NEEDED REFORM:
THE CRS PROGRAM & NATURE-BASED
FLOOD REDUCTION ACTIVITIES

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Overview: The National Flood Insurance Program's Community Rating System (CRS) offers a unique opportunity to incentivize local governments to adopt policies and practices that reduce flooding and promote natural functioning of floodplains, however, Wetlands Watch found the CRS does not always or easily credit a locality's or individual's voluntary use (non-regulatory) of green infrastructure projects that help reduce flooding. We believe this oversight may dis-incentivize locality adoption and promotion of these activities and reduce the likelihood of implementation. These projects help improve water quality, reduce the impacts of flooding, improve natural floodplain functions, and adapt to sea level rise. Wetlands Watch recommends that the CRS program credit these nature-based projects.

During a Norfolk, Virginia neighborhood sea level rise adaptation design project coordinated by Wetlands Watch, local undergraduate students proposed various storm and floodwater reduction designs, such as a living shoreline, bio-retention systems, pervious pavers, and ground level cisterns with plant beds. According to student research and modeling analyses using the EPA Stormwater Management Model (SWMM), implementing these small scale, and often parcel-level, nature based practices reduced neighborhood flooding by 90%, when modeling against a 2009 storm. Actions such as these, that provide a significant reduction in floodwater, should ostensibly receive credits under the CRS.

The CRS program currently does not easily credit best management practices (BMPs), or small-scale flood reduction activities, that manage stormwater runoff, control erosion, and reduce flooding. We believe the CRS should reexamine how it evaluates nature-based flood reduction activities. These projects present multiple benefits for localities; in addition to reducing flooding, many of these practices also improve water quality and earn credit towards localities' required nutrient and sediment reduction goals under the Chesapeake Bay Total Maximum Daily Load. These multiple benefits further incentivize local government use of these solutions in neighborhood and municipal planning, thereby creating localities resilient to the impacts of sea level rise.

Flood Reduction Value of Voluntary BMPs: Voluntary best management practices, also known as low impact development (LID) strategies, slow down, infiltrate, capture, and re-use stormwater on-site, thereby reducing runoff and subduing peak flows and associated flooding. Voluntary BMPs are those not required by regulatory programs. Examples may include downspout disconnections, rain gardens, bioswales, cisterns, permeable pavers, retention and detention storage, tree plantings, living shorelines, and conservation landscapes that replace turf or impervious surfaces with native plantings of trees, shrubs, and perennials. It is important to note that installation of voluntary BMPs requires periodic inspection to ensure proper functioning, which may result in an increased burden on locality staff; perhaps utilizing local volunteer programs could relieve any additional burden on local staff.

The Chesapeake Bay Program now identifies many of these voluntary initiatives as "Residential Stewardship Practices." These practices provide a nature-based or green infrastructure approach to storm and floodwater reduction. Conservation landscaped shorelines, riparian buffers, and living shorelines offer an adaptive solution to flooding and shoreline erosion by allowing floodplains to perform their natural ecosystem services, allowing coastal land to flood and drain naturally with tides and storm surges. Living shorelines with shoreline buffers also allow the natural land-ward migration of wetlands, which will occur as sea levels continue rising.

Case Study: Norfolk, Virginia

The Tidewater Rising Resiliency Design Challenge found the implementation of multiple parcel and street-level practices could result in a greater than 90% reduction of floodwater volume in a neighborhood, when using flood levels from the 2009 nor'easter, *Nor'Ida*, as a baseline model. If the CRS program considered crediting these voluntary conservation landscaping-type BMPs, the City of Norfolk may be more inclined to invest in installing these projects. The Elizabeth River Project, a local non-profit, already promotes and incentivizes the voluntary implementation of these BMPs through their River Star Homes Program with grant funding.

Case Study: Nashville, Tennessee

The City of Nashville's "Storm Busters" program, run by the Mayor's Office, organizes volunteers who plant trees, create rain gardens, clean waterways, and restore river and stream banks. Since 2010, the Storm Busters program is responsible for the citywide planting of 7,300 trees and 60 rain gardens. These green infrastructure and best management practices have the capacity to mitigate over 2.5 million gallons of stormwater.

Case Study: Milwaukee, Wisconsin

The City of Milwaukee credits a 14 million gallon stormwater capacity to their use of green infrastructure in stormwater management. Practices used in Milwaukee include BaseTerns, green streets, bio-retention, green roofs, rain gardens, and much more.

Case Study: Washington, D.C.

The Department of Energy & Environment's RiverSmart programs offer individuals, businesses, schools, and others funding to install voluntary green infrastructure practices, such as rain barrels, green roofs, rain gardens, permeable pavement, and trees. The program has treated over 20 acres of land with stormwater best management practices.

Case Study: Natural Shoreline Defenses

The National Wildlife Federation released a report arguing that natural infrastructure offers equal or better flood protection than traditional gray infrastructure.

Case Study: Systems Approach to Geomorphic Engineering (SAGE)

SAGE is a Community of Practice joining federal, state, and local agencies, non-profits, academic institutions, businesses, and engineers together to implement and encourage shoreline resilience through nature-based shoreline management projects. FEMA is an existing SAGE partner.

The Current CRS Treatment of Nature-Based Flood Reduction Activities

CRS Credit for Living Shorelines

Living shorelines are the preferred method of shoreline management and stabilization in Virginia and are a Chesapeake Bay Program approved nutrient/sediment reduction best management practice to meet TMDLs, however, qualification for CRS credit is difficult.[1] Credit is possible as open space; however, calculating very small parcels of shoreline land is an unlikely use of locality staff time. Credit is also possible if a local ordinance or policy requires implementation of living shorelines over hardened shorelines. This is not a realistic requirement; although local boards may prefer a softened shoreline, they remain unpopular. Credit for the second option requires that the living shoreline offer flood protection to at least the 25-year-flood level. This standard of protection is difficult to prove.

CRS Credit for Voluntary BMPs

Currently, the CRS does not credit the voluntary installation of BMPs on individual properties, however, the CRS offers minimal points if flood reduction practices are *mandatory* per local regulations. Providing credit for on-the-ground projects that reduce localized flooding would help incentivize the implementation of multi-benefit practices. Localities are encouraged to track these voluntary BMPs to get TMDL credit.

Wetlands Watch Recommendations: Wetlands Watch recommends that the CRS program provide credit for **voluntary** LID projects and other nature-based BMPs. This reform would provide communities with an opportunity to engage, educate, and reward individual property owners, neighborhoods, and even localities for their work to reduce flood damage to insurable property, strengthen the NFIP by spreading knowledge of the program, and encourage a comprehensive approach to floodplain management.

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[1] *Flood Protection Pay-Offs: A Local Government Guide to the Community Rating System*, page 79.