Reducing Nutrients on Private Property:

Evaluation of Programs, Practices, and Incentives

June 2012

PEP 12-05

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REDUCING NUTRIENTS ON PRIVATE PROPERTY: EVALUATION OF PROGRAMS, PRACTICES, AND INCENTIVES

Prepared for the

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Reducing Nutrients on Private Property: Evaluation of Programs, Practices and Incentives

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ABSTRACT:

Non-governmental organizations (NGO) are engaged in efforts to change private landowner behavior using practices that could be credited toward a local government's progress in achieving their Chesapeake Bay Total Maximum Daily Load (TMDL), Phase II Watershed Implementation Plan (WIP) strategies. Examples of local government and NGO collaborations are examined in this report, and recommendations are presented to expand these efforts in the Hampton Roads region.

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Work to support the development of Virginia's Phase II WIP is included in the Hampton Roads Planning District Commission Unified Planning Work Program for Fiscal Year 2012, approved by the HRPDC at its Executive Committee meeting of June 16, 2011. This specific project is included in the HRPDC 2011 CZM competitive grant proposal package. HRPDC authorized the submittal of the grant proposal and subsequent acceptance of grant offer at its Executive Committee meeting of September 15, 2011. This report was prepared for the Hampton Roads Planning District Commission by Wetlands Watch, Inc. and leveraged ongoing efforts by Wetlands Watch, using funding from The Campbell Foundation for the Environment.

PREFACE

This report was for the Hampton Roads Planning District Commission (HRPDC) as a subcontractor to CH2M Hill and funded through a grant to the HRPDC from the Virginia Coastal Zone Management Program.

The goal of this project is to support local Hampton Roads government efforts to develop Phase II Watershed Implementation Plan (WIP) strategies with a preliminary investigation into the feasibility, opportunities, and constraints of utilizing best management practices (BMPs) for nutrient reduction on existing urban/suburban residential and light commercial private property. The purpose of this report is to summarize the findings of this three-month preliminary investigation of:

- **Model Programs** of successful voluntary and mandated private property stormwater management programs and practices, including financial incentive programs and utility credits that Hampton Roads localities can use in their efforts to comply with the Virginia WIP strategies.
- **Efforts of non-profit organizations, citizens groups, and trained stewardship programs** (non-governmental organizations "NGO") to increase environmental stewardship and install BMPs in the Hampton Roads Region.
- **Appropriate best management practices (BMPs)** suitable for existing private urban and suburban residential and small commercial properties and factors that impact the feasibility and effectiveness of these retrofit-type BMPs to achieve nutrient and/or sediment reductions on private property.
- **Advantages, disadvantages, obstacles, and unresolved issues** that impact the feasibility of achieving nutrient reductions on private property.
- **Availability, quality, and usefulness of existing bmp data** associated with these NGO programs and projects in order to determine if the existing BMP data can be used by localities to estimate nutrient and sediment load reductions on private property.

The investigation was designed to expand on work originally initiated by Wetlands Watch in Late Spring 2011: 1) to identify existing watershed steward activities and programs in Hampton Roads and Chesapeake Bay Region; 2) to select a model program to emulate that would increase environmental stewardship actions including BMPs and habitat protection/restoration in Hampton Roads, 3) identify programmatic changes and resources needed to develop new or refine existing environmental steward programs, and 4) conduct a Strategic Summit to bring interested stakeholders together in a collaborative effort to develop a Watershed Stewards Academy (WSA) or refine existing environmental steward programs in Hampton Roads.

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EXECUTIVE SUMMARY

In 2010, the U.S. Environmental Protection Agency (EPA) established the Chesapeake Bay Total Maximum Daily Load (TMDL) for nitrogen, phosphorous, and sediment. The TMDL pollution reduction allocation was subdivided by state jurisdiction and watershed basin. Virginia further subdivided the state allocation to the local-government level. Each state developed Watershed Implementation Plans (WIPs) that explained how and when states would meet pollution reduction allocations.

In the Phase I and II WIPs, Virginia identified a number of strategies to meet the Chesapeake Bay TMDL (Bay TMDL). Ultimately, these state strategies will require localities to develop, implement and maintain regulatory and/or voluntary programs to achieve the Bay TMDL and comply with Municipal Separate Storm Sewer System (MS4) permits as well as other state and federal regulatory programs. In largely urban and suburban localities, like most in Hampton Roads, the Virginia WIP strategies for the urban sector pose a significant challenge. Population densities, older/pre-Clean Water Act developments, prevalence of impervious surfaces, lack of available land for large-scale best management practices (BMPs), and many other factors increase the difficulty of achieving nutrient and sediment reductions in stormwater runoff in Hampton Roads.

One strategy to meet the TMDL reduction goals is to encourage homeowners and businesses to voluntarily install BMPs on their property. Local governments are concerned about the increased staff and funding needed to motivate private property owners to install and maintain these practices, and to inspect, monitor and report nutrient and sediment reductions from these retrofit BMPs for the Chesapeake Bay TMDL.

In the spring of 2011, using unrestricted funding from The Campbell Foundation for the Environment, Wetlands Watch began a review of efforts by nonprofit watershed groups, environmental steward groups, local, state, and federal government, and the private sector to increase the use of conservation landscaping practices as BMPs on private property. This work evolved into a partnership with the Hampton Roads Planning District Commission (HRPDC), through a subcontract with CH2M Hill and funded through a grant from the Virginia Coastal Zone Management Program. In support of Hampton Roads local government efforts to develop Phase II WIP strategies, Wetlands Watch, Inc., conducted an investigation into the feasibility, opportunities, and constraints of utilizing BMPs for nutrient and sediment reduction on existing urban/suburban residential and light commercial private property.

This investigation relied on an on-line literature and records search, a survey of private property owners and trained environmental stewards, and extensive stakeholder interviews and communications with non-governmental organizations (NGOs), foundations, local and state government staff, Virginia Soil and Water Conservation District (SWCD) personnel, Virginia Cooperative Extension agents, and US EPA and Chesapeake Bay Program staff to examine:

- **Model Programs** of successful voluntary and mandated private property stormwater management programs and practices, including financial incentive programs and utility credits that Hampton Roads localities could use in their efforts to comply with the Virginia WIP strategies.

- **Efforts of non-profit organizations, citizens groups, and trained stewardship programs** (NGOs) to increase environmental stewardship and install BMPs in the Hampton Roads Region.
- **Best management practices (BMPs)** suitable for urban and suburban residential and small commercial properties in Hampton Roads and factors that impact the feasibility and effectiveness of these retrofit-type BMPs to achieve nutrient and/or sediment reductions on private property.
- **Advantages, disadvantages, obstacles, and unresolved issues** that impact the feasibility of achieving nutrient reductions on private property.
- **Availability, quality, and usefulness of existing BMP data** associated with NGO programs and projects in order to determine if the existing BMP data can be used by localities to estimate nutrient and sediment load reductions on private property.

This report highlights a number of model programs that localities can emulate or modify based on their own needs in order to increase the number of BMPs on residential, small commercial or small institutional properties. Most of the programs were originally designed to comply with stakeholder outreach, education, and engagement associated with MS4 permits or local TMDLs; however, if properly planned, implemented, tracked, and subsequently monitored, BMPs installed through these programs can be used to achieve sediment and nutrient reduction to meet the Chesapeake Bay TMDL. Seven of the programs highlighted are located in Virginia, with three of the programs in Hampton Roads. Most of the programs highlighted, whether initiated by local government, nonprofit watershed groups, or Soil and Water Conservation Districts (SWCDs) include several key characteristics that localities in Hampton Roads should consider when designing their own program.

This investigation identified significant, often untapped and unrecognized organizational, marketing, and financial resources in Virginia's Chesapeake Bay watersheds that could be utilized to achieve nutrient and sediment pollution reduction goals. Nonprofit watershed groups, SWCDs, environmental steward groups like the Master Naturalists and Advanced Master Gardeners, and private sector entities acting alone and in partnership with local governments have been working with private property owners (residential, commercial, institutional, and industrial) to change their behavior and adopt watershed conservation and restoration practices. At the same time, some local governments have begun reaching out to the NGOs for assistance in meeting environmental goals for MS4 programs or broader sustainability benefits.

From a residential and small commercial property perspective, the practices promoted are described as bayscaping, rainscaping, sustainable landscaping, water-friendly actions, or conservation landscaping. Much of the existing outreach, education, and engagement efforts have been funded by non-governmental sources, primarily foundations, which leverage significant in-kind volunteer and donated services. Often, NGOs will partner with the private sector (stormwater consultants, wetlands specialists, landscape architects/designers), research institutions, or local/state/federal government to provide technical expertise. NGOs work with local citizen volunteers, trained environmental stewards, and landscape contractors to install and maintain demonstration projects. Some NGOs and government programs have worked with the private sector to market and increase the availability of goods and services for these conservation landscaping BMPs. Pollution reductions from conservation landscaping BMPs could make a significant contribution toward meeting locality WIP goals in urban and suburban Virginia localities if practices were expanded, standardized for different applications,

consistently implemented, and appropriately documented and maintained to support nutrient removal efficiencies.

Based on data provided by the National Fish and Wildlife Foundation (NFWF), Wetlands Watch, Inc. estimates that NFWF alone has provided approximately $2.5 million within the Hampton Roads area, to NGOs, SWCDs, and localities to conduct outreach, education, and deliver incentive-based programs that increase environmental stewardship and installation of BMPs on existing private property. With matching funds from private sources and other grant programs like the Virginia DCR Water Quality Implementation Funds (WQIF), the total economic value associated with the NFWF funded grant projects is at least $5 million. Wetlands Watch, Inc. has estimated that NFWF provided almost $20 million in funding for a combination of Small and Targeted Watershed Grants in Virginia from 2006 to present. Other sources of funding for localities include US EPA grants, NOAA grants, either directly or through the Virginia Coastal Zone Management Program, Virginia WQIF, Chesapeake Bay Trust grants, general funds, bonds, stormwater utility fees, and stormwater mitigation funds.

This report also attempts to identify BMPs suitable for use in the Coastal Plain that meet existing EPA and Virginia standards. The report defines these BMPs and discusses how they are credited in Chesapeake Bay Models and the Virginia Stormwater Regulations.

In conclusion, Wetlands Watch found:

- Many BMP retrofits have been implemented on private property in Hampton Roads that could count towards WIP and MS4 required goals. However, additional work is needed to locate, track and standardize data documenting these activities.
- There is not a current process to ensure consistency, reliability, ongoing maintenance, and adequate reporting of existing and future BMPs on private property to enable localities to count these BMPs towards compliance with the Chesapeake Bay TMDL and MS4 permits.
- Stewardship or private property retrofit programs need to have strategies based on a well-defined, unifying, and publicly-available plan that acknowledges and responds to local issues, transition to long-term efforts with reliable funding sources, and involve partnerships between local governments, local NGOs (including trained environmental stewards), and private sector interests (landscaping and nursery businesses).
- There are model programs, in adjacent states and within Virginia that could be used to lay out “best practices” to expand BMP installation on urban/suburban residential and light commercial private property – including ways to provide incentives and remove barriers to adoption of these BMPs.
- Stakeholders would benefit from regional cooperation and coordination among and between NGOs, local, state, and federal government agencies, environmental steward programs, and the private sector (stormwater and landscape-related businesses).
- A strategic summit in eastern Virginia would provide stakeholders with opportunities to identify local programmatic needs and barriers to success, exchange ideas, share success stories, and formulate plans for cooperative partnerships.

Glossary is included in the complete report (pages vii-x).

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