



The Cacapon Institute leads a volunteer-driven tree planting at Deerfield Village outside of Shepherdstown, W.Va. Volunteers planted 28 trees as part of the Carla Hardy West Virginia Project CommuniTree. (Photo by Will Parson/Chesapeake Bay Program)

I. Introduction

The long-term success and sustainability of the Chesapeake Bay restoration effort will ultimately depend on the actions and support of the 17 million residents who call the watershed home. The cumulative impact of these individuals and their daily actions can both positively and negatively affect the health of watersheds, streams and rivers. Hundreds of local conservation and watershed organizations and a growing number of community associations, religious institutions and others are leading efforts to engage and empower citizens to restore local streams, reduce pollution, protect the environment, and improve their communities. The efforts of these groups and of community leaders also result in an ever increasing number of citizens adopting behaviors and taking individual actions that ultimately reduce our collective impact on the Bay. A growing army of local citizen volunteers who donate their time, talent and resources to our shared goals will build a larger, broader, and more diverse constituency of citizen stewards that will support many of the Goals and Outcomes outlined in the *Watershed Agreement*.

II. Goal, Outcome and Baseline

This management strategy identifies approaches for achieving the following goal and outcome:



Stewardship Goal

Increase the number and the diversity of local citizen stewards and local governments that actively support and carry out the conservation and restoration activities that achieve healthy local streams, rivers and a vibrant Chesapeake Bay.

Citizen Stewardship Outcome

Increase the number and diversity of trained and mobilized citizen volunteers with the knowledge and skills needed to enhance the health of their local watersheds.

For the purposes of this strategy, the following definition of diversity is being used: “Expanding the diversity of the workforce and participants in restoration and conservation activities means to include a wide range of people of all races, income levels, faiths, gender, age, sexual orientation and disabilities, along with other diverse groups. For this effort to be successful it will require us to honor the culture, history and social concerns of local populations and communities.”

Baseline and Current Condition

Meeting the water quality, restoration and conservation goals of the *Watershed Agreement* depends on engaged citizens who support stewardship in the larger community and take personal action to carry it out. Commitments for increasing citizen action and stewardship have always been a part of the Chesapeake Bay Program. A commitment to fostering individual responsibility and stewardship of the Bay’s resources was first included in the 1987 Agreement. Chesapeake 2000 reaffirmed that commitment with a stewardship and community engagement goal to “Promote individual stewardship and assist individuals, community-based organizations, businesses, local governments and schools to undertake initiatives to achieve the goals and commitments of this agreement.” In the 2010 “Strategy for Protecting and Restoring the Chesapeake Bay Watershed,” a goal to “Foster a dramatic increase in the number of citizen stewards of every age who support and carryout local conservation and restoration” was committed to by the Chesapeake Bay Federal Leadership Committee.

The commitment by nonprofit entities and federal, state and local governments, to increasing local stewardship has been significant. It is less clear how these commitments have been translated into action and what those actions have accomplished. While tracking and evaluation for individual programs exists, there has not yet been a watershed-wide attempt to measure the progress or results of our collective citizen stewardship efforts.

III. Participating Partners

The following partners have participated in the development of this strategy. A workplan to accompany this management strategy will be completed six months after this document is finalized. It will identify specific partner commitments for implementing the strategy.

Chesapeake Bay Watershed Agreement Signatories

- The State of Delaware
- The State of Maryland
- The State of West Virginia
- The Commonwealth of Virginia
- The Commonwealth of Pennsylvania
- The District of Columbia
- Chesapeake Bay Commission
- Federal government partners (National Park Service, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration)

Other Key Participants

- The Stewardship Goal Implementation Team organized a workgroup of more than 50 stakeholders from nonprofit organizations and state and federal governments to assist in the development of this strategy. The feedback this workgroup provided the foundation of this strategy.

Local Engagement

Nonprofit organizations (including watershed organizations) play a key role in engaging stakeholders and ensuring the successful implementation of the Citizen Stewardship Outcome. These groups bring interested citizens together around a common goal as well as organize events like stream clean ups, trainings, monitoring programs, etc. Local governments also play a key role in watershed protection through watershed planning activities and the implementation of regulations, permits, zoning, and land use policies. Citizen stewards play an active role in both nonprofit and local government efforts in watershed management. Increasing the number and diversity of citizen stewards will require leadership on behalf of both nonprofit organizations and local governments.

IV. Factors Influencing Success

There are a wide variety of factors that influence the ability to make progress on this Outcome. In order to focus this management strategy, the factors influencing progress have been organized into two major categories. Capacity Factors include the limitations, barriers and gaps that prevent the development and ability to scale up highly effective citizen stewardship programs. External Factors include many of the pre-existing public opinions, perceptions, politics, and market forces that define the challenges and opportunities to effectively increasing the number and diversity of citizen stewards. These categories are very much related in that many programs lack the capacity to effectively address or overcome the external factors that prevent the scaled up adoption of stewardship behaviors and actions. The Bay Program may be well positioned to address many of the capacity factors identified below enabling partner agencies and organizations to better address external factors and implement high impact citizen stewardship programs.

Capacity Factors

1. Many existing programs not designed for maximum impact (C1)

Many organizations believe that the reason the number or diversity of stewards isn't increasing is because the word isn't getting out about Bay clean-up efforts to enough people to make a difference. Further, there is a general misconception that building awareness and appealing to economic self-interests in isolation or together are the key drivers of behavior change. While these are factors in what drives behaviors, social science research suggests that programs that rely heavily on these approaches will not always be successful.

Focus should be placed on learning the social, economic, and environmental priorities identified by local leaders. Compare them to existing priorities and examine where there are common interests. Those common interests should be considered the basis for partnership and coalition building with local leaders. For example, if abandoned housing, education, food access, job creation, redevelopment and illegal dumping are priorities in diverse communities, then programs should be designed with those in mind. This type of adaptive program design seems to situate programs to be more attractive to broader communities.

2. Lack of financial and regulatory incentives for effective stewardship programs (C2)

The number and scale of citizen stewardship programs continues to increase driven by the pressing need to engage private landowners in the voluntary adoption of best management practices and ongoing effort to build a base of public support for watershed protection and restoration. These programs are fueled by a combination of public and private funding, increasingly supported by local governments as a component of their MS4 Stormwater Programs. Currently, many of the funding sources and regulatory programs lack adequate guidance or incentives to ensure outreach programs are designed after best practices or informed by successful models.

3. Need additional capacity to recruit and train volunteers and leaders (C3)

There are hundreds of organizations recruiting and engaging volunteers from communities through the region in Bay clean-up and citizen science activities, many of which are run by volunteers themselves and operating on private donations and (if fortunate) small grants. To convert volunteerism into lifelong stewardship, in some communities, particularly underserved, students must be engaged in volunteerism, internships and job skills training such as Youth Corps Programs that connects with education, community, environment, as well as economic success. Sustained funding through public-private partnerships, organizational capacity building and the promotion and replication of successful volunteer, citizen science and leadership development programs is needed for significant progress to be made toward this Outcome.

4. Lack ability to measure impact and track progress of stewardship programs (C4)

While public engagement has always been part of the restoration strategy, its impact on resource related goals or some consistent measure of the extent to which the public is engaged has not been adequately quantified or developed. As a result, information about the relative impact of specific citizen actions, the extent to which those actions are already being or could be taken, and an analysis of the cumulative impact of citizen actions on water quality restoration goals is not widely available to agencies and organizations implementing these programs. This makes any attempt to target the limited resources available for citizen stewardship programs challenging.

5. Lack of strategic coordination of the many programs implemented at the local level (C5)

An impressive number of programs engage the public in towns and communities throughout the region, but there is not enough synergy and intentional coordination among them. Local governments are shouldered with outreach requirements but often lack that capacity, while NGO's struggle to scale up their effective outreach programs. Grant-funded projects implemented by different groups often result in the duplication of program development efforts and lack a strategic targeting of audiences and actions, and many programs do not have a leadership development pipeline that links public outreach activities with volunteer opportunities in order to cultivate community leaders. While this may seem daunting, there are promising examples of organizations that are doing this well and of how partnerships and the effective coordination of existing efforts can significantly increase the impact of citizen stewardship programs.

6. Need region-wide stewardship programs to help build a more robust and diverse movement for clean water (C6)

Great progress has been made in recent years to broaden and diversify the individuals and groups engaged in Bay cleanup activities but there is more work to be done. This is especially the case when it comes to mobilizing individuals or communities participating in stewardship programs to support the many policies and funding programs in place and needed to achieve Bay restoration goals. As the number and diversity of citizens participating in stewardship activities increases grassroots organizations need to build their capacity to harness and maintain the engagement of those individuals in order to build a movement that can be mobilized to support important decisions about clean water policy at the local, state and federal level.

External Factors

1. Public opinion, perception and attitude about Bay clean up varies and poses both challenges and opportunities (E1)

While clean water and a healthy Bay often rank among the top environmental priorities of citizens in the region, the environment in general does not always rank as highly among the many other issues impacting people's lives. Efforts to engage citizens in Bay cleanup activities are challenged by the fact that within each community, county or region there are a number of important and pressing needs that exist that may compete directly with actions needed for clean water. A better understanding of public opinion will offer opportunities to align those interests and issues to advance them together, rather than in competition. Most opinion polls show people highly value the health of their local water resources and support many of the programs protecting them. However, opinions of specific programs and policies can vary greatly and can be influenced by competing narratives, messaging campaigns, and cross-currents in public opinion such as tax aversion or mistrust of the public sector. Despite these challenges, opinion research shows that Bay residents are aware of water quality problems locally and want to be engaged solving them. Given this complex environment of public opinion, it is important that facts about public attitudes and perceptions be considered as citizen stewardship programs are developed and implemented.

2. Lack of social norms that encourage adoption of helpful individual actions and behaviors (E2)

For a variety of reasons many of the actions targeted by outreach programs are not considered the social norm and, as a result, face a number of barriers to implementation. The public display of a behavior change by a growing percentage of a population can accelerate the adoption of these behaviors by others. Shifts in smoking habits may be the best example of this in recent time. Successful programs that result in citizen stewardship need to more effectively utilize this social science tool so desired actions are seen by others and begin a sea change of actions and behaviors for clean water.

3. Need to increase use of existing and expand access to water resources for all citizens (E3)

While not the primary factor influencing stewardship, the lack of public access sites and the use of existing sites, particularly in urban and low-income communities, contribute to challenges faced in further engaging many sectors of the public.

4. Existing markets are the major drivers of consumer choices and often create disincentives for stewardship actions (E4)

The Bay community lacks comprehensive strategies to address consumer markets that shape citizen stewardship actions. Just as policy can help drive action, individual actions can be recognized as a key driver of informed, practical, and workable policy and regulation that is needed to facilitate on-the-ground action. Efforts to change products and services through regulation (e.g., lawn fertilizer application) and to ensure regulations governing consumer choices (e.g., HOA ordinances) exist and have had considerable influence on consumer choices; however, these are often done in isolation and not as part of a comprehensive strategy that links regulatory or policy efforts with effective consumer outreach focused on behavior change and continued engagement.

V. Current Efforts and Gaps

To help define citizen stewardship and provide a structure for identifying stewardship actions that could guide Bay Program strategies and support local efforts, the following framework has been developed. The framework recognizes the role individual citizens, community leaders, nongovernmental organizations, state and local governments and others play in inspiring, persuading, educating and motivating millions of watershed residents whose actions and support collectively amount to significant gains in Bay Program goals and outcomes. This management strategy is organized around the premise that there is a continuum of citizen stewardship and one can enter at any level. On-going progress towards a greater number and diversity of trained and mobilized citizens restoring and protecting their local watersheds requires the recognition of successful actions at each level along this continuum. These levels are:

- **Individual Citizen Action:** Adoption of individual actions and behaviors (can be broken down by action type such as landscape practices, transportation choices, energy use, waste reduction and reuse, water use, etc.)
- **Volunteerism/Collective Community Action:** Engagement in volunteerism/collective community efforts that initiate and maintain engagement in stewardship actions (stream clean ups, tree plantings, sojourns, conservation corps, citizen monitoring programs, etc.)
- **Citizen Leadership:** Emergence of local champions/leaders who catalyze individual and

collective action (water keepers, stewards academy graduates, community leaders, citizen advocates, nongovernmental organizations, etc.)



Current Efforts

There are many successful efforts throughout the watershed that are already being taken by jurisdictions, agencies and organizations that address the three levels of citizen stewardship. The examples summarized below demonstrate the diverse and effective programs that address the broader goal of increasing the number and diversity of local citizen stewards that actively support and carry out the conservation and restoration activities that achieve healthy streams, rivers and a vibrant Chesapeake Bay.

Individual Actions and Behaviors

The **Stormwater Management and Restoration Tracker (SMART) Tool** is an interactive mapping and tracking tool to help counties and towns account for voluntary stormwater best management practices that reduce nutrient and sediment pollution. The SMART Tool empowers runoff-conscious private property owners to track stormwater remediation practices on their properties. Howard County, Maryland is piloting the SMART tool, and is tracking small-scale stormwater practices that improve water quality and reduce water quantity entering their waterways.

Stormwater Rebate Programs offer rebates to property owners who install techniques like rain gardens, rain barrels, conservation landscaping and other approved projects that help control stormwater.

Jurisdictions including Baltimore City and County, Howard, Montgomery and Prince George's counties, the City of Rockville, and the City of Gaithersburg currently offer stormwater rebates to their residents.

The **RiverSmart Homes Program** is an innovative program designed to reduce stormwater runoff on

residential properties within the District of Columbia. The Alliance for the Chesapeake Bay is coordinating the installation of rain gardens, and BayScape gardens, and the replacement of impervious surfaces with pervious surfaces through grants provided by the District Department of the Environment. Through this program, homeowners are given a \$1,200 grant credit towards the installation of one of these projects.

The **Chesapeake RiverWise Communities Program** enables citizens and businesses in D.C, Richmond, and Harrisburg to reduce stormwater runoff by making important changes to the ways they manage their properties, including the use of rain barrels, rain gardens, permeable pavement, and BayScapes and the planting of trees. Piloted successfully over the last few years, RiverWise aims to develop a comprehensive approach for local governments to apply residential-scale stormwater reduction through green practices.

The **Maryland Green Schools Program** is a sustainable schools program that provides educational opportunities for preK-12 schools that promote responsible environmental stewardship practices and increase awareness of how our relationship with the environment ultimately impacts public health and society. The program's goals are to enrich education by integrating hands-on, inquiry-based instruction, to empower youth to practically apply knowledge at school, home and in their communities that reduce ecological impact, and to encourage sustainable practices.

Volunteerism and Collective Community Action

Earth Conservation Corps is a nonprofit, environmental action program powered by unemployed community youth engaged in Anacostia River restoration. A small staff and the dedication of partners including the Metropolitan Police Department, the Environmental Protection Agency, the District Department of the Environment, the Department of Youth Rehabilitation Services and many other organizations and individuals provides year round volunteers with the leadership skills and environmental expertise that will put them on a path toward a career in nature or science.

The **Senior Environment Corps Program**, sponsored by Nature Abounds in Pennsylvania, engages volunteers aged 55 and over in numerous activities, including water quality monitoring, stream habitat assessment, storm-drain stenciling, environmental education, community gardening, wildlife surveying, marking abandoned oil and gas wells, and cleaning up parks and trails. Since 1997, SEC volunteers in Pennsylvania have contributed over 2,000,000 hours, and their contribution is estimated to be worth more than \$3 million per year.

The **READY Program**, Restoring the Environment and Developing Youth, is a partnership between the Alliance for the Chesapeake Bay, Howard County, and People Acting Together in Howard (PATH) to provide green jobs for youth, ages 16-25, during the summer who work to build conservation landscapes and rain gardens. These watershed protection measures help to reduce storm water runoff from man-made surfaces such as rooftops and parking lots in Howard County that would otherwise flow directly to its streams and rivers, and hence the Bay.

Pennsylvania River Sojourns are guided paddling trips, sponsored by Pennsylvania Organization for Watersheds and Rivers with funding support through the Pennsylvania Department of Conservation of Natural Resources (DCNR) and the American Canoe Association (ACA). The Anacostia Watershed Society hosts free Paddle Nights in the summer to get people on the water to discover the Anacostia. These paddling opportunities are an excellent way to connect people to the land and water of their local rivers.

The Chesapeake Bay Foundation's (CBF) **Oyster Gardening Program** gives individuals the opportunity to help bring back this vital species by using the area alongside their docks to grow oysters. Once grown, the oysters are returned to CBF so they can be planted on sanctuary reefs where they continue to mature, filter water and reproduce.

The Alliance's for the Chesapeake Bay's Citizen Water Quality Monitoring Program, **River Trends**, is a regional network of 50 trained volunteers who perform weekly water quality tests that help track the condition of waters flowing toward the Bay. Some have worked with the Alliance for more than ten years, watching their rivers through the seasons and regularly submitting the valuable data they collect.

Local streams and woodlands receive a clean start for Earth Month as thousands of volunteers come out for **Project Clean Stream**, one of the largest cleanup events in the Bay region. The Alliance for the Chesapeake Bay organizes and delivers the public up-close and personal connections to the watershed. Through these coordinated hands-on events, more than 7,000 volunteers annually receive the opportunity to dig, plant, pick-up trash, learn, and realize that their everyday decisions affect the health of the Bay and its watershed.

The **Alliance for Aquatic Resources Monitoring (ALLARM)**, a project of the environmental studies department at Dickinson College, has provided capacity building technical assistance to Pennsylvania communities to monitor, protect and restore local waterways since 1986. ALLARM enhances local action for the protection and restoration of Pennsylvania watersheds by empowering communities with scientific knowledge and tools to implement watershed assessments. Through the work of student and professional staff, ALLARM offers comprehensive services to enable groups to use critical scientific tools to enhance environmental quality and fully participate in community decision-making.

The Izaak Walton League's **Save Our Streams Program** trains and coordinates more than 500 volunteers who monitor water quality at more than 150 sites in Virginia. Volunteers conduct biological monitoring and submit data to the state to identify polluted waters and to assist with watershed management. Additional information on these activities is available at www.iwla.org/sos.

Citizen Leadership

The **Watershed Stewards Academy (WSA)** is a training program that empowers residents to improve the quality of their local streams. By sharing resources, forming partnerships, and coordinating efforts, WSA works with a consortium of support professionals, Master Watershed Stewards and their communities to reduce pollutants, curb stormwater and restore natural systems. Currently, Watershed Steward Academies are active in Maryland's Anne Arundel County, Howard County, and Cecil County, and the National Capital Region.

The **Chesapeake Watershed Forum** is a three day/two night conference held in Shepherdstown, West Virginia that brings together representatives from local watershed organizations and local governments to learn the latest restoration science and direction, network with other groups facing similar challenges, and be inspired to continue the work of preserving and restoring the Chesapeake Bay watershed.

The **Chesapeake Network** is a community of organizations and individuals working to protect and restore the land and waters of the Chesapeake Bay watershed. The online community facilitates networking and cooperation among its members by providing tools, resources and connections to help

its members further their efforts. The Network is used by more than 4,000 conservation practitioners to communicate with peers and interested citizens, network and collaborate on specific projects, share opportunities, and bring together communities of people working on watershed restoration and protection.

WATERKEEPERS® Chesapeake is a coalition of eighteen independent programs working to make the waters of the Chesapeake and Coastal Bays swimmable and fishable. Waterkeepers Chesapeake amplifies the voices of each Waterkeeper and mobilizes these organizations to fight pollution and champion clean water. The members of Waterkeepers Chesapeake work locally, using grassroots action and advocacy to protect their communities and their waters. They work regionally to share resources and leverage individual organizational strengths to expand each Waterkeeper's capacity for on-the-water, citizen-based enforcement of environmental laws in the Chesapeake region.

Bridging the Watershed is an outreach program of the Alice Ferguson Foundation, in partnership with the National Park Service and area schools, designed to promote student academic achievement, personal connections with the natural world, lifelong civic engagement, and environmental stewardship through hands-on curriculum-based outdoor studies in national parks and public lands.

Interfaith Partners for the Chesapeake and [Blue Water Baltimore](#) organize the **Blue Water Congregations Program** for congregations in Baltimore City/County who wish to install stormwater management practices on their grounds. As property owners, congregations can reduce their polluted runoff by installing rain gardens, retrofitting their parking lots, and performing other best management practices. This program offers congregations the technical and organizational support they need to embark on construction projects that will address polluted runoff and help reduce their stormwater utility fees. More than 80 congregations have participated in this program.

Current Gaps/Factors Influencing Stewardship Efforts

Several organizations have recently conducted studies and produced reports documenting current activities, trends and gaps in citizen stewardship programs. A summary of their results and recommendations are included below.

Chesapeake Bay Trust/National Fish and Wildlife Foundation Residential Stormwater Forum

The Chesapeake Bay Trust with NFWF held a Residential Stormwater forum in spring of 2014. The forum convened key stakeholders engaged in residential stormwater outreach programs to review, discuss, and develop recommendations to increase the use of tools and technical assistance, and encourage partnerships that will increase the impact of these expanding outreach programs. Forum participants were engaged in an effort to identify gaps, and recommend actions to address barriers to advance effective and sustainable stewardship programming. Recommendations included:

- Increase systematic support and coordination between nongovernmental organizations and local governments to develop and cooperatively implement effective stormwater outreach programs, with an eye towards avoiding overlapping/ duplicative research and programming and consideration of efforts to develop a common brand for outreach programs where appropriate.
- Document the case for more public investment in stormwater outreach using social marketing best practices.

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- Coordinate broad, comprehensive development and implementation of audience research available for application at the local level.
 - Increase coordination of “mid-stream” activities and approaches to avoid duplication and find economies of scale – e.g. contractor training/certification, audit software, design templates, etc.
 - Develop and promote a tool for a rapid assessment/audit of outreach programs to encourage the incorporation of social marketing best practices into existing program design. Numerous outreach programs already exist that could benefit from enhanced understanding of the target audience.
 - Expand and promote the stormwater outreach technical assistance provider (TAP) network; this would be accomplished through additional TAP training courses.
 - Develop common measures to evaluate stewardship program success.

Chesapeake Bay Trust Watershed Outreach Professionals’ Behavior Change Practices, Challenges, and Needs: Insights and Recommendations for the Chesapeake Bay Trust

In 2011 and 2012 the Chesapeake Bay Trust worked with a group of graduate students from the University of Michigan to assess the types of outreach programs underway in the Chesapeake Bay watershed. The research uncovered two key points: 1) several Chesapeake Bay organizations are already using social science tools to tackle known barriers to behavior change, and 2) most organizations are applying these tools outside of a social science framework like social marketing. These two outcomes are positive for the Bay community as it means there is a foundation for social science application and there is room to improve behavior change efforts through increased application of social science processes. The Michigan team’s research resulted in a number of recommendations, which follow:

- There is a need to foster a greater understanding of how to develop strategic behavior change programs that are audience-oriented; in particular there is a need to address misperceptions about the relationship between awareness and behavior change.
- Many ongoing programs do not understand their target audience. There is a need to provide nongovernmental organizations with increased professional development opportunities to learn about effective behavior change strategies. In particular, increasing knowledge of methods for understanding and working with the target audiences served by programming should be prioritized.
- Creation of a behavior change group or case study repository where nongovernmental organizations can share outcomes of work categorized by specific behaviors. This repository should include a template for grant recipients’ and nongovernmental organizations evaluative results to standardize reported information and help grant recipients find needed information more easily.
- Nongovernmental organizations are not sufficiently market-focused and audience-driven. There is a need to provide nongovernmental organizations with opportunities to strengthen their audience targeting, recruitment, and assessment skills. Although many survey respondents reported that they target specific audiences, interview results suggest that Bay organizations may be targeting too broad an audience, or may not be effectively engaging with targeted audiences to develop audience-oriented programming.

Chesapeake Bay Program Science and Technical Advisory Committee (STAC): Exploring Applications of Behavioral Economics Research to Environmental Policy-making in the Chesapeake Bay Watershed

Greater understanding of the drivers of individual choices holds promise for developing more effective policy decision-making to restore the Chesapeake Bay. The goal of this workshop was to

increase the depth of STAC's and other social scientists' knowledge about behavioral economics and explore potential applications in the Bay watershed. The presentations and discussions led to suggestions for research that would contribute to knowledge about behavior that would help the Bay restoration goals be met in a more effective way. The suggestions included:

- Research human behavior before developing more outreach and other engagement programs. In general, human decision-making was perceived by workshop participants as often being so complex as to make it necessary to better understand the audience before conducting an educational/outreach campaign (i.e. "thinking before doing"), or there could be unintended consequences.
- Research the efficacy of informing homeowners about their links to the Bay. A current strategy is the placement of signs on storm sewers to make homeowners who are thinking about dumping motor oil feel "guilty."
- Research ways to recognize best management practice implementation by home owners (such as a sign or list in the newspaper). This area is largely unexplored, and there may be opportunities.
- Research how stewardship and water quality improvements can be embedded into farmers' social identity, including considerations of geographical location, sense of place and ownership.
- Research effective visual communication techniques that encourage behavioral change among various communities.
- Develop methods that can be used to cultivate peer pressure related to stewardship to encourage change. One example that is gaining traction with the U.S. Department of Agriculture is "community conservation," where groups of landowners are encouraged to work together to solve a water quality problem through an incentive based on a joint outcome.

Encouraging Sustainable Behavior: A Guide for National Fish and Wildlife Grantees to Implement Social Marketing Campaigns

Typical measures of success with regard to outreach and education efforts include indicators such as number of brochures printed and distributed, workshops held, or persons "reached" via print or other media advertisements or as part of an education initiative. In 2007, the Small Watersheds Grant Program began evolving "away from typical environmental education and outreach towards a more strategic focus on social marketing" and "actively seeking projects that propose to use social marketing to achieve behavior changes."

This report was conducted for the National Fish and Wildlife Foundation (NFWFW) in order to develop metrics and indicators of progress for small watershed organizations so they can improve their campaign design in order to achieve long-term behavior change. This report also provided a framework to evaluate social marketing campaigns and measure changes in behavior.

Two recommendations from this guide that are particularly relevant include:

- Develop a template to help grantees plan for measurable success in the use of Community Based Social Marketing (CBSM) to facilitate behavior change. By organizing campaigns steps in similar ways, and using standard language to document methods, successes, and lessons learned, it will be feasible to share stories and benefit from one another's experiences, specifically dealing with water quality in the Chesapeake Bay and its tributaries.
- Develop a crowd-sourced behavior and target audience database. It is suggested that there is great demand for a crowd-sourced CBSM case study database, as many organizations are working to promote similar behaviors to similar target audiences. The entire Chesapeake Bay watershed community will benefit from sharing knowledge, tools, and lessons learned with each other. With the creation and use of the database (entering active or completed campaigns, and use of information entered by others), it is believed that implementing CBSM will become less challenging, and more attractive, thus spurring even more organizations to implement CBSM for increased adoption of behaviors beneficial to water quality. The database will also enable better accounting of campaigns and their cumulative impacts across the watershed.

Actions, Tools and Support to Empower Local Government and Others

There are a number of efforts underway to increase the capacity of effective stewardship programs at the local level. This management strategy and work plan will identify those efforts and outline additional strategies to empower stewardship programs regionally. This strategy will also highlight the close relationship of citizen stewardship with the Local Leadership, Environmental Literacy and Diversity Outcomes.

VI. Management Approaches

The Chesapeake Bay Program partnership will work together to carry out the following approaches to achieve the Citizen Stewardship Goal. This long term, comprehensive list of approaches seek to address the factors affecting our ability to meet the goal and the gaps identified above. The work plan to follow will contain specific actions that jurisdictions and partners will take by approach. A proper balance that adequately reflects the need of a community while also weighing impact on local environmental condition will be taken when prioritizing and targeting specific actions.

The long-term success of the *Watershed Agreement* depends on the support and action that arises from local citizens and conservation groups. Local government leaders must have the capacity and tools to address watershed issues and the citizen support to implement watershed restoration policies and incentives. State and federal agencies rely on partnerships with local leaders and conservation groups to achieve their goals and government funding is critical for catalyzing and leveraging private action. The base of the environmental movement and its leadership must be more diverse and inclusive.

Actions and approaches that the Bay Program can undertake to address the factors affecting the Citizen Stewardship Goal and Outcome include:

Establish mechanisms to measure impact and track progress of citizen stewardship programs

The commitment over time to increasing local stewardship action by federal, state and local governments, as well as nonprofit entities has been significant. In order to advance the public

awareness and understanding of issues facing the Chesapeake, cultivate the broad-scale adoption of behaviors and practices that benefit the Bay watershed, and build the social and institutional structure needed to support public engagement, foster stewardship action, and advance goals, we must have a means to measure the progress and results of individual and collective citizen stewardship efforts in all communities across the watershed. Data collected through this process will assist in the process to prioritize and target future actions.

Approach: The Chesapeake Bay Program will develop a practical and value-added method to track changes in public attitudes, behaviors, and actions related to stewardship and use the results to guide future management strategies. (Addresses factor C4)

- Develop behavior change survey methodology that includes guiding criteria such as: (1) involves individual decision-making, (2) is repetitive and can be tracked over time, (3) can be broadly adopted, (4) has an impact on water health, and (5) and/or will engage the public.

Provide assistance to help develop and implement programs for maximum impact on citizen stewardship

Substantial resources have been invested by all Bay Program partners in defining the technical design and merits of numerous best management practices. However, methods for the successful delivery of this information to local residents or land managers have not always proven successful in changing behavior or motivating adoption. This is especially true of those BMPs that require lasting changes in individual behaviors by a large percentage of the public. These voluntary actions taken by land managers, residential, commercial, agricultural or other, represent an important component of Watershed Implementation Plans.

Approach: Increase program effectiveness to achieve results from citizen stewardship programs targeting individual behaviors. (Addresses factor C1, E1, E2 and E4)

- Provide training and technical assistance to agencies and organizations to assist them with the use of social science best practices in the design of their programs. These best practices should take into account the unique challenges and opportunities in reaching diverse communities.
- Develop and distribute successful templates for programs, sharing outreach strategies and providing technical assistance for setting up and evaluating programs.
- Prioritize the individual citizen or community behaviors that have the greatest potential to positively impact water quality. Conduct audience research focused on understanding barriers and perceived benefits to behavior change including those of diverse communities.
- Facilitate behavior change program development, implementation, and evaluation through state and federal support; such as, social marketing campaigns that encourage behavior change, including engagement of non-traditional and diverse citizens.

Approach: Share best practices and successful models of citizen stewardship programs. (Addresses factors C1, C5, E1, E2 and E4)

- Create an online accessible repository of market, social, and audience research that supports stewardship work; including research and data from local, state, and federal governments, nonprofit, and private sector sources; synthesize and disseminate to partners.

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- Develop turn key toolkits or program templates with supporting resources to assist in the transfer of lessons learned to the replication of successful program models. Provide training to a diverse set of user groups to ensure replication of tool kits accommodates characteristics unique to each community the programs target.

Approach: Increase the communications capacity of the Bay community. (Addresses factor E1)

- Train Bay Program partners, citizen leaders and others to access and understand public opinion data and how to use it to converse in a relevant way with the public.
- Support the regular examination of public opinion and share this information effectively with the leadership community.
- Develop and disseminate via on-line networks communications tool kits, including sample messages adaptable for different regions, audio and visual materials, campaign templates and other resources to assist with development and implementation of localized citizen awareness campaigns. This approach should consider the unique approaches for reaching diverse communities who have not traditionally been engaged in local or Bay environmental initiatives.
- Incorporate public opinion information into how we communicate and measure success in order to help the public better visualize the changes made and garner their support.

Approach: Increase strategic coordination and collaboration among programs at the local level. (Addresses factor C5)

- Engage local governments and nongovernmental organizations to facilitate partnerships that result in effective citizen outreach programs that address storm water program requirements and contribute to pollution reduction targets. Ensure that these efforts are done in a manner that supports existing local government's efforts.
- Engage with regulatory agencies to develop guidance and incentives for local governments implementing storm water programs to more effectively build capacity of and partner with nongovernmental organizations.
- Encourage coordination among funders of citizen outreach programs to incentivize collaboration and reduce redundancy among nongovernmental organizations and other funded programs.

Approach: Increase local public access to natural resources (see public access strategy) (Addresses factor E3)

- Expand citizen engagement actions (such as river trips, cleanup days, educational gatherings, trails, etc.) at local public access points to increase appreciation of nature and awareness of citizen stewardship actions.
- Use public access sites for volunteer mobilization.

Increase capacity to expand the number and diversity of citizen volunteers

People volunteer for an endless variety of reasons. Many want to gain experience, acquire skills, meet new people or expand their network while others want to give back to their community, help an organization, or promote a worthwhile activity. Volunteering is about moving beyond one's self to help the community at large. Volunteerism is also a gateway to making the connection between people and

their local watershed. Volunteer and community-based programs empower adults and youth to take on and learn about conservation challenges and stewardship practices that can advance larger Chesapeake restoration goals. Creating opportunities to build personal knowledge and experience through volunteer work can lead to greater advocacy for the environment.

Approach: Invest in successful volunteer recruitment and engagement programs. (Addresses factor C3)

- Foster the sustainability of existing successful programs that support local volunteerism.
- Increase/target financial investment from federal and state sources to leverage local government and private funders.
- Use funding to support and incentivize programs to recruit and engage volunteers in order to cultivate future citizen leaders who champion community change.
- Recognize work with youth volunteers and corps programs to expand opportunities for learning, employment, and leadership in diverse communities.

Approach: Expand citizen participation in science and monitoring. (Addresses factors C2, C3 and C6)

- Create a framework for the integration and effective use of citizen-collected monitoring data by the Chesapeake Bay Program.
- Identify linkages with environmental literacy strategy including programs such as Science Technology Engineering Mathematics in schools to sharpen skills for students.
- Evaluate gaps in monitoring networks and identify how citizen monitoring can fill gaps with citizen monitoring programs.
- Expand water quality monitoring efforts to provide stream trend information useful to local decision-making.
- Pilot and expand support for citizen-led inspection and verification efforts for selected best management practices and BMP systems.

Increase capacity to expand the diversity of citizen volunteers and community leaders

Approach: Acknowledge the priorities of minority communities, including managing and overcoming poor social and economic living conditions, when developing and designing volunteer and leadership programs. (Addresses factor C6)

- Develop programs that are coupled with quality education, certifications, and access to business and career opportunities as incentives for participation.
- Create achievement pathways from grade school to environmental degree programs to environmental careers that will likely develop long term stewardship supported by a sustainable economic incentive.

Approach: Increase direct engagement of diverse organizations and communities. (Addresses factor C6)

- Engage in a process of community-based listening with trusted local leaders to understand the connection between local issues and environmental goals.
- Expand funding, support and implementation of citizen engagement programs in partnership with minority and under-represented communities.
- Build the capacity of under-represented communities to implement effective outreach programs.

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- Support programs that increase student involvement and implementation in the “greening” of school grounds.
 - Expand the reach of programs that engage the faith community and businesses.

Recruit, train, and support more citizen leaders and local champions

While thousands of people volunteer for projects that plant trees, clean up streams, or collect water quality data, only a limited number emerge as community leaders for projects or programs that protect or restore their watershed. A limited number of programs currently exist that aim to empower local residents to take the lead in improving the quality of their watershed and their community. By providing more citizen stewards with knowledge and expertise, training in assessment tools, and hands-on experience with best management practices or behavior change projects, a larger consortium of community leaders can help develop solutions to local problems, organize other citizen stewards, and restore and advocate for the health of local waterways and communities.

Approach: Increase opportunities for training and empowerment of local champions. (Addresses factor C3 and C6)

- Transfer, replicate, and expand successful models for equipping citizen stewards for leadership such as the Watershed Stewards Academy.
- Integrate strong environmental training elements to more generalized leadership training programs.
- Maintain and enhance existing successful models of training and leadership skill development such as the Watershed Forum, Chesapeake Network, Stormwater Network, and other forums for technical training and leadership support related to priorities of the *Watershed Agreement*.
- Integrate watershed education and training into ongoing workshops for local elected officials.

Approach: Provide financial investment for local leadership training and education in all states. (Addresses factor C2 and C3)

- Identify potential sources of financial investment from federal, state, local and private funders.
- Target or prioritize grants for greater collective impact by engaging a larger and greater diversity of citizens and partners including schools at all levels, landowners, businesses and underrepresented constituencies in project development and implementation.
- Provide seed capital for the development and implementation of watershed leadership programs and foster their sustainability.
- Encourage the implementation of more small grant mechanisms to provide local project support and build the capacity of local champions.

Approach: Increase organizational capacity and effectiveness to build citizen leaders. (Addresses factor C3)

- Provide technical assistance to local governments and states for setting up programs
- Create mechanisms for the recognition of local champions and citizen stewards.
- Share information and data that will help citizen leaders prioritize the actions that will best benefit local communities and that have the greatest probability for success.

- Help organizations prioritize volunteer actions that will have the greatest probability for success and yield the greatest environmental benefits.

Approach: Build capacity of organizations to cultivate leaders and build the movement. (Addresses factor C3 and C6)

- Foster partnerships and collaboration to overcome the challenge of limited resources and improve coordination between awareness and outreach programs and policy advocacy efforts.
- Provide nongovernmental organizations with the support and technical assistance to needed design programs intended to increase the number of citizens engaged and to intentionally cultivate participants to increase their level of engagement leading to more citizen advocates and leaders.

Approaches Targeted to Local Participation

The majority of the management approaches in the previous section facilitate greater local participation, including underserved and underrepresented communities as a way to include more diverse participation in achieving the citizen stewardship Outcome. In particular, the management approaches summarized in #3: Increase capacity to expand the number and diversity of citizen volunteers and #4: Recruit, train, and support more citizen leaders and local champions, contain particular approaches to empower local governments.

Cross-Outcome Collaboration and Multiple Benefits

All four management strategies and detailed approaches in the previous section influence other outcomes as the conservation and restoration actions that citizen stewards undertake at the local level impact local conditions. The partners responsible for implementing the Citizen Stewardship Outcome strategy will collaborate with Goal Implementation Teams including:

- Stewardship
 - Environmental Literacy
 - Public Access
- Healthy Watersheds
- Diversity
- Local Leadership

VII. Monitoring Progress

Over the last year, the Stewardship Goal Implementation Team developed a stewardship index that provided much needed base line metric(s) for the Citizen Stewardship Outcome with particular attention paid to better understanding the diversity of citizens engaged in stewardship activities. This will build upon existing efforts to measure the penetration rate of homeowner best management practices (e.g., rain gardens, rain barrels, etc.) and assess the extent of community engagement by local nongovernmental organizations through volunteer and leadership development activities. The intent is for this effort to identify key data gaps and fill them as needed. All relevant data contributed to an analysis that generated an initial stewardship index which includes an index of individual behavior

change that helps quantify the extent to which citizen stewardship programs advance local restoration goals. The Stewardship Index will serve as a much-needed baseline from which to measure future progress.

This metric will contribute to an increased awareness on how tuned in citizens are to Chesapeake Bay Program issues and strategies. It will also provide insight into the effectiveness of programs and approaches, predict/quantify the value of citizen actions, and increase or maintain support for investments in local outreach and engagement.

VIII. Assessing Progress

Progress data will be collected and assessed every 3-5 years in a way that is consistent with the baseline data collected in summer, 2017. Biennial evaluation will be conducted to ensure that adequate progress is being made.

IX. Adaptively Manage

The Stewardship Goal Implementation Team will convene throughout the year to discuss goals and achievements in meeting the Citizen Stewardship Outcome. A biennial evaluation will be conducted on the Management Strategy and work plan to ensure that adequate progress is being made. This evaluation will allow for opportunities to re-assess where the group is in achieving the Citizen Stewardship Outcome and adjust strategies as appropriate.

X. Biennial Workplan

Biennial workplans for each management strategy will be developed. It will include the following information:

- Each key action
- Timeline for the action
- Expected outcome
- Partners responsible for each action
- Estimated resources

Lessons Learned

As a result of going through the adaptive management process, the Citizen Stewardship Workgroup refined its key actions and performance targets towards meeting the 2025 Stewardship Goal and Citizen Stewardship Outcome.

A refined set of actions will better enable the workgroup to strengthen its organizational capacity by establishing a leadership team that will aid in regular management of action items.

The recent development of the Stewardship Index and ongoing development of the Stewardship Online Tool have been groundbreaking monitoring efforts to accelerate citizens' adoption of the behaviors needed to enhance the health of their local watersheds, streams, and rivers.

Strong leadership from the workgroup will be crucial to deliver trainings to practitioners who can implement the index in their communities.

Language in the management approaches was updated accordingly to account for these changes. The 2018-2019 Workplan is reflected in the Management Strategy.