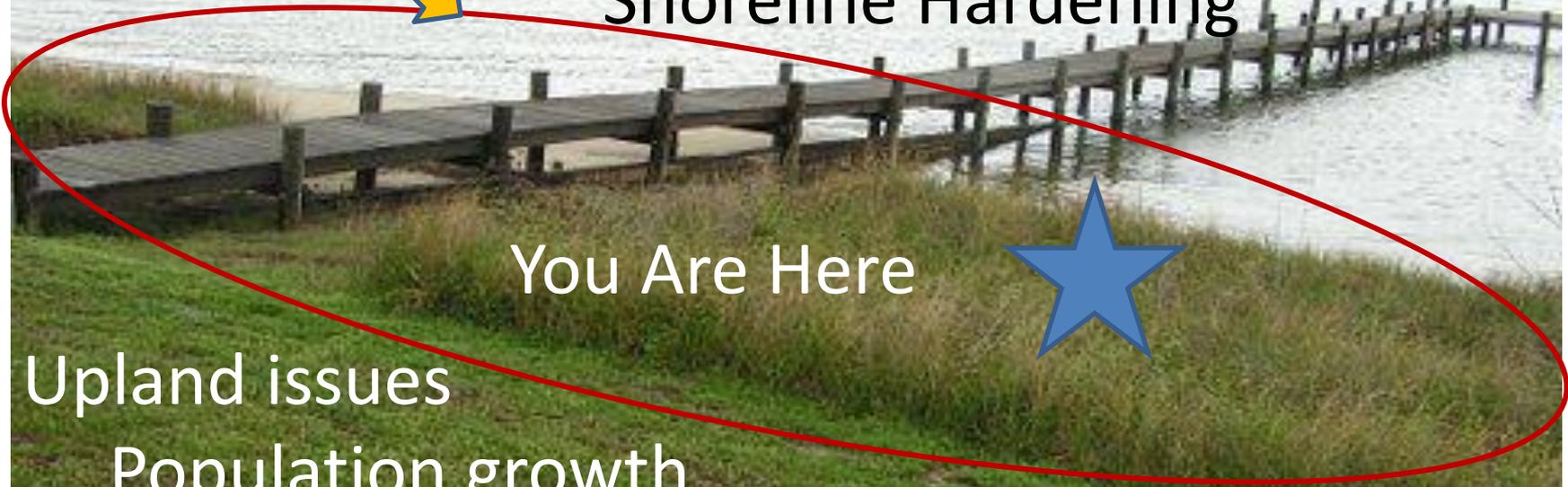
# Upland issues

Population growth

Development

Shoreline hardening

TMDL - Storm water



# TIDAL WETLANDS ACT Legal Framework for Local Boards

CYNTHIA B. HALL  
NORFOLK DEPUTY CITY ATTORNEY  
[CYNTHIA.HALL@NORFOLK.GOV](mailto:CYNTHIA.HALL@NORFOLK.GOV)  
757-664-4214

# LOCAL WETLANDS BOARDS

## Va. Code Sec. 28.2-1303

- 5 or 7 member boards are permitted
- 5 year terms
- Successive terms are permitted and member shall continue to serve if term expires until successor appointed
- 1-3 alternates “shall” be appointed by locality “to serve in place of the absent” regular member
- Member may be removed for just cause after 15 days’ notice and hearing
- Member may be removed for missing meetings (3 in a row or 4 over 12 month period)---no hearing or notice required

# LOCAL WETLANDS BOARDS

## Va. Code Sec. 28.2-1304

- Chairman elected annually for 1 year term
- Other officers elected as deemed necessary
- Quorum needed for the taking of “any action”
- Board may make rules and procedures and develop forms (use of alternates, on site meetings, permit extensions, completeness of applications, etc.)

# WETLANDS PERMIT

## Va. Code 28.2-1302

- Permit must be obtained to “use or develop any wetland” unless activity is specifically exempted
- Permit must contain detailed and specific information including “such additional materials and documentation” as the Board requires
- Permit fee must be paid as set by the locality
- Public hearing must be held within 60 days of “complete application” after notice by mail and publication---time period can be waived by applicant
- Chairman can administer oaths and compel attendance of witnesses
- Witnesses at the hearing can provide “concise written statement” or testimony

# WETLANDS PERMIT

## Va. Code Sec. 28.2-1302

- Board must “act” (take a vote) on application within 30 days of the public hearing. If not, application deemed approved
- Application is approved on affirmative vote of 3 members of 5 member board or 4 members of 7 person board. If not enough votes, the application is denied but can be resubmitted in modified form
- Permit must have an expiration date---extensions are permitted
- Board may require bond or letter of credit to secure compliance
- Board may require mitigation or compensation for wetlands loss

LEGAL RESPONSIBILITY OF LOCAL BOARD  
Va. Code Sec. 28.2-1302 (9)

The Board shall preserve and prevent the despoliation and destruction of wetlands within its jurisdiction while accommodating necessary economic development in a manner consistent with wetlands preservation

# LEGAL STANDARDS

## Va. Code Sec. 28.2-1308

- Wetlands of primary ecological significance shall not be altered so that ecological systems in wetlands are altered
- Development in Tidewater Virginia to the maximum extent practical shall be concentrated in wetlands of lesser significance, in areas previously irreversibly disturbed, or outside of wetlands
- Guidelines developed by VMRC must be considered in applying standards

ITEMS BOARD MUST CONSIDER IN DECIDING  
PERMIT REQUEST  
Va. Code Sec. 28.2-1302 (10)(A)

- Testimony of persons in support or opposition
- Impact of proposal on public health, safety and welfare
- Conformance with legal standards and guidelines

# CRITERIA WHICH MUST BE MET TO GRANT PERMIT

## Va. Code Sec. 28.2-1302 (10)(B)

- The anticipated public and private benefit of proposal exceeds its public and private detriment
- The proposal conforms to the standards and guidelines
- The proposal does not violate the spirit and intent of Title 28.2 of the Virginia Code and the local wetlands ordinance

**IF ANY OF THE CRITERIA ARE NOT MET, THE APPLICATION MUST BE DENIED BY BOARD**

## KEY POINTS TO REMEMBER

- Keep good records and maintain all documents
- Allow input and comments
- Articulate rationale for vote on the record either in the format of the motion or in the board discussion

# APPEALS TO VMRC

## Va. Code Sec. 28.2-1311

- Applicant or locality can appeal
- Commissioner can request review
- 25 or more freeholders of property in locality can appeal and must specify how Board failed to fulfill responsibilities under law

Appeal must be filed within 10 days and appeal hearing conducted within 45 days

# STANDARD ON APPEAL BEFORE VMRC Va. Code Sec. 28.2-1313

VMRC can modify, remand, or reverse decision of Board if:

- Board failed to fulfill responsibilities under wetlands ordinance, OR
- Substantial rights of appellant or applicant were prejudiced because findings of Board were:
  1. Unconstitutional
  2. In excess of authority
  3. Made on unlawful procedure
  4. Based on error of law
  5. Unsupported by evidence on record
  6. Arbitrary, capricious or abuse of discretion

## ENFORCEMENT OPTIONS

### Va. Code Sections 28.2-1316 through 28.2-1320

- Monitoring and inspections
- Issuance of compliance notice
- Issuance of stop work order by “designated enforcement officer” for substantial violations
- Restoration order to restore area affected by violation
- Suspension or revocation of permit
- After the fact permit
- Criminal charges ---12 months jail and/or \$2,500 fine
- Injunctions---mandatory order punishable by contempt
- Civil charges--- up to \$10,000 each violation with consent of violator
- Civil penalties ---up to \$25,000 per day for each day of violation in Circuit Court

1  **TIDAL WETLANDS ACT**  
**Legal Framework for Local Boards**

CYNTHIA B. HALL  
 NORFOLK DEPUTY CITY ATTORNEY  
[CYNTHIA.HALL@NORFOLK.GOV](mailto:CYNTHIA.HALL@NORFOLK.GOV)  
 757-664-4214

2  **LOCAL WETLANDS BOARDS**  
**Va. Code Sec. 28.2-1303**

- 5 or 7 member boards are permitted
- 5 year terms
- Successive terms are permitted and member shall continue to serve if term expires until successor appointed
- 1-3 alternates "shall" be appointed by locality "to serve in place of the absent" regular member
- Member may be removed for just cause after 15 days' notice and hearing
- Member may be removed for missing meetings (3 in a row or 4 over 12 month period)---no hearing or notice required

3  **LOCAL WETLANDS BOARDS**  
**Va. Code Sec. 28.2-1304**

- Chairman elected annually for 1 year term
- Other officers elected as deemed necessary
- Quorum needed for the taking of "any action"
- Board may make rules and procedures and develop forms (use of alternates, on site meetings, permit extensions, completeness of applications, etc.)

4  **WETLANDS PERMIT**  
**Va. Code 28.2-1302**

- Permit must be obtained to "use or develop any wetland" unless activity is specifically exempted
- Permit must contain detailed and specific information including "such additional materials and documentation" as the Board requires
- Permit fee must be paid as set by the locality
- Public hearing must be held within 60 days of "complete application" after notice by mail and publication---time period can be waived by applicant
- Chairman can administer oaths and compel attendance of witnesses
- Witnesses at the hearing can provide "concise written statement" or testimony

5  **WETLANDS PERMIT****Va. Code Sec. 28.2-1302**

- Board must "act" (take a vote) on application within 30 days of the public hearing. If not, application deemed approved
- Application is approved on affirmative vote of 3 members of 5 member board or 4 members of 7 person board. If not enough votes, the application is denied but can be resubmitted in modified form
- Permit must have an expiration date---extensions are permitted
- Board may require bond or letter of credit to secure compliance
- Board may require mitigation or compensation for wetlands loss

6  **LEGAL RESPONSIBILITY OF LOCAL BOARD****Va. Code Sec. 28.2-1302 (9)**

The Board shall preserve and prevent the despoliation and destruction of wetlands within its jurisdiction while accommodating necessary economic development in a manner consistent with wetlands preservation

7  **LEGAL STANDARDS****Va. Code Sec. 28.2-1308**

- Wetlands of primary ecological significance shall not be altered so that ecological systems in wetlands are altered
- Development in Tidewater Virginia to the maximum extent practical shall be concentrated in wetlands of lesser significance, in areas previously irreversibly disturbed, or outside of wetlands
- Guidelines developed by VMRC must be considered in applying standards

8  **ITEMS BOARD MUST CONSIDER IN DECIDING PERMIT REQUEST****Va. Code Sec. 28.2-1302 (10)(A)**

- Testimony of persons in support or opposition
- Impact of proposal on public health, safety and welfare
- Conformance with legal standards and guidelines

9  **CRITERIA WHICH MUST BE MET TO GRANT PERMIT****Va. Code Sec. 28.2-1302 (10)(B)**

- The anticipated public and private benefit of proposal exceeds its public and private detriment
- The proposal conforms to the standards and guidelines
- The proposal does not violate the spirit and intent of Title 28.2 of the Virginia Code and the local wetlands ordinance

IF ANY OF THE CRITERIA ARE NOT MET, THE APPLICATION MUST BE DENIED BY BOARD

10  **KEY POINTS TO REMEMBER**

- Keep good records and maintain all documents
- Allow input and comments
- Articulate rationale for vote on the record either in the format of the motion or in the board discussion

11  **APPEALS TO VMRC****Va. Code Sec. 28.2-1311**

- Applicant or locality can appeal
- Commissioner can request review
- 25 or more freeholders of property in locality can appeal and must specify how Board failed to fulfill responsibilities under law

Appeal must be filed within 10 days and appeal hearing conducted within 45 days

12  **STANDARD ON APPEAL BEFORE VMRC****Va. Code Sec. 28.2-1313**

VMRC can modify, remand, or reverse decision of Board if:

- Board failed to fulfill responsibilities under wetlands ordinance, OR
- Substantial rights of appellant or applicant were prejudiced because findings of Board were:
  1. Unconstitutional
  2. In excess of authority
  3. Made on unlawful procedure
  4. Based on error of law
  5. Unsupported by evidence on record
  6. Arbitrary, capricious or abuse of discretion

13  **ENFORCEMENT OPTIONS****Va. Code Sections 28.2-1316 through 28.2-1320**

- Monitoring and inspections
- Issuance of compliance notice
- Issuance of stop work order by "designated enforcement officer" for substantial violations
- Restoration order to restore area affected by violation
- Suspension or revocation of permit
- After the fact permit
- Criminal charges ---12 months jail and/or \$2,500 fine
- Injunctions---mandatory order punishable by contempt
- Civil charges--- up to \$10,000 each violation with consent of violator
- Civil penalties ---up to \$25,000 per day for each day of violation in Circuit Court



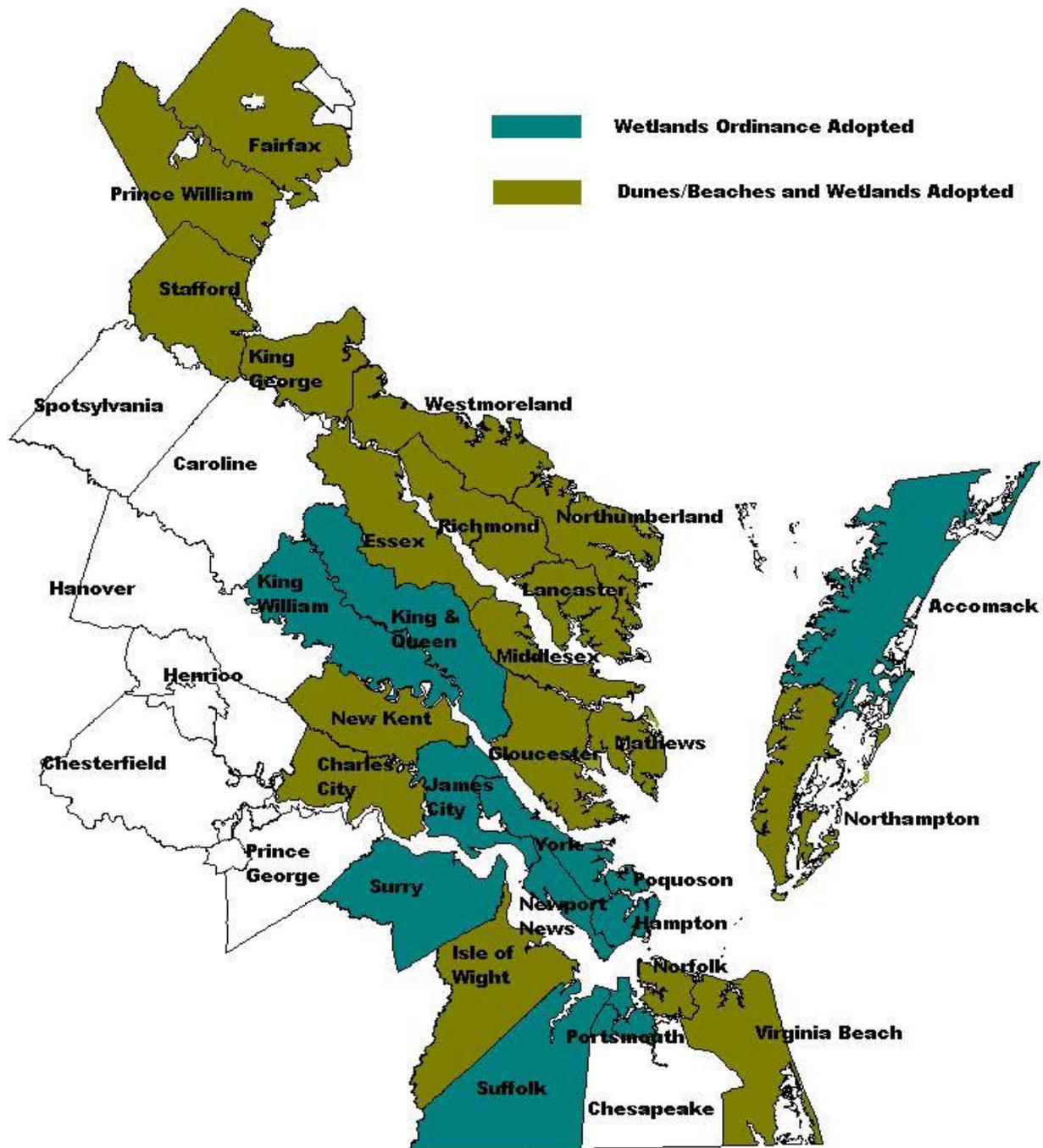
Tony Watkinson  
Chief, Habitat Management Division  
Virginia Marine Resources Commission  
2600 Washington Avenue, Third Floor  
Newport News, Virginia 23607

[www.mrc.virginia.gov](http://www.mrc.virginia.gov)

# Role of VMRC in the Wetland Board Review Process

Chapters 13 and 14  
Title 28.2 of the Code of  
Virginia





# Six Main Areas

- Receiving Applications
- Site Visits
- Wetland Board Meetings
- Appeals & Reviews
- Compliance Inspections
- Violations

# Receiving Applications

VMRC serves as the clearinghouse

- Receive applications
- Assign tracking #
- Copy and distribute applications and any additional information to:
  - Locality
  - U.S. Army Corps of Engineers
  - DEQ
  - Virginia Institute of Marine Science (notified)(completeness not assessed at this point)

# Applications may also be distributed to:

- Department of Game and Inland Fisheries
- Department of Conservation and Recreation
- Department of Historic Resources
- Department of Health Bureau of Shellfish Sanitation
- Department of Health Bureau of Wastewater Engineering
- Department of Transportation
- and others, if necessary

# Site Visits

- VMRC Staff visits each wetland project
- Assess jurisdiction
- Become familiar with the site
  - answer questions from staff or Board members
  - in case of an appeal or a review



**Upland**

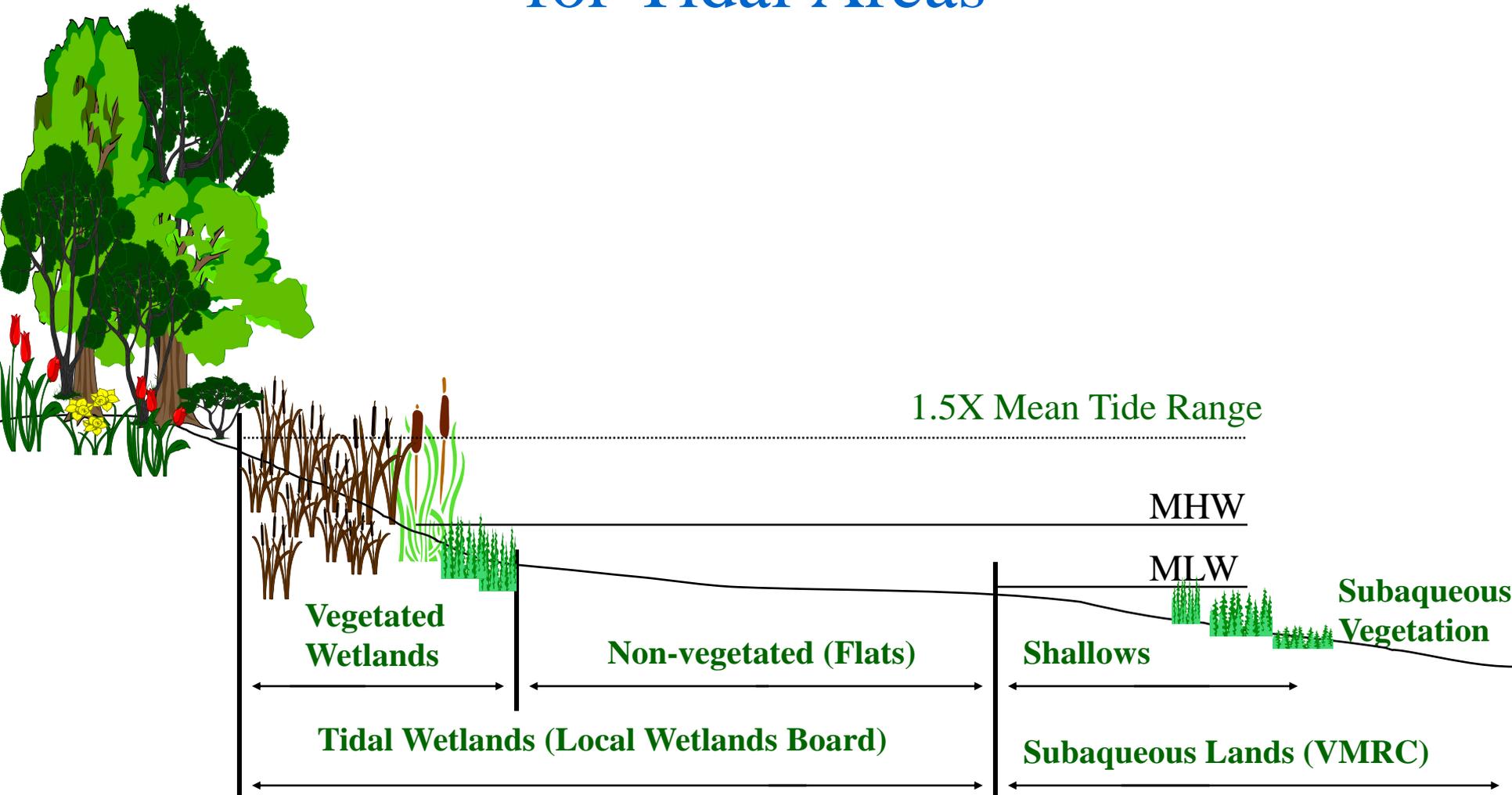
**Saltbushes**

**Saltmarsh  
Cordgrass**

**Mudflats**

**Subaqueous Bed**

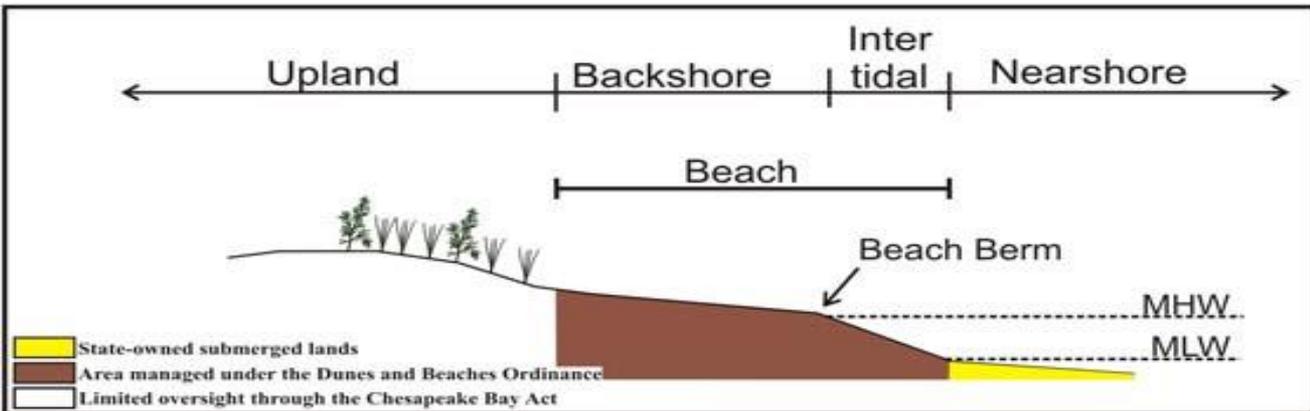
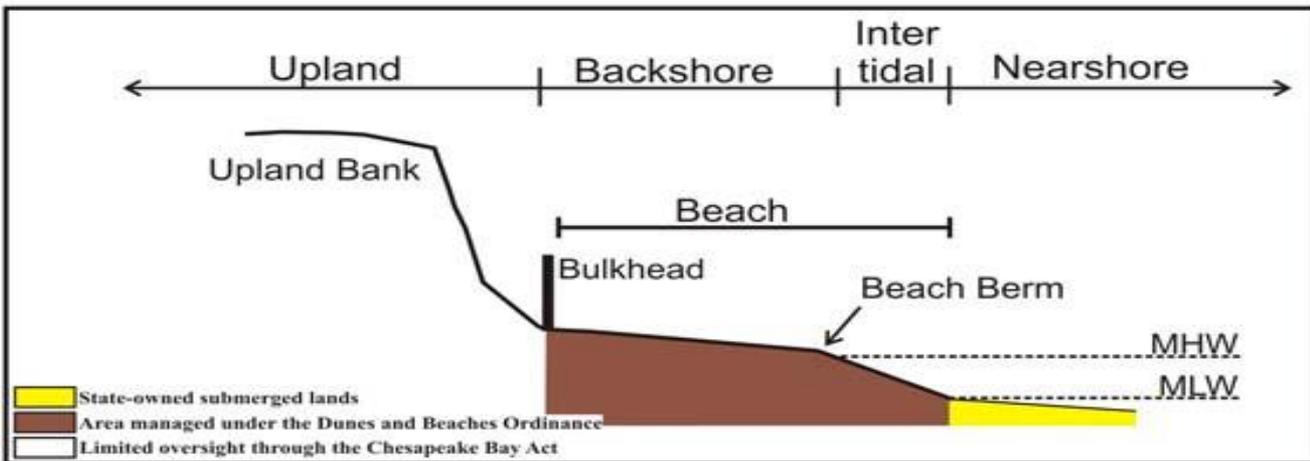
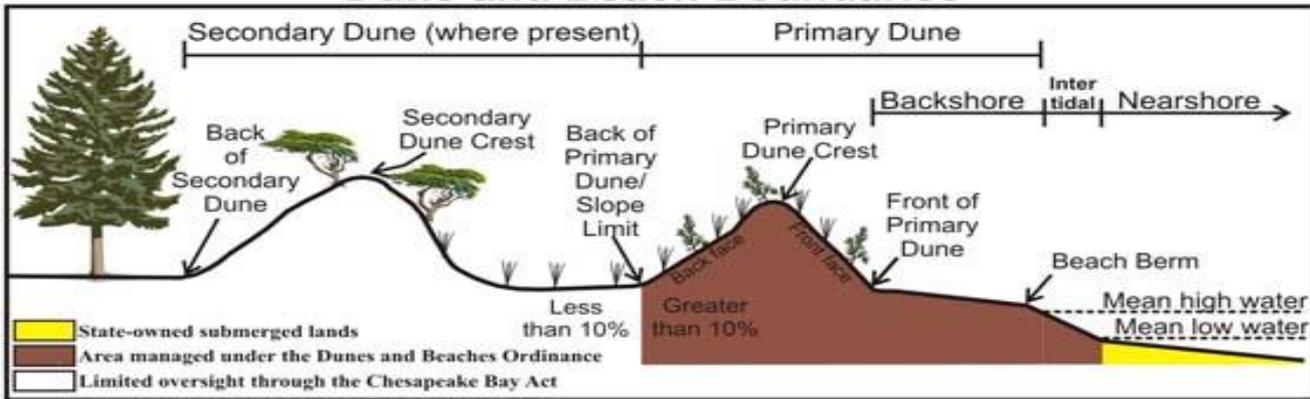
# Jurisdictional Boundaries for Tidal Areas







# Dune and Beach Boundaries



# Wetland Board Meetings

- VMRC Staff attends all Wetland Board Meetings
- Call attention to Code Sections that may be helpful while discussing a project
- Assist with procedures as requested
- Call attention to issues that should be evaluated
- But, can't give specific opinions or recommendations
- Fulfill our duty under §28.2-1310

## §28.2-1310

- The Commissioner shall review all decisions of wetlands boards and request the Commission to review a decision only when he believes the board failed to fulfill its responsibilities under the wetlands zoning ordinance.

# Appeals & Reviews

## § 28.2-1311

- The Commission shall review a decision of a wetlands board when any of the following events occur:
  - An appeal is taken from the decision by the applicant or the county, city, or town where the wetlands are located.

- The Commissioner requests the review. In order to make the request, the Commissioner shall notify the board, applicant, and the county, city, or town where the wetlands are located within ten days of receiving notice of the board's decision.

- Twenty-five or more freeholders of property within the county, city, or town in which the proposed project is located sign and submit a petition to the Commission requesting the review. The petition shall indicate those specific instances where the petitioners allege that the board failed to fulfill its responsibilities under the wetlands zoning ordinance.

- All requests for review or appeal shall be made within ten days of the date of the board's decision.
- The Commission shall hear and decide the review or appeal within forty-five days of receiving the request for review or notice of appeal.

# Commissioner request review

- Based on recommendation from staff:

Consider criteria in § 28.2-1302

public-private benefit/detriment

Consider standards prescribed in § 28.2-1308

ecological significance

Consider Guidelines

Consider mitigation

Consider all evidence

§ 28.2-1302 (§9) In fulfilling its responsibilities under this ordinance, the board shall preserve and prevent the despoliation and destruction of wetlands while accommodating necessary economic development in a manner consistent with wetlands preservation.

## § 28.2-1313

The Commission shall modify, remand, or reverse the decision of the wetlands board if:

1. The wetlands board, in reaching its decision, failed to fulfill its responsibilities under the wetlands zoning ordinance; or
2. The substantial rights of the appellant or the applicant have been prejudiced because the findings, conclusions, or decisions of the board are:
  - a. In violation of constitutional provisions;
  - b. In excess of statutory authority or jurisdiction of the wetlands board;
  - c. Made upon unlawful procedure;
  - d. Affected by other error of law;
  - e. Unsupported by the evidence on the record considered as a whole; or
  - f. Arbitrary, capricious, or an abuse of discretion.

*As a basic rule:*

The Commission Staff or Commission should not attempt to replace the judgment of the Wetlands Board.

# Compliance Inspections

## §28.2-1302 §11

The permit shall be in writing, signed by the chairman of the board or his authorized representative, and notarized.

A copy of the permit shall be transmitted to the Commissioner.

VMRC staff inspects a number of random wetland projects for compliance.

# Violations

- VMRC staff can:
  - assist with administrative aspects
    - Sworn complaint
    - Notice to comply
  - assist with site inspections
- Restoration orders or after-the-fact:
  - restoration order can't be appealed
  - after-the-fact decisions can be appealed

# Summary

- VMRC can be involved with most aspects of the Wetland Board review process.
- These duties are either
  - required by statute,
  - needed to get the job done, or
  - the result of the relationship that has developed between VMRC, Wetland Board staff and the Wetland Board.



**Local Wetland Board & VMRC permits (Wetland or Beaches & Dunes) 10/1/14 - 9/30/15**

Wetland Hearings	Actions
Tidal Projects Considered at Public Hearing	349
Approved as Proposed	267
Approved as Modified	68
Denied	0
Pending	11
Inactivated	1
No Permit Required	3

## Projects requiring Wetland Compensation 10/1/14 – 9/30/15

Compensation for Wetland Permits	Cases
Total Projects Requiring Compensation	55
Required On or Off site Compensation	22
Purchased Mitigation Bank Credits	5
Paid In-Lieu Fee	28

## Permitted Shoreline Erosion Control Structures, 10/1/2014 to 9/30/2015

Type of Erosion Control	Linear Footage
Riprap Revetment	32,956
Bulkhead	30,854
Living Shoreline*	18,268
- Sill	9,837
- Breakwater	4,059
- Fiber Log	2,483

\*living shoreline techniques include sill, breakwaters, and fiber logs.

## Permitted Conversion of Jurisdictional Wetlands and Dunes, 10/1/2014 to 9/30/2015

Conversion of Intertidal Land	Square Footage
Beach to Intertidal Riprap	9,152
Beach to Submerged Land	0
Beach to Vegetated Wetland	2,165
Beach Created from Upland	3,240
Beach Loss	10,215
Non-vegetated Wetland to Beach	55,230
Non-vegetated Wetland to Intertidal Riprap	73,175
Non-vegetated Wetland to Reef	4,342
Non-vegetated Wetland to Vegetated Wetland	106,701
Non-vegetated Wetland to Submerged Land	343
Non-vegetated Wetland Created From Upland	2,842
Non-vegetated Wetland Loss	25,497
Vegetated Wetland to Another Vegetated Wetland	12,675
Vegetated Wetland to Submerged Land	5
Vegetated Wetland to Intertidal Riprap	7,877
Vegetated Wetland Created from Upland	12,047
Vegetated Wetland Loss	5,109

# Questions from Wetland Boards

- Can Boards modify the local implementing ordinance to include additional requirements for information or criteria or adopt our own local policies
- Can Boards require or request a different project at a public hearing?
- Can boards consider project actions outside the footprint of the wetland area that are expected to have impacts on jurisdictional wetlands?
- Should permit drawings be part of the legal permit instrument?
- How & when during the process should Boards consider wetland compensation options?

## In Conclusion:

Process ----- follow procedures

Service ----- be responsive

Information -- use data

Access ----- open records

## Virginia Marine Resources Commission

Our Mission is to serve as stewards of Virginia's marine and aquatic resources and protectors of its tidal waters and homelands for present and future generations.

# Implementing sustainable shoreline management in Virginia: assessing the need for an enforceable policy

Marcia Berman, Co-PI  
Pam Mason, Co-PI  
Christine Tomblason



# RECALL

.... In 2011 Virginia adopted a policy that identified living shorelines as the preferred alternative for erosion control on Tidal Shoreline



# IN RESPONSE:

- VIMS has developed guidance and tools
- VMRC has implemented a general permit for Type 1 living shorelines
- VIMS has provided training and outreach since 2012

Comprehensive Coastal Resource Management Guidance

Planning Information and Guidelines for the Living Shoreline Practices

Prepared By:

Center for Coastal Resource Management  
Virginia Institute of Marine Science  
College of William and Mary



January, 2013



SO .....how well are we doing 5 years later?



# Project Goals

- Assess the effectiveness of the policy in achieving the Commonwealth's goal to **promote** living shorelines;
- Analyze the risk to wetland resources under the current policy;
- Identify shortfalls in the current policy and propose revisions.



# Assessment

- 1) Track wetland permit decisions beginning in 2013;
- 2) Use VIMS guidance to determine preferred shoreline BMPs;
- 3) Compare shoreline BMPs to board decisions;
- 4) Evaluate consistency of board decisions to the recommended guidance.



# Analysis

1) Use geospatial techniques to determine where wetlands are at risk under the current policy

Fact: In Virginia approximately 85% of the tidal shoreline can be managed using a living shoreline approach



# Desired Outcome

Evaluate the need for revisions to the existing policy and propose revisions if appropriate.

## VIRGINIA ACTS OF ASSEMBLY – 2011 RECONVENED SESSION

### CHAPTER 885

*An Act to amend and reenact § 28.2-1100 of the Code of Virginia and to amend the Code of Virginia by adding sections numbered 15.2-2223.2 and 28.2-104.1, relating to Marine Resources Commission; Virginia Institute of Marine Science; coastal resource management.*

Approved April 29, 2011

[S 964]

**Be it enacted by the General Assembly of Virginia:**

**1. That § 28.2-1100 of the Code of Virginia is amended and reenacted and that the Code of Virginia is amended by adding sections numbered 15.2-2223.2 and 28.2-104.1 as follows:**

**§ 15.2-2223.2. Comprehensive plan to mitigate coastal resource management guidance.**

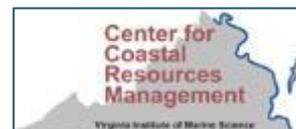
*Beginning in 2013, any locality in Tidewater Virginia, as defined in § 10.1-2101, shall incorporate the guidance developed by the Virginia Institute of Marine Science pursuant to subdivision 9 of § 28.2-1100 into the next scheduled review of its comprehensive plan. The Department of Conservation and Recreation, Virginia Marine Resources Commission, and the Virginia Institute of Marine Science shall provide technical assistance to any such locality upon request.*

**§ 28.2-104.1. Living shoreline: development of general permit guidance.**

*A. As used in this section, unless the context requires a different meaning:*

*"Living shoreline" means a shoreline management practice that provides erosion control and water quality benefits; protects, restores or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, rocks, sand fill, and other structural and organic materials.*

*B. The Commission, in cooperation with the Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science, shall establish and implement a*



# General Assembly & Other Updates

Karen Duhring

May 5, 2016

Tidal Wetlands Workshop

This PDF version includes [web site links](#) for more information. Look for blue underlined text.



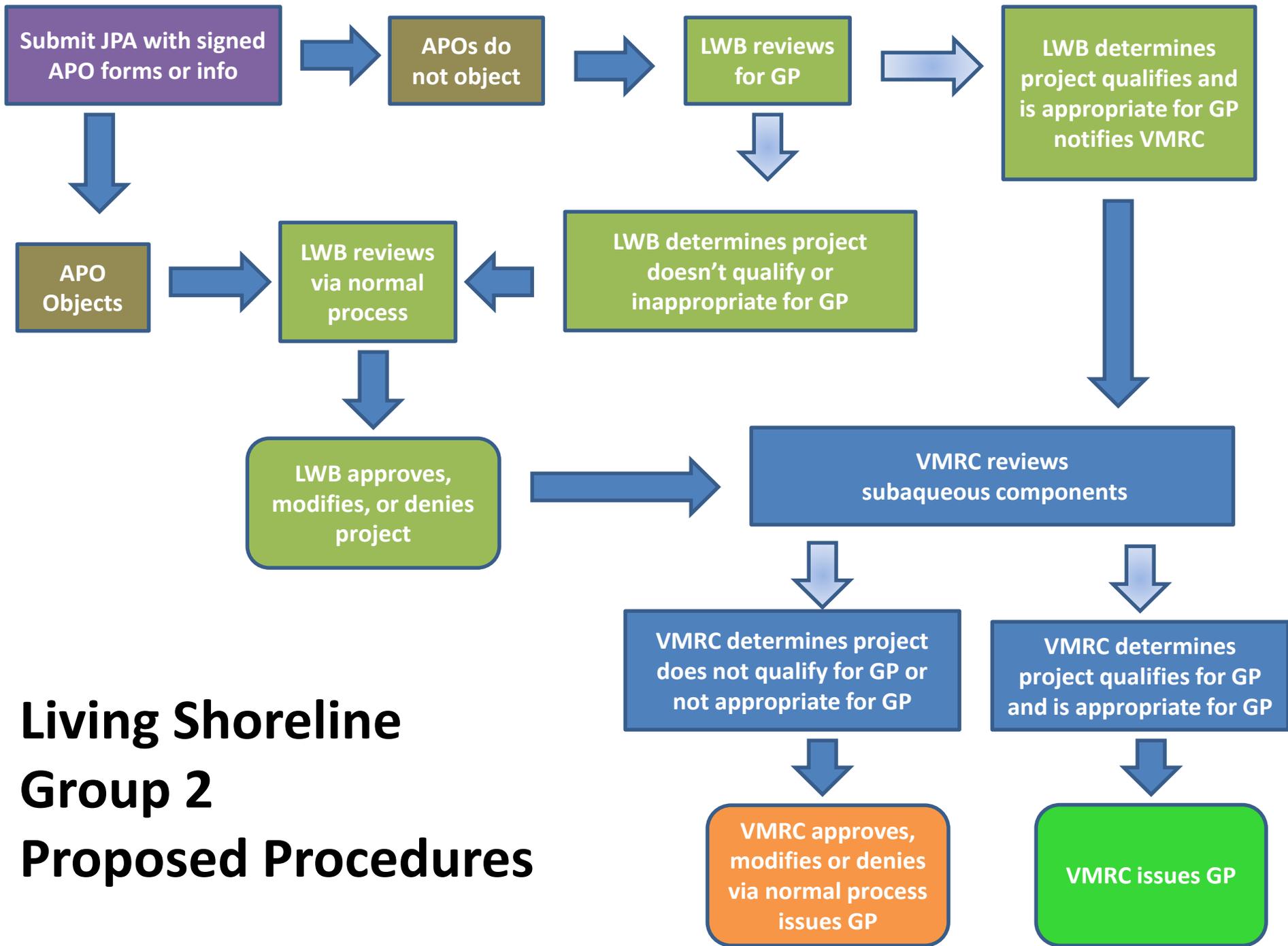
# Living Shorelines General Permit

- **Group 1 General Permit** *approved & in use*
  - Non-structural type projects, e.g. planted marshes, fiber logs, shell bags, sand nourishment
  - Group 1 permits confined to areas of Wetlands Boards' jurisdiction
  - Wetlands Board can review application and determine General Permit is not appropriate, regular JPA process applies
  - 5 issued to date for  $\pm$  850 linear feet of shoreline

# Living Shorelines General Permit

- **Group 2 General Permit** *still under development*
  - Approval hopefully later this year
  - Will allow for certain marsh toe revetments & sills with sand nourishment & plantings
  - Minimum fetch 0.5 mile & maximum fetch 1.5 miles; OR < 0.5 mile with active detrimental erosion present
  - Adjacent property owner notification included

**Contact for more information**  
**[Chip.Neikirk@mrc.virginia.gov](mailto:Chip.Neikirk@mrc.virginia.gov)**



**Living Shoreline  
Group 2  
Proposed Procedures**

## **HB 1734 Living Shorelines: loans for creation**

2015 amendment expanded the activities of the Virginia Clean Water Revolving Loan Fund

Allows State Water Control Board to authorize low interest loans from the Fund for the purpose of establishing living shorelines in 2 ways:

for locality implementation

for localities to issue loans to individuals



**December 2015** *Draft guidelines for program & local plan*

**February 2016** *Public comment period with 3 received*

**April 2016** *State Water Control Board approved guidelines*

**[DEQ Clean Water Financing & Assistance: Living Shoreline](#)**

## **HB 526 Living Shorelines; tax exemption from local property taxes**

Any living shoreline project approved by the Virginia Marine Resources Commission or the applicable local wetlands board and not prohibited by local ordinance shall qualify for full exemption from local property taxes.

**APPROVED BY GOVERNOR Effective 7/1/16**

Intended to provide real estate tax exemption for new living shoreline construction projects at locality discretion

The decision to allow such an exemption, the method for appraising a project's value, and the term of exemption will be at the discretion of the locality within certain parameters

This is a “may”, not a “shall”



# **SB 282 Virginia Shoreline Resiliency Fund**

Establishes the Virginia Shoreline Resiliency Fund for the purpose of creating a low-interest loan program to help residents and businesses that are subject to recurrent flooding.

Moneys from the Fund may be used to mitigate future flood damage.

Governor recommended amendment, Senate & House adopted, passed & effective 7/1/16



## **HB 903 Commonwealth Center for Recurrent Flooding Resiliency**

Designates the Commonwealth Center for Recurrent Flooding Resiliency jointly at Old Dominion University, the Virginia Institute of Marine Science, and The College of William and Mary to:

- (i) serve, advise, and support the Commonwealth by conducting interdisciplinary studies and investigations and
- (ii) provide training, technical and nontechnical services, and outreach in the area of recurrent flooding and resilience research to the Commonwealth and its political subdivisions.

**[VIMS News Story](#)**



## **HB 327 Beach restoration; expedited permit**

Directs the Virginia Marine Resources Commission to develop an expedited process for issuing a permit for emergency sand restoration activities

on a publicly owned beach when the erosion is caused by a discrete, identifiable weather event that was the subject of a local or state declaration of emergency.

The bill exempts the permit process from certain provisions of the Administrative Process Act.

This bill is identical to [SB 307](#).

Approved by Governor, effective 7/1/16

## **HB 813 Offshore waters and submerged lands; Commonwealth jurisdiction to three miles; survey**

Updates the description of the offshore waters over which the Commonwealth has jurisdiction

- currently shifts with changes in the shoreline location

In place of a reference to certain seas claimed in the Virginia Constitution of 1776, the bill provides for jurisdiction over offshore waters for a distance of three geographical miles as determined by metes and bounds surveys.

The bill also directs the Secretary of Natural Resources to conduct surveys of the three-mile boundary and to request that the Attorney General file the surveys in the United States Supreme Court.

# Comprehensive Coastal Resource Management Portals

## CCRMP Update

- 22 locality specific portals now available
- Sea level rise risk & vulnerability tool updated
- 2015 revisions *for Lancaster, Middlesex, Portsmouth, Stafford*
  - Digitized shoreline now at upland bank
  - Simplified shoreline best management practices
- 2016 localities now in progress
  - Accomack, Chesapeake, Prince George

***Customized Training Sessions can be arranged***

Contact Karen Duhring

[karend@vims.edu](mailto:karend@vims.edu)

CCRM Training Coordinator



## **Legal Authority, Roles, & Responsibilities of Local Wetlands Boards**

Thursday, May 5, 2016

Virginia Institute of Marine Science

Gloucester Point, VA

### **Interactive Experience Stations**

#### **OUTDOORS**

##### **1. Shoreline Application Review at VIMS Teaching Marsh** *Christine Tombleson & Pamela Mason*

Are you a new wetlands board member, new wetlands board staff, or just need a refresher? Join us at the Teaching Marsh to review a mock application for tidal shoreline stabilization. This hands-on activity will include how to:

- Learn basic information that should be provided on JPA drawings
- Locate Mean High Water
- Determine the upper limits of wetland/upland transition area & delineate Wetlands Board jurisdictional area
- Identify common wetland plant species
- Understand the importance of the riparian buffer in wetlands management
- Make a recommendation on a proposed project

##### **2. Ribbed Mussels & Living Shorelines Research at VIMS Teaching Marsh** *Robert Isdell*

The ecological drivers for ribbed mussel populations and opportunities for integration of this shellfish into living shorelines will be described by a CCRM Ph.D. student. Demos of the survey methods, live mussels, and trematode-induced pearls will be provided.

##### **3. Beach and Dune Field Experience at VIMS Beach** *Julie Bradshaw & Molly Mitchell*

Learn about beach and dune processes, values, and jurisdictions plus how to identify different dune plants. Be prepared for walking up to ½ mile in sand, and getting sand in your shoes.

#### **INDOORS**

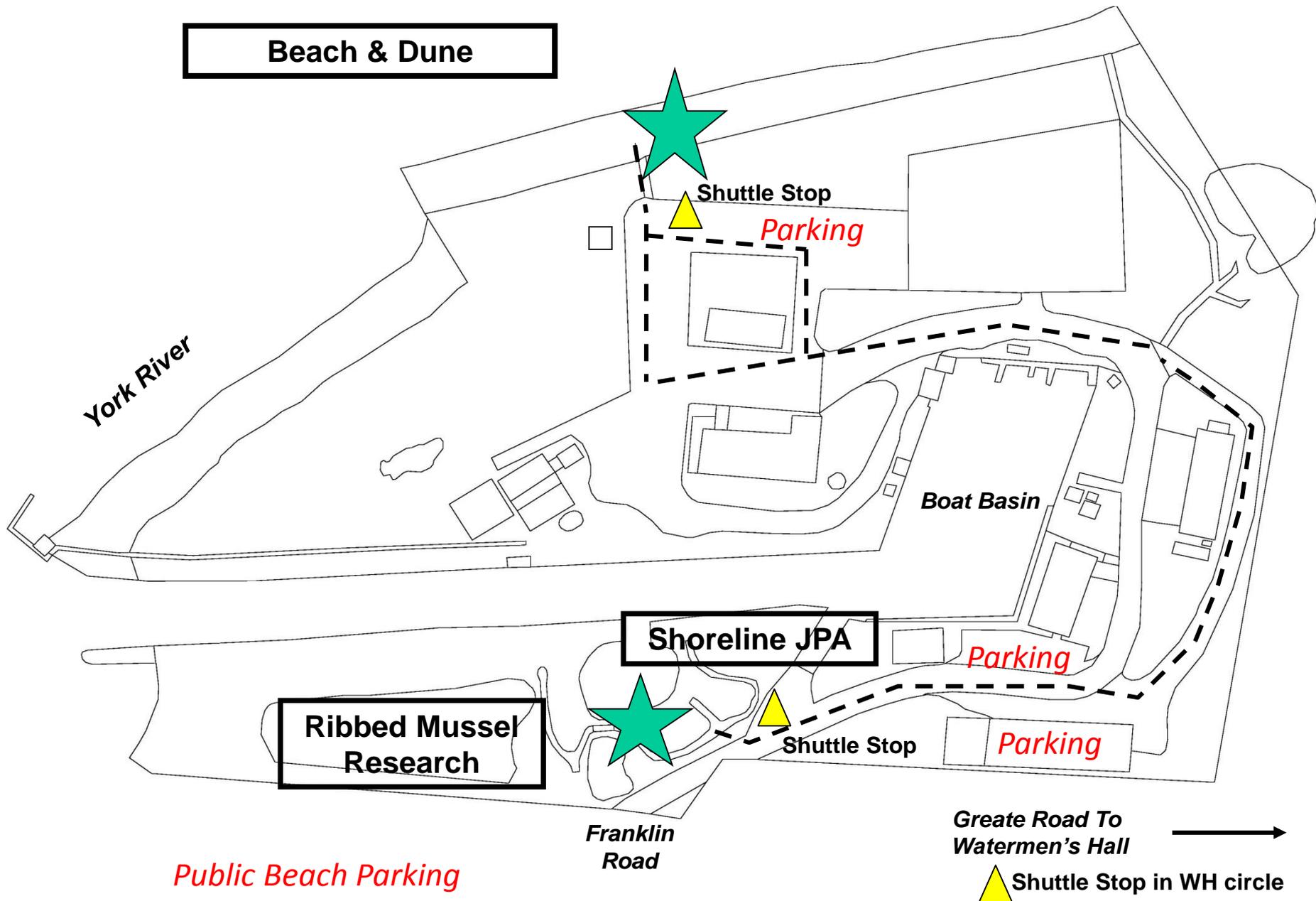
##### **4. Hands-On CCRMP Learning at Technology Classroom** *Tamia Rudnický & Karinna Nunez*

There are 22 locality-specific Comprehensive Coastal Resource Management Portals or CCRMPs now available. This station provides a hands-on opportunity to learn more about the CCRMP contents and to practice using these tools with GIS staff present to provide guidance and answer questions. The classroom has desktop computer stations for each user to access & try out the CCRMP tools. Please don't bring food or drinks into this computer classroom.

##### **5. Shoreline Management Tools at Auditorium** *Marcia Berman*

An overview of various shoreline management tools will be provided, including GIS map viewers, on-line guidance, and self-help tutorials. Recent improvements in GIS data delivery and new projects will be highlighted.

# May 5 Field Activities – VIMS Boat Basin



## Tidal Wetlands Shoreline Application Review

### Exercise for Wetlands Board Staff and Wetlands Board Members

#### 1) Wetland Plant ID EXERCISE (low marsh vs high marsh)

*Spartina alterniflora* (Low marsh) Adapted to daily tidal flooding, can tolerate high salinity and low oxygen

*Juncus roemerianus* (Occurs around MHW and above)

Seashore Goldenrod

Saltmeadow Hay

Switch Grass

*Iva frutescens*

Sea oxeye

*Baccharis halimifolia*

#### 2) JPA – Everyone acting as staff or wetland board members: (hand out drawings)

##### a. Desktop review before going to site

- Be familiar with project,
  1. What's proposed, where?
  2. Look at aerials
  3. CCRMP – preferred approach, wetlands?, beach? Fetch? Orientation?
- Get Tide Data (Tide Range, time of low tide, predicted vs observed)
  1. Tides & Currents, NOAA
- Plan site visit at low water. When is LW? Is it an average low water? (spring or neap?)
- IMPORTANT: Is the application complete?

##### b. What important information is missing from the drawings? (Drawings become legal document)

- MHW
- Benchmarks
- Limits of disturbance (backfill) with dimensions
- Limits of wetlands
- North Arrow (helps you orientate the site)
- Not to scale
- Access
- Other stuff.....

##### c. Visit site at low water

#### 3) Site Visit

##### a. Bring drawings!

##### b. Observe site conditions

1. Predicted vs observed tide levels (storm, wind, moon phase etc)
2. Natural resources
3. Erosion

c. Determine jurisdictional limits

1. MLW – MHW (non-vegetated sites)
2. MLW – 1.5 times the tide range (Vegetated sites)

MLW – visit site at MLW

- MLW will always be channelward of vegetation (if vegetation is present)
- Upper limits - 1.5 times the tide range (Tide range for this site is 2.38)
  - i. Upper limits of wetlands =  $1.5 \times 2.38 = \text{elevation } 3.57$ 
    1. Survey it
    2. Observe it
      - a. Vegetation (good to be familiar with wetland plant list)
        - i. Iva vs. Baccharis
        - ii. Upland Plant indicators  
Pine tree, bay berry, vines, grasses

**EXERCISE: FLAG UPPER LIMITS**

GO to BACK

**.5 times Tide Range from MHW – Upper limits  $.5 \times 2.38 = 1.19 = \text{add } 1.19 \text{ to } 2.38 = 3.57$   
(juncus roemeianus)**

**EXERCISE: FLAG MHW ?**

**Is the proposed project within wetlands board jurisdiction? YES**

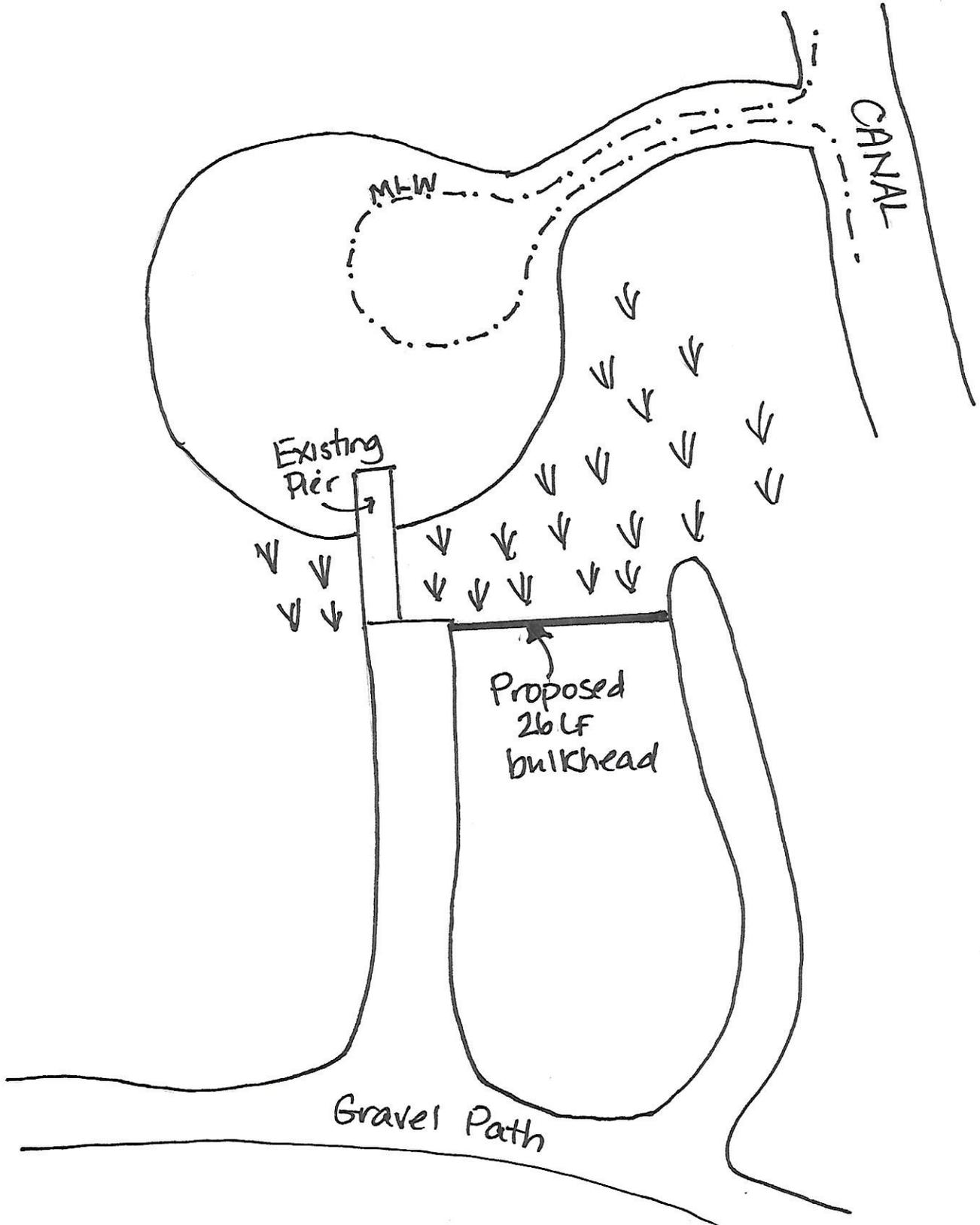
- 4) Project impacts?
  - a. Measure area of estimated area of impacts (what type of impacts?)
    - Explanation of determining impacts
- 5) Is the proposed bulkhead appropriate for this site?
  - a. No – No active detrimental erosion
    - Unnecessary wetland loss
    - Impacts can be avoided
- 6) Moving bulkhead to the RPA – always the answer 😊
  - a. Why is this not appropriate either?
    - Prevent migration of wetland
    - Tidal ecosystem functions and processes interrupted or eliminated
    - Reduces the probability that tidal shoreline ecosystem and resources will be sustained in the future
    - Water quality and erosion control for wetland area

**What is the preferred approach?**

Nothing, no erosion

Plant wetland or riparian vegetation as necessary

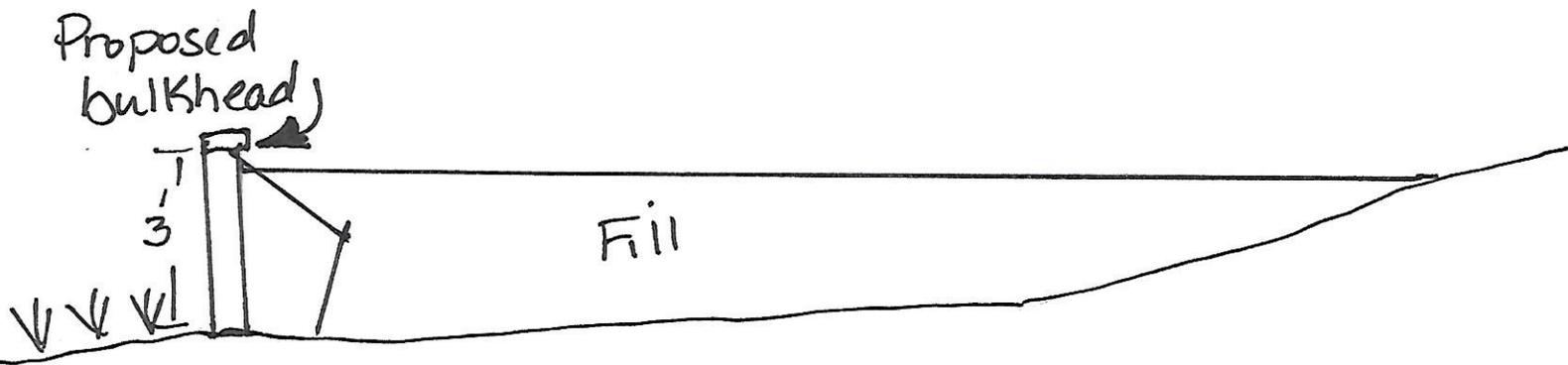
**If there had been erosion along this shoreline, what would have been the preferred approach?**



Plan  
View

John Smith  
VIMS Boat Basin  
Gloucester Pt, VA

MAY 5 2016



Cross  
Section

John Smith  
VIMS Boat Basin  
Gloucester Pt, VA

## **Additional Training Summary**

Although not a final product deliverable, CCRM continues to provide other training related to tidal wetlands and shoreline management.

### **Regional Training – CCRMP & Shoreline Best Management Practices**

CCRM continues to raise awareness and provide orientation to new CCRM tools and guidance provided through the Comprehensive Coastal Resource Management Portal (CCRMP). Beginning in 2012, CCRM started developing portals for each Tidewater locality. Three more locality-specific portals were completed during the grant period. There are now twenty-two portals serving as gateways to comprehensive shoreline data, maps displaying shoreline best management practice recommendations, and sea level rise issues at the local level. Each year, CCRM will release more local portals.

Seven CCRMP locality-specific training sessions related to CCRMPs and shoreline best management practices were held at VIMS and also off-campus during the grant period for a combined total of 160 participants.

- 10/17/2015 – Peninsula Master Naturalists Coastal Ecology Training (30)
- 03/29/2016 – Historic Southside (Isle of Wight-Suffolk) Master Naturalists Coastal Resource Management (15)
- 04/21/2016 – City of Portsmouth Wetlands Board Hands-On CCRMP Training (5)
- 04/25/2016 – Tidewater (Virginia Beach) Master Naturalists Wetlands & Living Shorelines (25)
- 04/30/2016 – Peninsula Master Naturalists Coastal Resource Management (25)
- 06/09/2016 – Northern Neck Master Naturalists Coastal Resource Management (20)
- 08/09/2016 – Mathews Master Gardeners Water Quality Practices (40)

### **Living Shorelines Professionals Training**

In addition, four trainings for living shoreline professionals and practitioners were conducted. These training sessions covered living shoreline law & policy as well as technical design, construction, and maintenance information. Tours of a living shoreline demonstration at the VIMS Teaching Marsh for advanced and professional groups were also given. These training events were attended by 187 participants.

- 11/12/2015 Virginia Water Environment Association Stormwater Committee Living Shorelines (40)
- 01/13/2016 Living Shoreline Professionals Training Workshop, Virginia Beach (50)
- 06/13/2016 Virginia Interagency Oyster Team Living Shorelines (20)
- 09/10/2016 Go Green Expo Living Shorelines (25)
- Teaching Marsh Tours (52 combined)

### **On-Line Course for Shoreline Best Management Practices**

The Center continues to make available an on-line course dedicated to shoreline best management practices. This dynamic course launched is free and available to anyone that is interested. It has eleven modules, each covering a different topic made up of a video and follow-up quiz. Participants can work through the course at their convenience. The Wetlands Program continues to monitor course registration and participation, answer questions about content, troubleshoot technical difficulties, and issue certificates of completion. [http://ccrm.vims.edu/education/shoreline\\_BMP/index.html](http://ccrm.vims.edu/education/shoreline_BMP/index.html)

- 8 more certificates of completion were issued this grant period (50 total)

## **Publications**

Center staff annually produces our *Rivers & Coast* newsletter. The *Rivers & Coast* covers one relevant topic in more detail through the use of charts, graphs, maps and photos in an 8-page color publication. The newsletter is mailed to all local wetlands board members and their staff. Additionally, it is available online and is announced through CCRM's quarterly e-newsletter to approximately 2500 email addresses which include local and state agency personnel, General Assembly members, and interested private citizens. *CCRM e-News* summarizes and communicates a variety of issues that support integrated management of coastal zone resources, announces pertinent publications, programs and events, and points the reader to more detailed information on our website (and others).

### *Rivers and Coast*

- Summer 2016, Vol. 11  
Sea-Level Rise & Virginia's Coastal Wetlands  
<http://ccrm.vims.edu/publications/pubs/rivers&coast/Summer2016Final.pdf>

### *CCRM e-News*

- December 2015 (New CCRMP's Aquaculture Portal, Shoreline Contractor Workshop, GCA Scholarship)
- February 2016 (Living Shorelines Loan Program, Workshop Announcement, Marine Debris)
- June 2016 (Living Shoreline – Funding Assistance & Nationwide Permit, Workshop Presentations)
- September 2016 (Rivers & Coast, National Estuaries Week, Landscape Professional Certification)

## Dawn Fleming

**From:** Center for Coastal Resources Management <dawnf@vims.ccsend.com> on behalf of Center for Coastal Resources Management <dawnf@vims.edu>  
**Sent:** Thursday, December 17, 2015 8:56 AM  
**To:** Dawn Fleming  
**Subject:** CCRM December e-News

Having trouble viewing this email? [Click here](#)



## Center for Coastal Resources Management e-Newsletter



CCRM e-News

December 2015

### Quicklinks

[CCRM Website](#)

[CCRMP's](#)

[Shellfish Aquaculture](#)

[Garden Club  
Scholarship](#)

[Marine Debris  
Rivers & Coast](#)

### 2015 Comprehensive Coastal Resource Management Portals - CCRMPs

Beginning in 2012, the Center for Coastal Resources Management (CCRM) started developing Comprehensive Coastal Resource Management Portals, or CCRMPs, for each Tidewater locality. The portals are gateways to resources that address data gaps, shoreline best management practices, and sea level rise issues at the local level. Each portal links to comprehensive shoreline data, maps displaying shoreline and tidal marsh inventory data, plus shoreline management recommendations and decision support tools.

The Center is almost finished completing four new CCRMPs. This will bring the total number of completed portals up to 22 Virginia coastal localities. The 2015 [Stafford County CCRMP](#) is now available. New portals for the City of Portsmouth, Middlesex County, and Lancaster County will be ready in early 2016.

Some of the existing CCRMPs have also been updated with new locality-specific Shoreline Management Plans. They were produced by CCRM and the VIMS Shoreline Studies Program. The updated plans were posted to each locality's County Toolbox page within their CCRMP, including [James City](#)

[County](#), [Charles City County](#), [Fairfax County](#), [City of Suffolk](#), and [York County](#).

Visit the [CCRMP web page](#) to see all of the new and updated portals, plus information, guidance, and resources for localities without a CCRMP yet. Contact the [CCRM Training Coordinator](#) if you would like to arrange for customized CCRMP orientation sessions for staff, Wetlands Boards, or other interested groups in your locality.

---

## New Chesapeake Bay Shellfish Aquaculture Portal

CCRM recently completed a new [shellfish aquaculture web portal](#) for industry, resource managers, and the general public with funding from Virginia Sea Grant. This portal is focused on shellfish aquaculture in Virginia (oysters, clams) and Maryland (oysters).



*New shellfish aquaculture tools are now available for Virginia and Maryland.*

One of the featured tools is a new [Chesapeake Bay Aquaculture Vulnerability Map Viewer](#). The Aquaculture Vulnerability Model delineates where shellfish aquaculture is possible and practical based on physical and biological conditions plus policy, regulation, and land use practices. A ranking system is used to locate areas with a range of conditions. Optimal conditions are where physical and biological conditions necessary for shellfish

aquaculture exist and surrounding land uses pose a minimum risk to aquaculture success. An increase in vulnerability reflects conditions that are in conflict with good shellfish growing conditions and opportunities.

---

## Results from Shoreline Contractor Workshop

A Wetlands and Shoreline Contractor Workshop took place in Reedville, Virginia on October 7, 2015. Over 80 contractors, government officials, and a contingent of conservation groups, academics and local business owners attended this event sponsored by Lancaster County, Friends of the Rappahannock and The Wetlands Project. The morning sessions included presentations from Virginia Institute of Marine Science, Army Corps of Engineers, and Virginia Marine Resources Commission. The event also included a panel discussion, a 'mini-expo', and a site visit to a demonstration living shoreline at the Reedville Fishermen's Museum.

Visit the [Wetlands & Shoreline Workshop](#) web site to see the agenda, presentations, and a summary report. A selection of available resources from a variety of organizations including CCRM is available on another related web site called [The Contractor's Toolbox](#).



*A marsh sill under construction.  
Photo courtesy B. Burton, Longwood Univ.*

If you would like to plan a similar event for living shoreline professionals in your community, contact the [CCRM Training Coordinator](#) for assistance with event planning.

---

### 2016 Garden Club of America Wetlands Scholarship Deadline: January 15, 2016

The Garden Club of America provides an Award in Coastal Wetlands Studies. Applications are now being accepted for the 2016 scholarships. The award is a one-year \$5,000 scholarship to support graduate-level field-based research in coastal wetlands. The scholarship is administered by the Center for Coastal Resources Management, Virginia Institute of Marine Science (VIMS) at the College of William and Mary. Applications are reviewed by a selection committee of practicing wetland scientists.

To be eligible, students must be enrolled in a graduate program at a university within the United States. Field-based study must be in coastal wetlands in the U.S., defined as tidal or nontidal wetlands within the coastal states, including the Great Lake states. A student may only apply to one GCA-sponsored scholarship per year.

Visit the [Garden Club Scholarship](#) web site for more information about application requirements and to see previous award winners. The deadline for 2016 scholarship applications is January 15, 2016.

---

### Upcoming Events & Meetings at VIMS

The **2nd Virginia Marine Debris Summit** will be held **March 7-9, 2016** at the VA Institute of Marine Science (VIMS) in Gloucester Point, VA. The first Marine Debris Summit held in 2013 launched work that led to the "Virginia Marine Debris Reduction Plan". The Virginia Coastal Zone Management Program has a [Virginia Marine Debris Summit Summary](#) from this event. The

latest issue of the Center's Rivers & Coast publication also featured [Marine Debris & Microplastics: Sources & Solutions for Coastal Virginia](#).

The 2nd Virginia Marine Debris Summit in 2016 promises to be an important event that will help shape the future of marine debris reduction in Virginia and beyond. Registration will open in January. Summit details are available on the Virginia Coastal Zone Management's [Marine Debris Issue web page](#).

**A York River Research Symposium** will be held on **Wednesday, March 30, 2016** at the Virginia Institute of Marine Science (VIMS) sponsored by the Chesapeake Bay National Estuarine Research Reserve in Virginia (CBNERRVA). This Research Symposium will host a multidisciplinary group of scientists, state and federal partners, resource managers, academicians, and land managers, who will gather to present their latest research, discuss current hot topics, and share new ideas. **A Call for Abstracts is now open for contributed oral presentations and posters until noon on Friday, February 26, 2016.** Submissions may address research within the York River watershed (such as ecology, hydrology, resource management, species biology, etc.). Contact the [CBNERRVA Coastal Training Coordinator](#) for more information about the symposium and abstract submission instructions.

Carl Hershner, Director  
Center for Coastal Resources Management  
Virginia Institute of Marine Science  
Email [CCRM](#)  
804.684.7380

Like us on Facebook 

[Join Our Mailing List](#)

This newsletter was funded, in part, by the Virginia Institute of Marine Science and the Virginia Coastal Zone Management Program at the Department of Environmental Quality through Grant #NA15NOS4190164, Task #7 of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended. The views expressed herein are those of the authors and do not necessarily reflect the views of the U.S. Department of Commerce, NOAA, or any of its subagencies.

**[Forward email](#)**

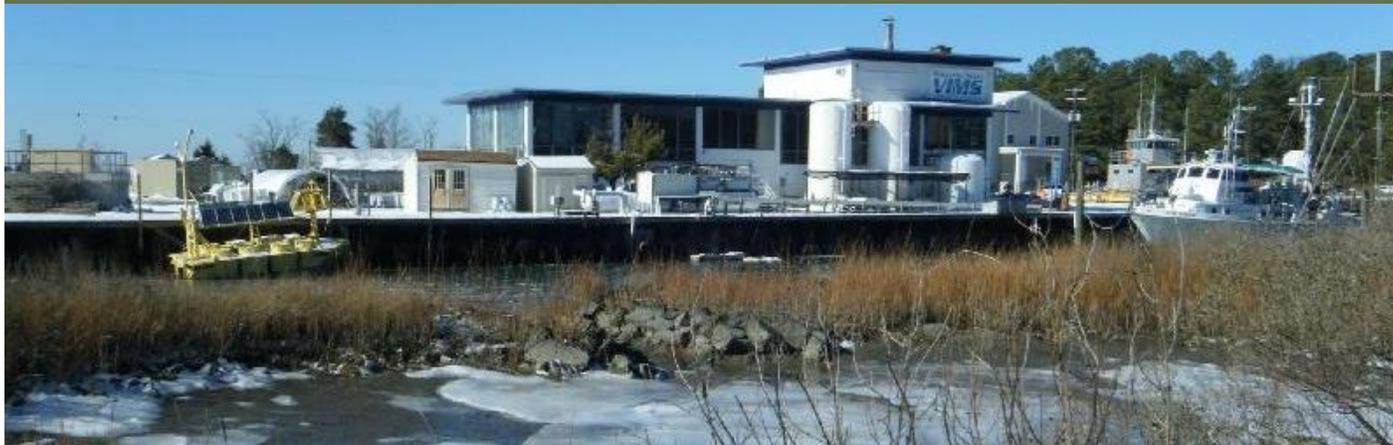


This email was sent to dawnf@vims.edu by [dawnf@vims.edu](mailto:dawnf@vims.edu) | [Update Profile/Email Address](#) | Rapid removal with [SafeUnsubscribe™](#) | [About our service provider](#).



Center for Coastal Resources Management | 1375 Greate Road | Gloucester Point | VA | 23062

## Center for Coastal Resources Management e-Newsletter



CCRM e-News

February 2016

### Quicklinks

[CCRM Website](#)

[CCRMP's](#)

[Living Shorelines  
Loan Program  
Proposed Guidelines](#)

[The Dilemma of  
Derelict Gear](#)

[2nd Virginia Marine  
Debris Summit](#)

[Marine Debris  
Rivers & Coast](#)

### New Living Shorelines Loan Program - Public Comment Period Now Open

A [public notice and draft guidelines](#) are now available for the new Living Shorelines Loan Program. The Virginia General Assembly passed an amendment in 2015 that expands the activities of the Virginia Clean Water Revolving Loan Fund. This addition allows the State Water Control Board to authorize low interest loans from the Fund for the purpose of establishing living shorelines. Local governments and other interested parties are encouraged to review the draft guidelines and provide comments of either support or necessary additions and corrections to make the program more attractive and feasible for local government implementation.

A public meeting will be held at 10:00 a.m. on Tuesday, February 23rd at DEQ in Richmond. **The public comment period will close on February 29, 2016.** Questions and comments about the Living Shorelines Loan Program should be directed to [Walter Gills](#), DEQ, 629 East Main Street, P.O. Box 1105, Richmond, VA 23218, (804) 698-4133.

---

Save the Date: May 5, 2016

## Tidal Wetlands Workshop at VIMS

The annual VIMS Tidal Wetlands Workshop will be held this year on Thursday, May 5, 2016 from 9:00 a.m. - 3:00 p.m. These annual workshops provide an opportunity for Local Wetlands Board members, local government staff, marine professionals, non-governmental organizations, and others to gather and learn about current events in tidal shoreline management. This year's workshop agenda is still being developed. More details and registration information will be announced very soon.



*Teaching Marsh Tour, VIMS, Gloucester Point*

---

## New Comprehensive Coastal Resource Management Portals - CCRMPs

Three new locality-based [Comprehensive Coastal Resource Management Portals](#), or CCRMPs, have been completed, including **Stafford County, Middlesex County, and the City of Portsmouth**. A fourth CCRMP for Lancaster County is in the final stages of development. When that is complete, a total of 22 coastal Virginia localities will have these resource management tools available. Each CCRMP includes a Shoreline Inventory, a Tidal Marsh Inventory, Preferred Shoreline Best Management Practices, plus guidance for comprehensive plan updates and a Sea Level Rise Risk & Vulnerability Tool. There are map viewers for easy on-line use, plus the GIS data can be downloaded for special applications.

Contact the [CCRM training coordinator](#) if you would like to learn more about CCRMPs or if you want to plan a training session for staff, Wetlands or Chesapeake Bay Boards, Planning Commissions, or other interested groups in your

locality.

---

## Second Marine Debris Summit: March 7-9, 2016 at VIMS

The 2nd Virginia Marine Debris Summit will be held March 7-9, 2016 at VIMS in Gloucester Point, VA. The Summit is open to all Virginians and others interested in marine debris and litter sources, impacts, and solutions. Summit attendees will receive updates from experts on current marine debris science and trends and will explore techniques and tools effective in enhancing knowledge, changing behavior and influencing policies that reduce marine debris. Visit the [Marine Debris Summit web site](#) for more information about the planned agenda and registration.

In related news, a [recent study by VIMS scientists](#) found that the removal of derelict crab pots has major economic impact on blue crab harvest in the Chesapeake Bay. Additional information about this topic is available at the Coastal Zone Management Program's [Marine Debris initiative web site](#) and the latest edition of CCRM's publication Rivers & Coast that featured [Marine Debris & Microplastics: Sources & Solutions for Virginia](#).



*Marine debris after a tropical storm at VIMS, Gloucester Point*

Email [CCRM](#)  
804.684.7380

[Join Our Mailing List](#)

This newsletter was funded, in part, by the Virginia Institute of Marine Science and the Virginia Coastal Zone Management Program at the Department of Environmental Quality through Grant #NA15NOS4190164, Task #7 of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended. The views expressed herein are those of the authors and do not necessarily reflect the views of the U.S. Department of Commerce, NOAA, or any of its subagencies.



### LIVING SHORELINE FUNDING ASSISTANCE - APPLICATIONS NOW BEING ACCEPTED

The Department of Environmental Quality (DEQ) recently announced the FY 2017 annual solicitation of applications for financial assistance through the Virginia Clean Water Revolving Loan Fund (VCWRLF). This year for the first time governments can apply for financial assistance in order to directly establish living shorelines themselves or to establish a local government funding program for individual citizens to establish living shorelines on their properties to protect or improve water quality.

**Completed applications (4 copies) must be hand delivered or postmarked by 5:00 p.m.**

**on July 15, 2016.** DEQ plans to evaluate the applications received and present a proposed funding list to the State Water Control Board in September/October 2016. For more details regarding the programs offered, the application process or assistance in completing the application, please contact [Walter Gills](#) in the Central Office or your closest regional representative (see [VCWRLF contact list](#)).

[More Info](#)

### LIVING SHORELINES NATIONWIDE PERMIT - PUBLIC COMMENT PERIOD

Nationwide permits are a type of general permit issued by the US Army Corps of Engineers (Corps) on a nationwide basis for activities in jurisdictional wetlands and waterways with minimal impacts. The Corps, in addition to soliciting comments for the reissuance of the existing nationwide permits (NWP), general conditions, etc. are soliciting comments on two new NWPs and one new general condition.

One of these new NWPs is a separate 'NWP B' to authorize the construction and maintenance of living shorelines. While some activities associated with living shorelines can be authorized by existing NWPs 13 and 27, the construction of living shorelines often requires individual permits from the Corps because the work requires substantial amounts of fill discharged into jurisdictional wetlands and waterways that do not fall within the current terms and conditions of the existing nationwide permits. The newly proposed NWP B for living shorelines will provide an efficient mechanism for authorizing these types of



### NEW LIVING SHORELINES JOURNAL ARTICLE

The May 2016 edition of the Coastal Management journal features a new article by Center scientists Dr. Donna M. Bilkovic, Molly Mitchell, Pamela Mason, and Karen Duhring. The article titled **The Role of Living Shorelines as Estuarine Habitat Conservation Strategies**, synthesizes the current understanding on the use of living

projects when they have no more than minimal adverse environmental effects.

The Corps is requesting comments on all aspects of these proposed nationwide permits during a **60-day comment period that will end on August 1, 2016**. More information about the proposed updates and new living shorelines Nationwide Permit B can be found online at the Federal Register under docket number COE-2015-0017 and/or RIN 0710-AA73.

shorelines as both shoreline protection and habitat conservation strategies along eroding shorelines. Lead by Dr. Donna M. Bilkovic, the authors conducted a review of emerging research findings that suggest living shorelines may be a viable approach to conserving coastal habitats. Enhanced public acceptance, coordination among regulatory and advisory authorities, and systematic and standardized monitoring were also found to be vital to expand the use of living shorelines and to fully understand their significance as habitat conservation strategies.

[More Info](#)

[Read Article](#)



### FOCUS WAS ON LEGAL ISSUES AT RECENT TIDAL WETLANDS WORKSHOP

The annual VIMS Tidal Wetlands Workshop was held May 5, 2016 with a focus on the **Legal Authority, Roles & Responsibilities of Local Wetlands Boards**. There were 130 workshop participants representing 23 local governments, 4 state agencies, 10 non-profit organizations, & 15 marine related businesses. Guest speakers shared their legal expertise and advice with the audience and a panel of local government staff representatives shared their experiences with administration of tidal shoreline regulations. An interactive discussion with Local Wetlands Board members in the audience further explored some of the many legal issues and challenges encountered during the shoreline permit application review process. Following the morning session, workshop participants engaged in interactive outdoor experiences at the VIMS Teaching Marsh & VIMS Beach related to legal issues. And a CCRM Ph.D. student provided a demonstration of his research about the ecological drivers for ribbed mussel populations and opportunities for integrating this shellfish into living shoreline projects.

[Learn More](#)

[CCRM WEBSITE](#)

[ABOUT CCRM](#)



[JOIN OUR MAILING LIST](#)



[FORWARD TO A FRIEND](#)

This newsletter was funded, in part, by the Virginia Institute of Marine Science and the Virginia Coastal Zone Management Program at the Department of Environmental Quality through Grant #NA15NOS4190164, Task #7 of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended. The views expressed herein are those of the authors and do not necessarily reflect the views of the U.S. Department of Commerce, NOAA, or any of its subagencies.



CCRM e-News

September 2016

**RIVERS & COAST:  
SUMMER 2016 ISSUE  
NOW AVAILABLE**

The Summer 2016 issue of the Rivers & Coast newsletter focuses on **Sea-Level Rise & Virginia's Coastal Wetlands**. Read about the current scientific understanding of relative sea-level rise in Virginia and its effects on coastal wetlands. The relationships between natural wetland responses to rising water levels and human shore protection activities are also reviewed.

[More Info](#)



**NATIONAL ESTUARIES WEEK  
SEPTEMBER 17-24th**

September 17-24, 2016 is National Estuaries Week! This annual event celebrates the



**NEW CHESAPEAKE BAY  
LANDSCAPE PROFESSIONAL  
CERTIFICATION PILOT  
PROGRAM**

There is an increasing demand for landscape professionals trained to implement rain gardens, bioretention areas, permeable hardscapes, riparian buffers, living shoreline plantings, and other practices

many benefits of our bays and estuaries. Each year dozens of organizations around the nation host volunteer events, cleanups, canoe and kayak trips, and more to celebrate local waterways. You can help celebrate and spread the word. Go visit an estuary near you and get involved.

- Learn more about the [marine debris problem](#) and what you can do to help.
- Participate in a [Coastal Clean-Up event](#) or organize a local trash pick-up near you. There are several events scheduled around coastal Virginia during this week and other times of the year.
- Support local watershed organizations in your area that need help with water quality monitoring, native planting projects, and education programs.
- Let your elected officials know how much you enjoy clean, productive estuaries.

[Learn More](#)

to reduce stormwater runoff and pollution. A new Bay-wide certification for landscape professionals who design, install, and maintain sustainable landscapes and small scale stormwater practices will be piloted in Virginia, Maryland and the District of Columbia starting this fall. The certification program will expand across the region in 2017. The two-level program includes downloadable study guides, online webinars, live training events, and a written exam.

The new Chesapeake Bay Landscape Professional certification program will help connect consistently trained professionals with potential employers and clients. Learn more about this new program, encourage your local landscape professionals to pursue certification, and then support the hiring of landscape professionals who successfully earn this certification in your locality.

[Learn More](#)



## VIRGINIA COASTAL PARTNERS WORKSHOP - NOVEMBER 16-17

Registration is now open for the biennial Virginia Coastal Partners Workshop to be held in Richmond, VA on November 16 & 17, 2016 at the Virginia Department of Environmental Quality (DEQ). This event will include a celebration of the **Virginia Coastal Zone Management Program's** 30th Anniversary! Share and hear the latest on important coastal and ocean management topics. Network with other partners and stakeholders. Provide input on the focus of the program over the next three years. The free registration deadline is 5 pm, Friday November 4.

[More Info](#)

JOIN OUR MAILING LIST



FORWARD TO A FRIEND

This newsletter was funded, in part, by the Virginia Institute of Marine Science and the Virginia Coastal Zone Management Program at the Department of Environmental Quality through Grant #NA15NOS4190164, Task #7 of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended. The views expressed herein are those of the authors and do not necessarily reflect the views of the U.S. Department of Commerce, NOAA, or any of its subagencies.

## Sea-Level Rise & Virginia's Coastal Wetlands

The importance of Virginia's coastal wetlands is well established. Over the past 44 years, since the Tidal Wetlands Act was adopted in 1972, the wetlands management program has evolved in response to new scientific understanding in order to preserve the benefits of healthy coastal wetlands. For example, program revisions were made when cumulative impacts from multiple, incremental projects became obvious and also when wetland compensation policies and practices were found to not effectively replace natural wetlands.

The wetlands management program must continue to evolve as we learn more about sea-level

rise. The effects of sea-level rise on tidal wetlands are numerous and already apparent in local wetlands (Figure 1).

Some of these effects include:

- more frequent inundation
- changes in tidal amplitude
- changes in tidal flow patterns
- changes in sediment transport and vertical accretion rates
- shoreline erosion
- migration of estuarine salinity gradients
- changes in plant and animal species composition
- landward migration of tidal waters and habitats
- habitat loss

Wetlands have a natural ability to adjust to some of these factors, yet scientists have discovered that their ability to do so depends on human decisions and responses to some of the same factors.

*“Climate change is causing significant impacts on ocean and coastal habitats, with effects likely to increase in the future. While these impacts are varied... sea-level rise has one of the most direct effects on tidal wetlands.”*

- NOAA Restoration Center, 2011

This issue is dedicated to helping coastal managers better understand how the gradual, long-term increase in the average sea level is already affecting different types of coastal wetlands in Virginia. This information will foster improved understanding and continued evolution of wetland decision making that considers both development and natural stresses on wetlands. Understanding sea-level rise effects on coastal wetlands is also important to effectively locate and design wetland restoration, wetland compensation, and living shoreline projects that are supposed to provide wetland benefits into the future.



**Figure 1.** Evidence of sea-level rise at the VIMS Teaching Marsh includes changes in plant species, landward wetland migration, and increased inundation.

Rivers & Coast is an annual publication of the Center for Coastal Resources Management, Virginia Institute of Marine Science, College of William & Mary. This publication is distributed electronically. If you would like to be added to or removed from the e-mailing list, please send correspondence to:

Rivers & Coast/ CCRM  
 P.O. Box 1346  
 Gloucester Pt., VA 23062  
 (804) 684-7380  
[dawnf@vims.edu](mailto:dawnf@vims.edu)

CCRM Director: Dr. Carl Hershner

Contributing Authors:  
 Karen Duhring  
 Carl Hershner  
 Molly Mitchell

Layout: Dawn Fleming

Photo Credit: CCRM—VIMS

Figures 4 & 8 — Symbols courtesy of the Integration and Application Network ([ian.umces.edu/symbols/](http://ian.umces.edu/symbols/)), University of Maryland Center for Environmental Science

This report was funded, in part, by the Virginia Institute of Marine Science and by the Virginia Coastal Zone Management Program of the Department of Environmental Quality through Grant #NA15NOS4190164 Task #7 of the National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resources Management, under the Coastal Zone Management Act, as amended. The views expressed herein are those of the authors and do not necessarily reflect the views of NOAA or any of its subagencies or DEQ.



## How Sea-Level Rise is Measured

The National Water Level Observation Network has been operating on all U.S. coasts dating back to the early 1800's. Older tidal measuring stations used mechanical instruments, while modern stations use advanced acoustics and electronics to measure the time it takes for an audio signal to travel down a sounding tube to the water surface and back. Highly accurate sea-surface heights have also been measured since 1992 using satellite radar altimetry. This method measures the time it takes a radar pulse to travel from the satellite antenna to the sea surface and back to the satellite receiver.

A minimum 30-year time span is used to estimate long-term sea-level trends to account for repeatable, predictable cycles, such as tidal, seasonal, and interannual variation between years. There are eight water level stations in Virginia where long-term sea-level trends have been calculated by the National Oceanic and Atmospheric Administration (NOAA). The Sewells Point tide station at the Norfolk Naval Base is one of these locations.

The monthly observed water levels at Sewells Point have been highly variable with extreme high and low tides. Yet the trend in mean monthly sea levels, shown by the red line, has increased by about 0.9 feet since the Commonwealth's wetlands management program started (Figure 2). The present monthly mean sea level is also higher than the current benchmark elevation determined from the latest 19-year tidal epoch from 1983-2001.

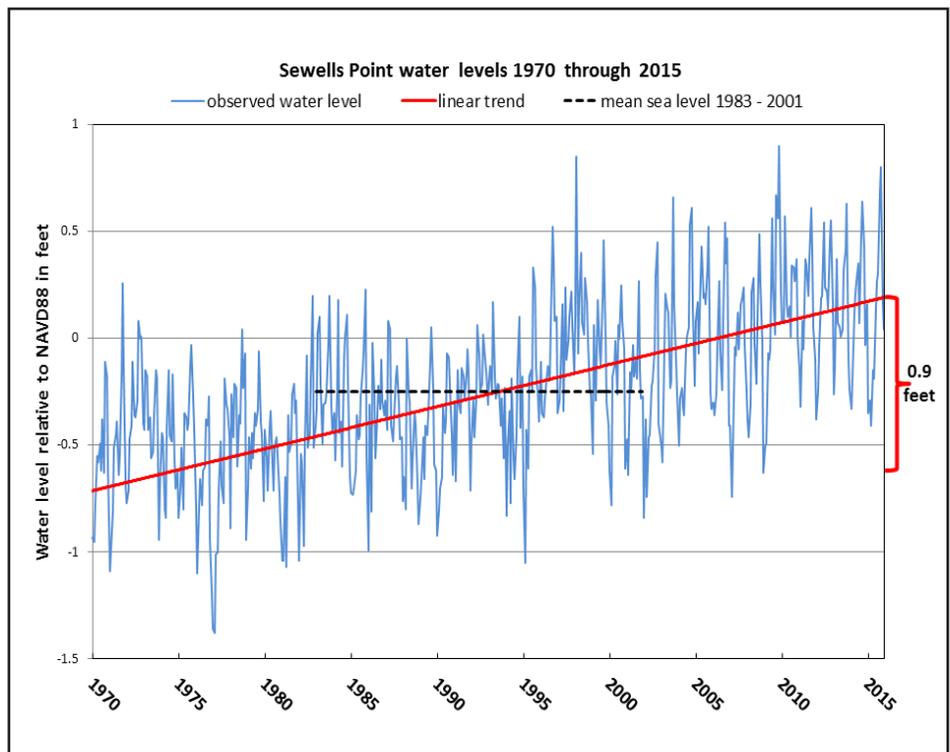


Figure 2. Long-term sea-level trend measured at Sewells Point tide station, Norfolk, Virginia.

## Relative Sea-Level Rise in Virginia

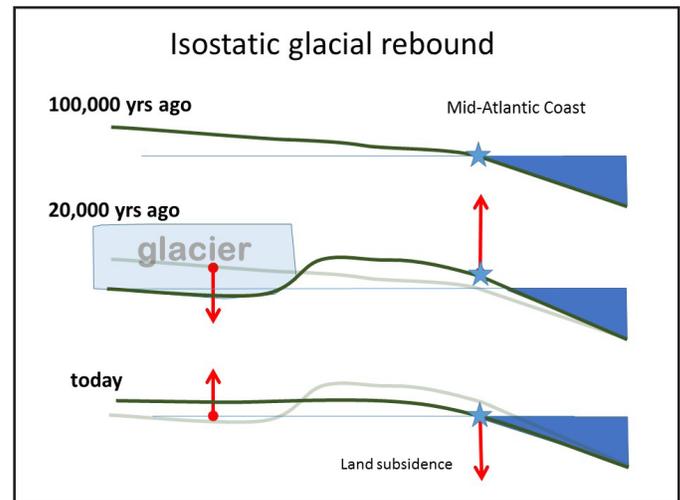
**Global sea-level rise** refers to the worldwide increase in the volume of the world’s oceans due to thermal expansion and from melting ice caps and glaciers. **Relative sea-level rise** refers to the combined effects of global sea-level rise with other localized processes that affect the long-term sea level at a particular location or region. Scientists are now estimating that Virginia’s relative sea-level rise is more than twice the global rate due to these regional processes (Table 2).

**Ocean circulation changes** are one of these other processes. New evidence is being reported of changes to the Atlantic Meridional Overturning Circulation pattern, which includes the Gulf Stream off of Virginia’s coast. The Gulf Stream current started to slow down in the mid-1990’s and its path has shifted. A slower ocean current means less pressure to move water away from the coast and the result is higher water levels along the mid-Atlantic coast.

**Land subsidence** or sinking relative to the Earth’s center is another primary factor causing about half of Virginia’s relative sea-level rise. One cause of land subsidence is ‘isostatic glacial rebound.’ This is the Earth’s crust readjusting to the pressure and then retreat of continental ice sheets over the past 10,000 years (Figure 3). Groundwater removal for industrial uses and drinking water is another contemporary, human process that contributes to land subsidence.

*“Sea-level rise in Virginia is a documented fact. Water levels in Hampton Roads have risen more than one foot over the past 80 years. The causes of this rise are well understood.”*

– Carl Hershner & Molly Mitchell  
Rising Tides, Sinking Coast  
Virginia Issues & Answers,  
Winter 2012-13.



**Figure 3.** Illustration of regional land subsidence caused by readjustment of the Earth’s crust.

Primary Cause	Processes
<b>Global Sea-Level Rise</b> increase in the volume of the world’s oceans	<ul style="list-style-type: none"> <li>• Warming and expanding ocean water</li> <li>• Melting ice sheets</li> </ul>
<b>Ocean Circulation</b>	<ul style="list-style-type: none"> <li>• Atlantic Meridonal Overturning</li> <li>• Circulation changes</li> </ul>
<b>Land Subsidence</b>	<ul style="list-style-type: none"> <li>• Isostatic glacial rebound</li> <li>• Groundwater withdrawals</li> </ul>
<b>Relative Sea-Level Rise</b> the combined effects of global sea level rise with other localized processes	<b>All processes combined</b>

**Table 2.** Dominant drivers of Virginia’s relative sea-level rise.

## Coastal Wetland Responses to Sea-Level Rise

Coastal wetlands are dynamic habitats that change in response to surrounding environmental conditions, including sea-level rise. Some wetlands actively engineer their position vertically within the tide range to keep pace with sea-level rise. They may also shift positions horizontally over time by erosion along seaward edges and landward expansion into adjacent upland habitats (Figure 4).

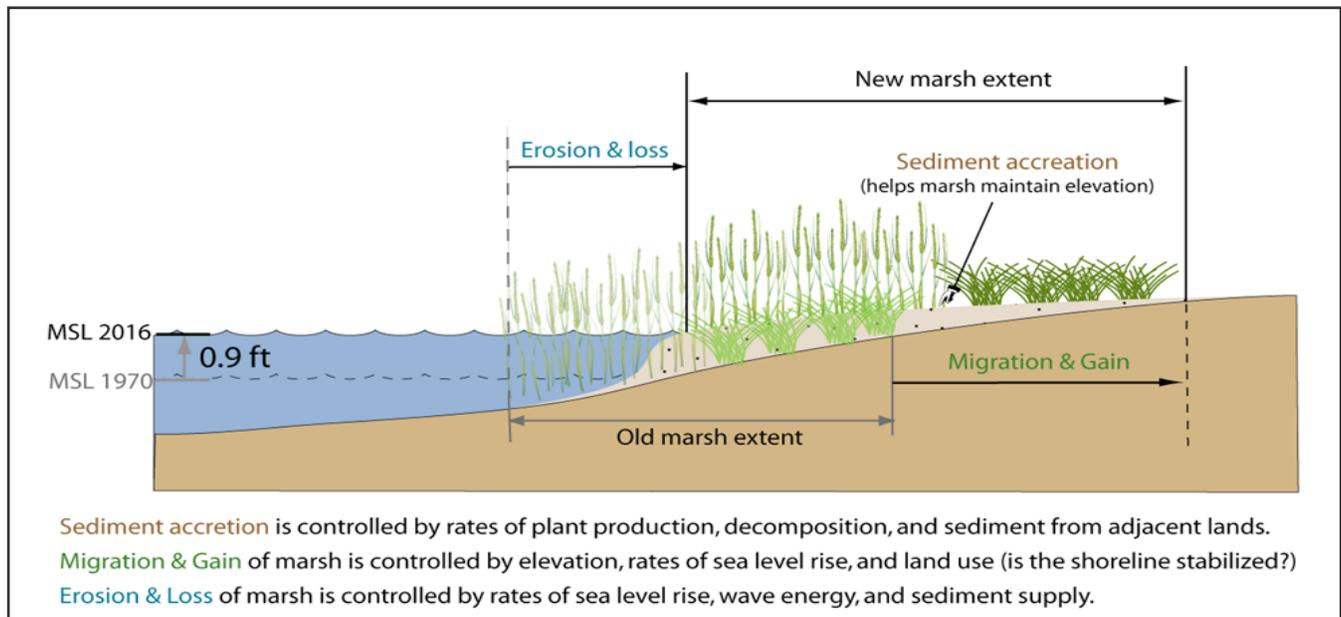


Figure 4. Illustration of vertical and horizontal wetland responses to sea-level rise.

### Vertical Development

A coastal wetland will persist in the same location if it builds vertically at a rate at least equal to the rise in sea level. If the water level rises faster than the wetland elevation builds vertically, then the wetland will gradually become submerged. Tidal wetlands build vertically through the accumulation of mineral sediments and the buildup of plant organic matter. This process depends on local conditions, such as the available sediment supply.

Mineral sediments are deposited on the surface when the wetland is flooded. There is recent evidence that increased flooding due to sea-level rise actually increases the rate of sediment accretion on some wetland surfaces. Instead of being overwhelmed by sea-level rise, some wetlands are able to keep pace through vertical elevation adjustments. Sediments can also be removed from the wetland surface by storms, tides, heavy rainfall, and ice buildup.

In addition to mineral sediments, organic matter accumulates on the wetland surface and below the ground from plant production and decomposition, especially root and rhizome growth. The rate of vertical development from organic matter varies for different wetland types. The rate of organic matter accumulation in common reed grass (*Phragmites australis*) wetlands, for example, is greater than other wetland types because of traits that support higher below-ground productivity.

#### CCRM Sea-Level Rise Research

- **Marsh migration model 2016** a model to simulate physical, biogeochemical, and human components to assess the evolution and persistence of tidal marshes under different sea-level rise scenarios
- **Tidal marsh change analysis 2016** comparisons between historic and current Tidal Marsh Inventories
- **Effects of sea-level rise on tidal wetlands in the Lynnhaven River Watershed 2009** a geospatial model to quantify potential wetland loss under various sea-level rise scenarios
- **Vulnerability of shallow tidal water habitats in Virginia to climate change 2009** models that forecast the distribution of key habitats within the next 50 to 100 years, including tidal wetlands

## Horizontal Migration

Wetlands also respond to sea-level rise by moving horizontally to higher elevations on land or into adjacent waters if they fill with sediment. The most common type of wetland migration in Virginia is erosion of the seaward edge and migration inland. There are many locations where marsh edge erosion is happening and also where formerly upland habitats are shifting to wetlands (Figure 5).

Marsh edge erosion increases with sea-level rise because there is less dissipation of incoming waves with a higher water level. Landward migration occurs for wetlands adjacent to low upland banks and beaches with gradual slopes and where the adjacent upland plants die back because they cannot tolerate rising water levels and increased salinity. Landward marsh migration is less likely to occur next to high, vertical banks and permanent impediments such as development or shoreline defense structures that prevent migration.

Even if wetlands can shift horizontally, wetland survival still depends on vertical accretion processes. Recent studies suggest that the highest possible rate of organic matter accumulation is 5 mm/year. This rate is actually less than the current rate of sea-level rise in some areas. That is why scientists now assume that wetlands need both mineral sediment accretion plus the ability to migrate inland to keep pace with sea-level rise.



## Community Shifts

The conversion of upland to wetland habitat is just one type of community shift. If a wetland cannot keep pace with sea-level rise vertically or horizontally, then increased flooding levels and inundation frequency can force vegetation changes to occur. Sea-level rise has also moved saline waters further upstream where tidal freshwater wetlands are located. It only takes a minimal salinity increase to alter freshwater wetland ecosystems.

### Documented Community Shifts Forced By Sea-Level Rise

- Low-lying farms, forests and residential yards converting to tidal marsh
- High marshes converting to low marshes
- Tidal freshwater forested wetlands converting to marshes without trees
- Freshwater marshes converting to brackish marshes
- Low vegetated marshes converting to mud flats and open water



**Figure 5.** Horizontal wetland movement occurs through (a) marsh edge erosion (above left) and (b) landward migration into upland habitats that cannot tolerate rising water levels (above right).

## Human Interference with Wetland Response to Sea-Level Rise

Wetlands are not responding to sea-level rise in a vacuum. Coastal communities are also responding to sea-level rise, increased erosion, more frequent tidal inundation, and coastal storms in ways that affect wetlands. New development pressures and the desire for economic growth are on-going. Coastal development, shore protection activities, and landscape management practices affect the surrounding environmental conditions that determine how or if wetlands can adjust to sea-level rise.

There are both inadvertent and deliberate actions and land use choices that prevent wetlands from adjusting (Figure 6). These interferences include:

- Physical obstacles to landward migration
- Reduced intertidal space available, deeper water in adjacent nearshore
- Reduced local sediment supply
- Interruption to onshore and alongshore sediment movement
- Filling in migrating wetlands to maintain upland elevation
- Plant stress caused by routine landscape practices, e.g. mowing, herbicides
- Nutrient enrichment that affects organic matter production and decomposition



**Figure 6.** Illustration of land use choices that affect wetland migration potential with (a) a low bulkhead with marsh above it that was backfilled to stop marsh migration; and (b) a low marsh converting to mud flat next to a higher bulkhead.

Cumulative impacts to coastal wetlands have been documented over the past 44 years in spite of protection measures and compensation requirements put in place by the Tidal Wetlands Act. Sea-level rise is a contributing factor to these observed wetland changes and loss. Since coastal wetlands depend on both vertical accretion and landward migration, adequate sediment supplies and space are essential. Yet sediment processes are already highly altered and continue to be impacted, while the potential area for landward migration is small compared to the extent of wetlands at risk, especially in developed urban estuaries.

## Sea-Level Rise Forecasts

Another growing concern for Virginia's coastal wetlands are recent sea-level rise forecast scenarios. A number of different techniques and models are used to predict future trends in sea-level rise. Forecasts for Virginia's relative sea-level rise are currently based on data from the 2014 National Climate Change Assessment (<http://nca2014.globalchange.gov/>).

The original baseline assessment was for global sea-level rise only, so it was adjusted to incorporate land subsidence rates documented in southeast Virginia by the U.S. Geological Survey (USGS). There are four future sea-level rise scenarios for southeast Virginia

displayed in the graph below (Figure 7). Each colored curve represents a possible scenario based on a range of estimates.

The current 2016 mean monthly sea level at Sewells Point falls on the yellow 'high' forecast curve. This indicates the rate of sea-level rise is already higher than the historic trend. The trend reflects an acceleration in sea-level rise due to rising global temperatures. If this relationship is sustained, Virginia's sea-level rise over the next 50 years could be almost double what it was over the past 50 years.

**Highest** – worst case scenario from global warming and maximum possible contribution from ice sheet and glacial melting

**High** – upper end of recent model projections

**Low** – based on fourth assessment model of the Intergovernmental Panel on Climate Change using conservative assumptions about future greenhouse gas emissions

**Historic** – a projection of observed long-term rates of sea-level rise going back a century or more

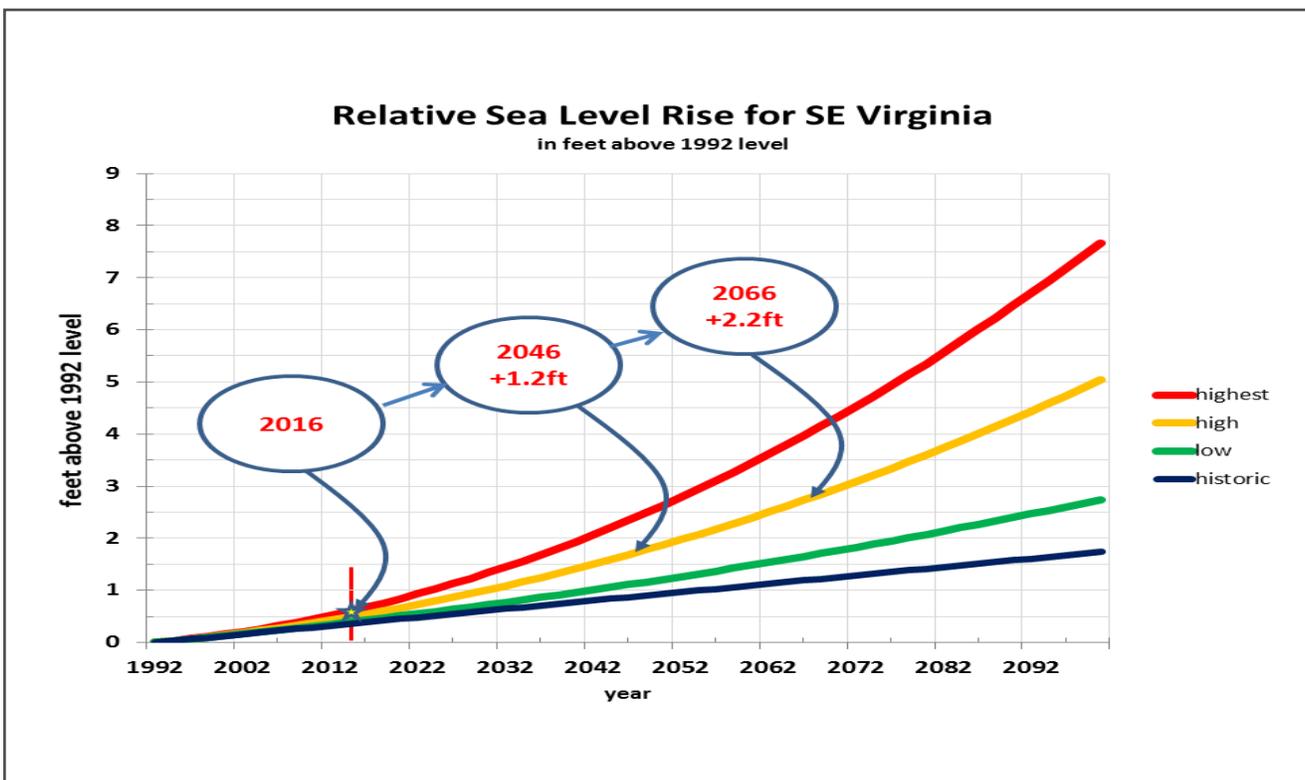
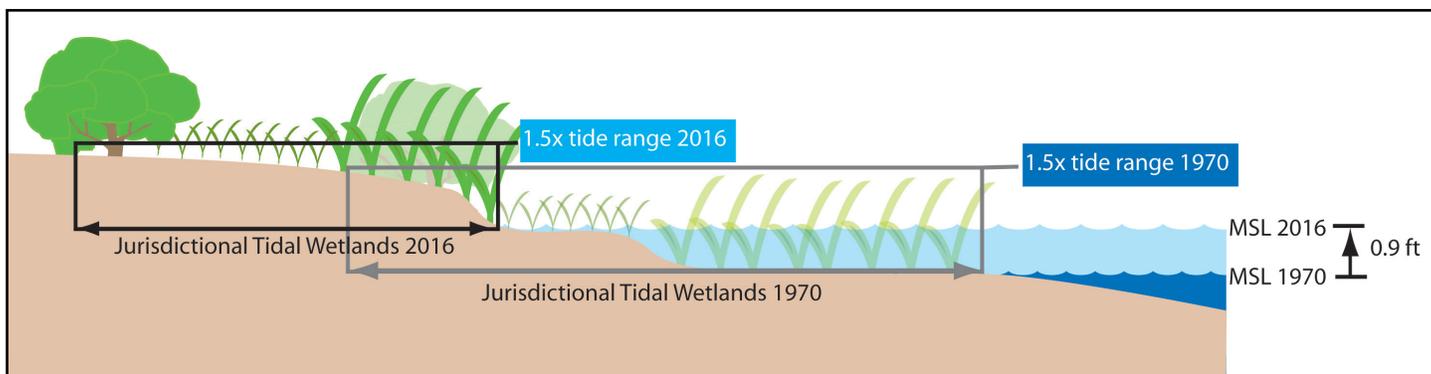


Figure 7. Sea-level rise forecast scenario curves with +30 and +50 year projections from the current water level at Sewells Point.

## Resource Management Strategies

If this future sea-level forecast is accurate, then continued wetland loss is expected if current management practices and policies are not adjusted to incorporate sea-level rise effects. It is not too late to adopt management strategies to reduce wetland vulnerability to sea-level rise. These strategies can be implemented at small and large scales by multiple parties in the public and private sectors.



**Figure 8.** Illustration of how jurisdictional vegetated tidal wetlands change with a rising sea level.

- **Adjust jurisdictional wetland boundaries** – The legally defined area of jurisdictional tidal wetlands is based on the local tide range, so it shifts with a rising sea level.
- **Rigorous application of the Commonwealth’s preference for living shoreline alternatives** – Where shoreline stabilization is needed, the default decision for local wetlands boards should be designs that inherently preserve the opportunity for fringing tidal wetlands to maintain themselves both vertically through sediment accretion and landward migration.
- **Perform local tide studies for living shorelines and compensation wetland design** – Don’t rely on tidal datum based on 1983-2001 tidal epoch because it is lower than the current mean sea level.
- **Identify resilient wetlands** – Focus on wetlands with a demonstrated ability to keep pace with sea-level rise based on current scientific information.
- **Locate and plan for potential migration areas** – Target land conservation and acquisition next to wetlands with the greatest chance for long-term survival.
- **Assign public interest values** – Identify economic and other contributions from coastal wetlands & develop incentives to accommodate rather than prevent wetland migration on private property.

### Additional Information & Resources

Understanding Sea-Level Observations – NASA Sea-Level Change Observations from Space

<https://sealevel.nasa.gov/>

Vulnerability of Shallow Tidal Water Habitats in Virginia to Climate Change. CCRM 2009. Report for NOAA Chesapeake Bay Office.

[http://ccrm.vims.edu/research/climate\\_change/index.html](http://ccrm.vims.edu/research/climate_change/index.html)

The Effects of Sea-Level Rise on Tidal Wetlands in the Lynnhaven River Watershed. CCRM 2009. Report for Virginia Environmental Endowment.

[http://ccrm.vims.edu/gis\\_data\\_maps/static\\_maps/lynnhaven\\_project/LynnhavenFinalReport.pdf](http://ccrm.vims.edu/gis_data_maps/static_maps/lynnhaven_project/LynnhavenFinalReport.pdf)

Planning for Sea-Level Rise in the Northeast: Considerations for the Implementation of Tidal Wetland Habitat Restoration Projects. NOAA 2011. NOAA Restoration Center, NE Region Workshop Report.

[http://www.habitat.noaa.gov/pdf/slr\\_workshop\\_report\\_november\\_2011.pdf](http://www.habitat.noaa.gov/pdf/slr_workshop_report_november_2011.pdf)