

# A Report to the Citizens of the Bay Region

[www.chesapeakebay.net](http://www.chesapeakebay.net)



CBP/TRS 284/07  
EPA 903R-07002  
April 2007



# CHESAPEAKE BAY

## 2006 Health & Restoration Assessment

### PART TWO: **Restoration Efforts**







# CHESAPEAKE BAY

## 2006 Health & Restoration Assessment



### CHESAPEAKE BAY PROGRAM: A Watershed Partnership

The Chesapeake Bay Program partners have developed science-based plans to improve the waters, habitats and fisheries of the Chesapeake. On-the-ground efforts are taking place throughout the 64,000-square-mile watershed and new initiatives are being implemented to accelerate progress.

The Chesapeake Bay Program brings together state and federal governments, non-profit organizations, watershed residents and the region's leading academic institutions in a partnership effort to protect and restore the Bay.

To learn more and find out how you can help, visit the Chesapeake Bay Program website at [www.chesapeakebay.net](http://www.chesapeakebay.net)

**Chesapeake Bay Program**  
410 Severn Avenue, Suite 109  
Annapolis, Maryland 21403  
800-YOUR-BAY

[www.chesapeakebay.net](http://www.chesapeakebay.net)





## ABOUT THIS REPORT

The Chesapeake Bay 2006 Health and Restoration Assessment is presented this year in two parts.

*Part One: Ecosystem Health* draws on the most up-to-date monitoring data gathered by Bay Program partners to assess the overall health of the Bay ecosystem last year.

This report, *Part Two: Restoration Efforts*, uses 20 indicators grouped into the five priority areas described in the landmark *Chesapeake 2000* agreement that represent major elements of the Bay restoration effort. Quantitative goals have been set for most of these indicators. For each, a chart shows the current status and a history of percent of progress toward achieving the goal. All of the charts have the same time scale: 1985-2010. In cases where measurement began or a goal was agreed to after 1985, a symbol on the chart indicates when “accounting began.” In the section “Reducing Pollution,” efforts are compared to goals defined by the Bay jurisdictions’ river-specific cleanup plans. Monitoring and tracking data and computer simulations are used in this section. In the remaining parts, restoration efforts are compared to goals adopted by the Bay Program. Monitoring and tracking data are used in these sections.

Electronic versions of the *Chesapeake Bay 2006 Health and Restoration Assessment* reports can be found at [www.chesapeakebay.net/press.htm](http://www.chesapeakebay.net/press.htm). Because of space limitations, only brief text is included in this report. Detailed information about each indicator can be found at [www.chesapeakebay.net/indicators.htm](http://www.chesapeakebay.net/indicators.htm). Expanded analysis and interpretation of data as well as the methods used to compile the graphs can be found at [www.chesapeakebay.net/Assess/](http://www.chesapeakebay.net/Assess/)





## RESTORATION SUMMARY



Restoration of a complex ecosystem requires a multi-pronged approach. The Chesapeake Bay Program has divided its restoration efforts into five broad areas: Reducing Pollution, Restoring Habitats, Managing Fisheries, Protecting Watersheds and Fostering Stewardship.

*Reducing Pollution* efforts are the most far-reaching. The goal is to take the actions necessary to remove the Bay and its tidal tributaries from EPA's list of "impaired waters" by 2010. Overall, about half of the pollution reduction efforts needed to achieve the nutrient goals have been undertaken over the past two decades.

Progress toward *Restoring Habitats* is measured against a series of goals established by the Program. Most of the goals have a 2010 deadline. Overall, habitat restoration efforts are collectively less than half-way to Program goals and there is concern about the overall quality of habitats that remain.

*Managing Fisheries* focuses on promoting a paradigm shift from a traditional management approach that looks solely at single species to one that recognizes interactions between species (multiple species) and environmental stressors such as low dissolved oxygen levels (ecosystem based). Success is measured by milestones necessary to achieve that shift, not by an assessment of fishing stocks (found in *Part One: Ecosystem Health*.) Progress toward this new approach ranges from 37-63 percent for five key species.

*Protecting Watersheds* efforts are also measured against Program goals. Many of these efforts help slow the rate of new pollution associated with population increases in the watershed as well as reduce current pollution levels. Overall, watershed protection efforts show good progress and are slightly more than two-thirds of the way toward meeting current Program goals.

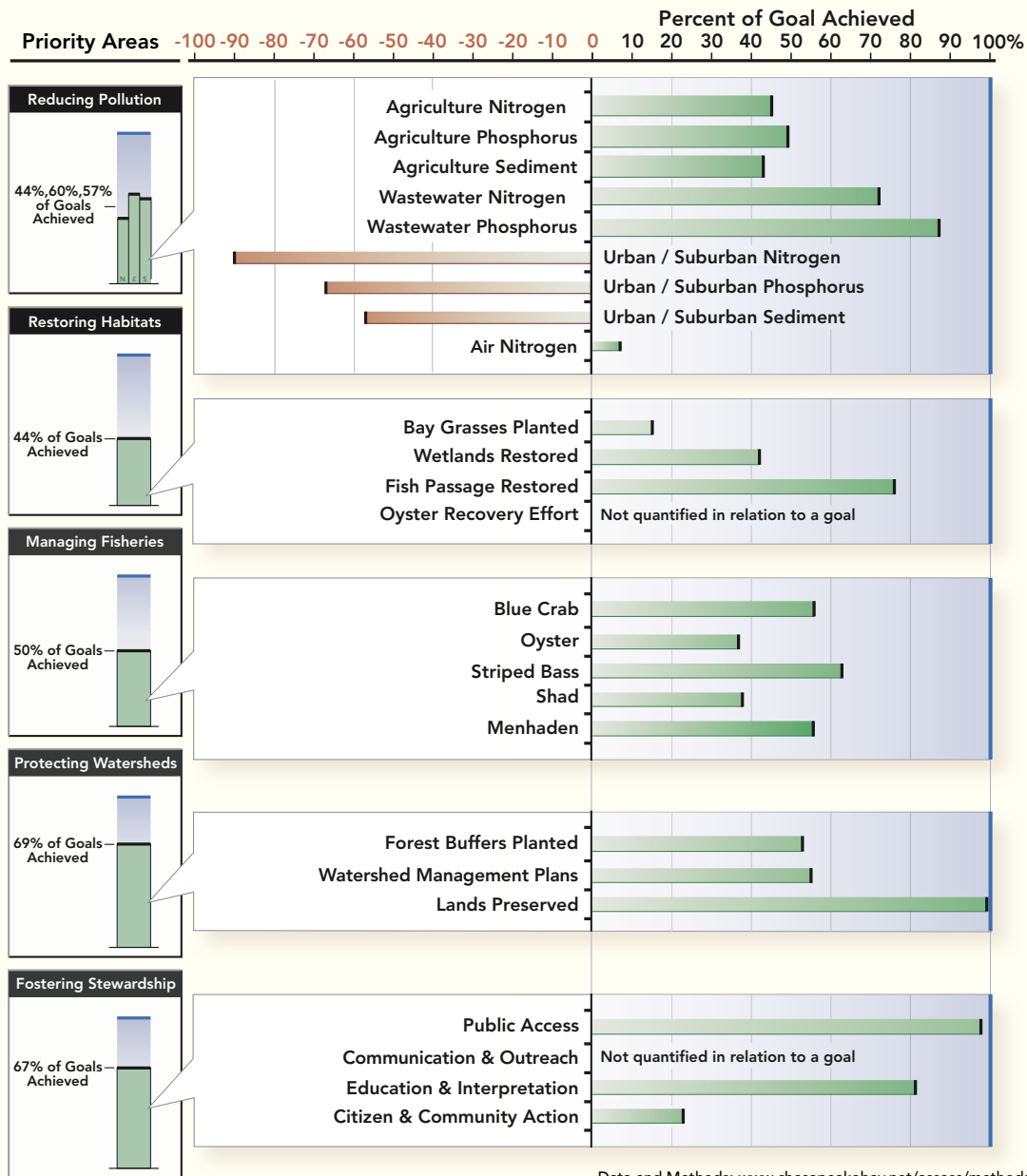
*Fostering Stewardship* efforts include a broad range of actions from expanding opportunities for residents to experience the Chesapeake, to formal outdoor environmental education experiences for school-age children, to engaging communities and helping move them to action. Overall the Program has reached two-thirds of its fostering stewardship goals.



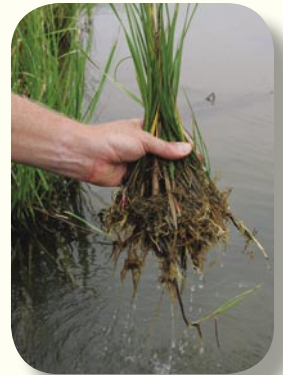




## SUMMARY: 2006 BAY RESTORATION EFFORTS

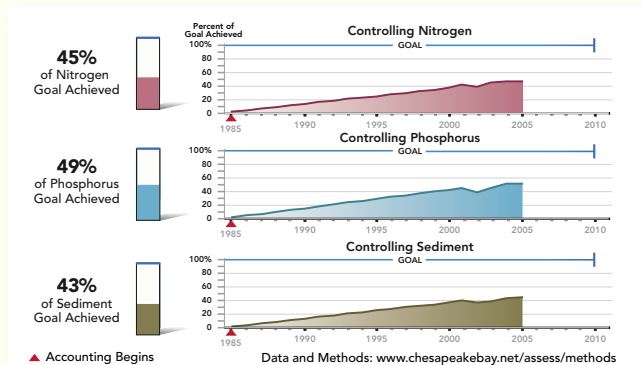


Data and Methods: [www.chesapeakebay.net/assess/methods](http://www.chesapeakebay.net/assess/methods)

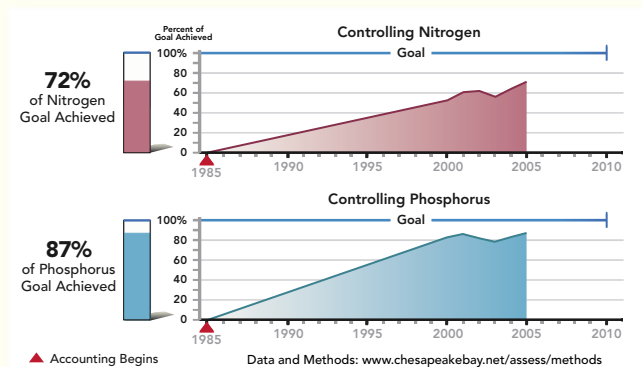




## AGRICULTURAL POLLUTION CONTROLS



## WASTEWATER POLLUTION CONTROLS



## REDUCING POLLUTION

Clearer, oxygen-rich waters are the foundation of Chesapeake Bay restoration. The Bay and its tidal rivers receive more nutrients and sediment than a healthy ecosystem can handle.

### AGRICULTURE

Farmers employ dozens of conservation practices to reduce the amount of pollution reaching local waters and the Bay. Computer simulations and water monitoring data indicate that these nutrient and sediment reduction efforts have been moderately effective. Since 1985 the partners have achieved nearly half of the goal for agricultural nutrient reduction efforts and two-fifths of the goal for sediment reduction efforts that have been estimated as necessary to reach water quality goals.

In part because they are so cost-effective, the Bay jurisdictions are relying on future reductions from agricultural lands for more than half of the remaining nutrient reductions needed to meet restoration goals. The history and economics of agriculture require that significant funding and technical assistance will be needed for this sector to meet its restoration goals.

### WASTEWATER

Decreases in the amount of nutrients discharged from wastewater treatment plants account for a large portion of the estimated nutrient reductions in the watershed to date. As the Chesapeake watershed's population continues to grow (an estimated 170,000 annually since 2000), the volume of waste requiring treatment grows. In 2005, Bay jurisdictions began putting into place a new permitting approach that requires hundreds of wastewater treatment plants to install a new generation of nutrient reduction technology equipment. Bay jurisdictions are relying on additional reductions from wastewater







treatment plants for achieving about 15 percent of their nutrient reduction goals. Since 1985 the partners have achieved nearly three-quarters of wastewater nitrogen reduction goal and more than four-fifths of their wastewater phosphorus reduction goal.

## URBAN/SUBURBAN LANDS AND SEPTIC SYSTEMS

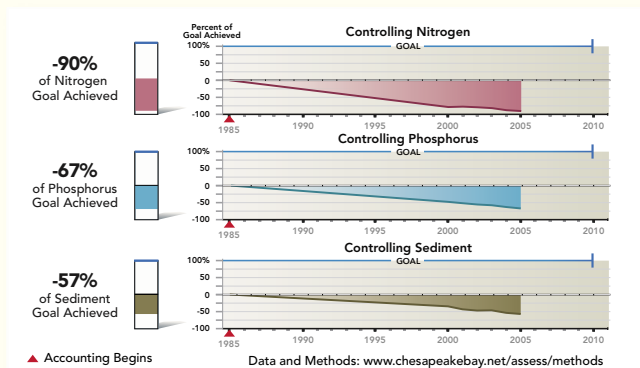
Stormwater that runs across roads, rooftops and other hardened surfaces carries harmful pollution to local streams and into the Chesapeake. These pollutants include nitrogen, phosphorus, sediment and many toxic compounds. About one-quarter of the nutrient reductions called for in the states' cleanup plans are expected to come from efforts to treat pollution from urban/suburban lands and septic systems. To date, it is estimated that the pollution increases associated with land development (e.g. converting farms and forests to urban/suburban developments) have surpassed the gains achieved from improved landscape design and stormwater management practices, although some

jurisdictions may be underreporting past stormwater management practices. The rapid rate of population growth and related residential and commercial development has made this pollution sector the only one in the Bay watershed to still be growing, and thus "progress" is negative.

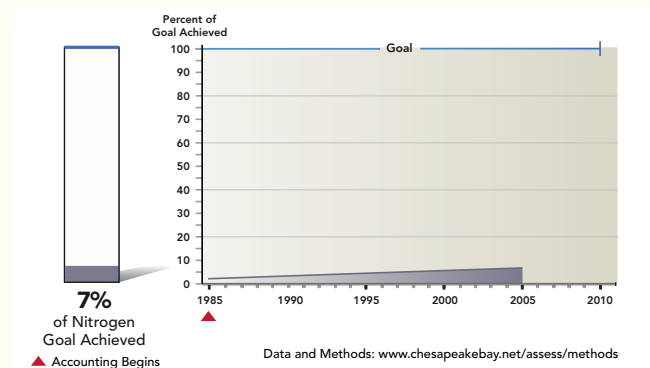
## AIR POLLUTION

Scientists estimate that one-quarter to one-third of the nitrogen reaching the Bay and its rivers comes through the air. Pollutants are emitted into the air primarily from vehicles, power plants, agriculture and other industries. These pollutants eventually fall onto water surfaces and the land where they can be washed into local waterways. Reducing the release of airborne nitrogen pollution is likely to have the additional benefit of reducing the release of toxic chemicals. The Bay jurisdictions are relying upon federal and state air pollution control programs to reduce airborne nitrogen emissions significantly by 2010.

### URBAN/SUBURBAN POLLUTION CONTROLS

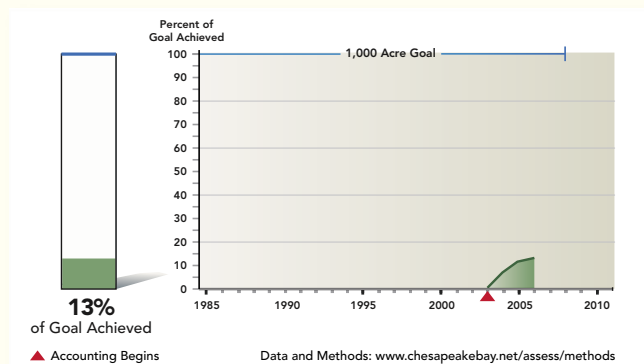


### AIR POLLUTION CONTROLS

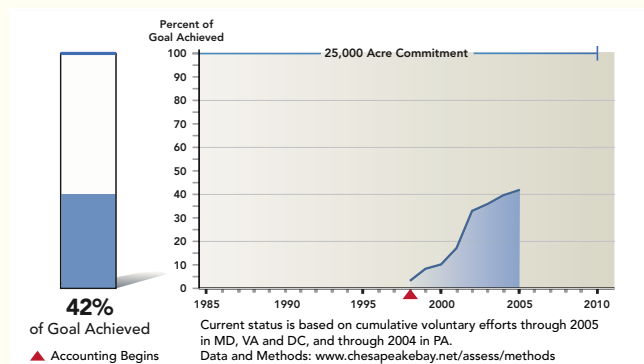




## BAY GRASSES PLANTED



## WETLANDS RESTORATION



## RESTORING HABITATS

Restoring high-quality habitat is critical to bringing the Bay ecosystem back into balance. Healthy habitats provide animals with access to food, shelter and safe areas to raise young.

Restoration efforts have focused on increasing four habitat types. An effort to plant underwater grasses has seen little early success, but the Program's fish passage efforts are both long-standing and generally successful. Restoring wetlands is a major focus area, and in 2005 the partners agreed to expand their goal in this area. Oyster reefs were once a vital habitat for entire underwater communities. Oyster restoration efforts have focused on increasing the number of healthy oysters in the Bay. Some efforts have resulted in restoring reefs, but these programs are still in their infancy.

## PLANTING UNDERWATER GRASSES

Restoring underwater Bay grasses relies overwhelmingly on the natural expansion of beds that comes with improving water quality. Bay managers have begun to supplement pollution reduction efforts with experimental Bay grass plantings. These new meadows, if successful, will provide seed sources to produce grass beds as water quality improves. In the first four years of this effort, Bay Program partners have planted about 13 percent of their initial goal of 1,000 acres by 2008. Not only do bay grasses filter the water, they also provide food and habitat for waterfowl, fish and shellfish. For more on the status of underwater grasses, please see *Part One: Ecosystem Health*.

## RESTORING WETLANDS

Wetlands serve multiple ecological functions. Restoring and enhancing wetlands throughout the watershed can provide critical wildlife habitat. The Bay Program's current strategy commits partners to restoring 25,000 acres of wetlands by 2010, and as of 2005 they are about 42 percent of the way toward this goal. In addition to habitat, wetlands also help clean the water of nutrients and sediments. To improve water quality, the Bay states call for the restoration of some 200,000 acres in their tributary cleanup plans. Progress toward this water quality goal is measured in part in the Reducing Pollution summary chart on page 3.







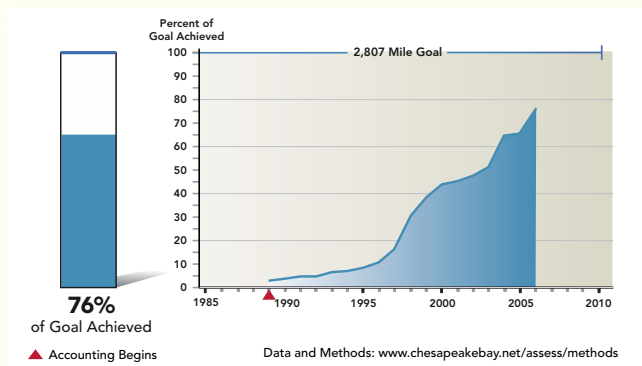
## REOPENING FISH PASSAGE

Dams, culverts and other obstructions block the movement of fish in many of the rivers and streams of the Bay watershed. By removing physical obstacles, key species like American shad are able to return to their native spawning grounds and increased habitat is available for resident fish. From 1988 through 2005 the partners had opened 1,838 miles of fish passage, surpassing their original 1,357-mile restoration goal. In early 2005 Bay Program partners committed to increasing the restoration goal to 2,807 miles by 2014, and an additional 305 miles were opened in 2006, bringing the cumulative total to 2,144.

## RESTORING OYSTER REEFS

Oyster reefs are an essential component of the Bay ecosystem, providing healthy habitat for other bottom-dwelling organisms as well as schools of fish. Reef restoration efforts include cleaning and placing oyster shells, planting hatchery-produced spat (juvenile) oysters, setting aside permanent sanctuaries, and placing alternate substrate materials. Thousands of acres have been treated in this way, sometimes with multiple efforts. The success of these habitat restoration techniques has been limited by numerous factors including disease, fishing pressure and resulting habitat destruction, and poor water quality caused by human population growth and land use changes. For more information on oysters, please see *Part One: Ecosystem Health*.

## OPENING RIVERS TO MIGRATORY FISH



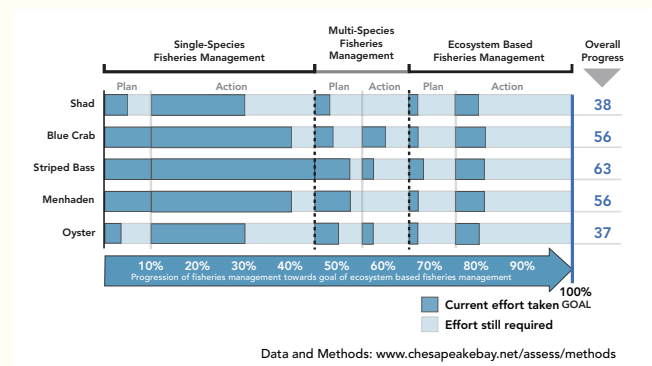
## MANAGING FISHERIES

While some significant effort was undertaken to improve the management of Chesapeake Bay fisheries this year, very few of these efforts resulted in changes to fisheries management plans or the implementation of these plans. As a result, the index values for all the fisheries assessed, with the exception of Atlantic menhaden, remained unchanged. A small increase in Atlantic menhaden was recorded due to the adoption of a commercial harvest cap in Virginia waters. Progress toward fisheries management goals ranges from 37-63 percent for the five key Bay fisheries. Note: The index does not gauge the health of the fisheries which is covered in *Part One: Ecosystem Health*.

## ECOSYSTEM-BASED FISHERIES PLANS

Chesapeake Bay ecosystem-based fishery management plans are being developed for five key species — oysters, blue crabs, American shad, striped bass and Atlantic menhaden. The index shows plans and actions that are single species specific, others that are directed toward multiple species, and still others that are ecosystem-based. Many of these plans are being implemented concurrently. The ultimate goal is to have fully implemented ecosystem-based fisheries management. Note: This year there was a slight change in the methods used to score progress of

## FISHERIES MANAGEMENT EFFORT INDEX





Striped Bass



American Shad

plan development. Due to this change, scores allocated for each fishery were slightly less than those allocated last year. The low scores reflect a change in methods (to give a more accurate assessment) and do not indicate that less management effort has taken place.

## OYSTERS

Although oysters are important in their own right, oyster reefs provide habitat to many species as well as being a food source for others and as such should be managed in conjunction with these interdependent species. Oysters are effective water filters. Management plans should capture this important ecosystem function, too. Oysters are currently managed as a single species using minimum size limits, gear restrictions, seasonal and geographic closings and bushel limits. Fisheries targets and thresholds are not established in the current plan. Restoration efforts include expanding the amount of clean, hard surfaces for oyster spat (juvenile oysters) to settle, increasing the number of breeding adult oysters, establishing sanctuaries and combating oyster diseases.

## BLUE CRABS

Blue crabs are currently managed as a single species using minimum catch size and seasonal limits on harvests to achieve target levels of fishing pressure. Annual reviews of blue crab stock are conducted to determine if target levels have been exceeded. Under this strategy, fishing pressure is set to levels that should allow for increased abundance. Blue crabs play an important role as both predator and prey in the Bay ecosystem. Interactions between blue crabs and striped bass, their predators, have been examined. In addition, some management recommendations have been implemented such as special openings in traps to allow the escape of non-targeted species.

## AMERICAN SHAD

By the mid-1970's, American shad stocks had been greatly diminished by overfishing, water pollution and spawning migration obstructions (e.g. dams). In 1980, Maryland implemented an American shad fishing moratorium and in 1994 Virginia followed, thus effectively banning direct harvest throughout the Bay. Current restoration efforts focus on

reopening native spawning habitat through dam removal or the installation of fishways, supplemented with hatchery stocking programs and efforts to improve water quality. Before the fishery is reopened, a new fisheries management plan, including catch limits (thresholds) and safe restoration levels (targets) will need to be developed.

## STRIPED BASS

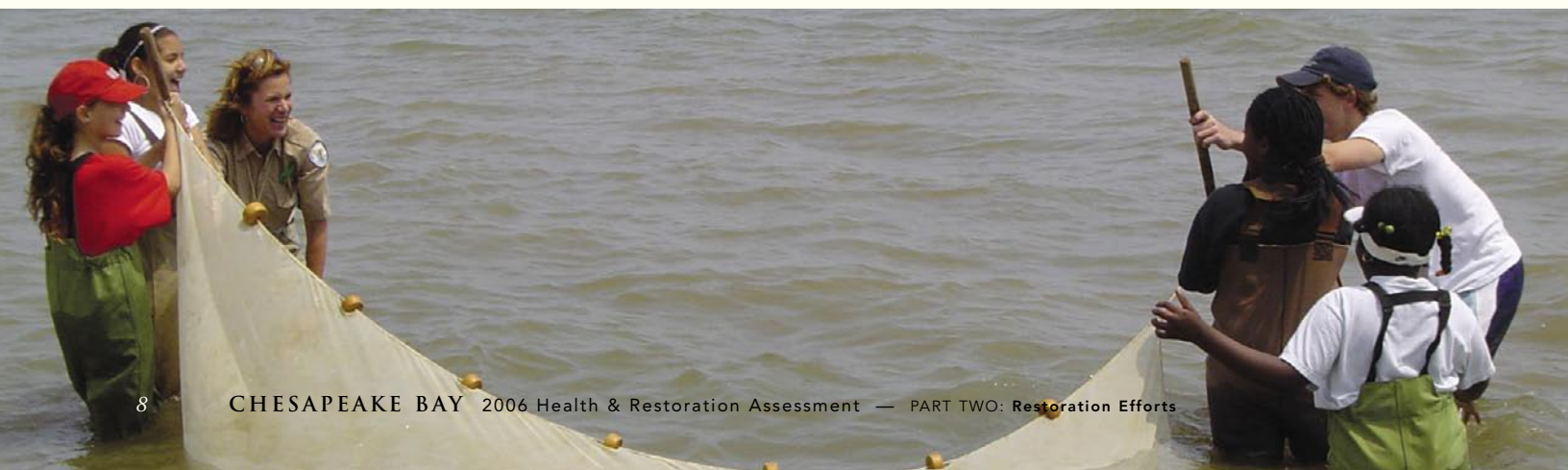
Maryland and Delaware instituted a moratorium on all striped bass fishing in 1985 in response to actions by the Congress and the Atlantic States Marine Fisheries Commission following the collapse of the fishery during the early 1980s. Virginia and the Potomac River Fisheries Commission did so in 1989. Since the moratorium was lifted in 1990, the stock has been rebuilt and maintained through an adaptive management approach, based upon constant monitoring and the use of catch quotas and seasonal closings. Striped bass are recognized as one of the top predators in the Chesapeake Bay and impact forage species such as Atlantic menhaden. The recently proposed annual cap on the commercial harvest of Atlantic menhaden was adopted in part due to the dietary importance of menhaden to the striped bass population.

## ATLANTIC MENHADEN

Atlantic menhaden are managed as a coastal population under a single species approach.

Menhaden are a significant part of the aquatic food chain and as such, multi-species management is critical. Currently, predator-prey and by-catch interactions are relatively well defined. Menhaden feed primarily on plankton and are prey for top predators such as striped bass and bluefish. There is concern over the steady decline in the number of young menhaden produced in Chesapeake Bay. This decline, and other concerns with the fishery, prompted Virginia's adoption of a five-year cap on the commercial harvest of menhaden starting in 2006. Critical research will be performed while the harvest cap is in effect.

Atlantic Menhaden







## PROTECTING WATERSHEDS

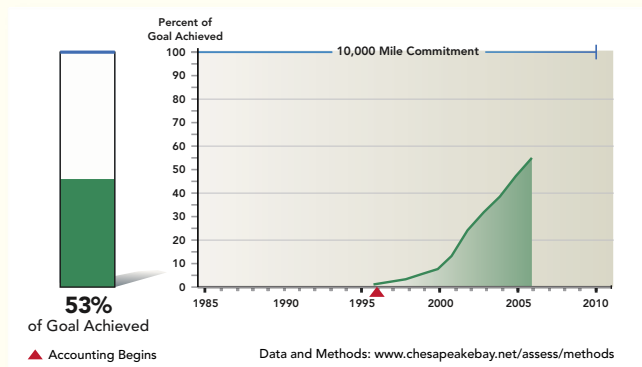
The human population in the Chesapeake watershed is now growing by more than 170,000 residents annually. Managing growth is especially critical in this watershed because of the vast amount of land that drains into the relatively shallow Chesapeake. Restoration efforts center on reforesting streamside buffers, developing watershed management plans and preserving open space. Partners appear to be on track with many of their watershed protection efforts and are two-thirds of the way toward meeting current Program goals, but these efforts appear to be inadequate in stemming the decline in water quality associated with population growth.

### CONSERVING FOREST BUFFERS

Streamside forest buffers provide habitat for wildlife, stabilize banks from erosion and keep river waters cool, an important factor for many fish. Program partners achieved their original 2010 buffer restoration goal of 2,010 miles well ahead of schedule and in 2003 raised that target to 10,000 miles. Partners are roughly on track to meet this goal with 5,337 miles restored through August 2006.

Also in 2006, Bay Program partners produced a report entitled *"The State of Chesapeake Forests,"* which was the impetus for an Executive Council Directive Protecting the Forests of the Chesapeake Watershed. The Directive seeks to protect riparian forest buffers and other forests important to water quality.

### RIPARIAN FOREST BUFFERS PLANTED



In addition to preserving the watershed, well-maintained forest buffers also naturally absorb nutrients and sediments, thus improving water quality in neighboring streams. To improve water quality, the Bay states call for the restoration of some 50,000 miles in their tributary cleanup plans. Progress toward this water quality goal is measured in part in the Reducing Pollution summary chart on page 3.

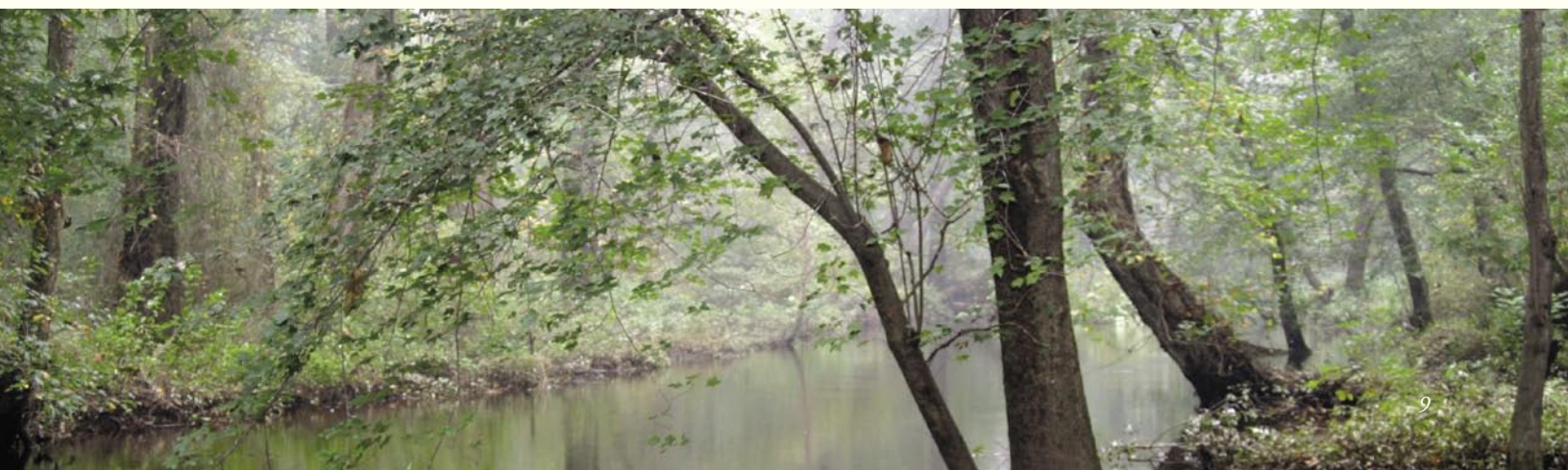
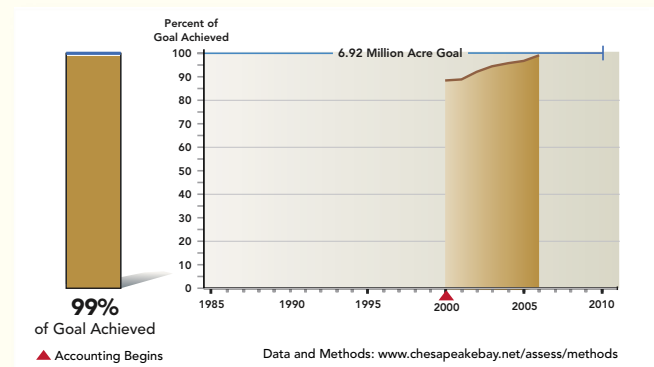
### PRESERVING LANDS

Maryland, Pennsylvania, Virginia and District of Columbia committed to permanently protect from development 20 percent of their combined 34.6 million acres by 2010. Parks, wildlife refuges and private lands protected through conservation easements are counted in this measure. By July 2006 a total of 6.83 million acres had been permanently preserved. The partners are very likely to meet the 2010 goal of 6.92 million acres preserved.

### DEVELOPING WATERSHED MANAGEMENT PLANS

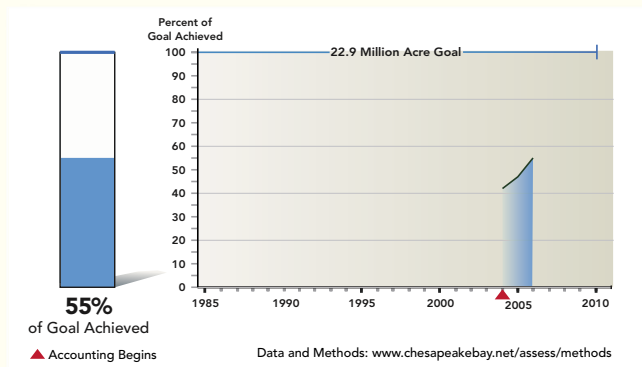
Watershed management plans address the protection, conservation and restoration of stream corridors, riparian forest buffers, wetlands, parklands and other open space for the purposes of preserving watershed health while enhancing the quality of life in local communities. The Bay Program has a goal of developing and implementing locally supported watershed management plans in two-thirds of the Bay watershed. By the end of 2006

### WATERSHED LAND PRESERVATION





## WATERSHED MANAGEMENT PLANS DEVELOPED



plans were in place for 12.6 million acres, more than half of the 22.9 million acres that should be covered under such plans by 2010. Translating these plans into action will be essential to restoring water quality (see *Part One: Ecosystem Health*).

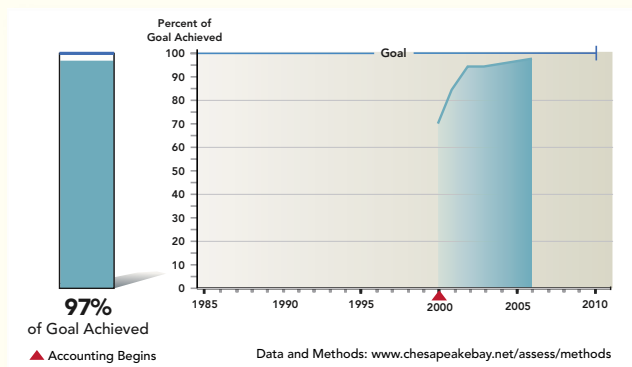
## FOSTERING CHESAPEAKE STEWARDSHIP

Accomplishing a comprehensive restoration plan for an ecosystem as complex as the Chesapeake Bay requires the full engagement of restoration leaders, citizens and all stakeholder groups throughout the watershed. All of the Bay's stakeholders require a base of information and motivation to take action. By providing an array of opportunities we optimize our chance to connect with people in the context of their interests, values and current level of understanding or motivation.

### PUBLIC ACCESS

Personal interaction with the Chesapeake Bay can help the public recognize the connection between the value of the Chesapeake and their own interests. The Chesapeake Bay must matter to people in order to gain their support for restoration efforts. Since 2000, the Bay jurisdictions have acquired, developed or enhanced more than 100 public access points and in 2006 Virginia, Maryland and Pennsylvania added or enhanced 42 sites. A public access guide (call 1-800-YOUR-BAY to order)

## PUBLIC ACCESS



catalogs over 600 major public access sites in the Bay area, listing opportunities for boating, fishing, wildlife observation and beach use.

The Chesapeake Bay Gateways Network enhances place-based interpretation of Bay-related resources and stimulates volunteer involvement in resource restoration and conservation. Six new Gateway sites were added to the network in 2006, bringing the total to more than 150.

A mix of water trails managed by state, local and non-profit organizations has blossomed since 2000. The trails exist throughout the Bay and its tributaries and offer a variety of low-impact paddling experiences, connecting people to the natural, cultural and historic resources of the Bay. Last year 53 new water trail miles were developed, bringing the total to more than 1,800 miles.

Overall, the partners have achieved 97 percent of established goals to enhance public access, create Gateways and establish water trails.

### COMMUNICATIONS AND OUTREACH

The partners believe that comprehensive and authoritative public information is essential to engage all stakeholders in the restoration effort. The Program has established a number of methods to meet this stewardship need. The *Bay Journal* newspaper reaches more than 50,000 print subscribers monthly, informing people about issues and events that affect the Chesapeake Bay. The monthly e-newsletter *Chesapeake Currents* is distributed to more than 850 subscribers, while the daily







electronic “Bay News” service goes out to more than 1,100 users. The Program’s combined websites were accessed by more than 4.6 million different users in 2006. Publications, press releases, presentations, events, and other communication and outreach efforts are also essential elements of the on-going effort to inform the public about the Bay and its watershed.

## EDUCATION AND INTERPRETATION

Formal environmental education opportunities allow for in-depth investigation and analysis that enhance a deeper understanding of ecological concepts, environmental interrelationships and human implications. All signatory jurisdictions’ school districts have incorporated curriculum that provides a meaningful outdoor watershed educational experience. Through 2006, the NOAA B-WET grants program has funded training opportunities for more than 8,000 teachers. Nearly 3 million Bay watershed students have participated in a field experience during their K-12 education.

Overall, the partners have achieved 81 percent of the current goal of providing a meaningful outdoor watershed educational experience to every student, starting with the class of 2005.

## CITIZEN AND COMMUNITY ACTION

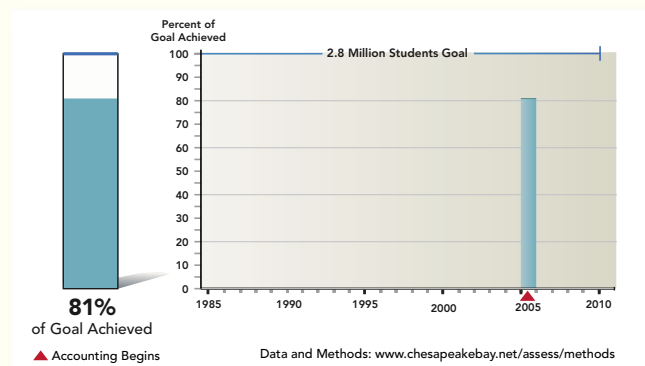
Often, our ability to influence the public rests with the success we have connecting personal and local issues to the well-being of the Bay. By successfully making these connections, we can encourage people to take part in restoration programs as individuals or with their families; at home, at work and in their communities. An essential part of our work is to convert detailed technical information and teach skills to stakeholders groups who can implement best management practices in arenas such as watershed planning or habitat restoration.

Businesses for the Bay is a voluntary effort by businesses committed to implementing pollution prevention in daily operations and reducing releases of chemical contaminants and other wastes to the Chesapeake Bay.

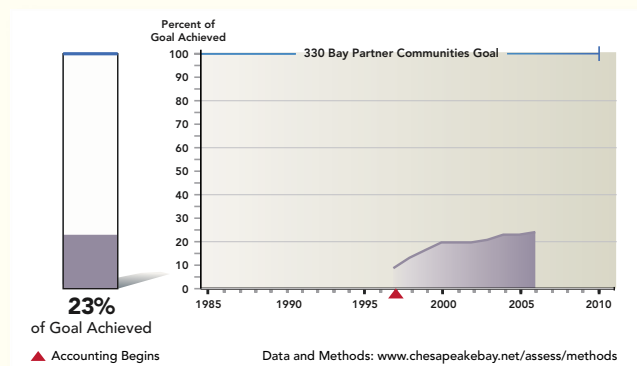
Towns and cities are implementing Bay-friendly measures aimed at making their local communities as well as the Bay a better place to live, work and recreate. In 2006, two new local governments were awarded Bay Partner Community status, and 8 previous winners were recertified, bringing the current total to 75.

Overall, the partners have achieved 23 percent of the existing goal to certify 330 Bay Partner Communities by 2005.

### EDUCATIONAL FIELD EXPERIENCES PROVIDED



### BAY PARTNER COMMUNITIES





## 2006 RESTORATION HIGHLIGHTS

Through a series of Chesapeake Bay agreements, Bay Program signatories – the states of Maryland, the commonwealths of Pennsylvania and Virginia; the District of Columbia; the U.S. Environmental Protection Agency representing the federal government; and the Chesapeake Bay Commission representing Bay state legislators - have committed to reduce pollution, restore habitats and sustainably manage fisheries. Since 2000, the headwater states of Delaware, New York and West Virginia have joined regional efforts to improve water quality.

### LOOKING BACK AT 2006

While there are many notable individual accomplishments relating to Chesapeake Bay restoration, *Part One: Ecosystem Health* makes clear that the Bay Program partners need to accelerate the pace of water quality improvement efforts. To that end, a number of specific initiatives in 2006 are worth highlighting:

Focusing on nutrient and sediment reduction, the **Chesapeake Bay Commission** garnered regional and Congressional support for Farm Bill conservation reforms benefiting both farmers and the Bay, and helped develop policy to preserve farmland, forests and open space. The Commission participated in creating our states' nutrient trading programs and other initiatives reducing nutrient pollution through forest and air policy and lowering nutrient content in lawn fertilizer. Congressional awareness was raised on Blue Plains Wastewater Treatment Plant's key role in Bay restoration.

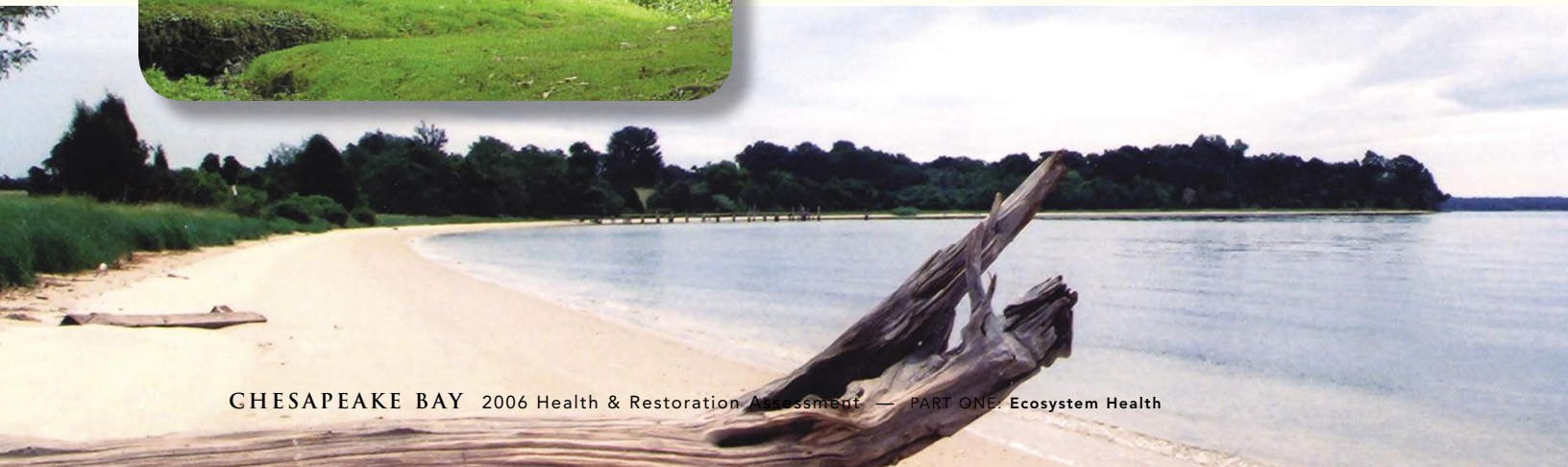


A restoration project located in the **Delaware** portion of the Choptank River Watershed was completed in a cooperative effort by the property owner, Delaware Department of Natural Resources and Environmental Control, and the Kent Conservation District. This project restored 1,700 feet of stream, installing water control structures to emulate beaver impoundments, and creating 2 acres of floodplain wetlands adjacent to the original channel. This is an innovative project that has created habitat and restored wetland function while reducing nutrient loads.

In 2006 the **District of Columbia** created 6 acres of tidal wetlands along the Anacostia River. The city is monitoring this site and a prior wetland project, where over 50 plant species have been identified since 2003. D.C. passed green building legislation in 2006 requiring that new or renovated buildings over 50,000 square feet and District government buildings over 10,000 square feet meet LEED silver accreditation. The District funded construction of several LID retrofits – showcasing alternative stormwater treatment techniques.

The **EPA**, working with funding partners the National Fish and Wildlife Foundation and the Maryland Chesapeake Bay Trust, provided \$7.7 million for 10 “targeted watershed” grants. The 10 projects funded in 2006 will reduce more than nine million pounds of nitrogen and nearly seven million pounds of phosphorous annually to the Bay. The projects reduce pollution from a range of sources and explore market-based incentives to encourage more widespread implementation of pollution-fighting programs.

In 2006, **Maryland** dedicated a record \$360 million in funding for land preservation, and celebrated achievement of its Chesapeake Bay Agreement goal of preserving 20 percent of the state's natural landscape. Ten wastewater treatment plant upgrades were initiated and one completed with Chesapeake Bay Restoration Fund dollars. In 2006, the first year that the Chesapeake Bay Restoration Funds were available for cover crops, 128,638 acres were planted. Maryland's Corsica River Watershed Action Strategy was named best watershed-based plan in the nation in an EPA report.







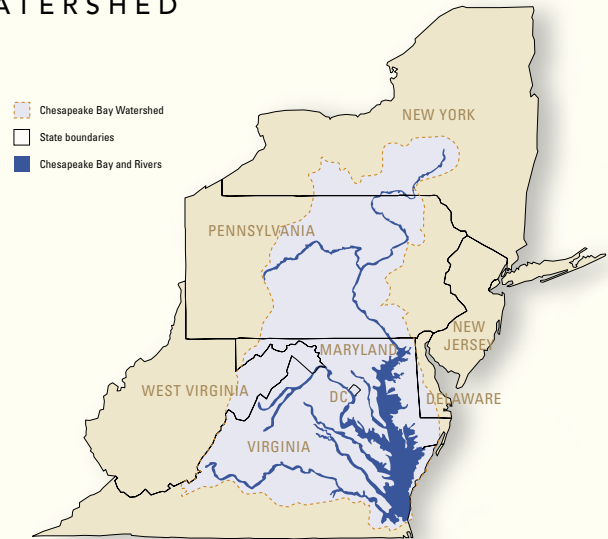
**Pennsylvania** supported nutrient reduction through its \$625 million Growing Greener II watershed restoration bond and \$250 million Sewer Infrastructure bond. A stakeholder outreach process was completed to refine Pennsylvania's Point Source Strategy and Nutrient Trading Policy. Nutrient limits are being included in permits for wastewater treatment facilities to reach compliance by 2010. Agriculture initiatives included Conservation District grants to build understanding of regulatory requirements. To address nutrient loads from developed lands, Pennsylvania issued a new Stormwater Best Management Practices Manual.

June record floods caused loss of life and substantial property and natural resource damage throughout much of the Susquehanna watershed in **New York**. Implementation priorities consider the need to effect recovery and flood damage prevention. The NYS Soil and Water Conservation Committee awarded 11 projects to Upper Susquehanna Coalition counties in 2006, totaling \$3.5 million, emphasizing grass based agriculture and involving more than 100 farms. Wetlands are a priority with over 370 acres restored under various state and federal programs.

**Virginia** permanently protected 49,837 acres of land and created new state parks on the Potomac, York, Shenandoah and James Rivers. Agricultural Cost-Share Programs were expanded with an emphasis on five "priority practices" and a comprehensive rewrite of stormwater management regulations is underway. Virginia also adopted a Chesapeake Bay Watershed General Permit regulating the discharge of nutrients from 125 significant wastewater treatment facilities. Compliance plans, describing how each discharger will meet their nutrient load caps, are due August 1, 2007.

**West Virginia** gained momentum in Tributary Strategy implementation by focusing work in priority watersheds. Successful projects such as a rain barrel workshop and a rain garden demonstration resulted from partnerships between volunteers, local governments and state agencies. These partners are now exploring ways to further promote such innovative stormwater practices in the quickly-developing eastern panhandle. West Virginia's implementation team also worked with NRCS to encourage poultry litter transport and nutrient management plans and to promote the Conservation Reserve Enhancement Program.

## THE CHESAPEAKE BAY WATERSHED



This report was developed by the Chesapeake Bay Program partnership to help inform watershed residents about the health of the Bay and efforts to restore it. Staff from a large number of state and federal agencies, academic institutions and non-governmental organizations contributed data and interpretation to the report, including The Alliance for the Chesapeake Bay, Chesapeake Bay Commission, Del. Dept. of Natural Resources and Environmental Control, D.C. Dept. of Health, Interstate Commission on the Potomac River Basin, Md. Dept. of Agriculture, Md. Dept. of the Environment, Md. Dept. of Natural Resources, National Park Service, National Oceanic and Atmospheric Administration, N.Y. Dept. of Environmental Conservation, Old Dominion University, Pa. Dept. of Conservation and Natural Resources, Pa. Dept. of Environmental Protection, Pa. Fish and Boat Commission, Susquehanna River Basin Commission, University of Md. Center for Environmental Science, University of Md. College Park, U.S. Army Corps of Engineers, USDA Natural Resource Conservation Service, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Forest Service, U.S. Geological Survey, Va. Dept. of Environmental Quality, Va. Dept. of Conservation and Recreation, Va. Dept. of Game and Inland Fisheries, Va. Institute of Marine Science, Va. Tech, Versar, W.Va. Dept. of Agriculture and the W.Va. Dept. of Environmental Protection.

For a full list of contributing partners, visit  
[www.chesapeakebay.net/baypartners.htm](http://www.chesapeakebay.net/baypartners.htm)

*Images:* Chesapeake Bay Program; Chesapeake Bay Gateways Network; Maryland Department of Natural Resources; Donna Morelli; George Grall@National Aquarium in Baltimore; National Oceanic and Atmospheric Administration (NOAA); Glenda Powell@NOAA; United States Fish and Wildlife Service (USFWS); United States Department of Agriculture (USDA); Virginia Institute of Marine Science (VIMS)







Chesapeake Bay Program  
A Watershed Partnership

Chesapeake Bay Program  
410 Severn Avenue, Suite 109  
Annapolis, Maryland 21403  
800-YOUR-BAY  
[www.chesapeakebay.net](http://www.chesapeakebay.net)



Printed on Recycled Paper

Printed by the  
U.S. Environmental Protection Agency  
for the Chesapeake Bay Program

