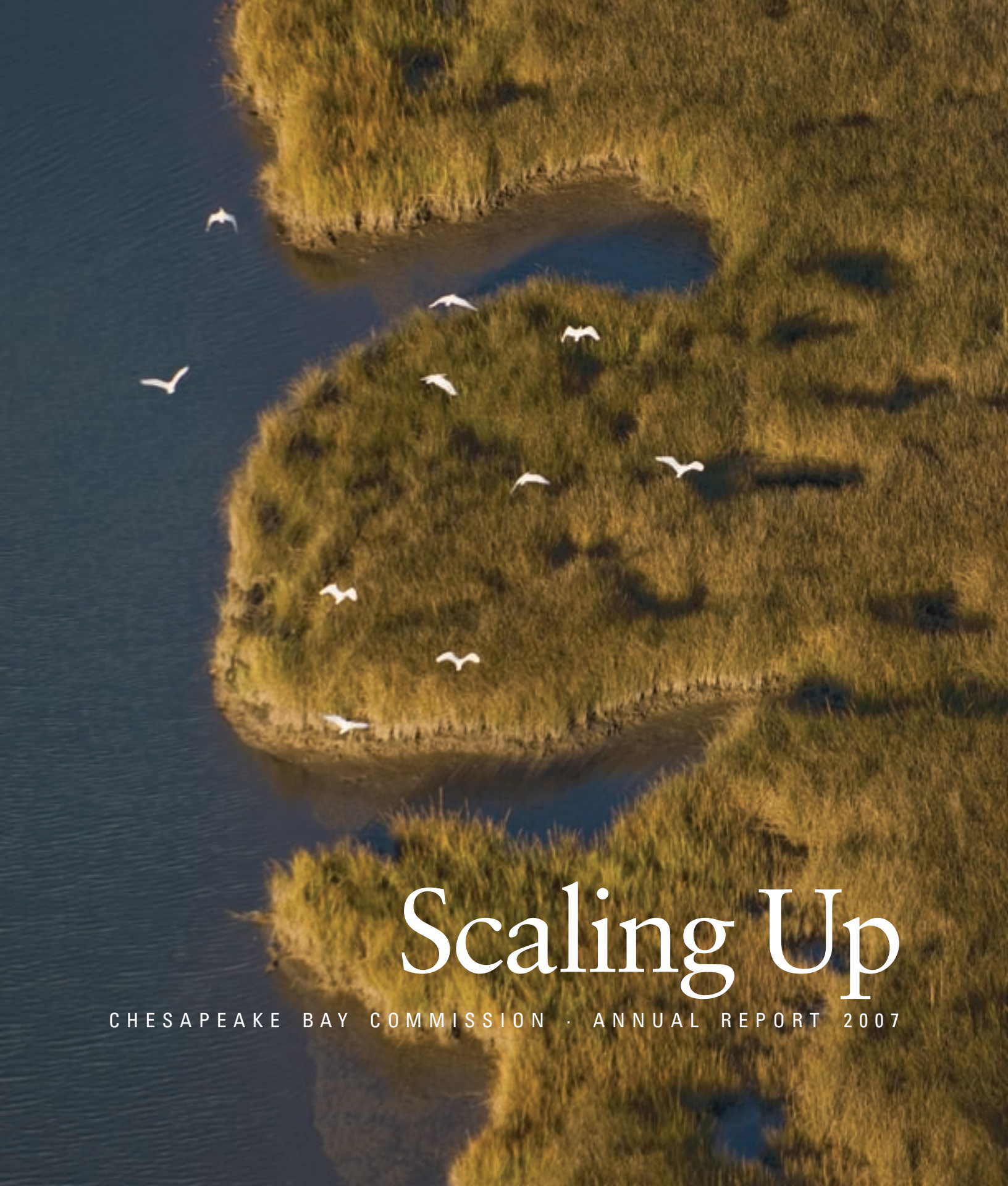


Scaling Up

CHESAPEAKE BAY COMMISSION · ANNUAL REPORT 2007

Chesapeake Bay Commission

Policy for the Bay

Scaling Up

CHESAPEAKE BAY COMMISSION · ANNUAL REPORT 2007

The Chesapeake Bay Commission is one of six signatories to the Chesapeake Bay agreements and a member of the Chesapeake Executive Council. The Commission represents the General Assemblies of Maryland, Virginia and Pennsylvania, and promotes Baywide laws, policies and programs at the state and Federal level.

Twenty-one members define the Commission's identity, strategic focus and issues. Fifteen are legislators — five from each state — who represent both political parties and the full range of urban, suburban and rural life found within the watershed. Each of the three governors is a Commission member, represented by the cabinet member who is directly responsible for managing their state's natural resources. Three citizen representatives round out the Commission's membership, one from each state.

As a leader in the Bay Program, the Commission addresses a broad range of issues and policies that reflect countless pollution sources, land uses and human impacts in a region spanning six states, a 64,000 square-mile watershed, and 180,000 miles of tributaries

WALLOPS ISLAND AQUACULTURE - PHOTO © DAVID HARP

and coastline. Commission members craft and work to secure passage of policies that must balance many ecological, societal and economic concerns.

The Chesapeake Bay Commission is also a leader in the enormous effort to secure funding for full Bay restoration. None of the members of the Bay Program has the financial resources or critical capacity to address the entire range of issues affecting the Bay. In the short run, our success will continue to depend on focusing strategic attention on policies that will deliver the greatest restoration results for the least cost. In the long run, however, Bay Program leaders recognize that our success depends on *scaling up* to a new level of funding and commitment to meet the full set of challenges facing the Bay.

Thus, the theme of this Annual Report — *Scaling Up* — addresses the central, largest issues that are preeminent in the protection and restoration of the Bay as a whole. These include current efforts to control nutrients and pollutants, such as promoting agricultural conservation practices and upgrading sewage treatment plants. These also include emerging, major issues that will have a huge impact on the Bay such as biofuels and climate change.

The pages that follow report on the progress made on these significant Bay issues in 2007, and the steps taken to secure more progress in 2008 and the years ahead. ■

Members and Staff of the Commission

The Hon. James W. Hubbard, Chairman * ..... Maryland House of Delegates
The Hon. John A. Cosgrove, Vice-Chairman * ..... Virginia House of Delegates
The Hon. Arthur D. Hershey, Vice-Chairman * ..... Pennsylvania House of Representatives

The Hon. Michael W. Brubaker ..... Senate of Pennsylvania
The Hon. Preston Bryant ..... Secretary of Natural Resources, Virginia
The Hon. Russell H. Fairchild ..... Pennsylvania House of Representatives
The Hon. Bernie Fowler ..... Maryland Citizen Representative
The Hon. Brian E. Frosh ..... Maryland State Senate
The Hon. John R. Griffin ..... Secretary of Natural Resources, Maryland
The Hon. Emmett W. Hanger, Jr. ..... Senate of Virginia
The Hon. Irvine B. Hill ..... Virginia Citizen Representative
The Hon. Lynwood W. Lewis, Jr. ..... Virginia House of Delegates
The Hon. L. Scott Lingamfelter ..... Virginia House of Delegates
The Hon. Kathleen A. McGinty ..... Secretary of Environmental Protection, Pennsylvania
The Hon. Thomas McLain (Mac) Middleton ..... Maryland State Senate (beginning Aug. 2007)
The Hon. Nick Rerras* ..... Senate of Virginia
The Hon. Edward G. Staback ..... Pennsylvania House of Representatives (though Oct. 2007)
The Hon. P. Michael Sturla ..... Pennsylvania House of Representatives (beginning Nov. 2007)
The Hon. J. Lowell Stoltzfus* ..... Maryland State Senate (through Aug. 2007)
The Hon. Michael L. Waugh* ..... Senate of Pennsylvania
The Hon. Michael H. Weir, Jr. ..... Maryland House of Delegates
The Hon. George B. Wolff ..... Pennsylvania Citizen Representative
The Hon. John F. Wood, Jr. ..... Maryland House of Delegates

Rear Admiral Frederic R. Ruehe ..... Naval Liaison

* Executive Committee Member (two from each state)

Staff

Ann Pesiri Swanson ..... Executive Director
Patricia G. Stuntz ..... Assistant Director/Maryland Director (through Sept. 2007)
Suzan Bulbulkaya ..... Virginia Director
Marel A. Raub ..... Pennsylvania Director
Matthew P. Mullin ..... Maryland Director (beginning Nov. 2007)
Paula W. Hose ..... Administrative Officer

Chapter 1 **The Commission's Work in 2007**

Scaling Up is about recognizing the need to respond faster and more efficiently to the challenges facing the Chesapeake Bay. It is about meeting these challenges head on — focusing our policy work on targeting, on innovation, and on those conservation practices that can either prevent further degradation or trigger pollution reduction.

In 2007, the Chesapeake Executive Council (EC), including Chesapeake Bay Commission Chairman Jim Hubbard, determined that the water quality goals set in the *Chesapeake 2000* agreement would not be met by the 2010 deadline. While the modeling efforts predict that actions already taken should achieve 44 percent of the nitrogen and 60 percent of the phosphorous goals, water quality monitoring indicates little significant change in the actual amount of nitrogen entering the Bay. Phosphorus levels have indeed decreased.

The EC members acknowledged that the rigorous and challenging nutrient and sediment reduction goals set forth in the agreement are still appropriate. Rather than weakening or abandoning the water quality goals, the EC members vowed to scale up their efforts,

CREEKSIDE MOORING - PHOTO © DAVID HARP

zeroing in on new policies and funding sources to accelerate progress.

Thus, the Commission centered its attention in 2007 on those actions that could most effectively deliver nutrient and sediment pollution reduction results — namely agricultural conservation practices and advanced sewage treatment. At the same time, it also focused new attention on two huge, emerging issues that will complicate — if not eclipse — the restoration progress being made if not handled correctly: biofuels and climate change.

These seminal issues all represent an important shift in the Bay Program toward larger-scale, increasingly complex issues that require much greater and longer-term commitments than ever before. The theme of this year's annual report — *Scaling Up* — represents this emerging trend in the Bay restoration effort, and the challenge that the Commission and its fellow EC members have taken on.

This chapter summarizes the Commission's work in 2007 concerning this set of issues, as well as other state initiatives that benefit Bay restoration.

ADMINISTRATION

Each calendar year, the chairmanship of the Commission rotates among the states. Outgoing Chairman Senator Emmett Hanger of Virginia turned the gavel over to Maryland Delegate Jim Hubbard at the January meeting in Annapolis. In 2008, the chairmanship will rotate to Pennsylvania.

The Commission met four times in 2007, with individual state delegations meeting more frequently throughout the year. The Commission's six-member Executive Committee held a special day-long retreat in order to provide focused policy guidance and administrative oversight to the group. Leadership of the Commission is noted in the Roster of Members and Staff on Page 5.

The Commission maintains its headquarters in Annapolis, Maryland, with additional staff located in Harrisburg, Pennsylvania and Richmond, Virginia. Financial support is provided via the general funds of each member state and through grant support for special projects. Individual states periodically appropriate additional funds to support state-specific efforts.

All agendas, reports and materials related to the Commission's work are available at *www.chesbay.state.va.us*.

STATE LEGISLATIVE ACTIVITIES

The Commission serves as the legislative leader of the Chesapeake Bay Program partnership, working to ensure that policies adopted by the Program have the complement of Federal and state laws, regulations, budgets and policies to support them. Highlights of the legislative activities in each state during 2007 are provided below:

Maryland

Creating a new fund to put Maryland's Tributary Strategies into action was the focus of much discussion throughout 2007. During the regular session, the *Chesapeake Bay Green Fund* was introduced as a dedicated funding source for Bay restoration efforts, particularly those practices that abate non-point source pollution. While the bill did not pass during the regular Session, it did create sufficient momentum for the General Assembly to take up the initiative again

in November, during a history-making Special Session designed to exclusively address budget issues.

Renamed as the *Chesapeake Bay 2010 Trust Fund,* the dedicated fund was approved in the final hours of the Special Session. A portion of the existing gasoline and car rental taxes will be dedicated to paying for pollution reduction efforts contained in the state's Tributary Strategies. About $50 million a year is expected to be generated for rural agricultural conservation practices, urban stormwater management, and suburban smart growth practices. Funding to reduce these nonpoint pollution sources will help Maryland tackle the largest inputs of nitrogen, phosphorus and sediment and move closer to achieving its 2010 Bay restoration goals.

The General Assembly is expected to take up an expenditure plan for the 2010 Trust Fund during its regular 2008 Session. The Maryland Delegation will play a lead role in these discussions.

Sponsored by Commission Chair Delegate Jim Hubbard along with Senator Brian Frosh, the Clean Cars Act passed during the 2007 Regular Session. It strengthens the standards for car emissions that cause smog and other pollution harmful to human health and the environment, including nitrogen oxides, which contribute nutrient loads to the Bay. The Act adds carbon dioxide, the main cause of global warming, to the list of pollutants that are covered by vehicle emission standards. It also requires that a percentage of new cars sold each year are advanced technology vehicles, such as hybrids.

By joining the 11 other states that have adopted these stricter automobile standards, Maryland expects to reduce nitrogen air pollution from cars by 1,500 tons per year by 2027. However, in December, the U.S. Environmental Protection Agency did not approve the California Federal preemption waiver request for stricter auto emission standards, triggering a logjam for implementation in the remaining 11 states. Maryland, Pennsylvania and New York, the three Bay states that have adopted Clean Cars legislation, have united with the remaining eight states in seeking EPA approval through the courts.

Also adopted, the Stormwater Management Act of 2007 raises the standards for new development in Maryland by requiring developers to address runoff during construction, as well as after development. The goal of the program is to maintain the existing hydrology of a site to prevent, minimize, and mitigate runoff during rainfall, not just to plan for managing large storm events. The Act will decrease the amount of runoff to the Bay by mandating environmental site design techniques, such as low impact design to reduce the amount of impervious cover, maintain natural vegetation, and reduce pollution. Incorporating green systems that mimic the natural world into the initial designs for stormwater management is much more cost effective than relying solely on structural methods.

In an effort to assist wastewater treatment plants in cutting the costs of phosphorous removal, legislation was passed prohibiting the sale of home dishwashing machine detergent containing over 0.5 percent phosphorus in Maryland. Prior to this, the ban only applied to laundry and liquid dishwashing detergents, like those used at the kitchen sink. The ban, which will go into effect on January 1, 2010, will apply to all detergents used in home dishwashers. It is expected to reduce overall phosphorous loads in Maryland by

3 percent. Similar initiatives are expected to pass in Pennsylvania, Virginia and the District of Columbia in 2008.

Pennsylvania

Agriculture and energy were the primary legislative themes for the Pennsylvania Delegation during the first half of its two-year, 2007/2008 Session. Summer marked a major victory for agricultural funding with the passage of the Resource Enhancement and Protection Program (REAP). Sponsored by Senator Mike Waugh and co-sponsored by fellow Commission members Representatives Art Hershey, Russ Fairchild and Mike Sturla, REAP provides $10 million in tax credits annually to farmers for implementation of certain best management practices. Support ranges from 25 to 75 percent of costs, depending on the practice. Additionally, the tax credits are transferable, encouraging investment from non-farm businesses and providing a source of up-front funding. Administered by the State Conservation Commission, REAP applications will be accepted beginning January 2008.

Recognizing the important role that conservation districts play in the implementation of best management practices, the General Assembly held hearings on SB 1020, co-sponsored by Senator Waugh and fellow Commission member Senator Mike Brubaker. The legislation would amend the Conservation District Law to enhance the effectiveness of Districts and the State Conservation Commission.

Also at the forefront of legislative action this year were Executive and Legislative proposals to promote energy conservation and energy independence in the Commonwealth. Governor Rendell called for a Special Session on Energy which began in September; suites of bills from the House Democrats and Senate Republicans helped frame the debate.

Included in these proposals were mandates and incentives for the use and production of alternative fuels, including ethanol and biodiesel. In light of the release of the Commission's report *Biofuels and the Bay: Getting it Right to Benefit Farms, Forests and the Chesapeake,* several amendments were offered to promote the development and eventual use of cellulosic biofuel technologies. Senator Waugh sponsored Special Session SB 25, which would expand the existing definition of biomass to include lignins (the cementing substance, along with cellulose, that makes up the plants cell walls) from wood processing, and reclassify these substances from Tier II to Tier I under the Alternative Energy Portfolio Standards. Additionally, Senator Waugh introduced Special Session SB 41, which would provide incentives for farmers to grow switchgrass and other cellulosic feedstocks. Incentives for their production are needed to overcome the multi-year time period these plants need to establish a harvestable crop. Senator Brubaker was named to the Senate Special Session Committee to consider these and other Special Session bills.

Regarding point sources, Commission staff continued to participate in the Joint Legislative Conservation Committee's Sewage Task Force. Created in 2005, the Task Force has been identifying wastewater infrastructure needs statewide and is beginning to develop legislative proposals to address funding for those needs. Similarly, Commission staff served on workgroups related to the implementation of the Commonwealth's

Chesapeake Bay Tributary Strategy and nutrient trading program.

Legislatively, the Pennsylvania Delegation took action to reduce the phosphorus flowing into sewage treatment plants by introducing bills in both the House and Senate. Similar to Maryland's phosphorous detergent ban, Senate Bill 1017, sponsored by Senator Brubaker and co-sponsored by Senator Waugh, and House Bill 1875, sponsored by Representative Hershey and co-sponsored by Representative Fairchild, would prohibit the sale of household dishwasher detergent containing phosphorus. Passage of this legislation is expected during the remainder of this two-year Session, sometime in 2008.

The General Assembly also considered bills related to land use and municipal planning, including proposals for acquisition of property for flood control purposes, implementation of temporary development moratoriums by municipalities, and amendments to the Municipalities Planning Code that would facilitate Traditional Neighborhood Development. Similarly, bills were introduced to promote environmentally-sensitive design and construction of publicly-funded buildings.

Recognizing the importance of mapping and geospatial information in land use planning, Representative Fairchild introduced legislation to create the Pennsylvania Geospatial Coordinating Council. It will facilitate the sharing of technical information among government agencies.

Virginia

Finding additional funds was a priority of the Virginia General Assembly in 2007. Funding mechanisms as diverse as bonding, revolving fund loans and tax incentives were examined by legislators in order to determine how best to *scale up* funding.

Most notably, $250 million in bonds was authorized through the Water Quality Improvement Fund for upgrading wastewater treatment plants. This will ensure that local governments in Virginia will receive state funding for the installation of enhanced nutrient removal technologies at publicly owned sewage treatment plants. By January 1, 2011, it is expected that Virginia will achieve its nutrient goal for point sources, which will mean a reduction in delivered loads to the Bay of three million pounds of nitrogen and 125,000 pounds of phosphorus from 2005 levels.

In Virginia's ongoing efforts to achieve its land conservation goal under *Chesapeake 2000,* a new proposal was enacted to assist localities. The bill, patroned by Senator Emmett Hanger and Delegate Lynwood Lewis, expands the Virginia Resources Authority (VRA) to provide cost-effective financial solutions for localities that have land conservation programs. The VRA offers revolving fund loans at below-market interest rates, thereby reducing borrowing costs and decreasing the financial burden to local taxpayers.

Finally, a four-day sales tax holiday was created for the purchase of Energy Star efficient appliances. Virginia Delegation Chairman Delegate John Cosgrove introduced legislation to raise awareness of energy consumption and encourage its efficient use. Reductions in energy use will lessen air pollution and greenhouse gas emissions.

Discussions continued throughout the year over Virginia's management of the menhaden fishery. During the 2007 Session, at long last, consensus was reached to establish an annual menhaden harvest limit of 109,020 metric tons

for the Virginia portion of the Bay. If an annual harvest falls below the cap, credit will be applied to the next year's harvest. Conversely, if a year's harvest exceeds the limit, a deduction will be applied to the following year's cap. The fishery will continue to be monitored and studied as the provisions of the bill expire at the end of 2010.

The unnecessary loss of a huge percentage of the crab population is a growing concern of the Virginia Delegation. Evidence presented to the Commission in 2006 suggests that there are thousands of old abandoned crab pots in tidal waters continuing to capture and kill blue crabs as well as other marine life. Delegate Scott Lingamfelter patroned a Joint Resolution directing the Virginia Institute of Marine Sciences (VIMS) to assess the scale of this Baywide problem, and propose mitigating solutions. The VIMS report was issued in December 2007.

Shellfish aquaculture is a growing industry in Virginia. In recognizing the potential economic and environmental benefits associated with increased shellfish production, a law was enacted requiring the Virginia Marine Resources Commission (VRMC) to develop a general permit for the placement of temporary shellfish-growing enclosures in state waters.

U.S. CONGRESS

By law, the Commission serves as the region's liaison to Congress; Congressional members and staff rely on the Commission for information, policy and drafting advice. Congressional activities in 2007 demanded the lion's share of the Commission's staff time. Working as the region's leader, the Commission spurred both the reauthorization of the Federal Farm Bill and enhanced funding for Blue Plains Wastewater Treatment Plant via reauthorization of the Water Resources Development Act. Taken together, these two initiatives could account for more than *half* of the nutrient and sediment reductions needed Baywide to clean the Bay. The Commission also weighed in on both global and local issues, with climate change and John Smith Water Trail-related legislative initiatives.

As is tradition, the Commission traveled to Washington, D.C. in May 2007 to meet with members of its Congressional Delegation to discuss these issues:

Federal Farm Bill

Every five years Congress produces the nation's flagship legislation on farm policy. The last bill, passed in 2002, had a five-year price tag of nearly $250 billion, of which $100 billion contributed payments of one kind or another to farmers — for commodity support, insurance, disaster relief and notably, conservation.

With the 2002 bill set to expire in 2007, the reauthorization of the Farm Bill has been the Commission's top Congressional priority. Without question, it represents this region's best opportunity to substantially *scale up* agricultural conservation activities through increased financial support and technical assistance.

During 2007, Commission members and staff determinedly made the region's interests known. Staff frequently met with their Congressional counterparts to draft policy, rank priorities and develop strategies to deliver the necessary dollars. The Commission also crafted a strategy for the region's governors to persuasively communicate their support for improving the conservation, forestry and energy provisions of the Farm Bill.

In the closing days of the Congressional Session of 2007, the U.S. Senate joined the U.S. House in passing its own Farm Bill and the two versions were put forward for reconciliation. The Conference Committee, which will determine its final content, is expected to convene in the first quarter of 2008. Both versions contain Chesapeake Bay-specific provisions, making the Chesapeake the only region across the nation singled out for substantially enhanced conservation support. While the details of these efforts are summarized in Chapter 2, the final story remains to be told in the 2008 Annual Report.

Water Resources Development Act

A huge gain for the Chesapeake occurred with the overwhelming passage of the Water Resources Development Act (WRDA) of 2007. Although initially vetoed by the President, the bill was enacted into law when both the House and Senate voted to override the veto. WRDA now authorizes hundreds of millions of dollars for Army Corps of Engineers projects in the Bay from oyster restoration to construction of a protective seawall on Tangier Island.

The Commission was instrumental in ensuring that WRDA also contained authorization for funding both upgrading nutrient removal at Blue Plains Wastewater Treatment Plant and retrofitting Washington, D.C.'s Combined Sewer Overflows (CSO). See Chapter 4 for further information on Blue Plains.

Climate Change

The Commission joined Maryland Governor Martin O'Malley, Virginia Governor Timothy Kaine and the Chesapeake Bay Foundation in September to offer expert advice to the Senate during its investigations of global climate change and the Chesapeake Bay. At the request of Senators Ben Cardin (D-Md.) and John Warner (R-Va.), Commission staff prepared a briefing paper summarizing the key issues and the research necessary to prepare us to make science-based policy decisions.

Shortly thereafter, Senators Warner and Joe Lieberman (I-Conn.) joined forces to introduce landmark legislation that would, for the first time, set mandatory U.S. limits on emissions of greenhouse gases. The Senate Committee approved the measure in December with full chamber debate, and a companion House version is expected in 2008.

Thanks in large part to Senator Cardin, the legislation provides a revenue stream, by way of the EPA and the Army Corps of Engineers, to address the effects of climate change on natural systems and explicitly singles out its application to "large-scale estuarine ecosystems," such as the Chesapeake and Long Island Sound. The Commission will keep close watch on the proposal in 2008 as it could translate to millions of new conservation dollars for the Chesapeake.

Captain John Smith National Historic Water Trail

If 2006 was the year that Captain John Smith's epic voyages on the Chesapeake were memorialized by the U.S. Congress via legislation establishing the nation's first water trail, then 2007 was the year the concept became a reality. In May 2007, as the nation celebrated the 400th anniversary of the settlement of Jamestown, Chairman Jim Hubbard joined Virginia Governor Kaine and National Park Service Director Mary Bomar for the dedication ceremony.

That same day, a group of 15 set out by oar and sail in a replica of John Smith's wooden shallop to reenact his 1,700-plus-mile route, explored in 1608. Paralleling his expeditions, the crew journeyed to the fall line of almost every sizable tributary in Chesapeake Bay, landing in dozens of ports along the way. They melded ceremony with lessons of history and conservation. In June, when the shallop docked in historic Mount Vernon, Senator Warner was joined by Virginia Delegates John Cosgrove and Scott Lingamfelter to welcome the crew and tour the interactive exhibit tents. In July, Chairman Jim Hubbard was there to greet Governor O'Malley and the crew members, as they landed the shallop together in Annapolis.

To enhance a boater's journey along the trail, the Commission worked with Congress to fund the National Oceanic and Atmospheric Administration (NOAA) to develop "talking buoys." These state-of-the-art, interactive buoys mark significant points along the trail and provide real-time meteorological, oceanographic, historical and current water-quality information. They are accessible through the internet and phone by calling 877-BUOY-BAY. The FY 2008 Federal Consolidated Appropriations Act includes $446,500 for NOAA's continuing work on this project.

CHESAPEAKE BAY PROGRAM LEADERSHIP

As one of six leaders in the Federally-funded Chesapeake Bay Program, the Commission is involved in all aspects of its policy development and restoration activities. Working in partnership with the Administrator of EPA, the Governors of Maryland, Pennsylvania and Virginia and the Mayor of the District of Columbia (all Executive branch), the Commission is the only representative of the Legislative branch. This makes the Commission's perspective unique in three ways:

- First, the Commission members are the least parochial, since they collectively represent the broadest geographical expanse of any signatory.
- Second, our members are the most locally anchored since they individually represent the smallest geographic areas of any signatory.
- Finally, the Commission itself is the most enduring since it is not subject to the term limits that complicate Executive Branch leadership.

These assets were put to the test in 2007 when the Commission staff was asked to represent the region in a number of national forums focused on large-scale ecosystem restoration. In speaking engagements too numerous to count, the Commission was able to speak broadly about Bay restoration while getting specific about the facts and political conditions that drive policy development.

Beginning in 2006, Federal staff was charged by the U.S. Congress to conduct a number of substantive reviews of the Chesapeake Bay Program. The highly publicized reports, including those of the Government Accountability Office, the Inspector General and the National Academy of Public Administrations, reviewed all aspects of the Bay Program. The Commission staff's broad understanding of Bay science and policy lent an inter-jurisdictional and legislative perspective. All of these reviews are now available at *www.chesapeake.net*.

Based on its involvement in crafting the Chesapeake Bay Program's 2006 Forest

Conservation Directive, the Commission remained a partner throughout 2007 to agree on region-wide, quantitative forest conservation goals and the policies needed to achieve them. The agreement, which was adopted by the Program's Chesapeake Executive Council in December, will accelerate protection of our most valuable forest lands throughout the watershed and will advance sustainable forestry principles among private forest landowners.

In 2007, Chairman Jim Hubbard represented the Commission at the EC meeting held on December 5. The Commission and its staff played a central role in shaping the agenda, preparing the background briefing materials and presenting its work on biofuels. Each of the EC members agreed to "champion" issues or programs with the goal of gathering information that could be used by others to advance achievement of the water quality goals. Chairman Hubbard agreed that the Commission would:

- Continue to lead the region's efforts to improve the Federal Farm Bill.
- Sponsor a "cellulosic biofuels summit" in 2008 in partnership with Pennsylvania Governor Rendell.
- Lead the region's efforts to secure Federal funding for Blue Plains Wastewater Treatment Plant.

PARTNERSHIPS/KEY ISSUES

Blue Plains Wastewater Treatment Plant

From the beginning of the Bay initiative, Blue Plains has served as the prime example of what is at stake if we fail to upgrade our largest point source facilities. The Chesapeake Bay Commission has long understood this challenge and has continued to support efforts to reduce nutrients at Blue Plains. As the largest wastewater treatment plant in the Bay watershed, even small reductions in nutrient concentrations achieved at the facility will be amplified many times over. The Commission believes that it is critical to reduce nitrogen discharge there from its current permit goal of 7.5 mg/L down to at least 4.2 mg/L. This unique regional opportunity is further described in Chapter 4.

Chesapeake Bay Targeted Watersheds Grant Program

Early in this decade the Commission worked closely with Senators Paul Sarbanes (D-Md.) and John Warner (R-Va.) to establish the Chesapeake Bay Targeted Watersheds Grants Program. The goal of the program is to expand collective knowledge on the most innovative, sustainable and cost-effective strategies for reducing excess nutrient loads within specific tributaries to the Chesapeake Bay. Funded by the EPA, the program has awarded over $13 million in grants in its first two years, while leveraging an additional $10.1 million in local matches.

Grants awarded in 2007 include: improving manure and pasture management on small horse farms; creating a diversified system for composting and marketing livestock manure; implementing innovative, farmer-friendly practices to keep livestock out of streams and off streambanks; demonstrating the widespread potential for continuous no-till and other conservation cropping practices; establishing a dairy certification and marketing program for milk produced in a manner that minimizes impacts to the Chesapeake; and, demonstrating the value of stream restoration and low impact

development practices to reduce pollution runoff in urban and suburban settings. Executive Director Ann Swanson has served on the grant selection Committee for the past three years.

Innovative Technology

In 2007, the Pennsylvania Delegation supported several unique projects that foster innovative and cost-effective pollution reduction, including:

- A pilot test of the Cove Area Regional Digester, a multi-stage methane digestion and wastewater treatment project using cow manure from several local dairy farms. Results from this test are showing increased efficiencies of the treatment beyond what was proposed, and will help to refine the project as it moves to the implementation phase.
- A Duncannon Borough study into the feasibility of developing the Commonwealth's first commercial-scale electricity generation facility fueled by poultry litter. Preliminary results of this study have provided important information on the poultry litter inventory and potential nutrient reductions that could be achieved from such a facility in the watershed.
- An Enhanced Nutrient Management Pilot Program led by the IPM Institute and American Farmland Trust to provide data on new practices included in the Commonwealth's Chesapeake Bay Tributary Strategy.
- Research by Pennsylvania State University to determine the sediment loadings from dirt and gravel roads and the effectiveness of their maintenance practices. The goal is to understand these practices so that they can be accurately integrated into the assumptions used in the Chesapeake Bay Program's computer model.

Results from these ongoing projects will provide information on the effectiveness and feasibility of expanded use of these practices throughout the watershed.

Blue Crabs

The Commission is well known for its leadership work on the blue crab, having convened and chaired the Bi-state Blue Crab Advisory Committee from 1996 to 2003. Regardless of significant management changes, over-fishing has occurred in six of the past nine years and in 2007 the Baywide catch is expected to be less than 50 million pounds, making it one of the smallest since 1945. With 2007 juvenile crab populations the lowest in recorded history, the Commission necessarily refocused on the resource.

Virginia actively reached out to its neighboring states of Maryland and North Carolina to over-haul Virginia's existing blue crab regulations. This Blue Crab Regulatory Review Committee began by assessing current regulations to question what is working, what is not working, and what can be done to coordinate multi-state efforts to increase the fishery. Among the management measures under review are:

- Increasing the size of required cull rings, which allow undersized crabs to escape, making the size uniform in all states;
- Expanding the spawning sanctuary in Virginia to include the migratory deep water channel to Maryland's state line; and,
- Instituting a crab pot tagging program.

A final report will be issued in 2009. However, in 2007, the Commission began to discuss whether further interstate action must be taken even before then.

Blue Ribbon Oyster Panel

In a grave effort to restore the native oyster in Virginia, the VMRC assembled a 20-member team of stakeholders. The Blue Ribbon Oyster Panel met to study native oyster restoration efforts, identify new and innovative methods to advance ecological restoration of the fishery and restore the economic stability of the industry. Virginia Director Suzan Bulbulkaya represented the Commission on this panel. Involving more than ten months of intensive work, the Panel recommended that the VMRC should expand oyster production and habitat for the commercial fishery, including aquaculture, and implement rotational harvest areas and permanent sanctuaries in the Rappahannock River. The Panel steered away from introduction of non-native oysters, as that issue is included in the Federally-sponsored comprehensive oyster restoration Environmental Impact Statement (EIS) due out in 2008. The VMRC will reconvene the Panel upon completion of the EIS.

Environment Virginia

In the spring of 2007, Senator Hanger and members of the Commission staff participated in the Environment Virginia Symposium, attracting a crowd of nearly 800. The Commission sponsored three repeating sessions on the impending reauthorization of the Federal Farm Bill, involving the Natural Resources Conservation Service Eastern Regional Assistant Chief, Virginia Secretary of Agriculture, and Executive Secretary of the Virginia State Dairymen's Association. Framed by what has already been accomplished in the 2002 Farm Bill, the speakers outlined new opportunities for improving Federal agricultural conservation programs.

Water Quality Trading

The Commission participated in a series of meetings and discussions in Washington, D.C. hosted by Forest Trends, an organization involved in developing market-based ecosystem trading programs worldwide. Staff served on a steering committee, (including representatives from U.S. EPA, NRDC, U.S. Forest Service, state agencies and NGO's) to explore the potential for establishing a Chesapeake Bay water quality trading program. Consensus on such an effort was not reached by year's end, but a 2008 national conference on ecosystem market opportunities is being planned by Forest Trends, followed by a second-day meeting on specific Chesapeake Bay water quality trading issues and opportunities. ■

Commissioners at Work

BELOW In December, the Chesapeake Executive Council wrestled with the fact that the 2010 water quality goals would not be met. The members resolved to stay the course, acknowledging that more time, new sources of funding and the strategic investment of all available dollars are critical.

COURTESY OF THE OFFICE OF THE GOVERNOR, STATE OF MARYLAND

GENE LEVINSON

ABOVE With wild crab populations far below average, Commission members consider the viability of juvenile crab stocking efforts underway at the Center of Marine Biotechnology in Baltimore.

DAVE HARP

ABOVE Walking the talk. Chairman Jim Hubbard thanks U.S. Senator Ben Cardin (Md.) for his steadfast leadership on Chesapeake Bay issues.

DAVE HARP

GENE LEVINSON

TOP The Maryland Delegation meets with U.S. Senator Ben Cardin (Md.) to strategize about new sources of funding for Bay restoration.

ABOVE What's for dinner? Deputy Secretary Cathy Curran Myers jokes with Representative Art Hershey about the spartan diet served up to juvenile crabs by the Center of Marine Biotechnology.

BELOW Former House of Delegates member, Preston Bryant now serves as Virginia's Secretary of Natural Resources.

DAVE HARP

DAVE HARP

ABOVE Senator Mike Waugh listens to disturbing reports about a continuing lack of improvement in the Bay's water quality. The Commission has joined with other *Chesapeake 2000* signatories to scale up efforts in 2008 and beyond.

BELOW From the northern reaches of the Susquehanna watershed, Representative Russ Fairchild embodies the long-term and long-distance commitment of the Pennsylvania Delegation members.

DAVE HARP

DAVE HARP

ABOVE Visits with the region's Congressional Delegation are an important tradition for the Commission each May. In the Capitol Rotunda, Virginia Congressman Randy Forbes joins (from left) Assistant Secretary of Natural Resources Jeff Corbin, Delegate John Cosgrove and Senator Nick Rerras.

Commissioners at Work

BELOW With a focus on state legislation, much of the Commission's work takes place at the state level. Here, Delegate Lynwood Lewis joins the Virginia Delegation for the traditional, quarterly breakfast meetings.

DAVE HARP

DAVE HARP

DAVE HARP

ABOVE Yes! Congressman Chris Van Hollen (Md.) describes his success in leading the House effort to establish Chesapeake Bay provisions in the U.S. Farm Bill to Delegates John Wood, Jr. and Jim Hubbard.

LEFT Translating the Bay's complexities into a clear message is of paramount importance to Citizen Representative Irv Hill, a communications expert from Norfolk, Virginia.

BELOW Senator Emmett Hanger (Va.) considers the process being used to assess the risks of introducing a non-native oyster, *Crassostrea ariakensis* to the waters of Chesapeake Bay.

DAVE HARP

GENE LEVINSON

LEFT While scientists carefully fine tune their ability to grow algae for fish food, Senator Mike Brubaker, Chairman of the Pennsylvania Senate Agriculture Committee and an agronomist by trade, considers its potential as a biofuel. Per acre, algae can yield an astonishing 5000 gallons of biodiesel.

BELOW Executive Director Ann Swanson highlights the Commission's top Farm Bill priorities to U.S. Senator Bob Casey (Pa.). As a member of the Senate Committee on Agriculture, Casey was instrumental in securing Chesapeake Bay-specific funding in the Senate's version of the bill.

DAVE HARP

MICHAEL C. WOOTTON

DAVE HARP

ABOVE The Commission's *Biofuels and the Bay* report has resulted in a new emphasis on cellulosic-based biofuels that can both reduce nutrient loads to the Bay and have significant economic benefit to the region. Here, members consider the negative water quality implications of corn ethanol.

LEFT Four hundred years later, crew members gather in Jamestown to launch their replica of Capt. John Smith's wooden shallop. Chairman Hubbard wishes them "God Speed," as they set out to retrace Smith's 3,000-mile route, first explored in two principal voyages during 1608.

Chapter 2 **Investing in Agriculture**

With attainment of the Bay Agreement 2010 water quality goals already in doubt, the need to accelerate nutrient reductions took on increased urgency in 2007. In response to that pressure, the Commission led efforts to find additional funding and focus on those areas where the greatest nutrient reductions could be achieved for the least cost.

As highlighted in the Commission's 2004 report, *Cost-Effective Strategies for the Bay,* full implementation of several agricultural practices have the potential to achieve 75 percent of the nitrogen reductions needed for just 25 percent of the total cost. Consequently, the Commission has devoted most of its attention to the creation of the next generation of agricultural conservation programs across the watershed.

At the Federal level, the Commission continued its leadership on behalf of the region's governors to secure new funds through the Conservation, Forestry and Energy Titles of a reauthorized Farm Bill. The early part of 2007 saw much activity in the form of several

Maryland, Virginia and Pennsylvania are all relying on agricultural conservation practices to achieve the majority of their nutrient and sediment reductions. Yet dollars to conduct outreach, offer technical assistance and help farmers put practices in place are all woefully inadequate. The Commission is leading the campaign to more than double agricultural funding Baywide to fulfill this obligation under the *Chesapeake 2000* agreement.

FARMING THE LOWER SHORE - PHOTO © DAVID HARP

"marker bills" introduced in the U.S. House. Rather than final form legislation, marker bills are essentially intended to "stake a claim" for funding needs and to propose new programs to the Congressional Agriculture Committees.

Commission staff worked with the region's Congressional Delegation and other environmental and agriculture organizations to draft language and recruit co-sponsors for four notable marker bills:

- *Healthy Farms,* introduced by Congressman Ron Kind (D-Wis.);
- *EAT Healthy,* introduced by Congressman Dennis Cardoza (D-Calif.);
- *Farm, Nutrition, and Community Investment* (the "Northeast Bill"), introduced by Congresswoman Rosa DeLauro (D-Conn.), and Congressman Wayne Gilchrest (R-Md.);
- And, most notably for the Bay region, the *Chesapeake Healthy and Environmentally Sound Stewardship of Energy and Agriculture* (CHESSEA), introduced by Congressmen Chris Van Hollen (D-Md.) and Bobby Scott (D-Va.). A Senate version was sponsored by Senator Barbara Mikulski (D-Md.).

All four bills reflected, to some degree, the Bay region's call for expanded national conservation programs such as the Environmental Quality Incentives Program (EQIP) and the Conservation Security Program (CSP). The bills created new national programs to foster large-scale, regional stewardship efforts, such as "Regional Stewardship" or "Cooperative Conservation," to leverage state and private dollars for focused conservation practices. Additionally, they called for increased investment in technical assistance as well as regional conservation practices to lessen the environmental impact of biofuel production. Only the CHESSEA bill, however, was exclusively focused on the Bay region's priorities.

The Commission's annual May visit to the region's Congressional Delegation emphasized the critical need for new funding and the importance of the various marker bills. By the end of the day's visits, Commission members had secured sponsorships from 17 Delegation members.

This amplified voice from the region paid off in July when the House passed a Farm Bill with unprecedented levels of conservation support. In addition to significant increases in existing programs such as EQIP, the House bill also created a new Regional Water Enhancement Program that would include the Chesapeake as a priority region, and two new Chesapeake-specific programs — the Chesapeake Bay Program for Nutrient and Sediment Reduction Control and the Chesapeake Bay Comprehensive Conservation Planning Program.

If passed, and if the funding is appropriated, these and other programs would provide over $100 million annually in new funding for agriculture conservation programs. Much credit must be given to Congressman Chris Van Hollen (D-Md.), chief patron of CHESSEA, as well as Congressman Tim Holden (D-Pa.), Vice-Chair of the House Agriculture Committee, and Congressman Bob Goodlatte (R-Va.), Ranking Minority Member of the Committee, who championed the region's priorities within the Committee.

With passage of the House bill, the Commission's attention then turned to the Senate. Highlighting the significant new funding levels the House was able

to adopt, the Commission coordinated a series of letters to the editor across the region and a letter from each of the three governors to the region's six Senators, calling for similar support. Led by Senator Bob Casey (D-Pa.), the region was able to achieve a Bay-specific program within the Senate bill — the Chesapeake Watershed Conservation Program. Significant additional funding was also provided through expansion of CSP, now known as the Comprehensive Stewardship Program.

The Commission coordinated a second letter to the Senate Delegation, which was signed by all State and District of Columbia members of the Executive Council at its December 5 meeting. The bill was passed the following week, and includes over $40 million annually to the region beyond existing funding.

As we went to press, the Farm Bill remained in Conference Committee. Our conferees include Congressmen Holden and Goodlatte, who coincidentally represent the farmers of the Lebanon and Shenandoah Valleys, among the most intensively farmed regions in the watershed. The Commission will continue to stress the region's priorities and assist the conferees with their work to complete the Farm Bill in 2008.

In a complemenary effort, the Commission members explored significant new funding sources in each state.

In the lead was Pennsylvania, with creation of the Resource Enhancement and Protection Program (REAP). First championed by then-Commission member Senator Noah Wenger in 2006, legislation sponsored by Commission member Senator Mike Waugh was ultimately adopted during July of 2007. REAP features a system of state tax credits for agricultural best management practices (BMPs). Farmers often have limited tax liability. This program allows them to use the credits over a 15-year period or sell them to another business that can use them. Businesses can also sponsor a conservation practice up front. Consequently, the program is seen as a unique way to increase non-farm participation in agricultural BMP implementation.

REAP reserves the highest level of tax credit, 75 percent of BMP cost, for basic practices such as conservation planning, nutrient management planning, improvements to animal concentration areas (ACAs) such as barnyards or heavy-use pastures, or establishment of 50-foot riparian forest buffers. A 50 percent credit is available for other BMPs, equipment purchases to implement those practices, and establishment of 35-foot riparian forest buffers. However, before these additional practices can be eligible, the farm must be in compliance with conservation planning, nutrient management planning, and ACA requirements.

Funded at $10 million for fiscal year 2008, the State Conservation Commission will begin accepting REAP applications in January on a first-come, first-served basis.

In Maryland, many months of discussion over a proposed "Green Fund" ultimately led to passage of the *Chesapeake Bay 2010 Trust Fund* during a rare November Special Session. The $50 million Trust Fund will be supported through a portion of the existing gasoline and car rental taxes. Although general in its conservation scope, a portion of the Trust Fund will be targeted to agriculture. However, the exact amount of the dedication is yet to be determined.

In Virginia, as the Commonwealth looks beyond achievement of its point source goals by 2010, the agricultural

SCALING UP Agriculture Funding Initiatives

Federal

Federal Farm Bill (Pending)

- Proposed expansion of existing Farm Bill programs such as EQIP and CSP.
- Proposed creation of new national programs such as the Regional Water Enhancement Program.
- Proposed creation of Chesapeake-specific programs.
- Potential for $100 million new dollars annually to the region.

Pennsylvania

Resource Enhancement and Protection Program (2007)

- Creation of a new $10 million agricultural conservation practice funding program.
- Provides transferable tax credits to spur non-agricultural investment in agricultural BMPs.
- Emphasizes conservation and nutrient planning as well as other basic cost-effective practices.
- Received 254 applications for over $10 million in the first 10 days of sign-up, leveraging an additional $8-9 million.

Maryland

Chesapeake 2010 Trust Fund (2007)

- Created a $50 million annual dedicated non-point source fund.
- Focuses a portion of this new fund to agricultural BMPs.
- Favors cost-effectiveness, targeting and performance-based approaches.

Virginia

Targeted Non-point Source Funding (pending)

- Proposed $20 million for agricultural BMPs in Governor's FY 2009 budget.
- Prioritized five most cost-effective practices via DCR agency policy.
- Focused BMP spending on five priority practices.

Regionwide

Cellulosic Summit

- Promotion of cellulosic biofuels as both a source of economic growth for agriculture and a cost-effective means for nutrient and sediment reduction.

portion of its Tributary Strategy is gaining renewed interest. By autumn a coalition of agricultural and environmental interests joined forces to pursue large increases in agricultural conservation funding. A proposed $100 million program funded by directing one-tenth of one cent of existing sales tax revenues started the early discussions.

In his budget proposal, Governor Kaine included $20 million for agricultural BMPs statewide, with two-thirds dedicated to the Chesapeake watershed. The Commission believes that significant nutrient and sediment reductions could result if these new funds are focused on the five most cost-effective practices, identified by the Kaine Administration earlier in the year. They are:

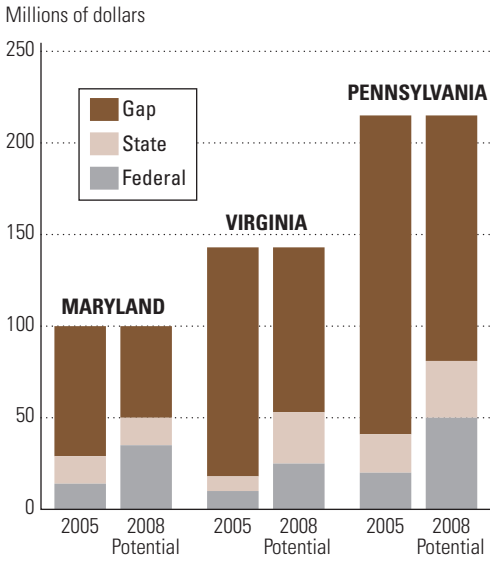
1. cover crops;
2. stream fencing;
3. riparian buffers;
4. conservation tillage; and
5. nutrient management planning.

New agreements with the poultry industry to increase litter transport and use of the feed additive phytase promise to achieve even further reductions.

Regionwide, the promotion of cellulosic biofuels is gaining traction as a new and economically viable way to achieve high levels of nutrient and sediment reductions while promoting sustainable agriculture. Made from perennial grasses, woody debris and other sources of biomass, cellulosic biofuels present an alternative to the less desirable corn-based ethanol. In Pennsylvania,

FIGURE 1

State Tributary Strategy Agricultural Funding Gap



Senator Waugh sponsored a bill during their Special Session that would promote the planting of perennial grasses, such as switchgrass, that have the potential to significantly reduce nitrogen loadings compared to traditional row crops. More information on the region's options regarding biofuels can be found in Chapter 3.

Despite these recent improvements to agricultural programs, a significant funding gap remains in all three states (see Figure 1). Consequently, continued *scaling up* of innovative and cost-effective agricultural programs will be required, and the Commission will keep this issue as one of its highest priorities through 2010 and beyond. ■

Chapter 3 **Opting for Better Biofuels**

Interest in biofuels has been both rapid and widespread, garnering headlines worldwide for their potential to address both energy independence and greenhouse gases. In the U.S., the effort to date has focused largely on producing ethanol from corn, but biofuels and their organic feedstocks are actually far more diverse and each has very different energy, economic and environmental effects. The choices are being widely debated in Congress as part of efforts to enact comprehensive legislation for both agriculture and energy.

In 2005, Congress set a domestic production goal of 7.5 billion gallons of biofuel by 2012, a goal that was met in less than two years. By January 2007, President Bush responded by calling for production of 35 billion gallons of ethanol and other biofuels by 2017 as a means of reducing U.S. dependence on imported gas and oil.

In the Chesapeake Bay region, biofuel demand has already changed the mix and volume of crops grown by farmers and will likely impact forest practices. Driven by public policies, subsidies and venture capital investment, biofuels could bring about the most

Biofuel production is here. Last year alone, the land in corn production skyrocketed as farmers anticipated new demand for biofuel feedstocks. This trend, if not handled carefully, could wipe out 25 years of conservation efforts to keep sediment and nutrients out of the Bay. But all biofuels and all feedstocks are not the same, with some far more energy efficient and friendly to the environment. Bay region leaders must help lead our Nation toward energy security while continuing our efforts to restore clean water.

FARMS AS FUEL - PHOTO © DAVID HARP

profound changes in regional agriculture and forestry in the past hundred years. It could also have major effects on the health of the Bay and on prospects for its recovery.

In 2007, the Commission undertook a detailed analysis of these issues and their implications. The report, *Biofuels and the Bay: Getting it Right to Benefit Farms, Forests and the Chesapeake,* summarized the major types of biofuels, their likely appearance in the Chesapeake watershed, and the estimated impacts they would have on farming, forestry and the waters of the Bay.

The main conclusion of the report was that if handled correctly, biofuels have the potential to provide new and permanent income sources for farmers and foresters while reducing greenhouse gases and helping to control nutrient runoff to the Bay and its rivers. The report warned, however, that if handled poorly, biofuels could create an uncertain future for farmers and foresters and substantially worsen the overload of nutrients and sediments to the Bay.

Background

The major biofuels under development and production are ethanol, biodiesel, and a variety of locally produced and consumed combustion and gasification products. The feedstocks that make these biofuels encompass a diverse group of organic materials — grains, grasses, wood chips, plant oils, and animal and plant wastes — that can be converted into energy, many of which are abundant in the Bay region.

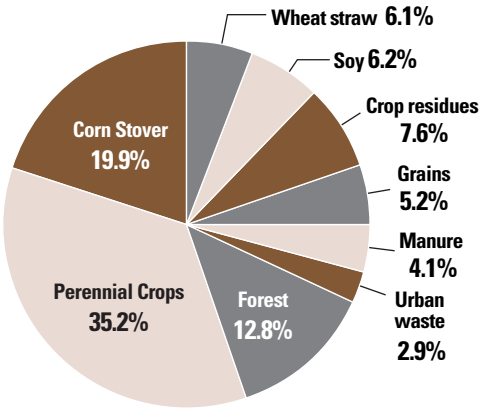
The technologies for producing energy from these feedstocks vary greatly in their stages of development and their cost. For example, nearly all U.S.-produced biofuel to date has been corn-based ethanol; yet, corn is able to produce less energy than other feedstocks. Meanwhile, Europe is investing heavily in biodiesel technologies, using crops such as soybeans and canola. Over time, the U.S. anticipates a shift to cellulosic feedstocks such as trees and plant wastes because they promise to yield even more ethanol, use less energy in their production and cause fewer adverse environmental impacts. Figure 2 shows an estimate of the anticipated U.S inventory of biomass by 2030 — corn and other grains will comprise only about 5 percent of the total.

The pace and direction of biofuel investment will be heavily influenced by a diverse array of factors. Private sector investment decisions, technological breakthroughs, Congressional actions regarding subsidies and production incentives, internationally-set commodity prices, powerful Midwest-based political forces and even international trade negotiations will play a

FIGURE 2

U.S. Biomass Inventory (2030 Projections)

Total projected inventory: 1.3 billion tons.



SOURCE: U.S. DEPARTMENT OF ENERGY, U.S. DEPARTMENTOF AGRICULTURE, APRIL 2005

role. This makes it difficult to predict how biofuels will impact the Bay region. In the face of these unknowns, the Commission's report identifies where actions can be taken to maximize the economic benefits and minimize the environmental damage from biofuel production.

The watershed's landscape is already showing signs of change. In 2007, an additional 160,000 acres of corn were planted across the Bay watershed in response to rising crop prices. Because corn requires heavy fertilization, and is a relatively inefficient user of these nutrients, as much as 40 to 60 percent of the fertilizer applied stays on the field as waste. If not absorbed by a winter cover crop, or held in the corn residue, the nutrients move into groundwater and streams, causing nutrient overloading in the Bay.

Chesapeake Bay Program modelers working with the Commission estimated that the 2007 surge in corn acreage increased nitrogen loads to the Bay by roughly 2.5 million pounds, which offsets the total reductions of nitrogen from *all* sources to the Bay achieved during the prior year.

As part of the biofuels report, the Commission asked the Bay Program to estimate the water quality effects of growing a number of different feedstocks. Using 2006 as the baseline, the Commission's Biofuels Technical Advisory Committee offered the modelers a prediction of 300,000 new acres of corn in the watershed in the next three to five years. This estimate would serve as the basis for the model runs, whether corn or other feedstocks.

As it turned out, the number is only double the actual 160,000 acre increase in corn acreage witnessed between 2006 and 2007. It is a conservative estimate that takes into account, among other things, the likely price rise of alternative crops such as wheat and soybeans.

Figure 3 summarizes the modeled results of the analysis. Essentially, 300,000 new corn acres would add five million more pounds of nitrogen to the Bay each year, assuming current levels of conservation practices. In contrast, 300,000 acres of new soybeans would add about half that. In even sharper contrast, 300,000 acres of new switchgrass (a cellulosic feedstock) would actually reduce loadings by 8.3 million pounds per year due to the ability of switchgrass to absorb nutrients. Clearly, these findings demonstrate the advantages of moving from grain to cellulosic feedstocks as quickly as the technology allows us, likely still several years away.

In the interim, applying cover crops to all corn acres (both the new acres and existing acres without cover crops) offers great promise, resulting in a reduced load of 17 million pounds per year. Scenario after scenario showed that if grain-based ethanol is to be produced, it must be coupled with aggressive BMPs on its feedstock crops.

Key Findings of the Report

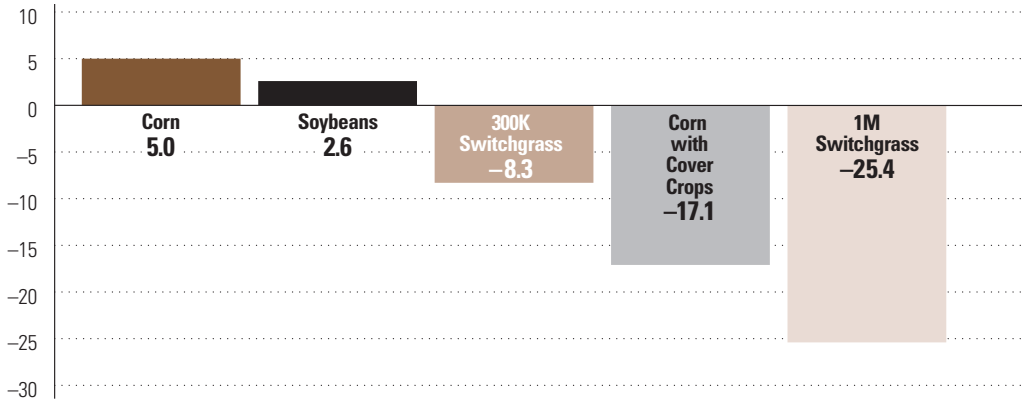
The Commission report looked at how each of the biofuels was likely to play out. To summarize:

- Corn and other grain-based ethanol should be considered a short-term windfall for farmers and refiners, a necessary step toward future development of a biofuel industry that includes cellulosic sources, and a stimulus for near-universal cover crops and other agricultural conservation measures to prevent adverse effects on the Bay.

FIGURE 3

Maximum Nitrogen Load Changes for Biofuels

Millions of pounds per year of nitrogen delivered from the Chesapeake Bay watershed to the Bay under five modeling scenarios.



Assumptions for Alternative Scenarios:

- **Corn:** 300,000 additional acres of corn with typical levels of management practices.
- **Soybeans:** 300,000 additional acres of soybeans with typical levels of management practices.
- **300K Switchgrass:** 300,000 acres of switchgrass, converted primarily from hay and pastureland, with no fertilization.
- **Corn with Cover Crops:** Cover crops on all existing and new (additional 300,000) corn acres and one quarter of all other row crops, watershed-wide.
- **1M Switchgrass:** 1 million acres of switchgrass, converted primarily from hay and pastureland, with no fertilization.

SOURCE: U.S. EPA CHESAPEAKE BAY PROGRAM OFFICE

- Cellulosic biofuel (primarily from corn roots and stubble, perennial grasses and wood slash) offers a promising source of additional income for farmers and foresters beginning 2012-2015, and can be managed to help reduce nutrient overloads to the Bay.
- Biodiesel is a potential but unlikely source of future extra income for farmers; its impacts on the Bay depend on the feedstock used, the ability to use conservation management practices to reduce nutrient loadings, and the relative loadings compared to corn or other preceding uses of the acreage.
- Combustion and gasification of manure, grasses and other feedstocks will become cost-effective at replacing traditional power sources for poultry houses and other farm processes; operational technology and economics are a few years off.

Recommendations of the Commission

The report concludes with seven recommendations for the future of biofuel production in the Bay region. Succinctly put, they are:

- The Chesapeake Executive Council should develop a comprehensive biofuels strategy for the region to plan, site and permit biofuel facilities and support state and regional environmental goals while strengthening local economies.

- The states must ensure that the expansion of corn production is accompanied by conservation measures, such as cover crops and other agricultural BMPs.
- The watershed governors should position the region to lead the nation in the evolution from grain-based to cellulosic biofuel.
- A policy watch should be put on biodiesel production as a long-term market for farmers' crops along with algae as a potential feedstock grown at municipal treatment works.
- Federal and state policies and funds should encourage the private sector to develop solutions to remove the technical and infrastructure constraints on regional biofuel production.
- Congress should use the Federal Farm Bill to encourage conservation practices, perennial crops, and biofuels and energy efficiencies on farms.

Public Reaction To The Report

The Commission report on biofuels experienced widespread exposure and favorable reviews in the press. Articles appeared in over 70 newspapers, including coverage in the region's major outlets. Editorial comment has been uniformly supportive of the recommendations and has praised the clarity and direction of the analysis and recommendations. Demand for copies of the report, both printed and on-line, has been intense and nationwide.

Commission members have also found a positive response from their colleagues in the state legislatures. The Chesapeake Agriculture Caucus comprised of the six state secretaries and commissioners of agriculture in the watershed unanimously endorsed the report and its recommendations in a letter to the Chesapeake Executive Council (EC). At its December 2007 meeting, the EC spent a major part of its private session receiving a briefing on the report and discussing the implications of its findings.

Subsequent Action

Legislative members of the Commission are working with colleagues in all three states on funding for cover crops and other management practices to offset the impacts of increased corn acres in the region. The Commission staff and others continue to press Congress to keep funding for Chesapeake conservation measures in the Farm Bill (see Chapter 2).

There is intense commitment among EC members to lead the nation in the move toward cellulosic biofuels. At the 2007 meeting of the EC, Council members offered resounding support when Chairman Jim Hubbard and Pennsylvania Governor Ed Rendell announced their joint intention to hold a "Cellulosic Summit" in September 2008. With a solid recognition of the environmental and economic benefits from such a move, the Commission will be at the helm of this initiative. ■

Our report, *Biofuels and the Bay; Getting it Right to Benefit Farms, Forests and the Chesapeake,* is available on-line at the Commission's web site, *www.chesbay.state.va.us*.

Chapter 4 **Funding for Blue Plains**

Since its creation, a top priority of the Chesapeake Bay Commission has been to clean up the largest point sources of pollution in the Bay watershed. The states have made substantial investments to fund and regulate the region's sewage plants, but a substantial challenge remains: upgrading the Blue Plains Wastewater Treatment Plant — one of the world's largest wastewater treatment plants — located on the shores of the Potomac River in Washington, D.C.

Advancing wastewater treatment is a priority that makes solid environmental and economic sense. First, it is far more efficient to remove nutrients and other pollutants before they are discharged to the Bay. Second, upgrading wastewater treatment plants is among the most cost-effective ways to reduce nutrient pollution.

Thus, a principal element of the Bay region's Tributary Strategies is to upgrade older plants with enhanced nutrient removal (ENR) technology. Each jurisdiction in the watershed has developed source-specific nutrient reduction goals for all causes of pollution. Maryland is relying on ENR improvements at Blue Plains to achieve 24 percent

Blue Plains is the largest wastewater treatment plant in the world, handling 20 percent of the Bay's total point source flow. The Commission is leading an effort to secure state and Federal funding to fully advance the facility's treatment of both sewage and stormwater. The cost is high but the prize is significant. Based on the original permit limit of 7.5 mg/L, when Blue Plains is upgraded, half of its nitrogen pollution will be prevented from reaching the Potomac River and the Bay.

ADVANCED TREATMENT AT BLUE PLAINS - PHOTO © DAVID HARP

of the state's point source reduction goals for nitrogen. Virginia expects to capture 3 percent of its nitrogen reductions from Blue Plains. With the District's portion of Blue Plains making up 90 percent of the city's total nitrogen load, the District is heavily reliant upon upgrading Blue Plains to meet its nutrient reduction goal.

In an effort to incorporate the three jurisdictions' Tributary Strategies and nitrogen reduction goals, the U.S. EPA in 2007 issued a new permit limit for Blue Plains' annual nitrogen discharge, limiting the amount of nitrogen that can be discharged from the plant to an effluent limitation of 4.2 mg/L. This new permit discharge limit effectively cuts in half the amount of nitrogen that can enter the Bay from Blue Plains, from 8.5 million pounds per year to 4.7 million pounds per year — a decrease of nearly four million pounds annually.

The significance of this single decrease of nitrogen entering the Bay cannot be overstated (see Figure 4). The upgrade of Blue Plains is comparable to the *entire* statewide point source efforts of Maryland or Virginia. For example, within the next decade, the other 86 significant wastewater treatment plants in Maryland are expected to reduce their annual nitrogen discharges by a cumulative four million pounds. In Virginia, 124 significant wastewater treatment plants are in line to achieve their nitrogen reduction goal of 3.2 million pounds per year.

Blue Plains serves two million people residing in five jurisdictions in the Washington region. Prince George's and Montgomery counties in Maryland contribute the largest amount of sewage flow to Blue Plains at 46 percent, with 41 percent coming from the District and 13 percent from Loudoun and Fairfax counties in Virginia.

FIGURE 4

The Sheer Size of Blue Plains (2005)

Jurisdiction	Plants on Potomac	Flow (MGD)	Nitrogen Delivered
D.C.	1 (Blue Plains)	330	5.2 M lb.
Maryland	31	118	1.8 M lb.
Virginia	42	217	4.2 M lb.
Total	74	665	11.2 M lb.

Because of its size and its location on the main stem of the Potomac River, every pound of nitrogen discharged from Blue Plains is delivered directly to the Bay with little time or distance to mitigate the impact. Most wastewater plants located further upstream deliver only a portion of their nutrient loads to the Bay, with the remainder assimilated into the natural system upstream.

Blue Plains presents a unique set of challenges related to upgrading. Residential and commercial sewage flows are large, but confounding its flows are the inputs derived from the District's stormwater sewer system. About one-third of the District is still served by an antiquated combined sewer overflow (CSO) system that conveys both stormwater and sewage in one set of pipes. During heavy rain events, flows to Blue Plains can increase dramatically and sometimes the combined slurry of stormwater and sewage must bypass treatment and overflow directly to the Bay.

Blue Plains is operated by the District of Columbia Water and Sewer Authority (WASA), which is under a judicial consent decree to implement a CSO Long-Term Control Plan for the District to minimize these overflows during storms. To comply, WASA has begun designing a system of

SCALING UP

Evolving to Enhanced Nutrient Removal

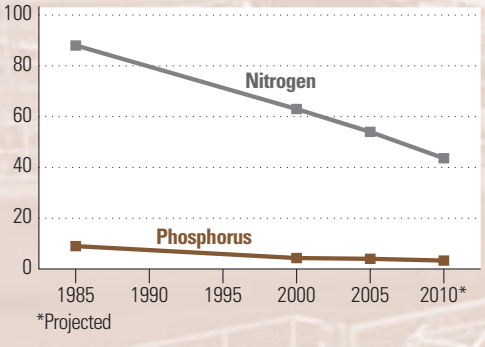
An emerging technology known as Enhanced Nutrient Removal (ENR) will allow advanced wastewater treatment plants such as Blue Plains to remove nutrients from the waste stream at levels never before achieved. Once installed at major plants across the watershed, ENR will prevent millions of pounds of nitrogen and phosphorus from reaching the waters of the Bay, year in and year out.

In the 1990s, a technology called Biological Nutrient Removal (BNR) was considered to be state of the art. BNR adds a step in the traditional treatment process that employs microorganisms in low-oxygen basins to feed on the excess nutrients in wastewater. This biological process allows the plant to ratchet down nitrogen discharge levels to 8 mg/L or less, with phosphorus down to 3 mg/L or even lower.

ENR adds filters to the BNR process to further reduce the levels of nutrients discharged from a treatment plant down to an amazing 3 mg/L total nitrogen, with phosphorus going as low as 0.3 mg/L. An external carbon source, such as methanol, is added to foster bacteria growth and further improve treatment.

Signs of Progress

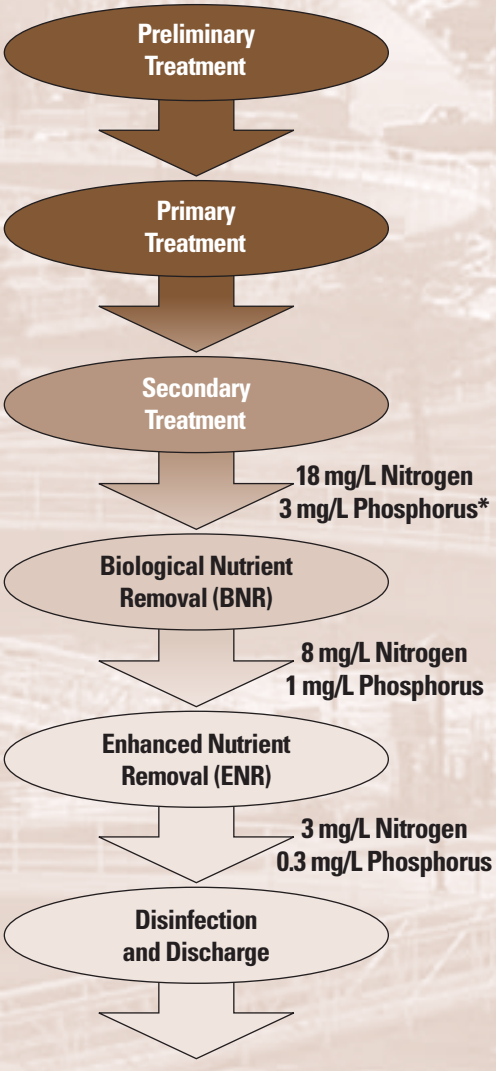
Nitrogen and phosphorus loads from wastewater treatment plants, Baywide (millions of pounds per year).



SOURCE: OFFICE OF INSPECTOR GENERAL EVALUATION REPORT, #08-P-0049, JANUARY 2008

The Promise of ENR

Without advanced treatment, a typical wastewater treatment plant discharges nitrogen at a level of about 18 mg/L. Plants such as these are focused more on removing solids than nutrients, targeting materials that either consume oxygen or support organisms that potentially harbor disease. Now, it is possible to reduce nitrogen discharges more than fivefold, to as low as 3 mg/L, with the right technologies and favorable site conditions.



* 6 mg/L of phosphorus prior to phosphate detergent ban.

Funding for Blue Plains

gigantic underground tunnels to temporarily store the stormwater and sewage mixture so that it can then be released slowly for treatment at Blue Plains. Once complete, heavy rains will no longer overwhelm the system or discharge untreated sewage to Chesapeake Bay. The cost and timeline associated with the CSO plan exceeds $2 billion over 20 years.

Achieving enhanced nutrient removal at Blue Plains cannot be accomplished without corresponding implementation of the CSO control plan to regulate the flow of stormwater to the plant. Consequently, EPA has proposed modifying the existing judicial consent decree for fixing the CSOs to include a schedule for completing ENR. By combining the two projects, WASA has developed a seven-year timeline that will result in the new ENR system coming on line by July 1, 2014, at an estimated cost of an additional $800 million.

A number of complicating factors could delay the projected timeline for achieving ENR at Blue Plains. First, finalization of the permit has been delayed by objections raised by three different parties. Pending resolution of these appeals, the new nitrogen limit for Blue Plains has been suspended. A hearing before the Environmental Appeals Board was held in November 2007 and a decision is expected in early 2008. Despite this possible set back, WASA has moved ahead and invested $2 million in a pilot to test a portion of the first stage of its proposed ENR plan.

A second, much larger hurdle is securing funding for completion of the combined CSO and ENR improvements. All of the costs of the CSO Long-Term Control Plan ($2.2 billion) and about 41 percent of the ENR costs ($325M of the $800M needed) are expected to be paid by the water and sewer customers of the District. Without some Federal support, this could impose a significant burden of over $2.5 billion on these ratepayers, in particular the District's economically disadvantaged households.

Since the District is not a state, it is only eligible for small Federal grants but not the more sizable loans available to states via the Clean Water State Revolving Loan Fund. As the only "Federal city," it also does not have state-level funding sources to offset costs such as Maryland's Bay Restoration Fund and Virginia's Water Quality Improvement Fund. Finally, the District does not have a sizable population that is financially capable of shouldering significant rate increases (see Figure 5).

A third and very significant concern is the possibility that the District will trigger a Use Attainability Analysis (UAA) under the Clean Water Act. Because of the enormity of the costs and potential burden on ratepayers, WASA could claim economic hardship and request a UAA. Such an assessment could lead to long delays and possible relaxation of the permit limits.

In order to minimize the economic hardship on the District and avoid relaxation of any water quality standards, the Commission is leading the region's efforts to persuade Congress to help share the cost of upgrading Blue Plains. There are several excellent reasons for securing Federal support. First, the Bay has long been recognized as a national treasure and it behooves Congress to continue to join the states and the District in ensuring its restoration — in particular, in helping to achieve the scale and positive impact that this upgrade represents. Second, this is an interstate waters issue, for which Congress often shares responsibility.

Third, and most importantly, a large part of the cost of wastewater treatment results from stormwater runoff and sewage generated in our nation's capital, including Federal government buildings and Federal lands that cover a large portion of the combined sewer region of the District. Because most of the aged infrastructure was also installed when Congress managed the District during the last century, there is a clear Federal obligation to support the CSO plan and ENR upgrades.

In 2007, the Commission petitioned the Office of Management and Budget to include $66 million in the President's budget for Blue Plains. The Commission also worked with Congressional delegation members to include Blue Plains funding in the Water Resources Development Act of 2007. Under the leadership of Senator Ben Cardin (D-Md.) and Eleanor Holmes Norton (D-D.C.), $65 million was authorized in the Water Resources Development Act for WASA ($30 million for ENR and $35 million for CSOs). In 2007, WASA also received $5.2 million from EPA through the Clean Water State Revolving Loan Fund for construction grants at Blue Plains.

Both Maryland and Virginia have funding in place to cover the ENR expenses at Blue Plains. The final piece of the puzzle is the District. In 2008, Governors O'Malley and Kaine and Mayor Fenty, led by the Commission, will work with our Congressional partners and the President to continue to secure the necessary funding for the District's portion of Blue Plains. Such sure-fire, "silver bullet" pollution control opportunities like these are rare, and should not be missed. ■

FIGURE 5

Funding Sources for Upgrading Blue Plains Wastewater Treatment Plant

	Rate Payers	State Funds	Federal Funds
District of Columbia	580,000	n/a	Unpredictable*
Maryland	1,100,000	Bay Restoration Fund	Clean Water Revolving Loan Fund
Virginia	450,000	Water Quality Improvement Fund	Clean Water Revolving Loan Fund

* Includes Federal Clean Water State Revolving Fund, D.C. Appropriations and Water Resources Development Act.

Funding for Blue Plains

Chapter 5 **Confronting Climate Change**

WE ARE ALREADY SEEING THE INITIAL EFFECTS OF CLIMATE change in the Chesapeake Bay system — rising sea levels, higher water temperatures, larger dead zones and oxygen-depleted areas and shifting composition of marine communities. Along with these aquatic impacts, terrestrial changes, economic implications and threats to human health will add to the complexity of restoring an already stressed ecosystem.

Sea level rise may be the most immediate and apparent threat to the Bay. While many modeled scenarios vary in predicting global sea-level rise, projections for the Chesapeake hover between 12 and 35 inches, with an average of 24 inches anticipated in the 100 years between 2000 and 2100. One scientific study estimated that with a sea-level rise of 28 inches, 420,000 acres of shoreline and tidal wetlands would be submerged. Entire Bay communities, both natural and man-made, would be lost.

Consider for a moment the expansive, low-lying marshes and flooded forests of the Bay's lower Eastern Shore. Visualize what a

International data overwhelmingly indicate that the world is warming and the global climate system is changing. These changes will likely have a profound impact on the Chesapeake ecosystem and the region's economy. Fortunately, leading Bay scientists have already begun to analyze the implications of climate change. It will be the Commission's goal to ensure that this science anchors future policy decisions.

LIVING ON THE EDGE - PHOTO © DAVID HARP

two-foot rise of water level will do to vast acreages of marshes that now rise barely a foot above mean high tide. When it comes to the impacts of climate change, the Bay shoreline — its extensive wetlands and tidewater areas — may truly be at "Ground Zero."

Global air temperatures have risen 1° F (0.6° C) during this past century. These global temperature changes track with those observed in the Chesapeake region. With IPCC models forecasting further increases, the Bay's scientific community now agrees there will be significant consequences for the restoration goals set by the Chesapeake Bay agreements. They cite higher carbon dioxide concentrations in the atmosphere, sea level rise, increasing air and water temperatures, and potential changes in precipitation regimes among the reasons why we will need to recalibrate our priorities and policies.

Variations in precipitation affect the flow of freshwater to the Chesapeake Bay from its many tributaries. In the mid-Atlantic region, a predicted rise in precipitation combined with increases in impervious surfaces will increase runoff, adding to nutrient loads. These conditions will worsen the hypoxic conditions that create dead zones in the Bay. A moderate increase in freshwater delivery is enough to tip the scales. In the Bay region, some IPCC models predict an annual rainfall change of just 10-15 percent — sufficient to exacerbate the Bay's declining water quality conditions.

Increasing atmospheric temperatures also directly influence Bay water temperatures. Monitoring data collected at the Virginia Institute of Marine Science in Gloucester Point and at the pier of the University of Maryland's Chesapeake Bay Laboratory on Solomon's Island have shown a steady rise in the Bay's water temperature over the last several decades (see Figure 6). The data shows the 1990s to be about 2°F (1°C) warmer than the 1960s. Modest increases in water temperatures can cause big changes in the growth rates of plankton communities, which choke waters of oxygen, modify vital food chains and increasingly trigger fish kills.

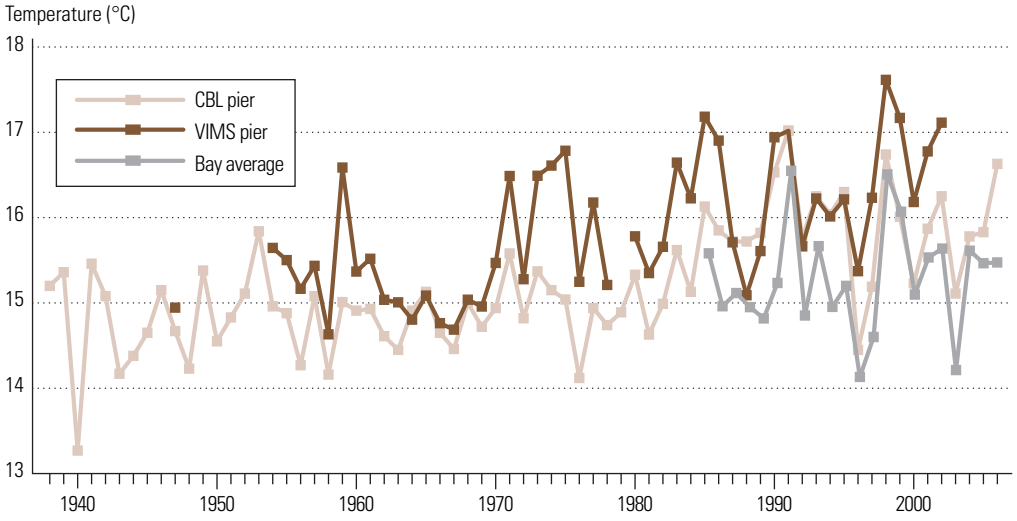
Bay scientists have already documented the effects of these higher water temperatures on underwater grasses (submerged aquatic vegetation, or SAV). In 2005, there was a significant die-off of eelgrass, *Zostera marina,* a primary habitat of the blue crab in saltier waters. This was attributed to higher water temperatures. Similar impacts to habitat are possible in the upper watershed, where species such as brook trout need cold, freshwater streams to thrive.

Because of the interplay between surface water and atmospheric carbon dioxide (CO_2), additional CO_2 in the air can also affect the carbonate ion concentrations in the Bay's surface water. The result is an increase in the water's acidity, thereby reducing carbonate ion concentrations that the Bay's shellfish populations directly rely upon. One of many unanswered questions in the examination of climate change impacts is the effect on our shellfish populations if carbonate ion concentrations are permitted to fall below critical levels.

In the near term, the effects of climate change may be minimal. But for the long term, it will be important to incorporate climate change factors into the assumptions that underlie our various Tributary Strategies. These factors will affect not only our efforts to reduce nutrients and sediments, but our plans to maintain these load reductions once they are achieved.

FIGURE 6

Rising Mean Annual Water Temperature (Mid-and Lower Chesapeake Bay)



SOURCE: G. ANDERSON, H. AUSTIN AND VIMS SCIENTIFIC DATA ARCHIVE (VIMS PIER); D. SECOR AND R. WINGATE (CBL PIER); D. JASINSKI AND CHESAPEAKE BAY PROGRAM OFFICE (BAY AVERAGE).

Similarly, the strategies and plans must incorporate adaptive approaches to accommodate change, which it appears is happening ever more quickly.

If we have learned anything in our 25 years of crafting policy for the Bay, it is that scattershot approaches to fixing our environmental problems do not work. Instead, we must recognize the interrelated aspects of this problem and pursue solutions that are well coordinated and complimentary, both within our region and beyond.

Fortunately, our member states are beginning to address climate change. The states are examining ways to reduce greenhouse gas emissions, invest in renewable energy sources and green building design, promote increases in energy efficiency, and implement approaches to sequester carbon including the Regional Greenhouse Gas Initiative, in which Maryland is a member. While all of these initiatives are admirable and necessary, it is likely that they are insufficient to meet the climate challenge. These efforts must be integrated and the Bay Program must estimate — and support — the value of their collective efforts.

Two things are certain in 2007: The Chesapeake's health continued to decline despite years of restorative efforts, and climate change will only complicate the situation. There is a lot at stake. The Chesapeake Bay Commission has only begun its examination of the implications of global warming and is resolved to meet the challenge. ■

A Fond Farewell

One of the Commission's long-standing members stepped down in 2007, leaving behind an eleven-year legacy of thoughtful and effective contributions to the Bay Program. Maryland Senator J. Lowell Stoltzfus brought to the Commission a lifetime of experience on the Bay and a vigilant commitment to protect his Eastern Shore constituents.

In ordinary life, Stoltzfus is the largest cabbage farmer north of Georgia. Every year, he sends 30 million cabbage plants to the northern states and Canada, most ultimately destined for sauerkraut. A Mennonite and a former choir director, he is deeply committed to conservative values and honesty. More than anything, he is just plain nice.

As extraordinary as his life is, so is his legislative career. During the session, he finds time to juggle leadership demands with the

management of his year-round farming operation. His goal: to be the best conservative, rural legislator in Maryland and the best darn cabbage plant grower in the nation.

As a fiscal conservative, Stoltzfus is keenly focused on budget expenditures, both internal and external, which greatly sharpened the Commission's work. Behind his legislative efforts lies his fervent belief that state government dollars should be spent wisely and that those expenditures should, in his words, "be closer to the people."

Throughout Stoltzfus' time on the Commission, his focus was dollars; in particular, how available funds could best be spent. "How can we get the most bang for the buck?" he was known to ask. As Chairman of the Commission in 2004, he oversaw the publication of its well-respected study, *Cost-Effective Strategies for the Bay,* which identified those practices that provide the most effective use of taxpayer dollars in Bay restoration. Two major issues featured in this annual report — agricultural conservation practices and wastewater treatment plant upgrades — are right at the top of that list.

Following publication of the cost-effectiveness study, Stoltzfus had the opportunity to put these findings to work with the establishment of the Bay Restoration Fund. Serving as Senate Minority Leader, Stoltzfus partnered with then-Governor Ehrlich to establish a "Sewer Surcharge" to upgrade Maryland's 66 largest sewage treatment plants with enhanced nutrient removal technology. Upon full implementation, the initiative will single-handedly accomplish one third of the state's required nitrogen pollution load reduction. The new law met the Stoltzfus standard: it is cost-effective and directed at the local level.

When asked about his interest in the Chesapeake Bay, he cannot help but tell stories of his childhood and family days, and the enjoyment he derives now, reliving those days with his grandchildren. For Stoltzfus, the Bay conjures up an emotional and spiritual commitment. He remarks, "Golly, it's a cultural thing. It's an economic thing. It's an emotional thing. It's an environmental thing. It's a wonderful thing. It's just a treasure."

Senator Stoltzfus had to make some tough personal decisions of late, decisions that required him to scale down his demanding leadership schedule and focus closer to home, on his constituents and his family. In recent years, he has stepped down as Minority Leader and as a member of the Executive Nominations Committee and more than a half dozen other committees. In his own words: "The Commission was the last big committee that I stayed with. I just hated to let it go."

Senator Stoltzfus, thank you for sticking with us all these years. ■

Bay Advocate Extraordinaire

Few people are as skilled and determined as Charlie Stek when it comes to advancing complex efforts to benefit the Chesapeake Bay. In May, as he stepped down after more than 25 years as advisor to U.S. Senators and Congressmen, his colleagues came together to honor his legacy.

The Chesapeake Bay Commission held a gala celebration with The Conservation Fund (TCF), the Chesapeake Bay Foundation (CBF) and the Local Government and Citizens Advisory Committees to the Chesapeake Bay Program, to recognize Stek, who most notably served on U.S. Senator Paul Sarbanes' (Md.) executive team from 1985 until the Senator's retirement in early 2007.

Over the course of the evening — we were at least 80 strong — speaker after speaker marveled at Stek's vision and follow-through.

After all, he is directly responsible for managing and bringing to fruition an enormous number of projects and legislative initiatives considered vital to the Chesapeake Bay region. Most notable among them:

- The $307 million Poplar Island Project, which recycles clean dredged materials from the Port of Baltimore's shipping channel to create the largest habitat restoration project ever undertaken in the United States;
- New funding for alternative transportation systems on Federal lands that resulted in a reduction of congestion, improved public access, reduced air pollution and increased protection of natural resources in and around national parks and wildlife refuges.
- Creation of the Chesapeake Bay Gateways Network, linking interpretive programs in local, state and Federal parks throughout the watershed; and most recently,
- Establishment of the Captain John Smith Chesapeake National Historic Trail, the first of its kind in the country.

Still, a list of accomplishments cannot capture the essential leadership that Stek provided to the Bay community. Yes, he was an employee of a United States Senator representing the state of Maryland. But Stek knew that what was good for Maryland would be good for the Bay and seized every opportunity he could, working on most of the major Federal environmental, transportation and public works statutes. His efforts have influenced the Clean Water Act, Clean Air Act, Water Resources Development Act, SAFETEA-LU, and the 2002 Farm Bill, for which he successfully led efforts to increase conservation funding.

On May 10, 2007, his grateful colleagues at TCF, CBF and the Commission presented Charlie Stek with a pair of bronze blue-winged teals to remind him of their appreciation for a job done well, comforting themselves with the knowledge that, though he may be taking a hiatus, we all still have his cell phone number! ■

DAVE HARP

CHESAPEAKE BAY COMMISSION STAFF

From left: Virginia Director Suzan Bulbulkaya, Maryland Director Pat Stuntz, Pennsylvania Director Marel Raub, Executive Director Ann Swanson, and Administrative Officer Paula Hose.

CREDITS

Scaling Up was prepared by Commission staff with contributing writer Bill Matuszeski.

Pat Herold Nielsen (1948-2008)
Gifted writer, director, producer and conservationist, Pat Nielsen contributed her editorial magic to the Commission's publications — including this annual report — for the last decade. Her creativity led to a lasting improvement in the clarity and persuasiveness of our communications. Pat died on February 28 after a long battle with cancer. This annual report is dedicated to her unforgettable spirit.

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CHESAPEAKE BAY COMMISSION

The Commission maintains offices in Maryland, Virginia and Pennsylvania. Commission staff is available to assist any member of the general assembly of any signatory state on matters pertaining to the Chesapeake Bay and its watershed, as well as the Chesapeake Bay Program.

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