

Accelerating the Scale and the Rate of Living Shoreline Implementation in Rural Coastal Virginia

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Nassawadox, VA

Outline for Discussion

- What is the Shoreline Erosion Advisory Service?
- Living Shorelines in Virginia
- Shoreline Management and Chesapeake Bay TMDL WIP
- NFWF INSR 2021 Grant

Shoreline Erosion Advisory Service



WHAT WE ARE

The Department of Conservation and Recreation (DCR) is the state's lead natural resource conservation agency. DCR protects what Virginians care about - natural habitat, parks, clean water, dams, open space and access to the outdoors.

WHAT WE DO

DCR enables and encourages PEOPLE to enjoy and benefit from Virginia's NATURAL and CULTURAL RESOURCES.

HOW WE DO IT

DCR accomplishes its mission through FUNDING, EXPERTISE, EDUCATION, ACQUISITION and improved ACCESS.

ENJOY THE OUTDOORS

Virginia State Parks and Natural Area Preserves provide a wide variety of outdoor experiences. Every year, more than 10 million people visit state parks and natural areas. From the Atlantic Ocean to Cumberland Gap, DCR offers natural and outdoor recreation and education for everyone.

- 182,000 acres in state parks and natural area preserves
- More than 600 miles of trails
- 262 cabins, 22 family lodges and 1,800 campsites
- 11 swimming beaches and six pools

Nearly every state resident lives within an hour's drive of a state park or natural area preserve. In 2017, park visitors spent \$226 million, of which \$104 million came from out-of-state visitors. For every \$1 of general tax money spent, more than \$12 of out-of-state money came into Virginia because of state parks.

07/28/2021

CONSERVE THE OUTDOORS

Land Conservation: This team works with landowners, land trusts and other state agencies to conserve land. It also provides grants and guidance to fund land conservation and handles DCR's real estate transactions.

Soil and Water Conservation: DCR works with Virginia's 47 soil and water conservation districts, farmers, urban and suburban landowners, and other land managers to reduce harmful runoff in Virginia waters. DCR works to reduce nutrients and sediment that can impact the quality of Virginia's waters, including the nation's largest estuary, the Chesapeake Bay.

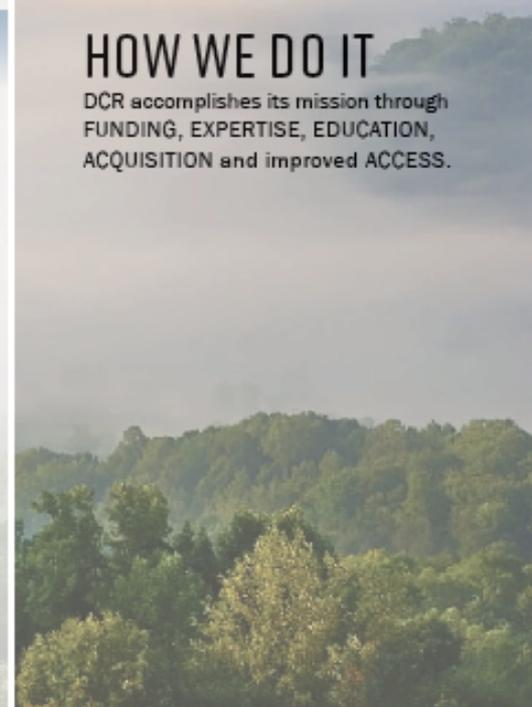
Outdoor Planning, Design and Construction: DCR provides comprehensive outdoor-recreation planning that includes grants, financial incentives, training, and technical expertise pertaining to open space use and access. DCR also manages the Scenic Rivers Program and the "Virginia Outdoors Plan." The design and construction staff plans and builds facilities within state parks.

PROTECT THE OUTDOORS

Natural Heritage: This unit manages Natural Area Preserves and develops, maps and shares rare species, habitat and natural community data. Science-based information and prioritization tools are shared with partners to conserve biodiversity, natural resources and ecologically important places. More than 2,200 high-priority conservation sites that have rare plant and animal species, natural communities or significant caves have been identified and must be protected.

Dam Safety and Floodplain Management: The most common natural disaster is flooding. DCR works to keep communities safe and protect homes and property through floodplain management and by ensuring the structural integrity of Virginia's dams.

Policy and Public Communications: DCR guides Virginia policy related to the outdoors and provides public information on outdoor recreation and significant milestones and events pertaining to Virginia's natural resources.



SEAS

Shoreline Erosion Advisory Service

- established 1980
- science-based technical assistance on environmentally sound shoreline mgmt alternatives
- private property owners & public land mgmt agencies experiencing erosion
- tidal shorelines or non-tidal streambanks & impoundments
- Services
 - on-site field investigations
 - written advisory reports
 - review designs and plans
 - construction inspections
 - guidance on financial incentives
- all SEAS services are **NO COST** to property owners



The collage includes several key elements:

- Field Site:** A photograph of a person in a red hat standing near a streambank with reeds.
- Letter:** A letter from the Commonwealth of Virginia, Department of Conservation and Recreation, dated October 13, 2011, addressed to Mr. Cliff Arnes.
- Map:** A technical map showing a shoreline area with various markers and labels.
- Construction Site:** A photograph of a construction site with a large pile of rocks and an excavator.
- Brochure:** A brochure titled "VIRGINIA SHORELINE EROSION ADVISORY SERVICE" featuring a house icon and a landscape photo.
- VCAP PROCESS:** A flowchart detailing six steps:
 - STEP 01 CONTACT:** Reach out to your local SWCD to discuss interests and program eligibility.
 - STEP 02 SITE ASSESSMENT:** SWCD staff will visit your property to determine which services in the back bay.
 - STEP 03 DESIGN PLAN:** With your SWCD, you will create a design plan that includes details on construction, materials, specifications, operation, maintenance and an estimate of total cost.
 - STEP 04 PERMIT:** Your plan will be taken to the SWCD Board and the VCAP Steering Committee for approval.
 - STEP 05 REGULATION:** Schedule a pre-construction meeting with SWCD staff, permit and contractors to discuss and design specifications. A certified engineer design may be required.
 - STEP 06 REIMBURSEMENT:** SWCD staff will inspect the project for compliance. You will then be written a check for the approved reimbursement amount.
- Advertisement:** A banner for "This is the year for cost-share" from the Virginia Soil and Water Conservation District, highlighting record funding, more flexibility, and increased cap for every producer.

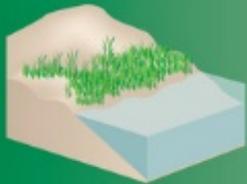
Living Shorelines in Virginia

HOW GREEN OR GRAY SHOULD YOUR SHORELINE SOLUTION BE?

GREEN - SOFTER TECHNIQUES

GRAY - HARDER TECHNIQUES

Living Shorelines



VEGETATION ONLY -
Provides a buffer to upland areas and breaks small waves. Suitable only for low wave energy environments.



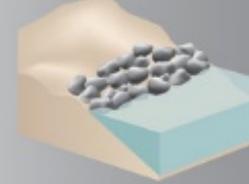
EDGING -
Added structure holds the toe of existing or vegetated slope in place.



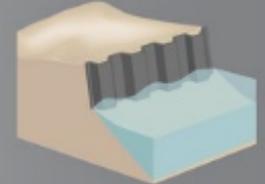
SILLS -
Parallel to existing or vegetated shoreline, reduces wave energy, and prevents erosion. Suitable for most areas except high wave energy environments.



BREAKWATER -
(vegetation optional) - Offshore structures intended to break waves, reducing the force of wave action, and encourage sediment accretion. Suitable for most areas.



REVETMENT -
Lays over the slope of the shoreline and protects it from erosion and waves. Suitable for sites with pre-existing hardened shoreline structures.



BULKHEAD -
Vertical wall parallel to the shoreline intended to hold soil in place. Suitable for areas highly vulnerable to storm surge and wave forces.



LIVING SHORELINES SUPPORT RESILIENT COMMUNITIES

Living shorelines use plants or other natural elements—sometimes in combination with harder shoreline structures—to stabilize estuarine coasts, bays, and tributaries.



One square mile of salt marsh stores the carbon equivalent of **76,000 gal of gas** annually.



Marshes trap sediments from tidal waters, allowing them to **grow in elevation** as sea level rises.



Living shorelines improve **water quality**, provide fisheries **habitat**, increase **biodiversity**, and promote **recreation**.



Marshes and oyster reefs act as natural **barriers** to waves. **15 ft** of marsh can **absorb 50%** of incoming wave energy.



Living shorelines are **more resilient** against storms than bulkheads.



33% of shorelines in the U.S. will be **hardened** by **2100**, decreasing fisheries habitat and biodiversity.



Hard shoreline structures like **bulkheads** prevent natural marsh migration and may create seaward **erosion**.



Policy Directives

- Living shorelines are Commonwealth’s preferred alternative for shoreline stabilization (Va. Code §28.2-104.1; SB 964; 2011)
 - strengthened by SB 776 (2020); → de facto permitting option; revised VMRC Tidal Wetlands Guidelines (May 2021)
 - related to Chesapeake Bay Preservation Act amendments (HB 504; 2020) “Coastal Resilience and Adaptation” (DEQ regulation amendments June 2021)
- Chesapeake Bay TMDL Watershed Implementation Plan (WIP) (Phase III; 2019)
 - goals for shoreline stabilization, including living shorelines
 - AND State Lands WIP (2021)
- Increasing Virginia’s Resilience to Sea Level Rise and Natural Hazards (Executive Order 24; 2018)
 - Coastal Resilience Master Plan (Framework, 2020) & Coastal Resilience TAC
 - employ natural and nature-based solutions to maximum extent possible
- Community Flood Preparedness Fund (Regional Greenhouse Gas Initiative funding)
 - flood prevention and protection projects (e.g., nature-based solutions including living shorelines)

Living Shoreline Financial Incentives

- Streamlined Permitting
 - VMRC Group 1 and Group 2 General Permits
- Low Interest Loans on Residential/Business & Public Property
 - Middle Peninsula PDC thru DEQ Living Shoreline Loan Program
- Low Interest Loans on Agricultural Property
 - DEQ Agricultural BMP Loan Program
- Cost-Share on Residential Property
 - Virginia Conservation Assistance Program (VCAP) thru SWCDs
 - James River Association cost-share program
 - Elizabeth River Project cost-share program
- Cost-Share on Agricultural Property
 - Virginia Agricultural BMP Cost-Share Program (VACS) – DCR
- Tax Credits on Agricultural Property
 - Virginia Agricultural BMP Cost-Share Program (VACS) – DCR
- Property Tax Exemption
 - HB 526 (2016)

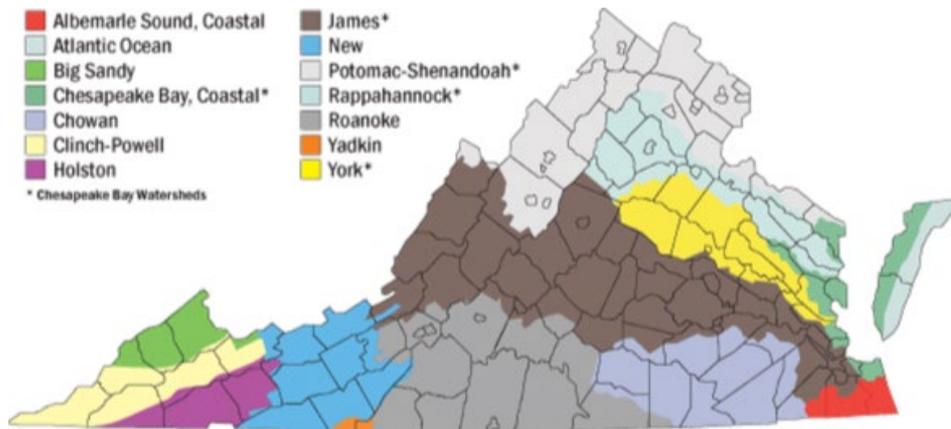


Shoreline Management & Chesapeake Bay TMDL WIP

Chesapeake Bay Phase III WIP

Basin	WIP3 (ft)	WIP3 (mi)
Potomac	70,051	13.27
Rappahannock	132,484	25.09
York	141,042	26.71
James	79,446	15.05
Eastern Shore	76,977	14.58
SUM	500,000	94.70

- released mid-2019
- guide actions through 2025
- multi-sector blueprint
- BMPs necessary to achieve pollutant reduction targets
- includes basin-level goals for shoreline management BMPs, including living shorelines



Chesapeake Bay Phase III WIP

>500 ideas and suggestions, one of six common themes among programmatic actions

- enhance promotion of living shoreline techniques to address shoreline erosion

7.1 Multi-Sector Policy Initiatives

- (1) enhance reporting of BMP implementation
- (4) pursue the restoration and enhancement of wetland habitats
- (6) Coastal Resilience Master Plan (NNBFs)

7.2 Agricultural Sector Policy Initiatives

- (15) reinstate Virginia's Agriculture BMP Loan Program
- (20) make revisions to the Virginia Agricultural BMP Cost-Share Program (VACS)
- (34) support growth of private sector native plant nurseries

7.4 Developed Lands (incl. MS4) Sector Policy Initiatives

- (43) establish state cost share for residential homeowners (i.e., VCAP)
- (44) enhance marketing of funding opportunities (e.g., SLAF) for non-MS4

Shoreline Mgmt BMP Verification Outcomes – Sites, Shoreline

# of Sites	1,199	
# of Sites with Plants	48	4.0%

Length of Protected Shoreline	243,602	feet
	46.14	miles

Planted Area	248,982	square feet
	5.72	acres

Shoreline Mgmt BMP Verification WIP3 Goals vs. Reported Credits

- BMP verification by SEAS
 - reported annual pollutant reductions
 - 31,361 lbs N
 - 21,830 lbs P
 - 17,937 tons S

WIP 3 Goals			
Major Basin	goal (ft)	reported (ft)	% of goal
Potomac	70,051	36,886	52.7%
Rappahannock	132,484	65,260	49.3%
York	141,042	70,946	50.3%
James	79,446	48,735	61.3%
Eastern Shore	76,977	21,775	28.3%
TOTAL	500,000	243,602	48.7%

NFWF INSR 2021 Grant

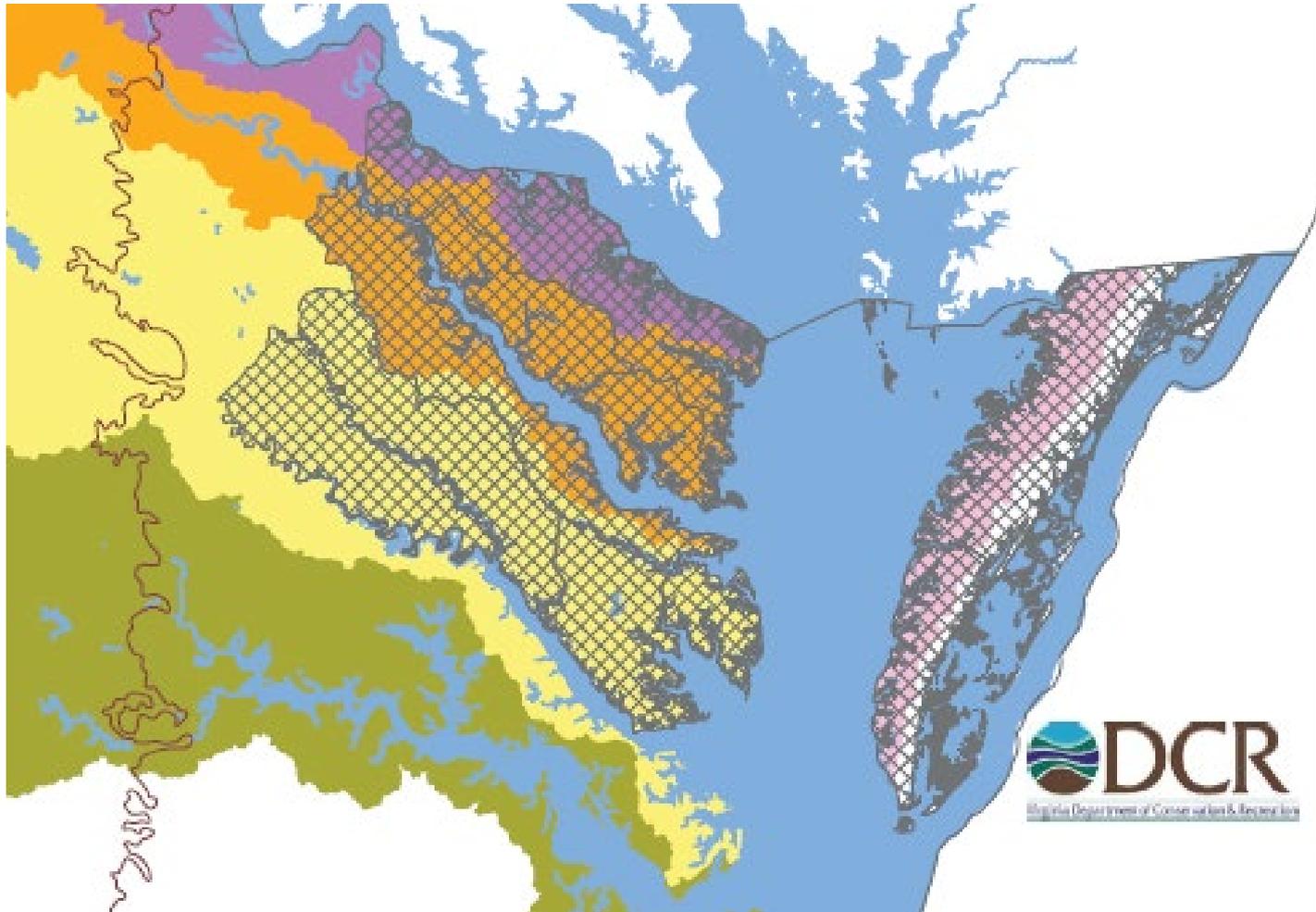
NFWF 2021 INSR

- Accelerating the Scale and the Rate of Living Shoreline Implementation in Rural Coastal Virginia
- now thru June 30, 2024
- \$1M federal grant + \$2M match
- funded by National Fish and Wildlife Foundation and U.S. Environmental Protection Agency
 - through Innovative Nutrient and Sediment Reduction Grant Program, a core program under NFWF’s Chesapeake Bay Stewardship Fund
 - additional support for CBSF is provided by U.S. Department of Agriculture’s Natural Resources Conservation Service and U.S. Forest Service, U.S. Department of the Interior’s U.S. Fish and Wildlife Service, and the Altria Group
- *This material is based on work supported by the U.S. Environmental Protection Agency (Assistance Agreement No. CB96358201) and the National Fish and Wildlife Foundation’s Chesapeake Bay Stewardship Fund, which promotes community-based efforts to develop conservation strategies to protect and restore the diverse natural resources of the Chesapeake Bay.*
- *The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions or policies of the U.S. Government or the National Fish and Wildlife Foundation and its funding sources. Mention of trade names or commercial products does not constitute their endorsement by the U.S. Government, or the National Fish and Wildlife Foundation or its funding sources.*

Objectives

- grow and enhance existing partnerships engaged in living shoreline implementation across Rural Coastal Virginia
- develop cache of shovel-ready living shoreline projects with completed engineering designs on socially vulnerable sites, agricultural sites, & other priority sites
- provide financial incentives to construct new living shorelines on socially vulnerable sites
- document installation of recently implemented shoreline mgmt projects across tidewater Virginia that have not yet been credited towards WIP goals

Rural Coastal Virginia



Partnership Enhancement ~\$50k

- work to improve effective collaboration by exploring formal mechanisms for coordination and communication
- work to sustain motivation and a shared collaborative vision by developing shared strategic plans for achieving WIP goals
- examine variety of topics integral to sustaining living shoreline restoration success
 - barriers to wide-scale utilization of living shorelines by landowners
 - coordinated training programs for designers and contractors
 - institutionalized financial incentive programs and joint financing approaches
 - consistent and coordinated social marketing campaign for regional-scale outreach programs
 - interdisciplinary monitoring strategy to assess living shoreline success and inform landowner maintenance needs
 - supporting growth of private sector native plant nurseries

Utilize existing forums

- Potomac Watershed Roundtable
- Rappahannock River Roundtable
 - also RRBC & Technical Committee
- York River and Small Coastal Basin Roundtable
 - also CBP TOGI
- Eastern Shore Watersheds Roundtable
 - also A-N PDC Climate Adaptation Working Group

- SWCDs
 - Northern Neck
 - Tidewater
 - Three Rivers
 - Eastern Shore

- PDCs
 - Northern Neck
 - Middle Peninsula
 - Accomack-Northampton

Field Verification ~\$50k

- over past 4 years, DCR-SEAS reported 1,199 sites for WIP goals
 - however, hundreds of sites remain to be initially documented and reported (goal 475)
- on-the-water site inspections/verifications via boat
 - Friends of the Rappahannock
 - James River Association
 - Chesapeake Bay Foundation
 - DCR also working on leasing boat

Engineering Designs ~\$200k

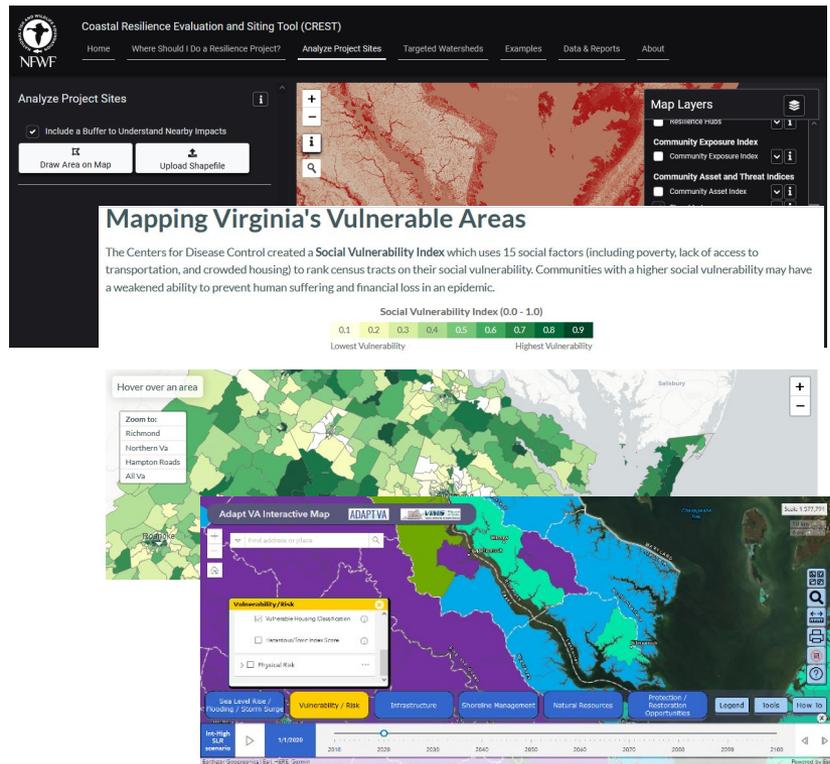
- cache of shovel-ready living shoreline projects with completed engineering designs that partnership can solicit construction funds
- VIMS Shoreline Studies Program (Scott Hardaway)
- ~12 designs
- three categories
 - socially vulnerable residential areas
 - agricultural or timbered properties
 - other priority sites

Construction ~\$625k

- two to four living shorelines
- in socially vulnerable residential areas
- cost-share 95:5
- designed at reach scale, across multiple parcels, involving several property owners, likely in medium-to-high wave energy environments
- goal
 - 1,373 feet of shoreline will be protected
 - 10,984 square feet of marsh grass planted
- post construction monitoring

Socially Vulnerable

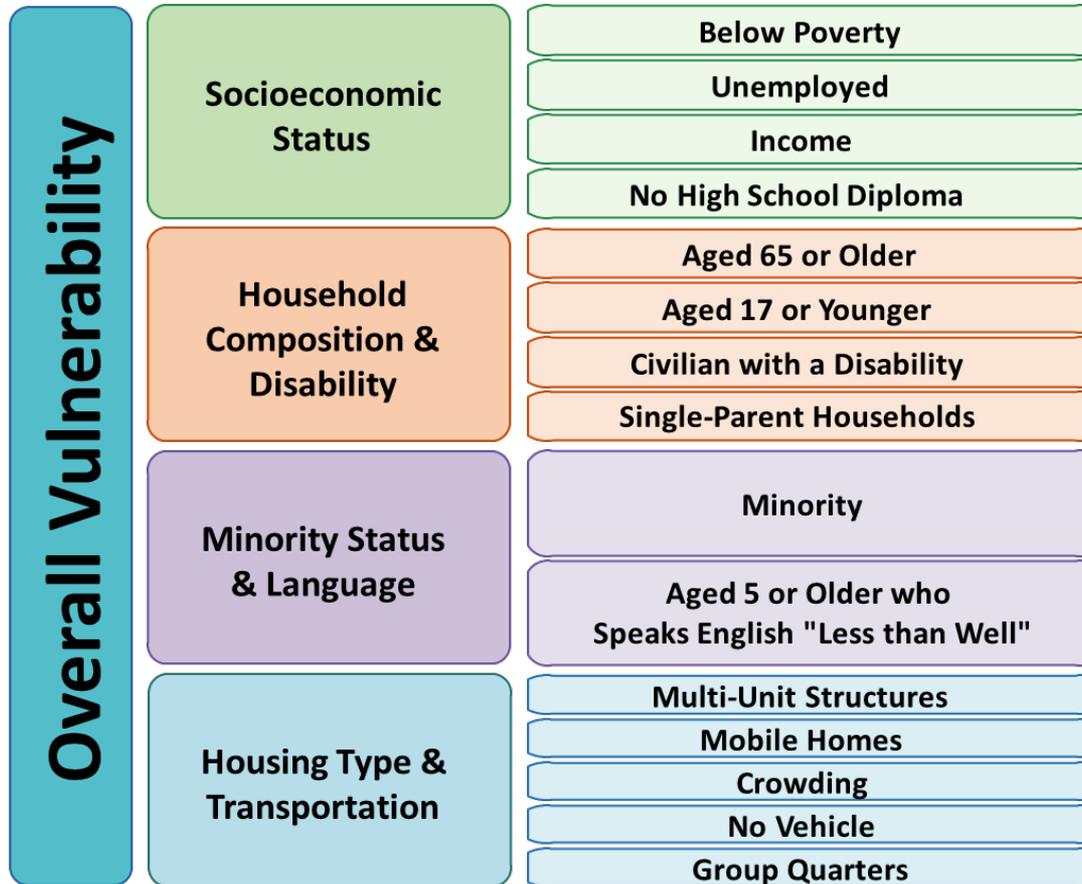
- NFWF Coastal Resilience Evaluation and Siting Tool (CREST)
- Virginia Public Access Project
 - Centers for Disease Control - Social Vulnerability Index
 - potential negative effects on communities caused by external stresses on human health, including natural disasters
- AdaptVA



The image displays two web-based mapping tools. The top screenshot is the NFWF Coastal Resilience Evaluation and Siting Tool (CREST) interface. It features a navigation menu with options like 'Home', 'Where Should I Do a Resilience Project?', 'Analyze Project Sites', 'Targeted Watersheds', 'Examples', 'Data & Reports', and 'About'. The main area shows a map with a red overlay and a 'Map Layers' panel on the right. Below the map, there is a section titled 'Mapping Virginia's Vulnerable Areas' which includes a text description of the Social Vulnerability Index and a color-coded legend ranging from 0.1 (Lowest Vulnerability) to 0.9 (Highest Vulnerability).

The bottom screenshot is the AdaptVA Interactive Map. It shows a map of Virginia with various colored overlays representing different risk factors. A 'Vulnerability/Risk' pop-up window is visible, containing options for 'Vulnerable Housing Classification', 'Vulnerable/Over-Exposed', and 'Physical Risk'. The interface includes a search bar, a legend, and a timeline at the bottom for selecting different years (e.g., 1/1/2020, 2030, 2050, 2070, 2100).

CDC Social Vulnerability Index



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