



Saving a National Treasure:

Financing the Cleanup of the Chesapeake Bay

A Report to the Chesapeake Executive Council
From the Chesapeake Bay Watershed Blue Ribbon Finance Panel

The Formation of the Blue Ribbon Finance Panel

The Chesapeake Bay Watershed Blue Ribbon Finance Panel was formed pursuant to Chesapeake Executive Council Directive No. 03-02, approved in December 2003. The Panel was established to identify funding sources sufficient to implement basinwide clean-up plans so that the Bay and its tidal tributaries would be restored sufficiently by 2010 to remove them from the list of impaired waters under the Clean Water Act.

The *Chesapeake 2000* agreement, signed on June 28, 2000, by the Chesapeake Executive Council, recognizes that “improving water quality is the most critical element in the overall protection and restoration of the Chesapeake Bay and its tributaries.” To that end, the Executive Council committed to a partnership effort that would correct the nutrient- and sediment-related problems in the Chesapeake Bay and its tidal tributaries by 2010.

In December 2003, the Executive Council endorsed new ecologically based water quality criteria and stringent new loading allocations for the Bay’s primary pollutants: nutrients and sediment. The Bay Program’s leadership also committed to completing Tributary Strategies in 2004 that would meet these water quality goals and load allocations. Finally, the Executive Council directed the Chesapeake Bay Program “to establish and convene a Chesapeake Bay Watershed Blue Ribbon Panel to consider funding sources to implement the Tributary Strategies basin-wide and to make recommendations regarding other actions at the federal, state and local level to the Executive Council.” The Directive called for a detailed report of recommendations from the Panel in October of 2004.

The Panel is composed of fifteen distinguished leaders from the private sector, government and the environmental community. Members were appointed by the governors of the states in the Bay watershed — Delaware, Maryland, New York, Pennsylvania, Virginia and West Virginia — as well as by the Mayor of the District of Columbia, the Chair of the Chesapeake Bay Commission and the Administrator of the U.S. Environmental Protection Agency. Additional members were appointed to provide the full range of financial and stakeholder expertise.



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Chairman's Summary

Why We Must Act Now

The Chesapeake Bay is America's largest and most biologically diverse estuary, home to more than 3,600 species of plants, fish and shellfish. The United States Congress calls it "a national treasure and a resource of worldwide significance."

Today the Chesapeake Bay is at a turning point. A key part of the region's heritage and economy, agriculture, is also the largest single source of pollution into the Bay, and current efforts to correct these problems are underfunded and poorly coordinated. Forests, nature's own pollution control system, are disappearing at the rate of 100 acres a day.

Meanwhile, population in the watershed has grown to 16 million residents, increasing nutrients from wastewater treatment facilities and adding new shopping centers, highways and housing developments. The resulting runoff of nutrients and sediment has polluted the Bay's waters and damaged its ecosystem.

Simply put, restoration efforts are being overtaken by current trends.

To save the Chesapeake, we must act now and act boldly. A major financial investment is needed, coupled with improved coordination of the restoration effort on a watershedwide scale. Finally, we must secure a permanent source of funding for the restoration to be successful over time.

THE RESTORATION EFFORT

Responding to a public outcry, in 1983 the states of Maryland, Virginia and Pennsylvania, the District of Columbia, the Chesapeake Bay Commission and the U.S. Environmental Protection Agency committed to a historic Bay Agreement, creating the regionwide partnership known as the Chesapeake Bay Program.

For twenty years the Chesapeake Bay Program has coordinated Bay restoration efforts. Through a remarkable state-federal partnership, the program has developed the most sophisticated estuarine science in the world. The partners have built unparalleled cooperative efforts and pioneered clean-up strategies that have resulted in measurable gains in reducing the flow of pollutants into the Bay.

In spite of its commendable work, the Chesapeake Bay Program is not fully equipped to meet the future challenges of restoring the Bay. The reason is simple. It lacks a permanent funding base that is sufficiently large to do the job.

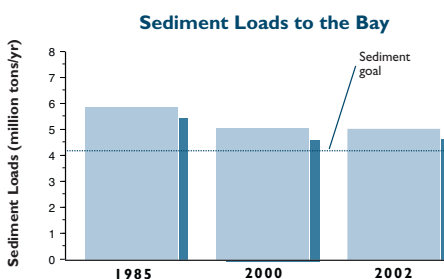
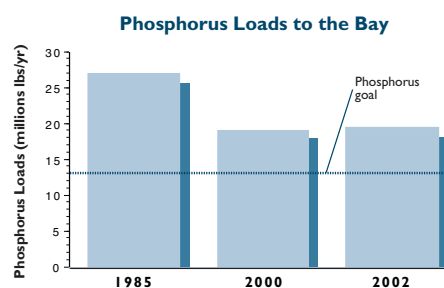
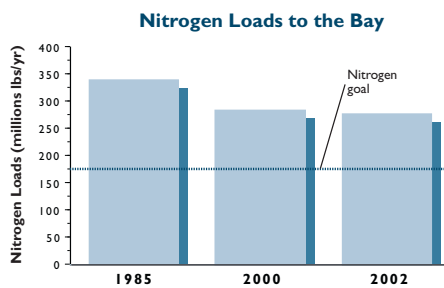
The lack of adequate funding and implementation has left the Bay effort far short of its goals. In its current state, the Bay supports less than half the underwater grasses that were here in 1950, and the estuary's primary filter feeder, the oyster, has fallen to two percent of mid-20th century levels.

The plight of the Bay has not gone unnoticed. Lawsuits have been filed calling for full enforcement of the Clean Water Act, and a 1999 consent decree executed in federal court in Virginia has led the Bay Program to commit to a 2010 deadline for removing the Chesapeake Bay from the federal list of impaired waters. In its landmark agreement, *Chesapeake 2000*, the Chesapeake Bay Program has produced a roadmap for the recovery of the Bay, outlining a range of programs meant to cut the flow of pollutants and restore the Bay's living resources by 2010.

As described in this report, excess nutrients and sediment have identifiable sources — farms and feedlots, municipal and industrial wastewater treatment plants, air deposition,



The Chesapeake is the largest estuary in the U.S. It has seen massive increases in the amount of nutrients and sediment entering its waters, and massive declines in oysters and underwater grasses.



Source: Chesapeake Bay Program Watershed Model

and runoff from cities and suburbs. The difficulty has been in dedicating adequate funds to implement much-needed programs to control this pollution and reverse the Bay's decline.

THE WORK OF THE BLUE RIBBON FINANCE PANEL

In an effort to identify the financial resources essential for cleaning up the nation's largest estuary, the Chesapeake Executive Council in December 2003 called for the creation of a Blue Ribbon Finance Panel to make recommendations for the effective funding and financing of the Bay clean-up effort.

We have, during the past seven months, been briefed on the results of studies detailing the causes of the Bay's degradation, and the level of nutrient and sediment control required to restore the Bay's water quality and to remove the Bay from the Clean Water Act list of impaired waters.

We have also received background reports prepared

for the Panel by Chesapeake Bay Program partners that examine the sources of water quality impairment, including information about the major sources themselves and projections of future growth. We were informed about the types of technologies that will need to be employed, about projected costs of achieving necessary reductions by pollutant source, and about current funding for nutrient and sediment control.

We have drawn some conclusions.

First, we have concluded that while it is difficult to determine the full costs of restoring Bay water quality, it is clear that current funding does not begin to meet financing needs for restoring Bay water quality by 2010. What funding is available remains insufficiently prioritized and directed.

The state Tributary Strategies — the jurisdictions' plans for achieving nutrient and sediment reductions — are still being completed. Possibilities for reducing costs are also still being explored,

through innovative initiatives such as trading and through new, more cost-effective technologies. At the same time, we face continual cost increases in our efforts to reduce nutrients and sediment, especially since more than 100,000 people move to the Chesapeake watershed every year, and each day development in the basin adds to urban and suburban stormwater runoff and the disruption of natural hydrology.

The restoration of the Bay will only become more expensive over time.

A second conclusion is that it will be difficult to achieve a fully integrated approach for funding and implementation, given the number of jurisdictions — six states and the District of Columbia — along with the large presence of federal facilities and operations in the watershed. While the Chesapeake Bay Program has repeatedly shown what can be accomplished through a strong federal-state partnership, the Tributary Strategies for achieving the

2010 water quality commitment — upon whose implementation the state of the Bay will depend — are state-specific and do not incorporate the benefits of interstate or collective action.

A number of federal, state and local programs provide some funding for reducing nutrients from urban and agricultural sources, and existing regulatory programs play a significant role in controlling pollution, including air emissions, runoff from new development, and discharges from wastewater treatment plants and other “point sources.” Existing programs — and especially existing funding — do not, however, begin to meet the financing needs for restoring Bay water quality by 2010. They leave as yet a large financing gap.

The Panel presents, in the context of specific funding needs, a number of suggestions for more effectively implementing existing funding programs and standing authorities to restore Bay water quality. The Panel reached an early and strong consensus, however, that simply improving existing programs alone will provide too little and will take too long to restore Bay water quality by 2010. Something more substantive and dramatic will be required.

Keeping to the goal of restoring Bay water quality by 2010, moreover, is fully consistent

with the commitment the Chesapeake Executive Council made in *Chesapeake 2000*. It is also important from the standpoint of the court-established deadline for meeting water quality requirements (measured as total maximum daily loads, or TMDLs). But the Panel believes there is another factor that makes the 2010 goal so essential: with each

A 1999 consent decree executed in federal court in Virginia has led the Bay Program to commit to a deadline of 2010 to remove the Chesapeake Bay from the federal list of impaired waters.

passing year, population growth and development in the watershed make it more difficult and thus more and more expensive to protect Bay water quality. Financially, it is wise to make this investment in the Bay now. Legally, it would be imprudent to ignore the consequences that would flow from failure to make this investment.

The Panel’s deliberations have been guided by a set of principles. These guiding principles are fundamental to our approach and to any successful financing initiative going forward. We list them here:

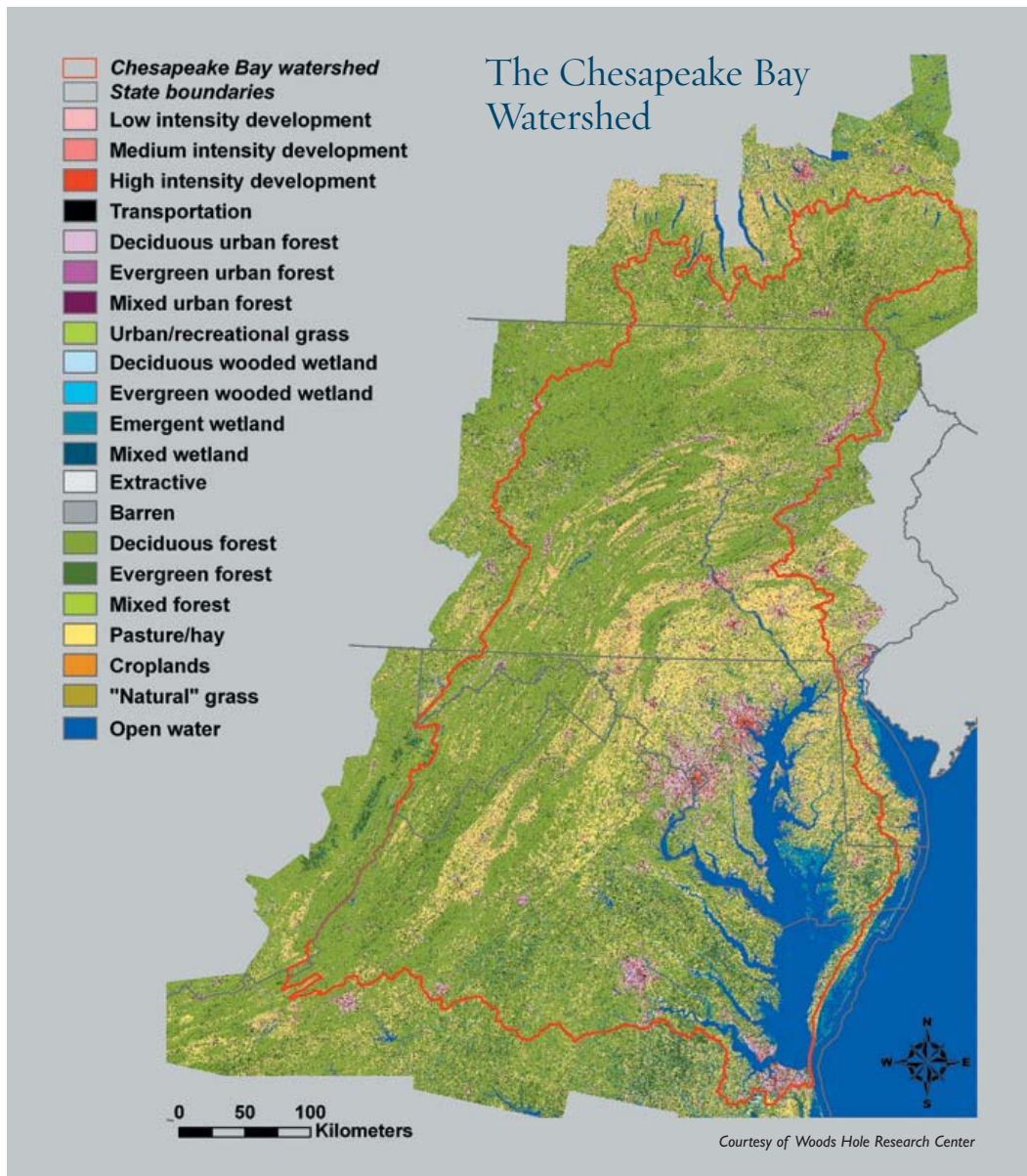
- **Immediacy** — While long-term efforts are essential, programs must be put in place immediately to meet the deadline of removing the Bay from the list of impaired waters by 2010.
- **Simplicity and Efficiency** — Approaches must be simple enough to be understood and accepted by the public and easily used by a broad range of stakeholders. Through competition and streamlining, jurisdictions should strive for new levels of efficiency and cost effectiveness.
- **Innovation and Flexibility** — Financing mechanisms should be innovative and creative, and where appropriate should make use of trading, watershed permitting and other promising concepts. Approaches should also be flexible enough to allow adaptations to local needs, priorities and preferences.

- **Cooperation and Inclusiveness** — For the Chesapeake Bay cleanup to succeed, high-level cooperation must occur among a range of stakeholders, including state and federal agencies. The Panel recommends also that the Secretary of the U.S. Department of Agriculture serve on the Executive Council of the Chesapeake Bay Program. A successful regional effort must be an inclusive one. The Panel therefore recommends that the governors of the headwater states be invited to serve on the Bay Program’s Executive Council.

- **Prevention, Regulation and Enforcement** — Preventing pollution is much cheaper than cleaning up later, so pollution prevention becomes a financial as well as an environmental benefit. Also, taxpayers should not have to pay for clean-up efforts that result from individuals, companies or others breaking the law. Laws and regulations should be vigorously enforced, saving taxpayer dollars and ensuring both the protection of the environment and a level playing field for all.

- **Education and Outreach** — In the end, participation by a wide range of stakeholders will prove essential to the successful cleanup of the Chesapeake Bay. For example, lands that are forested, farmed or developed often rest in private hands. The best means for gaining the cooperation and participation of these private landowners is through education and technical assistance. We must persuade such stakeholders to help keep nutrients and sediment out of our waterways, and then show them how. The Panel recommends that one percent of all restoration funds be set aside as a pool for competitive awards to nonprofit organizations that demonstrate an expertise in outreach, education and assistance.





CHESAPEAKE BAY FINANCING AUTHORITY

The Panel believes that restoring the Chesapeake Bay and its watershed depends on a strong regional financing mechanism aimed at coordinated funding and implementation of concrete clean-up plans, built on the state's Tributary Strategies and based on coordinated timing and performance. Time is of the essence and we urge immediate action.

To provide this regional funding mechanism, the Blue Ribbon Finance Panel proposes that the six Bay watershed states and the District of Columbia create a Chesapeake Bay Financing Authority, capitalized by the federal and state governments, with the capacity to make loans and grants.

The Chesapeake Bay Financing Authority would finance projects according to an Intended Use Plan consonant with U.S. EPA guidelines and built on each state's Tributary Strategies. The U.S. EPA would work in collaboration with the Authority. The Financing Authority would direct funds toward efforts deemed the most effective, efficient and innovative, regardless of geography. It would leverage funds and unleash innovation and efficiency through competition.

An initial capitalization of \$15 billion will be necessary to launch the Financing Authority, with a mix of federal and state matching funds. It is the Panel's firm conviction that a meaningful investment in the Bay now will be returned many times over

in an improved quality of life and through positive economic impacts on fishing, recreation, real estate, tourism and other regional businesses.

Although modeled after the successful Clean Water Act State Revolving Loan Fund, the Financing Authority would exist as a separate entity, and capitalization grants would be provided in addition to existing State Revolving Loan Fund levels.

The Financing Authority would be simple and flexible, allowing jurisdictions in the watershed to pursue a variety of concrete actions, and would recognize that all Bay clean-up efforts do not have the same priority in every jurisdiction.

Given the enormity of the task, and to ensure that this funding vehicle is sustained over the long

term, beyond the initial federal-state capitalization, the Financing Authority should devise mechanisms for a sustainable revenue stream. The states would collect this revenue and retain a portion of the funds to support state and local clean-up programs. This revenue stream could be derived from various sources, including many of the proposals advanced by the Blue Ribbon Panel subcommittees (e.g., surcharges on water and sewer fees, septic fees, and development fees).

While the revolving loan structure of the Financing Authority remains in keeping with current federal strategies, the Authority must also have the capacity to make grants with a portion of its funds. This ability is especially important in the Chesapeake Bay clean-up effort, where the participation of the agricultural community, as well as at-risk urban communities, will be key to our success. Funds could be targeted to certain agricultural areas, for example, providing both technical assistance and the financial assistance necessary for implementing best management practices.

As the jurisdictions work to establish the Financing Authority, the governors of the states and the Mayor of the District of Columbia should cooperate to set up a voluntary funding coalition that would use existing authorities, such as State Revolving Loan Funds. This interim cooperative effort would be capitalized by federal, state and local government, at a proposed ratio of 80/20 — the same as that legislated for current State Revolving Loan Funds across the country. As of January 1, 2007, the interim cooperative would transition to a permanent Chesapeake Bay Financing Authority, which would give loans and grants, as detailed in a separate section below.

In the end, only an ambitious financing partnership, with meaningful investment by federal, state and local partners, will remove the ongoing threat to the Chesapeake Bay and ensure the rightful restoration of our national treasure.

— The Honorable
Gerald L. Baliles, *Chair*

A Statement of the Problem

The Challenge Facing the Chesapeake

The Chesapeake Bay, the nation's largest estuary, is in peril. Since the 1950s the Bay ecosystem has suffered massive losses of habitat and declines of some of its most important species. The toll of an unhealthy Bay is felt in fishing communities where watermen can barely make a living from a Chesapeake that has supported their families for generations. Boaters and tourists see a Bay covered in algae blooms that can rob oxygen from the water below. Ducks and waterfowl struggle to find enough food to survive a winter on the Chesapeake. Swimmers encounter scum and sediment in today's degraded waters.

Research has singled out the primary cause of the Bay's woes — excess nutrients from farms, wastewater treatment plants, septic systems, city streets, suburban lawns, even from the air.

During the past three decades, research has singled out the primary cause for the Bay's woes: excess nutrients. From farms, wastewater treatment plants, septic systems, city streets, suburban lawns — even from the sky — these nutrients have turned the “faire bay” described by Captain John Smith into a murky waterbody where some areas of the bottom have as little oxygen in summer as the surface of the moon. Today, about 16 times as much nitrogen and 30 times as much phosphorus enter the Bay as when John Smith explored the estuary. Much of that increase occurred in the past half century, as air pollution, the watershed's population and agricultural use of fertilizer all rose sharply.

Nutrients spur algae growth that, along with sediment, blots out the

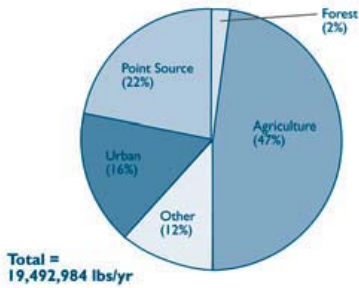
sunlight needed by beds of underwater grasses that provide food and habitat for fish, shellfish and waterfowl. The loss of these grasses ripples through the Bay — juvenile blue crabs are 30 times more abundant in grass beds than in barren areas. Too few crabs not only reduce the watermen's commercial catch but also alter the food web. And, unlike algae, underwater grasses anchor the Bay bottom with their roots and capture drifting sediment.

Excess algae does further harm as it sinks to the bottom of the Bay and is decomposed by bacteria whose high metabolism uses up the oxygen in the water. The result is oxygen-starved “dead zones” which put huge amounts of habitat off limits to fish, shellfish and other Bay dwellers each summer.

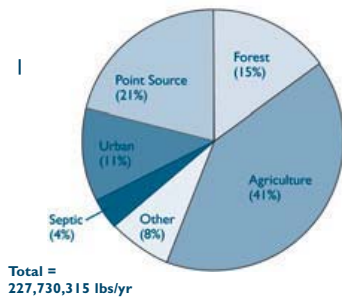
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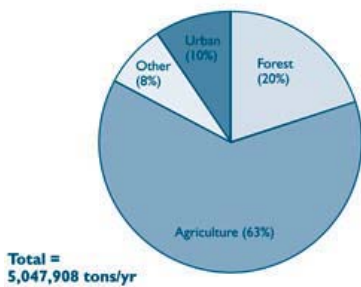
Phosphorus Sources to Chesapeake Bay in 2002



Nitrogen Sources to Chesapeake Bay in 2002



Sediment Sources to Chesapeake Bay in 2002



Source: Chesapeake Bay Program Watershed Model

Today, problems can be seen throughout the Bay ecosystem:

- In the 1950s, oxygen depletion in the Bay was rare, but today it is an annual event. As much as 40 percent of the Bay in some years has either too little oxygen to support fish and shellfish, or none at all. Nutrient reductions so far have been too modest to improve the situation.

- Major fish and shellfish populations have suffered serious declines, and are at, or near, all time lows, including shad, blue crabs, menhaden and oysters.

- Striped bass, the fish most closely associated with the Bay, has rebounded, but scientists say as much as half the population is infected with a potentially lethal disease. Poor water quality and a disrupted food web are blamed for making the fish susceptible to infection.

- Underwater grass beds cover only about a third of the area they did just a few decades ago. After modest improvements in the late 1980s, total grass bed acreage in the Bay has remained relatively stagnant.

- Large reefs of oysters once filtered the Bay's waters and provided important structural habitat. Now severely diminished oyster stocks can no longer provide that ecological function. With fewer Bay grasses and fewer oysters, the Bay has lost its natural filters.

- Natural filters have disappeared on land as well. Wetlands and forests, especially those located along rivers and streams, cover only a portion of the area they did in pre-Colonial times. Modern development is adding greater amounts of concrete, asphalt and other impervious surfaces.

Under *Chesapeake 2000*, the Chesapeake Bay Program outlined an ambitious effort to reverse the Bay's decline. Bay Program partners have agreed to reduce nitrogen pollution from an estimated 285 million pounds per year in 2000 to no more than 175 million pounds by 2010. Similarly they have pledged to reduce phosphorus from about 19 million pounds per year to less than 13 million pounds. The challenge is indeed daunting — the region must essentially quadruple the pace of the Bay cleanup to meet the 2010 commitment.

To achieve these goals, the states have developed Tributary Strategies — restoration plans detailing the specific actions needed to reduce nitrogen and phosphorus in each river basin. These plans are still evolving as jurisdictions struggle to write plans that will achieve their goals.

So there is much to be done and not much time in which to do it. Action is required and excuses are no longer defensible.



What is the Chesapeake Bay Program?

The Chesapeake Bay Program is a regional partnership leading and directing protection and restoration of the Chesapeake Bay. It was formed in 1983, with the first Chesapeake Bay Agreement signed by the governors of Maryland, Virginia and Pennsylvania, the Mayor of the District of Columbia, the Chairman of the Chesapeake Bay

Commission (a tri-state legislative body) and the Administrator of the U.S. Environmental Protection Agency, representing the federal government. These officials constitute the Chesapeake Executive Council, which meets annually to set policy direction and call for specific actions. In 2002, the partnership welcomed the governors of Delaware, New York

and West Virginia, who joined the water quality restoration effort. The statutory authorization for the Chesapeake Bay Program is contained in Section 117 of the federal Clean Water Act.

The day-to-day work of this partnership brings together scientific and technical experts from all over the watershed. The Program works with





What We Have Lost

From Secretary Murphy's testimony to the House of Representatives Committee on Government Reform on August 20, 2004.

"Let me give you a final perspective on what these programs mean to me personally and to Virginia. As some of you know, I am from Virginia's Northern Neck, a peninsula bounded by the Potomac, the Rappahannock and the Chesapeake Bay. I was born there and have lived nearly all of my life on the banks of the Potomac River. Since I began my career in public service as a member of the House of Delegates, I have seen changes in the resources of the Bay.

In 1984 oyster harvests in Virginia were over 4 million pounds; in 2003, the harvest of oysters yielded just over 77,000 pounds. In 1984 there were 200 oyster-shucking houses in Virginia; in 2003 there were 20.

In 1984 blue crab harvests in Virginia were over 50 million pounds; in 2003 the harvest was down 58 percent to just over 21 million pounds. In 1984 there were 75 crab-picking houses in the Commonwealth; in 2003 there were 10.

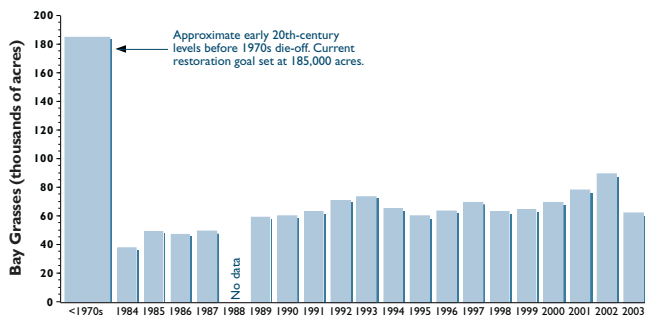
When one considers these statistics there is small wonder that those engaged in the fishing industry feel that they have paid the cost of our neglect of their interest in water quality and habitat protection. We are not talking simply about water quality improvements for water quality's sake; improved water quality will contribute mightily to Virginia's economy, whether it be commercial or recreational fishing or tourism."

— W. Tayloe Murphy, Jr.,
Secretary of Natural Resources
Commonwealth of Virginia

researchers, policymakers and resource managers from universities, conservation organizations, business and industry, and local, state and federal government agencies. Through committees, partners discuss actions and make decisions by consensus. To implement the agreements, the Bay partners use a variety of voluntary and regulatory tools.

The most recent master agreement, *Chesapeake 2000*, contains comprehensive commitments that will guide Bay restoration well into the 21st century. The agreement addresses five key areas: protecting living resources, restoring vital habitat, improving water quality, encouraging sound land use, and expanding community stewardship.

Submerged Aquatic Vegetation in Chesapeake Bay



Source: Adapted from Chesapeake Bay Program and Moore et al. 2004

Investing in a Restored Chesapeake Bay

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The Chesapeake Bay has provided the foundation of the economic, cultural and social character of much of the Mid-Atlantic region. But the Bay is more than simply the premiere regional economic asset in the Mid-Atlantic. The Chesapeake is home for every branch of the United States Government, and virtually every executive branch department and agency has its home office located within the watershed. America's history and culture have taken shape within the expansive Bay watershed, from the distant headwaters in Cooperstown, through the battlefields of the Civil War to the earliest colonial footprints in Jamestown. The Bay serves as the center of the ecologically vital North American Flyway for migratory birds, and it is the spawning area for 90 percent of all the striped bass in the Atlantic.

It is no exaggeration to say that an investment in the restoration of the Chesapeake is an investment in America.

The Chesapeake Bay Watershed Blue Ribbon Finance Panel was charged with developing new and innovative ways to finance and secure this extraordinary resource's future as a vital and valuable ecosystem.

ESTIMATING COSTS

The Blue Ribbon Panel found that calculating the shifting costs, available funds, and the resulting funding gap for restoring water quality was a difficult task, but ultimately reached a consensus to target \$15 billion for the Bay.

Despite more than twenty years of a formal restoration effort, no summary cost of all needed restoration activities is available. Among the most comprehensive studies was the 2003 *Cost of a Clean Bay*, by the Chesapeake Bay Commission, which was limited to just three jurisdictions (Pennsylvania, Maryland and Virginia). Since then all of the jurisdictions have been developing detailed clean-up plans, or Tributary Strategies, and they have been calculating costs as they do so. But the Tributary Strategies are not complete and neither are the cost estimates.

The most up-to-date cost of implementing all the actions



identified in the strategies is \$28 billion in total upfront capital costs, including some items that are primarily for the benefit of local waters, not the Bay itself. The implementation strategies also require \$2.7 billion in total annual costs, which includes operation and maintenance, land rental and incentives. The Panel's analysis of these cost estimates revealed the following:

- These costs represent actions necessary to meet water quality standards watershedwide, not just Bay standards. These include those actions that are required under regulations, such as local compliance with existing permits and erosion and sediment controls, as well as commitments made specifically to address Chesapeake Bay water quality.

- The basis for including costs was not consistent from state to state. For example, the cost of legally-ordered repairs of combined sewer overflows is included for Washington D.C., but similar costs are not included for Baltimore, Maryland.

- Cost effectiveness was not the driving force in developing restoration strategies. Other factors, such as the pollution reduction potential of practices, accommodating growth and sharing the burden across sectors, all came into play.

The Panel turned its attention to answering the question – what is the funding gap to be filled? Federal, state, local and private monies currently cover a portion of this cost, but current funding for Bay clean-up efforts in virtually every area remains highly fragmented.



A BRIEF HISTORY OF THE CHESAPEAKE BAY

About ten thousand years ago, when the rising seas finished flooding the valley of the Susquehanna River, a new place was formed that became known as Chesapeake Bay. With its extensive shallow areas and many wide tidal rivers, it marked out 11,000 miles of shoreline, and received its fresh water from 110,000 miles of creeks, streams and rivers. There was nothing else like it in the world, and there still isn't.

The mix of fresh and salt water at countless salinities, the tidal flows, and the rushes of fresh water from upstream storms, the changes in

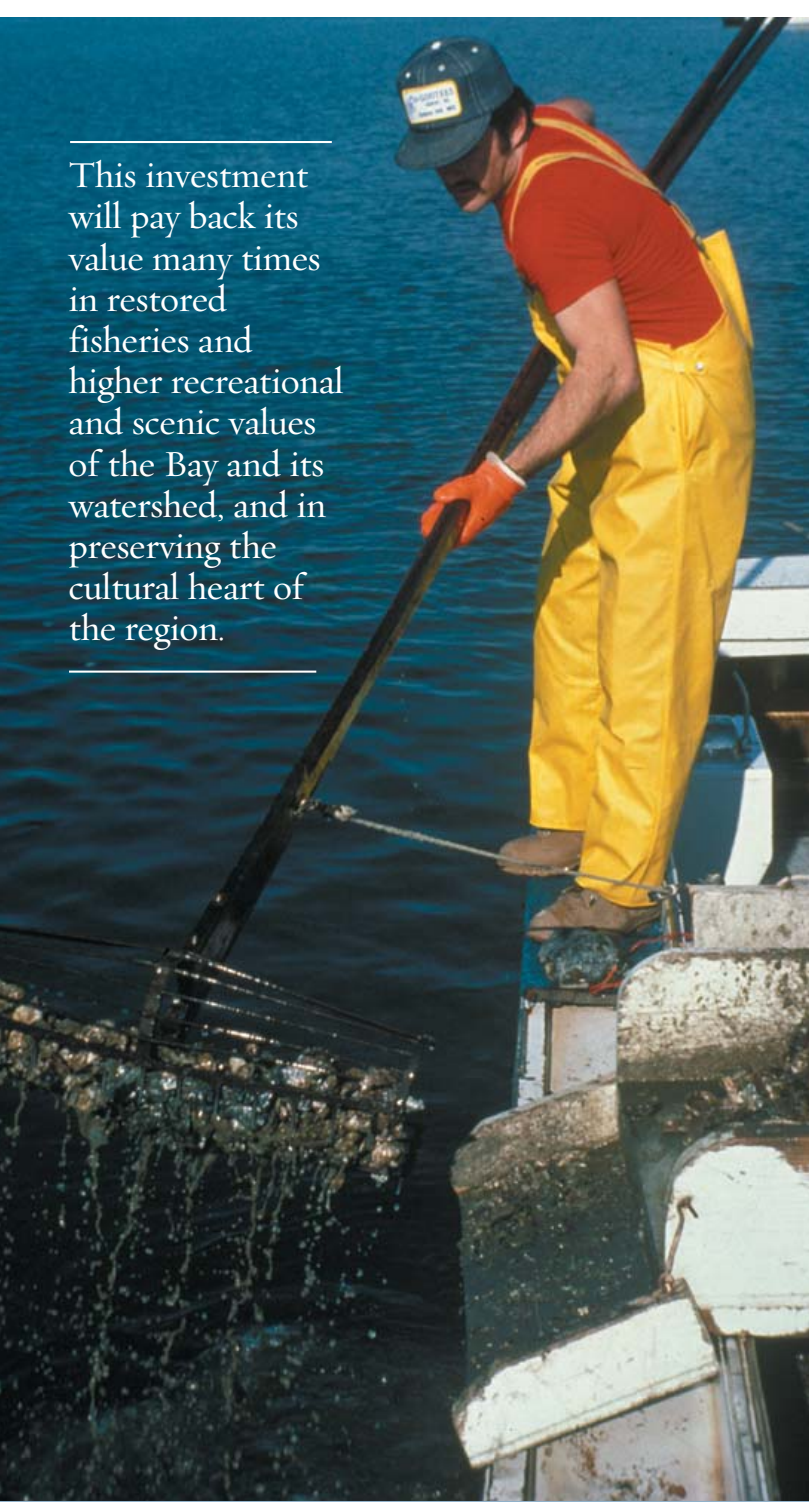
seasons and the shallowness of the Bay combined to create near perfect conditions for fish and shellfish. Indeed, the name given to the Bay by the Native Americans who settled along its shores was Great Shellfish Bay. Their footprints were not heavy – some clearing, some burning, some fishing, but little else to stress the natural systems in place.

The Chesapeake has been the center of many of America's key historic moments since that time. Beginning with the first permanent English settlement along the tidal James River in 1607, a lot has

happened on these lands and waters. Captain John Smith explored as far as the Susquehanna River at the top of the Bay and reported that there were so many fish that his men caught them in frying pans.

The colonies grew around the Bay and along the rivers, which were the highways of commerce and communication. But with these settlements came the first threats to the Chesapeake's natural resiliency. Cutting the forests and growing more crops meant more erosion, and more sediment began to enter the Bay. Core samples taken by scientists

This investment will pay back its value many times in restored fisheries and higher recreational and scenic values of the Bay and its watershed, and in preserving the cultural heart of the region.



The Value of the Bay

What is the Chesapeake Bay worth?

Though that question may be difficult to answer, various studies have come up with some estimates. In Maryland, for example, economists have measured recreational boating activity at some \$2 billion a year. In Pennsylvania, the estimate is \$4.7 billion a year for fishing activities across the whole state, resulting in 43,000 jobs outfitting, lodging and guiding anglers. A University of Maryland study completed 15 years ago attempted to place a number on the value of the Bay and came up with \$678 billion. Today inflation alone would likely push that number above a trillion.

Any way you calculate it, the economic value of the Bay and its rivers is enormous. Homes along the waterfront are often valued in the hundreds of thousands or even in the millions of dollars. Businesses in the region are able to attract top-notch talent because of the lure of the Chesapeake. In fact, from real estate to shipping to seafood and tourism, it would be difficult to identify a major segment of the region's economy that is not shaped and enhanced by the Chesapeake.

As well as bolstering economic activity, a clean environment also has direct benefits for human and ecological health. Economists have analyzed those benefits in connection with Clean Air Act programs, and determined that by 2010 related benefits will total some \$110 billion. Similar calculations can surely be done for the Bay, its watershed and its airshed.

In the end, however, the Chesapeake Bay is more than just a powerful economic engine for the region. The experience of fishing, sailing, swimming, crabbing, or simply enjoying the Bay's timeless rhythms speaks of a value beyond dollars and cents. The historic and cultural values in the Bay watershed are also beyond calculation. From the time of the first Native Americans through the Revolutionary and Civil Wars, we have built a country and spilled our blood on the Bay's shores. A key part of our American civilization was born in its watershed.

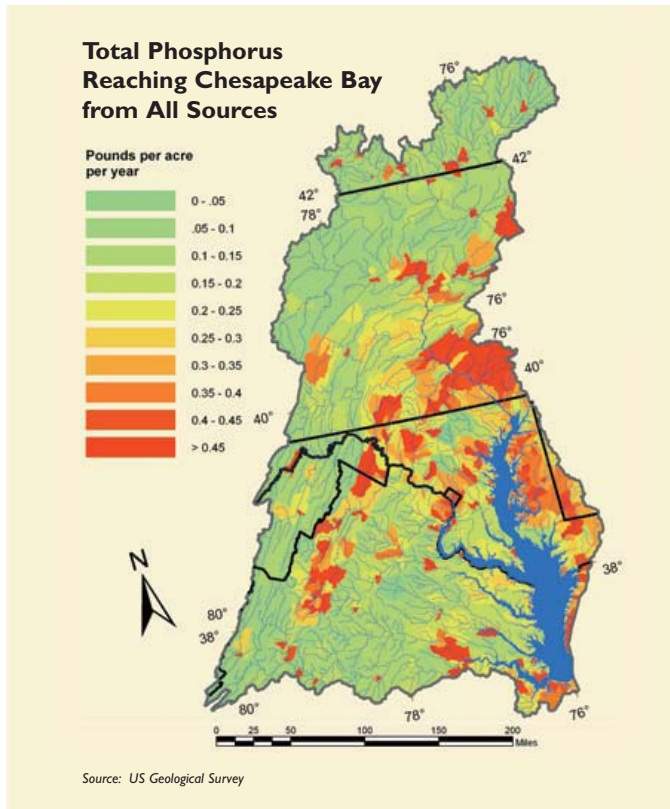
So what is the Chesapeake Bay worth? Perhaps in excess of a trillion dollars to an economist. But to America, the Chesapeake Bay is one of those rare jewels that really does qualify as priceless.

today show a major increase in these sediment loads beginning in the mid-1700s, when tobacco became a major crop and slave labor made large plantations possible.

For the next century, much of America's history happened here. The Chesapeake basin became a famous battleground, even as it continued to develop as a center of fishing, farming and forestry. The surrender of Cornwallis and his British armies at Yorktown in 1781 was made possible because the French fleet was in the Chesapeake fending off British ships with their

cargo of reinforcements. The British returned in 1812 via the Chesapeake, cutting across from Marlboro on the Patuxent River to capture the new capital on the Potomac, where they burned the White House and the Capitol Building. Later, many of the greatest battles of the Civil War took place in the Bay's watershed, including Gettysburg and Antietam, culminating in the Confederate surrender at Appomattox Courthouse. Modern naval warfare also began near the mouth of the Bay, where the *Monitor* met the *Merrimac*.





- Funding originates in an array of state and federal programs, with little coordination.
- Local communities across the watershed differ greatly in their financing ability.
- Even programs directed at a single sector, such as agriculture, may require different forms, criteria and evaluations, placing an added burden on the user.

No overarching mechanism exists for collecting, distributing or targeting funds across the

Chesapeake Bay watershed.

In spite of the uncertainties, the Panel was able to reach consensus on a target of \$15 billion for its deliberations. The figure of \$15 billion ensures funding for the most cost-effective areas of wastewater treatment and agriculture, the major areas of emphasis in the states' Tributary Strategies. Addressing these two sectors alone will provide major benefits to water quality. This amount also provides limited funding for essential stormwater and septic work.

Additionally, the Panel concluded

that \$15 billion accounts for the approximate costs for restoration commitments outlined in the Tributary Strategies that are unique to Chesapeake Bay restoration. As mentioned above, the Panel found that a total cost of \$28 billion includes practices that are required by regulations primarily for local, not Bay, water quality benefits — though exact costs for complying with regulations remain uncertain. The Panel recognized that Chesapeake Bay water quality restoration will not occur without these practices and that state and local governments are struggling to cover these costs. Indeed, several Panel members took particular note of the large national funding gap in addressing water infrastructure needs.

THE PANEL'S APPROACH

The Panel started its work by looking at the sources of massive nutrient and sediment loads to the Bay that are so severely degrading water quality and habitat. They looked at characteristics of each source sector, with projections for future growth and available solutions, and reviewed the current sources of funding for clean-up actions. Extensive background materials were provided to the Panel on the following areas:

- Municipal and Industrial Wastewater
- Agricultural Runoff
- Runoff from Developed Lands and Air Deposition

The Panel also received a

briefing on the critical role of forests in maintaining Bay water quality and natural habitat.

To examine different sources of funding in depth, and to draft recommendations, the Panel divided into three subcommittees, each oriented toward a major source of funding:

- Federal
- State and Local
- Nongovernmental

GENERAL FINDINGS AND OBSERVATIONS

The Panel learned that the Chesapeake Bay is at a turning point. Nutrients and sediment flowing into the Bay have severely damaged the capacity of the Bay's tidal waters to support thriving fish and shellfish populations. Though there have been numerous efforts to reduce the flow of nutrients and sediment, the Bay remains severely degraded. To restore the Bay, current nitrogen loads must be cut nearly in half, and phosphorus loads must be cut by one-third.

The legal deadline for Chesapeake Bay tidal water restoration is 2010. With only six years to go, this is clearly an immense and daunting task to finance and implement. But time is not on the Bay's side. Looking at the future of the watershed, the Panel heard that if land use practices continue at the current rate, more than two million acres of farm and forest in the Chesapeake watershed will be converted to development over the

Beginning in the 19th century a new set of pressures began to influence the Bay and its bounty. New canals and railroads made it possible to bring materials to market and ship back manufactured goods. Farming became more intensive and forests were clearcut and floated down the rivers. With industrialization came expanded ports and dredging, dams for electricity and pollution of the rivers. The Bay remained remarkably unaffected by these changes, at least on the surface. While a few harbor areas in Baltimore, Washington and Norfolk became dangerously contaminated, not only

the health, but even the bounty of the rest of the rivers and the Bay itself seemed to prevail.

It was in the 1950s and 1960s that people first began to notice the change. The water lost some of its clarity, the crabs and oysters and other fish seemed less easy to find and harvest, and the underwater grasses began to thin out. It took a while for a consensus to emerge that something was wrong, and when it did there were many potential suspects. Was it toxic discharges from industries along the Bay's rivers and shores? Was it all the raw sewage from growing cities?





next 25 years. Without new programs in place, by the year 2030, development will add about 35 million pounds of nitrogen a year to the Bay's nutrient load, erasing much of the progress made since 1985. Restoring the Bay's ecosystem once the natural hydrology is so radically altered could prove impossible. In any event, restoration efforts would be immensely more costly than if undertaken now.

After a detailed review, the Panel came to the conclusion that, while there were many ways to improve existing funding mechanisms (some of which are included as supplementary recommendations in this report), there is no possibility that the huge funding gap for Bay water quality restoration can be filled simply by augmenting or modifying existing programs.

As noted in the Chairman's Summary, the Panel found that ultimately restoring the Bay's water quality will require new institutions that will meet financing needs for years to come. To alleviate the fragmentation and severe limitations found in existing funding, to foster a coherent regional structure for funding and implementation of the Bay cleanup programs, to provide the means to leverage sustainable revenue streams, and to establish the financing needed to restore Bay water quality by 2010 and maintain it thereafter, the Panel recommends the establishment of a regional Chesapeake Bay Financing Authority.

Described in greater detail in the Recommendations section, this structure would be capitalized by federal and state government, and would provide essential funds for investing in a restored, productive Chesapeake Bay. This investment will pay back its value many times in restored fisheries and higher recreational and scenic values of the Bay and its watershed, and in preserving the cultural heart of the region.

To set the stage for the Panel's recommendations, the following section provides a summary of what the Panel learned about each of the source sectors, existing sources of funding, and the need for financing.

What was hurting the Bay?

There then began an age of scientific debate and discovery about the Chesapeake Bay that was unprecedented in the world. Eventually it led to the first understanding of how estuarine systems like the Chesapeake really work, and what affects them. Gaining an understanding of the physics of a mixed salt and fresh water system like the Chesapeake was a major breakthrough. It was here in the Bay that the interplay of the layers of salt and fresh and warm and cold waters and their impacts on the species living

there was first understood. And it was here that the cause of degradation of these estuarine systems was first pinned, not on toxics or bacteria from sewage, but on the excess of nutrients and sediment being loaded to the system, primarily through the rivers.

This last conclusion came as a shock, not so much because it was unsuspected, but more because of what it meant had to be done. Two things have to be understood at this point. First, the Clean Water Act and EPA had not placed much emphasis on nutrient and sediment reductions because, unlike bacteria and toxics, they

did not directly affect human health.

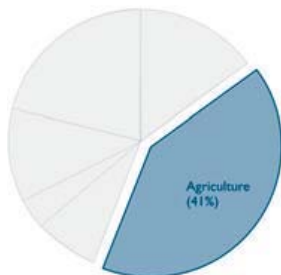
People and politicians reacted more to lead contamination and beach closures than they did to algae blooms, smelly marshes and dead fish. Much as they didn't like the latter, the priorities were the perceived threat to children and others. As a result, at the end of the 20th century the single most significant remaining water quality problem in the country was nutrient overloads to lakes, rivers and estuaries. Understanding precisely how these nutrients behaved in lakes and bays posed a difficult challenge.

Second, nutrient reduction for the

Chesapeake was not a simple matter of cleaning up a few sewage treatment plants that discharged high levels of nitrogen and phosphorus. The Chesapeake watershed was unique in the world for its extensive land area draining into a very shallow system. As a ratio of land area to water volume, it is nearly 10 times higher than the next body of water on earth. This meant that enormous efforts would need to be undertaken to reduce agricultural nutrients and urban runoff as well as retrofit hundreds of sewage treatment plants. The task would be Herculean.

What We Have Learned About the Sources of the Bay's Decline

Nitrogen Sources to Chesapeake Bay in 2002

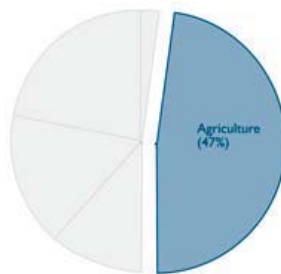


AGRICULTURE Maintaining the watershed's agricultural heritage while restoring the Bay

The agricultural heritage of the Chesapeake Bay region is rich and multifaceted. Farms provide food and fiber, but they also provide significant open space, aesthetic and environmental values for all of us. Conserving farmlands in the watershed is a goal of the Chesapeake Bay Program that the Panel wholeheartedly supports.

But there is a problem. Agricultural operations remain the largest single source of nutrient and sediment loads to the Bay. It is apparent from the information presented to the Panel that of all financing choices, reducing excess nutrients and sediment runoff from agricultural lands will yield the greatest return on investment. We are persuaded by the economic information that farmers in the watershed will need federal and state financial assistance, on a sustained basis, to achieve the needed load reductions.

Phosphorus Sources to Chesapeake Bay in 2002



Source: Chesapeake Bay Program Watershed Model

What we have learned about agriculture as a source of nutrients and sediment ...

- Agricultural lands account for nearly a quarter of the watershed, and in total contribute more nutrients to the Bay than any other land use. Agricultural operations produce about 41 percent of the nitrogen and 47 percent of the phosphorus loads going to the Bay. Agriculture also contributes about 63 percent of the Bay's sediment.
- Although significant efforts have been made to address environmental impacts, especially nitrogen and phosphorus runoff from manure, the Chesapeake Bay watershed ranks in the top 10 percent in the United States in terms of manure-related nitrogen runoff, leaching and loadings from confined livestock and poultry operations. In addition, areas in southeast Pennsylvania and the southern Virginia coastal region rank in the upper 10 percent of watersheds nationally in use of commercial nitrogen fertilizer.
- Specialization, intensification and concentration of

agricultural production, particularly poultry and livestock, have continued to create field, farm-gate and regional nutrient imbalances.

What we have learned about engaging the help of the agricultural community to restore the Bay ...

- To restore water quality in the Bay, all of the basin's more than 87,000 farms will need to implement best management practices (BMPs) at levels never before seen in this country. In fact, the states have committed to implement close to 30 different agricultural best management practices as part of their restoration strategies. Some of these BMPs are new technologies that have not been fully developed or field-tested.
- Farming has a long and proud tradition in the region. Many farmers see themselves as stewards of the land and many feel that they have done quite a bit to help with conservation. As private property owners, farmers are protective of their privacy and rights.
- A large number of farms in the Chesapeake watershed are small businesses, most part-



In 1983, the Chesapeake Bay states, the District of Columbia, the Chesapeake Bay Commission and the federal government signed the first Bay Agreement, a short document setting out a set of broad objectives for the restoration of the Bay's waters and living resources. This was followed by another Agreement in 1987 establishing more far-reaching objectives, including the goal to reduce nutrient loadings by 40 percent by 2000.

By the latter half of the 1990s, it was clear that the Bay's restoration was struggling. Maryland listed the Bay on its 303(d) list — sometimes known as the “dirty waters list” —

for failing to meet the state standard for dissolved oxygen in the water. The state pointed to nutrients as the cause. In 1999, EPA concluded that the Virginia portion of the Bay also needed to be listed as an impaired water for failing to meet the Virginia dissolved oxygen and aquatic life standards because of nutrients. Environmental groups initiated lawsuits to compel EPA to address water quality problems. In Virginia, settlement of a court case set a definite time frame for Bay restoration efforts.

Citizens and experts alike felt that Bay efforts needed more specific goals and road



What are Tributary Strategies?

Tributary Strategies are river specific clean-up strategies that detail “on-the-ground” actions needed to reduce the amount of nutrients and sediment flowing into the Chesapeake Bay. The strategies aim to reduce pollution coming from all sources. They are a framework that will evolve over time to chart the most efficient and effective course to a clean Bay.

Each state independently develops strategies for its river basins. Tributary Strategies are designed to address the unique land use characteristics of a river basin. By working with interested stakeholders, such as farmers, local governments, urban planners, conservation and civic organizations, states build understanding and support for the strategies.

Combined, the 36 strategies cover the Chesapeake Bay’s entire 64,000 square mile watershed with a clean-up plan. As blueprints for the future, the strategies show the incredible magnitude of the actions needed to restore the Bay. Their ultimate success relies on the collective will to put these plans into practice.

| 13

time, operating on slim economic margins. Beneficial qualities most highly regarded by the public in preserving farming operations, such as maintaining open space and providing rural ambiance, do not generate any farm income, and thus register as economic constraints on the farmer.

- Understanding traditional values about farming and property rights, and recognizing the economic setting in which the farmers operate, is the key to working with the agricultural

community to reduce runoff from farms.

- For all of these reasons, while a number of programs exist to encourage practices aimed at reducing nutrient and sediment pollution from farms, the vast majority of these efforts remain voluntary. The motivation for farmers must be adequate to achieve the needed levels of BMP adoption and load reduction.
- Education, outreach and technical assistance will be essential to enhance and expand

successful implementation of programs. Agricultural innovation and change aimed at nutrient balancing and sustainability will be critical. Business as usual will not be effective or prudent in the long term.

- Industry, landowners and governments alike must work together to achieve two equally important goals: the protection and restoration of the Chesapeake Bay and the protection of farms and the agricultural economy throughout the region.

maps to implementation. The result was the *Chesapeake 2000* agreement, with many new or revised goals for restoration and with a different approach to achieving necessary water quality improvements. In order to retain the cooperative federal/state approach in the face of new regulatory requirements being enforced under the Clean Water Act, the Program devised a unique goal — to resolve the nutrient impairments in the Chesapeake by 2010, thus removing the Bay and its tidal rivers from the federal list of impaired waters.

This bold step has required resetting to realistic levels the entire system of water quality criteria and standards in the Bay and its tidal rivers (for “designated uses”), an effort which is on schedule. It also required substantially more aggressive nutrient reduction goals than set previously. To reach proposed water quality standards, nitrogen loads must be reduced by 110 million pounds from 285 million in 2000 to 175 million pounds annually, and phosphorus loads must be cut from about 19 million to almost 13 million pounds annually.

As a result of these agreements, the states and the federal government have enacted laws and established programs to reach those goals, including a wide range of actions to support improved agricultural practices and sewage treatment plant upgrades. By 2002, an estimated 60 million pound reduction in nitrogen loadings to the Bay took average year loads from 338 in 1985 to 278 million pounds. Similar results were achieved for phosphorus. The actual impact of all this on the Bay has been complicated, however, by a series of unusually dry and wet years that have

worsened algal and oxygen conditions. This has raised public concerns over the pace of the clean-up effort and the adequacy of funding support.

In response to these growing concerns, at its 2003 meeting the Chesapeake Executive Council established the Blue Ribbon Finance Panel to examine the available means to fund a clean-up effort at the required pace to achieve the goals in the *Chesapeake 2000* agreement. This report is the result of the deliberations and conclusions of the Blue Ribbon Finance Panel.

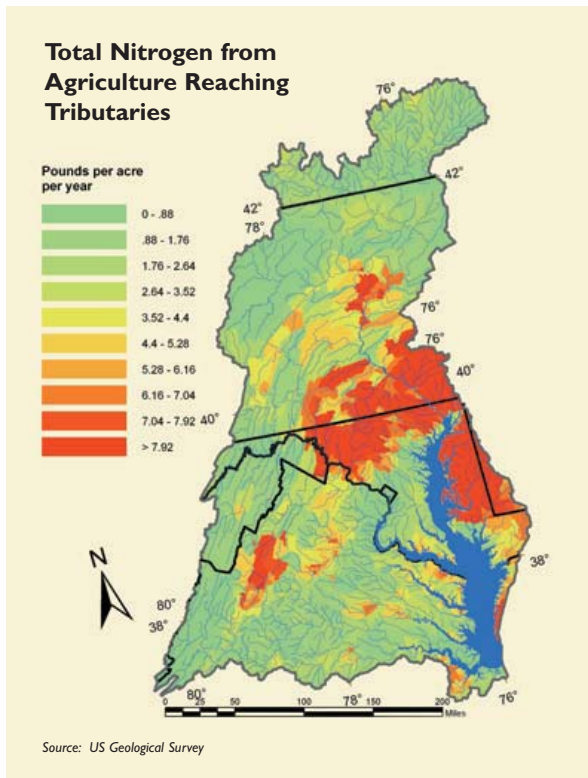


among federal programs that impede the most effective use of available funding should be lowered. Authorized cost-share levels are not being used to their maximum levels, are not allowed to be geographically targeted, and do not include all commodities or conservation practices. USDA also has numerous programs such as production subsidies that may reduce the focus on or, in some cases, compete with Bay goals.

Along with paying for implementation of current best management practices, government subsidies and loans must also invest in new, more efficient practices. Innovative BMPs, programs or system changes that stabilize farming incomes and economics, while at the same time curbing nutrient and sediment losses from agricultural lands, hold the promise over the long term of enhancing farming operations, reducing costs and increasing farmer adoption.

The challenge of financing expanded conservation programs on agricultural lands is complex and will require a combination of federal, state, local and nongovernmental financial resources. Clearly, given the economic constraints that many farmers face, a new assurance for increased federal funding will be necessary to achieve Bay restoration goals. In addition, closing the funding gap will require improving the efficiency of current agricultural programs, along with leveraging innovative programs such as coupling implementation of best management practices with Farm Bill commodity payments.

The estimated gap: Despite Farm Bill financing and very limited Clean Water Act grant and loan funding, there is an annual funding gap of over \$200 million for operation and maintenance of BMPs, land rental and incentives, plus \$180 million for annualized capital costs. Given a farmer's limited ability to pay, this gap will have to be financed largely by federal and state governments. The return on investment will be substantial, given the relative cost-effectiveness of agricultural BMPs.



What we have learned about the need for funding agricultural incentive programs ...

Cost estimates for achieving nutrient and sediment reductions from agricultural operations by 2010 are over \$2 billion for capital costs. Much of the funding need for environmental practices on agricultural lands occurs on an annual basis and is for operation and maintenance, land rentals, and incentive payments to farmers. This annual cost is over \$300 million, and will continue year after year, unless more sustainable agriculture and conservation systems are adopted.

Although the federal cost-share programs generally offer 50 percent of the cost of BMPs, with opportunities for state supplements, these programs currently provide only about 30 percent of the total cost of implementing agricultural BMPs. Therefore, 70 percent of the anticipated costs for agricultural programs requires additional funds.

To date, the USDA's involvement in the Bay restoration effort has been modest. Barriers between and

MUNICIPAL AND INDUSTRIAL WASTEWATER

Municipal and industrial wastewater plants throughout the watershed are operating treatment systems every day that have substantially improved water quality in the Bay's tributary streams and rivers. However, major new investment in nutrient removal at wastewater plants is needed to restore water quality in the Chesapeake Bay. With more than 100,000 new people in the Bay watershed every year, the nutrient load that must be treated grows continually. Fortunately, newer and more cost-effective nutrient removal technology is available, but financing is needed.

What we have learned about wastewater as a source of nutrients and sediment...

- Municipal and industrial wastewater treatment plants throughout the watershed are responsible for 21 percent of the total nitrogen pollution and 22 percent of the total phosphorus pollution delivered to the Bay. They are not a major source of sediment.
- About 322 municipal wastewater plants and 68 industrial wastewater plants are deemed significant because of their size or location on the Bay, and these "significant" plants account for 95 percent of all wastewater flows into the Chesapeake Bay watershed.

What we have learned about solving the wastewater problem...

- Even though industrial sources have reduced their discharges of nutrients, and some level of nutrient removal is being applied to about 56 percent of the flow from significant municipal wastewater facilities, the remaining nitrogen and phosphorus loads from almost all municipal wastewater plants must be reduced to far lower levels.
- Nutrient loadings from wastewater treatment plants are controllable.
- Biological nutrient removal technologies have significantly decreased the costs of removing nitrogen from municipal wastewater.

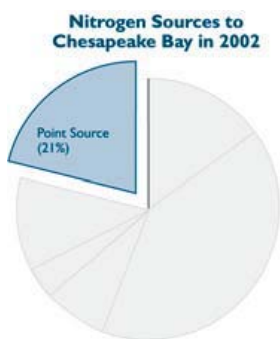
With more than 100,000 new people in the Bay watershed every year, wastewater treatment plants will require major new investments in nutrient removal if we are to restore water quality in the Chesapeake Bay.



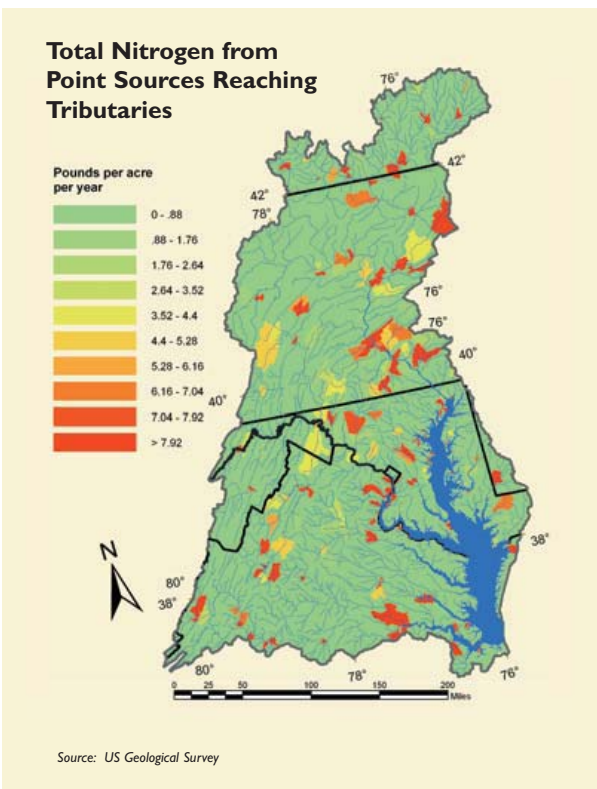
The costs for moving from second-stage biological nutrient removal (BNR) are relatively small, but more advanced BNR upgrades will require significant funding. TP = total phosphorus and TN = total nitrogen

Level of BNR treatment	TN (mg/L)	TP (mg/L)	Relative cost increase
First stage	8	2	---
Second stage	6	1	Small
Third stage	4	0.5	2-5 times second stage
Limit of technology	3	0.2	4-10 times second stage

Source: Chesapeake Futures, 2003.



Source: Chesapeake Bay Program Watershed Model



Source: US Geological Survey

- Wastewater treatment plant discharges are highly regulated through Clean Water Act permits, and monitoring requirements make it easy to verify pollution reductions.
- With growing populations to be served by municipal wastewater facilities, "cap" limits on total nutrient loads can and must be employed. Where state Tributary Strategies set loading caps at the current design limits of wastewater facilities, there is some room to accommodate population increases. In the future, however, even more effective and innovative wastewater treatment technologies will be needed to maintain those caps.

What we have learned about the need for funding wastewater treatment technologies...

Approximately \$6 billion is needed to upgrade wastewater treatment plants to meet the state Tributary Strategies. One-half of the estimated cost for this sector is for upgrades to the Blue Plains wastewater treatment plant (the largest point source of nitrogen in the watershed, which serves Washington, D.C., much of Northern Virginia and the Maryland suburbs); for combined sewer system controls in D.C.; and for controlling sediment discharges from the drinking water plant which serves Washington, D.C. and several Northern Virginia areas. Given existing and expected funds, the funding gap watershedwide is estimated to be close to \$4 billion needed for capital improvements.

Since wastewater discharges are regulated and new permit limits for nutrients will apply wherever needed to meet Chesapeake Bay water quality standards, local jurisdictions have the responsibility to address this issue. Because municipal wastewater treatment plants are service providers, they have a user base to pay for upgrading treatment facilities and for operations and maintenance.

According to the U.S. EPA's 2003 analysis, the costs of meeting nutrient removal requirements are "affordable" for many communities when measured by the impact of projected sewer rates on median household income and assuming the capacity to borrow (e.g. from a Clean Water State Revolving Loan program).

However, achieving nutrient removal requirements will likely require federal-state financial assistance in the form of grants in impoverished communities and in areas where there are very high competing costs to meet legal requirements for correcting combined sewer overflows and sanitary sewer leaks.

The removal costs vary widely for different wastewater treatment plants, depending on the size and configuration of the plant. These variations in cost present the opportunity for saving millions of dollars through nutrient trading across the basin or within sub-basins such as the Potomac watershed.

There exist funding sources for both loans and grants to help municipal wastewater facilities meet treatment needs. The Clean Water State Revolving Loan Fund programs provide loans for wastewater treatment projects, and in FY 2003 were the source of about \$27 million to facilities in the Chesapeake watershed. There are several other federal programs that provide small amounts of grant funds (for example, USDA's Rural Development program, the Appalachian Regional Commission, and the Department of Housing and Urban Development).

In a major recent development, the State of Maryland enacted in 2004 a user fee or sewer surcharge for all households and businesses connected to the state's wastewater facilities and to septic tanks. This fee is projected to generate about \$60 million annually and to provide, with leveraging, almost \$1 billion to support construction and operation of advanced nutrient removal in the state's 66 largest wastewater treatment plants. The Virginia Legislature recently appropriated approximately \$37 million for the Commonwealth's Water Quality Improvement Fund over the next two years, and the Commonwealth of Pennsylvania will fund some nutrient removal projects at wastewater treatment plants from its Growing Greener program.

The estimated gap: Current programs still leave a substantial funding gap, estimated at \$4 billion, for the capital improvements needed to achieve the nutrient reductions required from municipal wastewater sources.



While the population of the Bay watershed increased by about eight percent in the past decade, the amount of watershed land covered by impervious surfaces — surfaces through which water cannot flow — increased by about 41 percent.

DEVELOPMENT A Growing Footprint

Funding and implementing the Tributary Strategy requirements for reducing nutrient and sediment runoff from agricultural operations and for treating nutrients at wastewater plants will go a long way toward achieving load reductions by 2010 to restore Chesapeake Bay water quality. But what about the future?

The Panel received very disturbing information about the impact of land development patterns in the watershed. Not only is development in the watershed amplifying nutrient and sediment loads from urban and suburban areas, but with the rapid pace of forest and farmland conversion and the hardening of the landscape, the natural hydrology of the watershed is being radically altered. Therefore, in addition to reducing today's nutrient and sediment loads, support must be given to preventive strategies such as "low impact development" methods for stormwater management, conservation of forests and open lands, and preservation and restoration of riparian forest buffers.

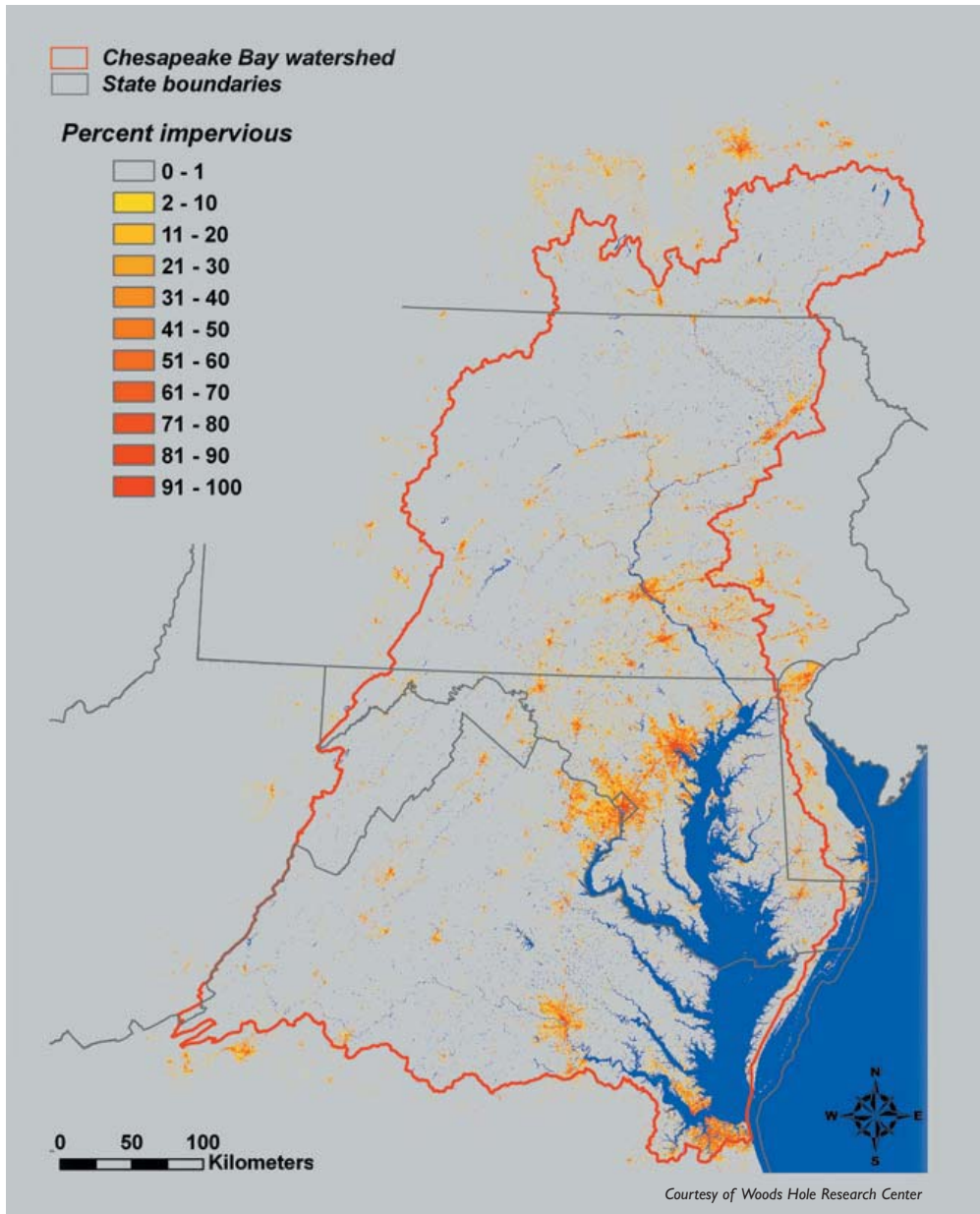
What we have learned about development's increasing contribution to nutrients and sediment in the Bay ...

- Though developed lands represent nine percent of the watershed's land area, runoff from suburbs, cities, industrial parks, commercial lands and roads contributes 11 percent of the total nitrogen and 16 percent of the total phosphorus loads to the Bay — and more in some sub-watersheds. Sediment runoff from construction areas can be very significant, but it is supposed to be controlled by local governments through sediment and erosion control ordinances.
- During the past thirty years, population in the Chesapeake Bay watershed has increased by over a million people every ten years. Based on recent population projections, this trend is likely to continue for the next thirty years.
- As the population of the watershed grows, so does its footprint on the landscape. The size of that footprint depends upon land use patterns and lifestyle choices. For example, while the population of the watershed increased by about eight percent in the past decade, the amount of

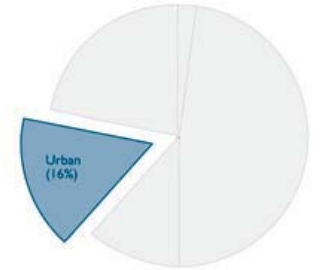
watershed land covered by impervious surfaces — surfaces through which water cannot flow — increased by about 41 percent. Such trends are encouraged by consumer preferences for large houses near open space, jobs and good schools; and by commercial preferences for less expensive office and parking spaces and for maintaining economies of scale through large volume "big box" retail outlets.

- As the number and size of roads, parking lots and rooftops increase, and forest and open lands are replaced by industrial, commercial and residential developments, the capacity of the terrain to soak up rainwater decreases dramatically — illustrated by the fact that a one-acre parking lot produces about 16 times the volume of runoff that comes from a one-acre meadow.
- Parking lots and other types of impervious surfaces increase both the volume and the rate of surface water runoff as it makes its way into stream and river systems. These hydrologic changes alter the streams by scouring the bottom sediments and eroding stream banks. Such impaired streams carry large amounts of sediment and attached nutrients to the Bay.

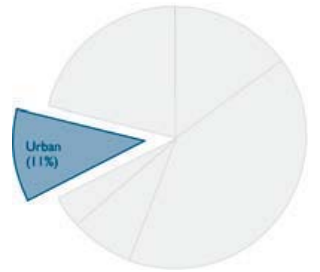
Parking lots and other types of impervious surfaces increase both the volume and the rate of surface water runoff as it makes its way into stream and river systems. A one-acre parking lot produces about 16 times the volume of runoff that comes from a one-acre meadow, and about 40 times the runoff from an acre of mature trees.



Phosphorus Sources to Chesapeake Bay in 2002

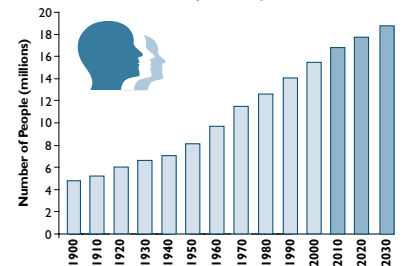


Nitrogen Sources to Chesapeake Bay in 2002



Source: Chesapeake Bay Program Watershed Model

Population Growth in the Chesapeake Bay Watershed



Source: Chesapeake Futures, 2003

- EPA ranks urban stormwater runoff as the second most prevalent source of water quality impairment in the nation's estuaries. Whether they originate from air deposition, lawn fertilizer, or other sources, keeping excess nutrients out of the waterways requires effective management of stormwater runoff.

What we have learned about controlling stormwater runoff ...

- The best time to prevent stormwater problems is to plan well for the location and design of new development in the first

place. The best time to install controls for stormwater runoff is during construction of new buildings and developments. Most local jurisdictions have local erosion and sediment control ordinances, but overall development in the watershed is not controlling stormwater runoff of sediment, nutrients and other pollutants effectively. Stormwater pollution prevention programs need to be supported and strengthened.

- The Chesapeake Bay Program is promoting new stormwater runoff control methods that use decentralized infiltration in landscaping and building design

under the general category of “low impact development.” This is very promising. Continued BMP development is needed because even the best current BMPs do not prevent 100 percent of the polluted stormwater runoff, nor do they preserve the natural hydrology. Each new development in the watershed, even using the best current technology, adds to the nutrient and sediment load. This underscores the need for effective land use planning up front and for retaining or restoring a buffer of forest vegetation along stream banks and shorelines.

- The Clean Water Act recognized that pollutants from stormwater

runoff were a problem, but they were not federally regulated until the 1990s. Maryland, Pennsylvania and the District of Columbia had begun stormwater programs in the 1980s. Now, Clean Water Act permit requirements for municipal separate storm sewer systems cover a large part of the Chesapeake Bay region, and new federal construction permit requirements apply everywhere. These regulatory programs offer outstanding opportunities to reduce nutrients and sediment from stormwater runoff, both in already developed areas and from new development.

- Even in urban areas with longstanding stormwater management programs, few actions have been taken to install BMPs retroactively (or “retrofitting”) in already developed areas. Generally, land and building owners in previously developed areas are not required to address stormwater unless significant redevelopment of the land occurs.

What we have learned about the need for funding management of stormwater ...

The Panel learned that current state and local strategies to address all stormwater pollution will cost approximately \$15 billion to implement. About 60 percent of this cost estimate, or around \$9 billion, is for retrofitting stormwater management facilities in already developed areas. This large cost is another reminder that investments in prevention really pay in stormwater management, compared to the costs of repairing the damage once it’s caused.

Retrofit costs vary from place to place based on land costs, operation and maintenance assumptions, staff, materials and cost of doing business. It’s also important to look at costs based upon new development, redevelopment and retrofit of environmental technologies in older urban areas.

The least costly solution is to plan for growth in appropriate places ahead of time, and then to incorporate stormwater controls into construction plans for new development or redevelopment. Control measures are much more economical as part of new construction. A buyer will generally absorb these expenses as part of the overall construction cost, thereby minimizing the costs to the local government. Even in this case, however, operation and maintenance may fall to the local government.

Areas developed prior to stormwater management requirements must deal with outdated systems. As the \$9 billion cost estimate shows, stormwater retrofitting can be very expensive because of the high per-acre cost compared to

strategies for controlling stormwater on new development.

Responsibility for financing stormwater management programs falls largely on local jurisdictions and even on local landowners. Stormwater management is primarily a local water quality and infrastructure management issue, although there are Bay restoration benefits. Stormwater management programs require funding for capital, operations and maintenance, and administrative costs such as monitoring, inspections and enforcement. Local governments typically turn to local property taxes, general revenues or user fees.

Local tax revenues or stormwater fee systems generally are expected to cover the costs of administering a program to regulate new development for stormwater management and sediment and erosion control. Local revenues should also cover operation and maintenance costs and a variety of routine management services such as catch basin cleaning, storm sewer maintenance, street sweeping and management of stream banks.

Funding urban retrofits has generally remained beyond the funding capability of local general revenues and fee systems, however, because of the expensive construction and displacement of other structures. Stormwater management projects are eligible for funding under the Clean Water Act (both the State Revolving Loan Fund program and the Section 319 Nonpoint-Source Program), but the funds are so limited compared to funding needs

that they are woefully inadequate. The Panel noted a legislative proposal, introduced in Congress as the “Wet Weather Water Quality Act of 2000,” which authorized federal grant funding of \$1.25 billion over a five-year period for combined sewer overflow and stormwater projects. Such funding, if enacted, would be helpful for reducing the stormwater funding gap in the Chesapeake Bay watershed.

Given the magnitude of the Chesapeake Bay restoration funding challenge, it is essential that communities take full advantage of financing trends and innovations for securing sustainable revenue and funding sources at the local level. Successful long-term financing will require implementing programs such as stormwater utility fees, tax breaks and other financial incentives.

The estimated gap: Developers and buyers can absorb the capital cost of incorporating stormwater controls to control nutrient and sediment runoff, and to protect natural hydrologic patterns, into new development. Localities can implement programs such as stormwater utility fee systems to enforce stormwater pollution prevention requirements and to inspect, operate and maintain BMPs. However, no clear funding source exists for capital improvements for stormwater retrofits. Given that retrofits account for roughly 60 percent of the estimated stormwater pollution control costs, the estimated funding gap is about \$9 billion.



The least costly solution is to plan for growth in appropriate places ahead of time, and then to incorporate stormwater controls into construction plans for new development or redevelopment.



FORESTS

The Watershed's Natural Filters

The Chesapeake Bay Program and the U.S. Forest Service have pioneered the science and practice of restoring forest buffers along streams and shorelines, and the Tributary Strategies call for a dramatic expansion of this program. As with agriculture, the Panel was impressed by the relatively modest costs of riparian forest restoration compared to its multiple benefits for water quality and habitat. Forests are essential for protection of the Chesapeake Bay watershed. The rate of land conversion makes it urgent to address riparian forest preservation and restoration on lands being converted to development, as well as buffer restoration on agricultural lands.

What we have learned about the importance of forests ...

- Though forests once covered 95 percent of the Chesapeake watershed, today they account for only 58 percent of the basin's

land cover. With a land-to-water ratio in the Chesapeake basin of roughly a thousand square miles of watershed for every one cubic mile of water, what happens on the land greatly influences water quality. Forests are by far the most beneficial land use in the watershed in terms of protecting water quality. To achieve a healthy Bay, the watershed needs to preserve and replant much of its tree cover.

- Trees are important because they do a great deal to filter the air we breathe and the water we drink. Forests in the Bay watershed retain up to 85 percent of the nitrogen deposited on them from the air and capture and store precipitation, allowing it to seep into the soil. By contrast, urban areas retain only about 20 percent of the nitrogen deposited from air emissions, and a one-acre parking lot produces 40 times the volume of stormwater runoff that comes from one acre of mature trees.
- Particularly noteworthy for water quality benefits are riparian forests, those trees along streams and shorelines. With nearly 200,000 miles of stream banks and shorelines, riparian forest buffers are essential for protecting waterways by filtering pollutants and sediments from runoff and groundwater.
- Riparian forests take up nutrients and water through their root systems and support processes of denitrification in the soil. They stabilize floodplains and reduce erosion. In addition to improving water quality, streamside forests sustain the health of fisheries and other aquatic species by providing food, habitat, shade, and instream processing of nutrients not provided by other types of buffer vegetation. The shade from trees cools the stream, keeping more oxygen in the water. Riparian buffers also provide important habitat and corridors for wildlife.
- To protect the ecological integrity of the Chesapeake Bay and its watershed for the long term, the Chesapeake Executive Council has established a scientifically based goal of restoring riparian forest buffers to at least 70 percent of all stream and shoreline miles.
- The state Tributary Strategies call for the restoration of over 40,000 miles of riparian forest buffers. This is to be a net gain; yet, forests are being destroyed

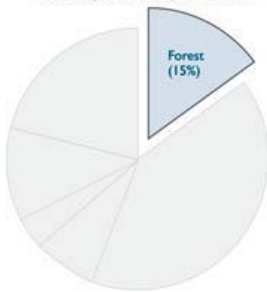
in the watershed at a rate of over 100 acres a day. Preventing loss of forest buffers and restoring riparian forests on agricultural and urban lands is imperative for restoring the Bay's water quality.

What we have learned about funding the greening of the watershed ...

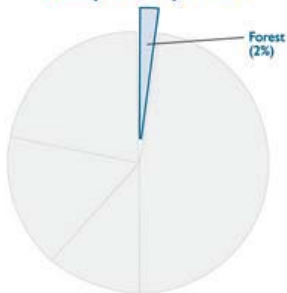
The estimated cost for tree planting to meet water quality restoration levels is about \$781 million in total or \$112 million per year (based on costs in the USDA Conservation Reserve Enhancement Program or CREP). Technical assistance for reaching goals in strategies could be as much as \$300 to \$500 million in total, or an additional \$45 to \$70 million per year.

Restoring forest buffers on agricultural, urban or other disturbed lands requires a significant up-front investment in plant materials, technical design, planting, pest control and several years of maintenance until established. Once established, forest buffers can function with minimal management for 75 years or more. In other programs across the country, 80 percent or more of buffers planted with trees were retained beyond the end of incentive program contracts.

Nitrogen Sources to Chesapeake Bay in 2002



Phosphorus Sources to Chesapeake Bay in 2002



Source: Chesapeake Bay Program Watershed Model
Note that per acre, forests are the least polluting land use.

The responsibility of conserving trees to help maintain water quality and reduce impacts of growth and development may be largely borne by developers, private communities, individuals or local municipalities. Education and technical assistance are essential to gain cooperation and participation. Enactment and enforcement of tree and riparian forest buffer ordinances serve as another tool, as do requirements to restore riparian forest vegetation when former agricultural lands are converted to development. Facilitating sustainable management of forests, especially in rural areas, may also help serve as an economic deterrent toward conversion and fragmentation of remaining forestlands.

Agricultural lands are widely available for riparian reforestation. CREP has supported over 90 percent of the riparian forest buffer restoration completed to date in the Chesapeake Bay watershed. Currently approved CREP programs are not, however, sufficient to accomplish the forest buffer goals in the state Tributary Strategies and do not optimize incentives for planting trees.

Long-term reliable funding mechanisms are needed to

provide a portfolio that can ensure sufficient financial resources for conservation and restoration of forests and forest buffers. It is unlikely that the extensive planting program needed to achieve the Bay restoration can be completed by 2010 without a significant increase in available funds and technical assistance resources. Accelerating the pace of restoration would require an intensive program of planting riparian forest buffers followed by a maintenance phase.

While CREP addresses agricultural lands, a combination of voluntary buffer reforestation on currently developed land and requirements for buffers on new development would need to be implemented to maximize riparian buffer reforestation. This initiative would require the implementation of new ordinances or regulations in much of the watershed to address the new development. A programmatic funding source would need to be created to facilitate volunteer buffer restoration in existing developed areas.

The estimated gap: Planting riparian forest buffers requires about \$160 million per year for maintenance, land rental and incentive monies.

Trees are important because they do a great deal to filter the air we breathe and the water we drink.



If recent trends continue, by 2030 the Chesapeake watershed will see some 2 million acres of resource lands converted to development, about two-thirds of which are forests.

Septic systems of all types and ages are a source of nitrogen to the Chesapeake Bay. Nitrogen moves from the septic system through the soil into groundwater and eventually to streams, rivers and the Bay.



SEPTIC SYSTEMS

Taking Advantage of Better Technology

The Panel noted the costliness of replacing existing septic tanks in the watershed. We were informed, however, about nitrogen-removing technology that should be used in new development, and learned that the unit costs of using this technology should go down with greater demand. Strategies for targeting septic tank replacement to areas of greatest vulnerability, such as developing waterfront communities, will also improve cost-effectiveness.

What we have learned about septic systems as a source of nitrogen ...

- Septic systems are estimated to account for about 4 percent of the region's nitrogen load to the Bay, though their impact is much larger in localized areas. Septic systems have allowed development — both commercial and residential — to occur beyond the reach of wastewater treatment plants. They have become a growing

source of nitrogen to the Bay in some areas, as wastes drain into groundwater.

- On-site septic systems of all types and ages are a source of nitrogen to the Chesapeake Bay. Conventional septic systems are not designed to remove nitrogen (although some is removed by biological processes in the soil). Depending on how close the system is to a waterbody, the nitrogen discharge per household can be high compared to that of a wastewater facility operating with biological nutrient removal. Special problems exist where septic systems are old and failing, and where they are placed too close to streams and shorelines.
- In critical areas experiencing growth, communities may need to consider the potential for connecting to new or existing wastewater treatment facilities or else replacing failing septic systems with newer, more advanced systems.

What we have learned about the need for funding ...

Although septic systems account for only 4 percent of the nitrogen

load, costs for addressing the septic issue are estimated to be \$4.6 billion, about 16 percent of total restoration costs. To place the cost estimates in perspective: to date there has been little demand for state-of-the-art nitrogen-removing septic systems, so the equipment price remains quite high. As demand increases, technological improvements and economies of scale should reduce costs significantly.

Overall, the most cost-effective approach would be first to address new development, requiring nutrient removal adaptations at the front end as part of development and construction costs. These costs would likely be passed on to the homebuyer.

The State of Maryland has provided an important model by assessing septic system owners a \$30 per-year fee to create a long-term revenue stream for financing septic system upgrades.

Septic systems are not a focus of federal programs. To help address the funding gap, the Panel believes that other states should follow Maryland's example, and establish state fee systems throughout the region for replacing failing septic tanks in critical areas with new, nitrogen-removing technology.

AIR DEPOSITION Benefiting from Clean Air Regulations

The Panel was impressed by the amount of nitrogen that air emissions, deposited on the watershed, add to the Bay's nutrient load. Enforcement of Clean Air regulations can therefore contribute significantly to water quality restoration, without adding to Tributary Strategy costs. The impact of land use on how much deposited nitrogen actually reaches the tidal waters of the Bay served as another reminder of the benefit of forest buffers and good urban stormwater management.

What we have learned about air as a source of nitrogen ...

- Modeling indicates that at least 25 percent and possibly a third of nitrogen entering the Bay comes from air deposition. The principal sources of emissions are power plants, cars and trucks, and off-road sources such as construction equipment, lawn mowers and aircraft.
- The Bay watershed receives significant levels of nitrogen oxides and other airborne pollutants from the far reaches

of its large airshed (which is about six and a half times the size of the watershed), as far west as Ohio and Indiana. Air deposition of nitrogen on the land adds to the burden that must be dealt with by farmers, local governments and other landowners.

- While population increased about eight percent during the last decade, vehicle miles traveled rose 26 percent.
- Land uses in the watershed play a major role in determining how much of the nitrogen from air deposition reaches the tidal waters of the Bay. Forests in the Bay watershed retain a high percentage of the nitrogen, while developed areas exhibit high levels of runoff of nitrogen deposited from the air.

What we have learned about the solution ...

- To date, Bay Program partners have relied on the implementation of Clean Air Act (CAA) regulations to reduce air deposition. The Tributary Strategies incorporate a total nitrogen reduction of 11 million pounds to be achieved by 2010, based on CAA regulations already in effect. An additional reduction can be expected by 2020.

Because the costs of these reductions will be borne by the air emission sources, they are not included in the cost estimates for restoring Bay water quality and will be a "free" contribution.

- Given the significant role that land use plays in the rate at which airborne deposits of nitrogen reach Bay waters, the most effective mechanisms in the state Tributary Strategies for controlling runoff resulting from air deposition are forest cover and improved stormwater management. Forests absorb air deposition at a rate four times greater than developed lands. Effective stormwater management approaches also encourage infiltration and help to improve water quality.
- Even where air emission sources are controlled by federal regulations, states in the watershed can adopt measures such as financial incentives to accelerate the rate at which these controls are realized. Given the rapid increases in vehicle miles traveled, financial incentives and disincentives could be used to encourage greater fuel efficiency and cleaner technologies in vehicles (cars, buses, SUVs and trucks).

Modeling indicates that at least 25 percent and possibly a third of nitrogen entering the Bay comes from air deposition.



While population increased about eight percent during the last decade, vehicle miles traveled rose 26 percent.

Recommendations: A Bold Approach

Controlling the unremitting flow of nutrients and sediment into the Chesapeake Bay will require a bold new approach. Costs for new programs will range in the billions, and conventional mechanisms that could raise \$100 million, \$200 million or even \$1 billion or \$2 billion are simply not adequate to the challenge before us. The Panel concluded that, while a range of smaller programs can play a key role, restoring the Chesapeake Bay will require a large-scale national and regional approach, capitalized by federal and state governments and directed according to a watershedwide strategy.

The Panel's recommendations follow.

THE CHESAPEAKE BAY FINANCING AUTHORITY

The Blue Ribbon Finance Panel recommends the establishment of a new Chesapeake Bay Financing Authority that uses funding on a regional basis to address critical needs throughout the watershed. We offer here a rationale for such a Financing Authority and a conceptual explanation of how it would function.

WHY A NEW FINANCING AUTHORITY?

Business as usual will not accomplish the task before us. Current efforts to control nutrient and sediment pollution are too modest and too fragmented, and lack the kind of directed coordination required for a regionwide strategy. While the states should be applauded for the actions they have taken so far, much-needed nutrient and sediment controls require moving the clean-up effort to a higher level. There must be a means for guiding significant resources to the most critical and cost-effective actions in the watershed, wherever they may be.

The need for a new regional Financing Authority for the Chesapeake Bay and the principles underlying its fundamental structure are based on the following premises:

- Cleaning up the Chesapeake Bay will cost many billions of dollars, requiring a renewed commitment from federal, state and local governments, private individuals and industry.
- We must secure the resources needed to fulfill the obligation to clean up the Chesapeake Bay — and to remove it from the Clean Water Act list of impaired waters — by 2010. A regional Financing Authority must be capable of filling the

funding gap between existing programs and the cost of a clean Bay.

- To ensure the meaningful and sustained commitment by all levels of government, the Financing Authority must receive new significant federal funding that is secured in partnership with increased state and local funding. It must be able to sustain itself, and it must also direct funds toward the highest priority needs in the Chesapeake Bay watershed.
- The Financing Authority must be simple and flexible, adapting to local needs and approaches and to the realization that cleaning up the Chesapeake Bay will not have the same priority in every jurisdiction.
- The Financing Authority should, to the extent possible, use structures and mechanisms that are familiar and may already be in place.
- Federal leadership to protect this national treasure is key, as is state and local governmental priority toward sustaining concrete clean-up actions and providing the needed accountability for implementing their plans.

CONCEPTUAL FRAMEWORK

The Chesapeake Bay Watershed Blue Ribbon Finance Panel recommends the following conceptual framework for establishing a new regional Financing Authority in a manner that makes much-needed funds available as soon as practicable and that secures and leverages funds, using competition to unleash innovation and efficiency. The justifications for establishing a Financing Authority are compelling and the logic is sound, but many details will need to be determined by the members of the

Bay partnership — the states, the District of Columbia, the federal government and the Chesapeake Bay Commission.

The Panel recommends:

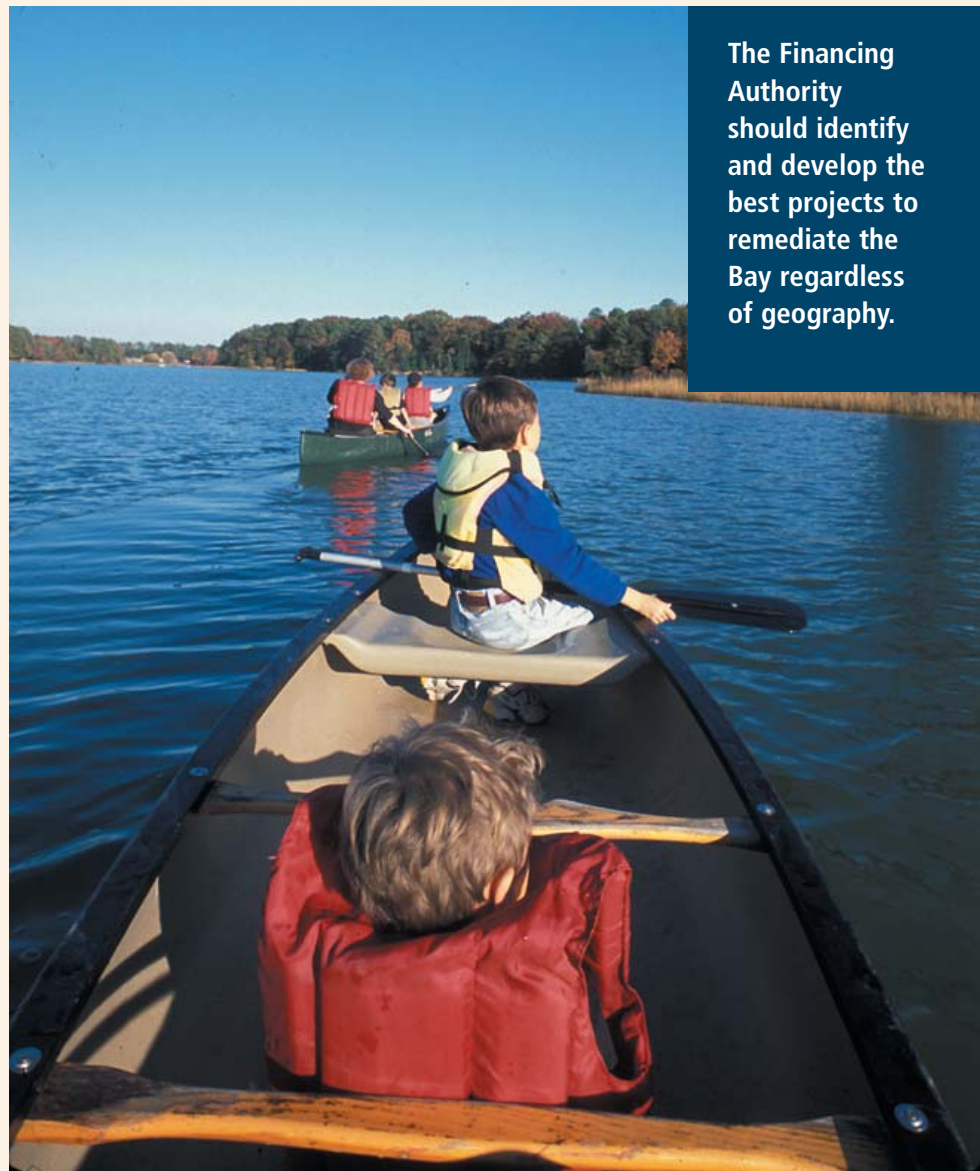
The creation of a Chesapeake Bay Financing Authority, capitalized by federal funds over a six-year period, as follows:

2005	\$1 billion
2006	\$2 billion
2007	\$2 billion
2008	\$2 billion
2009	\$2.5 billion
2010	\$2.5 billion

- The proposed ratio of federal to matching funds would be 80/20, the same as that legislated by current State Revolving Loan Funds across the country.
- The states' match should be \$3 billion, apportioned among the states and funded by whatever means the states choose, bringing the total capitalization to \$15 billion.
- Working together, the six Bay watershed states and the District of Columbia should first commit to establishing a Chesapeake Bay Financing Authority as soon as possible, but no later than January 1, 2007. The governors, mayor and other leaders should appoint experts as necessary to design both an interim strategy for the immediate future and a concrete strategy for the regional Financing Authority.
- Immediately, the federal government and the six states and the District Columbia should develop a shared sense of funding priorities. They should use existing authorities and structures, such as State Revolving Loan Funds (SRFs), to create a voluntary funding coalition. This funding coalition could begin to receive funds immediately from federal,

state and other sources, allowing the distribution of loans and grants in the near future. Note that the Clean Water SRF, unlike the Drinking Water SRF, cannot currently give grants, only loans. The Panel strongly recommends that a structure be devised that has a grant-giving component, such as the 30 percent allowed under the Drinking Water SRF.

- The Authority should be comprised of representatives of the U.S. Environmental Protection Agency EPA, the Chesapeake Bay watershed states, the Chesapeake Bay Commission, the advocate community and important stakeholders, including agriculture, wastewater treatment plant officials and business.
- The Financing Authority should identify and develop projects and programs to remediate the Bay on the basis of “best” project funded, according to effectiveness, efficiency and innovation, regardless of geography. The Financing Authority should implement a regional Clean Bay Intended Use Plan (IUP) built upon the states’ Tributary Strategies including full implementation plans, and consistent with EPA guidelines. (The IUP is a requirement of the Clean Water Act for administration of State Revolving Loan Fund programs, and has proven to be a very effective mechanism for directing the funds.)
- In recognition of the enormity of identified Chesapeake Bay clean-up costs, there must be sustainable, dedicated state and federal funding for the Authority. Accordingly, the Financing Authority should develop a mechanism for the creation of a sustainable revenue stream, collected by the states. The states in turn should be permitted to retain a portion of the revenue to support state and local clean-up programs. This revenue stream could be derived from a range of sources, including many of the proposals



The Financing Authority should identify and develop the best projects to remediate the Bay regardless of geography.

advanced by the Blue Ribbon Finance Panel subcommittees (e.g., surcharges on sewer fees, septic fees and development fees) and included in the Supplementary Recommendations below.

- The Authority should be empowered to issue grants as well as revolving loans. This component is particularly important to the Chesapeake Bay, since the greatest impact will result from the active participation of the agricultural community and of cash-strapped urban areas, neither of which is likely to embrace the program if it relies solely on revolving loan structures.

The Authority will require identifying and leveraging sustainable revenue streams. This will mean floating bonds (already underway in some cities and states) but also identifying new revenue streams, such as sewer surcharges, and — especially for economically distressed areas or large construction projects — public grants and loan funds as well. Such combined revenue sources are necessary given the large sums of money that must be raised. They are also logical in that the benefits are both local (e.g., for the community floating the bonds) and regional (e.g., for an entire state or region, which benefits from improved water quality).



Without a Chesapeake Bay Financing Authority, it is difficult to see any other way to assure the money necessary to restore this priceless national asset.

During the interim period, as the Financing Authority is taking shape, the Panel recommends an approach called “co-funding.” Co-funding involves formal cooperation and coordination of various federal and state agencies to allow the funding of a project that might not have otherwise been possible. For example, the State of New York has established a formal Water and Sewer Infrastructure Co-Funding Initiative to better streamline and coordinate the process of providing funding to a project from multiple funding sources (EPA, USDA, HUD, etc.). These co-funded projects are generally targeted to small communities that meet economic hardship standards.

Programs already operational and available within the Chesapeake Bay watershed states that could be involved in such a Co-Funding Initiative include: the SRF program, USDA’s Rural Utilities Service Water and Waste Disposal Loan and Grant Program, HUD’s Non-Entitlement

Community Development Block Grant Program, the Appalachian Regional Commission, the U.S. Department of Commerce’s Economic Development Administration Public Works and Infrastructure Development Program, USDA’s Partnerships and Cooperation provision in the Farm Bill, and various state environmental programs.

The Panel also recommends developing a way for the federal government to address cases where improving infrastructure, such as wastewater treatment plants and urban stormwater retrofits, could cause economic hardship in communities. This issue is addressed in the recommendations below.

In summary, the Chesapeake Bay Financing Authority should help to direct the financing of Chesapeake Bay restoration. It is difficult to see any other way to assure the necessary money will be raised and applied to restore this priceless national asset.

Supplementary Recommendations

During the Panel’s deliberations, a number of recommendations were developed by the Panel’s subcommittees to improve existing funding programs, expand financing opportunities and generally improve the ability of the Chesapeake Bay Program to restore the Bay. A number of these concepts can and should be coordinated with the proposed Financing Authority, and others are discrete recommendations for tax savings or other incentives. These recommendations were endorsed by the Panel, and are presented on the following pages.

Improve coordination and cooperation among federal agencies with programs in the Chesapeake Bay watershed.

The Panel endorses the call for cooperation articulated in *The Chesapeake Bay Restoration Act of 2000*. Section (f)(3)(A) states,

As part of the annual budget submission of each federal agency with projects or grants related to restoration, planning, monitoring or scientific investigation, the head of the agency shall submit to the President a report that describes plans for the expenditure of the funds under this section...The heads or designees of each federal agency — including, but not limited to the EPA, the Department of Defense (DOD), the U.S. Department of Agriculture (USDA), and the Department of the Interior (DOI) — with applicable programs should meet semi-annually to identify priority-funding issues and coordinate program implementation. The results of these meetings will be an annual funding strategy report submitted to the Executive Council of the Chesapeake Bay Program (CBP).

Establish state surcharge programs throughout the Chesapeake Bay watershed.

Recently, the State of Maryland enacted one of the most innovative and progressive water quality funding programs in the country. The Chesapeake Bay Watershed Restoration Fund will support three water quality efforts, including upgrading Maryland's 66 largest wastewater treatment plants, addressing failing septic systems, and supporting cover crop programs for agriculture. The Fund will be financed with a \$2.50/month surcharge on sewer bills and a \$30/year fee on septic system owners. The State of Maryland anticipates raising over \$60 million per year with this initiative, a revenue stream that is being leveraged to some \$980 million through state bonds. This program provides a model to other Bay states to fund wastewater treatment upgrades and other efforts.

We note that the Governor of Pennsylvania has proposed a Growing

Greener II Bond Issue which would be funded by dedicating waste disposal fees to finance the bonds. Additional fees would be imposed on municipal waste, residual waste, and Toxic Release Inventory releases. The \$800 million bond would, over a four-year period, fund \$80 million to improve the health of Pennsylvania's 83,161 miles of rivers and streams.

Total revenue of state surcharge programs throughout the watershed could raise as much as \$200 million per year in support of Bay restoration efforts. These funds could then be leveraged, as through use of state bonds.

Expand participation of the headwater states in the CBP.

The headwater states of Delaware, New York and West Virginia are now participating actively in the Chesapeake Bay Program's water quality restoration initiatives. They are equal partners in this endeavor, and have a major role to play. The Panel recommends that the governors of the headwater states be invited to join the Chesapeake Executive Council.

Set aside a portion of funds for education, outreach and technical assistance to important stakeholders.

The actions of builders, homeowners, businesses, farmers

and individuals all have played a role in the Bay's water quality problems, and now must play a vital role in the Bay's restoration and future protection. In order to achieve the reductions needed in nutrient and sediment loads to the Bay from farm fields, developed lands and other sources, the Chesapeake Bay Program partnership must work with private property owners and other stakeholders to help them understand the importance of their actions and the methods for applying best management practices. The Program also needs to reach a broad public, to educate them about the nature of the problems facing the Bay and the means for solving them.

There are groups and organizations with special skills in reaching out to these important audiences, and their assistance is needed in ambitious outreach and education efforts. The Panel recommends that one percent of all restoration funds be set aside as a pool for competitive awards to public and private nonprofit organizations that demonstrate an expertise in developing and delivering outreach, education and technical assistance. In addition to nonprofit organizations, such agencies as County Soil and Water Conservation Districts and County Cooperative Extension Offices (or their state associations), would be eligible to compete for this pool of funds.

The actions of builders, homeowners, businesses, farmers and individuals all have played a role in the Bay's water quality problems, and now must play a vital role in the Bay's restoration and future protection.



The Chesapeake Bay region historically has received relatively less Farm Bill funding than other regions of the country.

Supplementary Recommendations for the Agriculture Sector:

To help close the funding gap, in addition to the funds made available through the Financing Authority, the Panel recommends ...

Increase Farm Bill Funding for the Chesapeake Bay Watershed and Improve the Efficiency of Federal Cost-Share Programs.

A primary cause of the “efficiency gap” in federal cost-share programs is the need by farmers to keep land in production. Many of the most effective and efficient best management practices require removing land from production and instead using them as forest and grass buffers or returning them to their historic wetland functions. When faced with the prospect of lost income, cost-share levels can become prohibitive. Therefore, any new federal funding must address this efficiency issue. The Panel recommends:

- Allow federal cost-share to increase to the maximum allowed by law (for example, increasing the cost-share level of the Environmental Quality Incentives Program [EQIP] to 75 percent).

- Develop a program that aggregates Chesapeake Bay watershed or state block grants for packages of USDA programs customized to meet the unique circumstances of the region’s farmers and Bay nutrient goals. All farms, crops and animals in the Chesapeake Bay watershed should be made eligible for these funds as appropriate for nutrient reduction goals, and the programs should allow more flexibility and innovative departures from current Natural Resources Conservation Service (NRCS) guidelines when linked to performance-based management. This watershedwide approach should be integrated into the financing and implementation plans overseen by the Chesapeake Bay Financing Authority.

The Chesapeake Bay region historically has received relatively less Farm Bill funding than other regions of the country. Moreover, the vast majority of that funding has been targeted to a small

fraction of the region’s farmers who produce commodity crops. Therefore, the Panel noted that Farm Bill funding for the Chesapeake Bay region needed to be increased to better meet the needs of local farmers and provide sufficient funding to meet the Bay’s nutrient needs.

The Panel emphasizes the need to support innovation in farming practices. Farm Bill funds should be available for expanding innovative programs such as yield reserve and manure management.

Fully Implement the Conservation Security Program (CSP) under the 2002 Farm Bill and Place Greater Emphasis on CSP in the next Farm Bill.

The 2002 Farm Bill included an innovative new program, the Conservation Security Program (CSP), to encourage greater land and water stewardship and to build a financial support mechanism that applies to all types of farms. Because current farm subsidy programs in the Farm Bill are being scrutinized due to both budgetary concerns and trade issues, a broad range of interests are voicing support for increasing funding for CSP or a CSP-like program that is consistent with World Trade Organization rules, provides necessary financial support to America’s farmers, and improves environmental conditions on farmland. To date, implementation of CSP has been limited relative to its authorization in the 2002 Farm Bill.

The Panel recommends full implementation of the CSP in the remainder of the 2002 Farm Bill and greater emphasis on CSP in the next Farm Bill authorization. Under full implementation, CSP could bring \$42 million to the Chesapeake Bay watershed states. Much of this funding would be for incentive payments to encourage more conservation rather than for conventional crop or commodity practices. This effort should be coordinated with and become part of the watershedwide application of funds, as guided by the Chesapeake Bay Financing Authority.



Include Comprehensive Nutrient Management Plans as Part of Compliance for Farm Bill Commodity Payment Programs.

The greatest amount of public funding going to farmers in the Chesapeake Bay watershed is through commodity subsidies in the 2002 Farm Bill. These payments are roughly *five times* the amount of conservation payments going to farmers in the watershed. Consequently, commodity payments are much more likely to influence farmer behavior. A recent analysis by USDA Economic Research Service (Number 832, June 2004) concludes that substantial potential exists to address nutrient management and streamside buffers through commodity programs.

Much progress can be made through implementation of comprehensive nutrient management plans and/or buffer practices as part of conservation compliance for Farm Bill commodity programs. This action can leverage the \$275 million in commodity payments made to Bay watershed farmers to increase adoption and implementation of these key agricultural practices. As with the previous recommendations, this effort should be coordinated with the new Financing Authority, to assure that the full range of funds is being used to the best effect throughout the watershed.

The Secretary of Agriculture should be invited to join the Chesapeake Executive Council.

Given the overwhelming significance of agriculture in the Chesapeake Bay restoration effort, it is the recommendation of the Blue Ribbon Panel that the Secretary of the Department of Agriculture should be invited to become a permanent member of the Chesapeake Bay Executive Council.

State Revolving Loan Fund

The Clean Water State Revolving Loan Fund (SRF) program, created by the 1987 Amendments to the Clean Water Act, has become the primary tool for financing wastewater treatment plant upgrades and other water pollution control activities throughout the Chesapeake Bay watershed. SRF programs around the country have helped local governments reduce the cost of raising capital to finance wastewater treatment construction projects by allowing local governments to borrow money at lower rates than available from other lenders.

The federal seed money in the SRF can extend state and local dollars and finance more projects than either state or local sources could on their own. Repayments to the revolving funds allow for a relatively stable source of financing for water quality projects over the long term.

In addition to providing states with an effective tool for financing infrastructure improvements,

SRF programs often are the most effective way to internalize costs associated with environmental mitigation activities. Borrowing money at below-market interest rates significantly reduces the costs to communities for implementing water quality initiatives.

Even though costs are reduced, however, communities must still repay borrowed funds. Therefore, the ultimate cost for reducing pollution is borne by the polluters themselves — the utility customers. By using SRF programs, communities are implementing two vital components of fiscal sustainability — they are employing sustainable revenue streams and applying the costs of cleanup to the source of the pollution.

The Blue Ribbon Panel acknowledges that the SRF is a proven and effective tool and recommends that it be leveraged and expanded throughout the watershed.

Supplementary Recommendations for the Municipal and Industrial Wastewater Sector:

To help close the funding gap, in addition to the funds made available through the Financing Authority, the Panel recommends ...

To reduce the hardship level where necessary, the federal government should develop a Hardship and Innovation Fund to be used to supplement Clean Water State Revolving Loan Fund programs (SRF).

Though the Bay states have been very successful in leveraging SRF funds for wastewater treatment upgrades, one issue facing state and local officials is the economic hardship associated with upgrading wastewater treatment plants in some communities. EPA gauges hardship by comparing, for a given community, its wastewater user charge to its median household income. One issue facing state managers is the need to lower hardship levels in impoverished communities.

To reduce the hardship level where necessary, the federal

government should develop a \$200 million Hardship and Innovation Fund (the Fund) to be used to supplement Clean Water State Revolving Loan Fund programs (SRF) for the Chesapeake Bay Watershed. (This Fund should be additional federal funding, as it is not the Panel's intent that existing levels of SRF grant funds should be shifted for this purpose.)

The Fund would be used exclusively for biological nutrient reduction and enhanced nutrient reduction upgrades and new construction that incorporates these technologies. The Fund would be used in those communities where costs associated with wastewater treatment upgrades create a true fiscal hardship. The goal of the Fund would be to serve as a "gap financing" tool to reduce costs associated with specific wastewater treatment upgrades to below hardship levels, as measured by the percent of median household income represented by the local wastewater user charge.

Once established, this Fund should be incorporated into the Chesapeake Bay Financing Authority to address hardship and innovation in its grant and loan-making policies. The Panel does not intend to recommend double appropriations.





Nutrient Trading

Nutrient trading is the transfer of nutrient reduction credits, specifically those for nitrogen and phosphorus, between buyers (entities that purchase nutrient reduction credits) and sellers (entities that offer nutrient credits for sale). Often referred to as “cap and trade,” a well-designed nutrient trading program will reveal the lowest unit cost opportunities for reducing nutrient loadings from wastewater treatment plants, and thus achieve the lowest overall cost of compliance.

This type of arrangement has numerous advantages. One, ratepayers equally share the statewide cost. Two, those wastewater plants with the lowest costs would be encouraged to most aggressively reduce nitrogen pollution. Three, all ratepayers benefit when costs are reduced. Four, Bay states could establish trade “zones” that are designed to ensure needed reductions of nitrogen for all rivers and/or regions of the state. Five, there would be no need for the state to decide centrally where and when wastewater plants should be upgraded; instead wastewater plant managers would make those decisions locally.

Develop a pilot program that would allow Bay states to disseminate 30 percent of new SRF appropriations in the form of grants.

One impediment facing state Clean Water State Revolving Fund (SRF) managers is the current Clean Water Act restriction on disseminating SRF program funds in the form of grants. As a result, states are restricted in their ability to effectively fund priority projects in communities in need.

The federal government should develop a pilot program that would allow Bay states to disseminate 30 percent of new SRF appropriations in the form of grants. These grants would be in addition to the proposed Hardship and Innovation Fund and would apply to eligible point and nonpoint-source projects. For the Bay states, this would be a total of approximately \$510 million between 2004 and 2010, or approximately 10 percent of the expected value of Bay states’ revolving loan funds. This pilot program would be melded into the Chesapeake Bay Financing Authority, adopting the same concept of mixing loans and grants.

Create a Nutrient Trading Program for Municipal and Industrial Wastewater Plants.

Establish cap and trade permits that include municipal and industrial wastewater plants with nutrient limits adequate to meet Tributary Strategy allocations for this sector. In the Potomac River basin, this

could allow for trading across jurisdictions. Cap and trade programs reward innovation and could save an estimated \$1 billion in wastewater treatment costs if fully leveraged. Because the benefits of sewer surcharges are not dependent on the presence of cap and trade, or vice versa, the use of one need not dictate the other — although combining the two offers the greatest potential for increasing funds and efficiencies.

The Panel did not see a model of point/nonpoint-source trading which it could endorse at this time, although it was informed that some jurisdictions are interested in developing such a program.

Establish Tax-exempt Financing for Industrial Wastewater Facilities at the State Level.

Tax exempt financing can provide an affordable method for owners of industrial wastewater facilities to comply with wastewater standards. The State of New York has established an innovative program that provides such financing opportunities. The NYS Industrial Finance Program (IFP) provides tax-exempt and taxable conduit financing to private entities. The IFP lends the proceeds of tax-exempt bonds to borrowers seeking financing for environmental facilities including solid waste handling, wastewater treatment, drinking water supply, and privatization of municipal or state environmental facilities.

The use of tax-exempt bonds allows IFP clients to borrow funds at a lower rate of interest than would otherwise be available in the market. For projects or portions of projects that do not qualify for tax-exemption under the federal tax code, the IFP can provide taxable conduit financing. The minimum size of an IFP financing is approximately \$1.5 million. Several projects at one or more sites owned by one or more borrowers may, however, be financed with a single IFP bond issue. IFP financing can be used to privatize certain exempt facilities.

Each of the Chesapeake Bay watershed states should consider establishing a program to provide tax-exempt financing to owners of industrial wastewater facilities.

Supplementary Recommendations for Development:

To help close the funding gap, in addition to the funds made available through the Financing Authority, the Panel recommends ...

Ensure State Revolving Fund Capacity Through Increased Federal Capitalization.

Perhaps the most important use of public money right now is to increase the capacity of communities to plan, implement and fund best management practices through programs like stormwater utility fees. One of the most effective tools for accomplishing this is the Clean Water SRF. If used in conjunction with federal grant programs and local utility fees, sustainable revenue streams can be leveraged to manage upfront capital costs as well as long-term operations and management costs.

Although the SRF program may have sufficient capacity to handle current demands, it is not at all likely that state SRF programs would be sufficient to fund the majority of urban stormwater needs in the region, as well as other nonpoint-source programs such as land preservation or the implementation of agricultural BMPs.

In the Chesapeake Bay region, increased funding should be dedicated to nonpoint-source funding priorities — including stormwater management. While the Panel felt that there is logical justification for the development of a separate SRF program, specifically for stormwater, the creation of the Chesapeake Bay Financing Authority would be able to assume this function and direct some loans and grants to stormwater management projects.

Establish Stormwater Utility User Fees At The Local Level To Fund Stormwater Management Programs.

Localities have the basic legal responsibility to establish and enforce good stormwater requirements for new development and redevelopment. They must operate and maintain stormwater management BMPs, monitor stormwater quality, and implement a variety of local stormwater retrofit and stream restoration projects. For this, a sustainable local revenue stream is needed.

Stormwater utility fee systems should be put in place throughout the watershed to insure the integrity of local stormwater management functions. These fees could be based on the amount of impervious area created by the various types of development. Fees on a sliding scale would encourage the reduction of impervious surfaces created in housing construction or commercial development. Using several assumptions regarding the number of local governments that may enact such a fee and the type of fee schedule they may adopt, estimated

revenue generated within the watershed is between \$115 million and \$229 million annually.

Develop Financial Incentives That Would Be Used To Reduce Cost Of Urban Retrofits.

These incentives, as part of a Bay pilot program, should be in the form of grants, negative interest rate loans, or principal buy-back programs. Incentives would be used in conjunction with SRF funds and only in communities with current or planned stormwater utility programs. The goal would be to fund upfront capital costs for urban retrofits, while using stormwater utilities to fund operations and maintenance. In addition, only those communities that have upgraded stormwater management plans in place would be eligible to participate in the program. The program should be developed as part of one of the traditional funding programs, or could be a new program managed by the EPA SRF program. It should be developed immediately and then transferred to the new Chesapeake Bay Financing Authority.

Establish A Residential Lawn And Garden Fertilizer Surcharge At The State Level.

As more people move into the Chesapeake Bay watershed, individual impacts on the Bay from everyday activities become magnified. Through seemingly harmless activities such as lawn care, each citizen in the watershed begins to impact water quality in the Bay and its tributaries. One way of mitigating these impacts is to levy appropriate fees on those activities that contribute excess nutrients to the Bay.



Regulation and Bay Cleanup

As one Panelist put it, “Every successful environmental effort in this country has depended on a combination of appropriate regulation and adequate funding”

In *Chesapeake 2000*, the Chesapeake Executive Council recognized the importance of integrating the cooperative approaches of the Bay Program with the regulatory requirements of the federal Clean Water Act to speed the cleanup of the Bay. Since more than a quarter of the nitrogen entering the Bay comes from the air, cutting air emissions through federal Clean Air Act regulations will help clean the water as well as the air.

Several Clean Air Act regulations have established controls on nitrogen oxide emissions from power plants and other sources, and EPA has proposed a Clean Air Interstate Rule that would add substantially to these controls. These regulations are aimed at improving air quality nationwide — or over a large region — but there are great side benefits for Bay restoration. If these regulations are well enforced, air emissions will drop, reducing the amount of atmospheric deposition in the Chesapeake Bay watershed. Less air deposition of nitrogen means less to control on the ground, and therefore lower costs for Bay restoration.

Water pollution is regulated by the Clean Water Act. Administered by EPA and the states, the Clean Water Act regulates discharges of pollutants from “point sources” such as wastewater treatment plants, industrial plants and large concentrated animal feeding operations through permits called National Pollutant Discharge Elimination System (NPDES) permits. Regulatory requirements are also being applied to urban stormwater drainage, through a phased approach.

Looking ahead, the segment of Bay pollution that is on the increase comes from urban and suburban land development. NPDES permits will cap loads from wastewater treatment plants, but state and local regulations will prove essential if we are to protect sensitive land uses and control pollution from new development.

New Chesapeake Bay tidal water quality standards, now being adopted by the states, strengthen the scientific basis for establishing nutrient and sediment effluent limits in Clean Water Act permits. Setting and enforcing Bay-specific nutrient and sediment reduction requirements in NPDES permits will provide a substantial incentive for reducing municipal, industrial and stormwater loads to the Bay by 2010.

In the end effective regulation will channel investments toward reducing nutrients and sediment from regulated sources, and speed Bay restoration. At the same time, regulation without adequate funding will not get the job done. Regulation and financing must go hand in hand.

Educating Homeowners On the Use of Fertilizer

To help educate consumers about the importance of proper use of fertilizer and its potentially negative effects on the Bay if applied improperly, a label could be placed on the bag.

Language currently used by the Southern States Cooperative could serve as a model. Their label reads, "Fertilizer applied incorrectly or excessively can run off your property and harm your local waters. As a member of Businesses for the Bay, Southern States Cooperative encourages responsible use. Here are some tips for using this product responsibly: never apply fertilizer when rain is in the forecast or grass is dormant (brown); keep fertilizer off paved areas; test your soil before applying fertilizer; and store unused fertilizer in a dry area."

At the state level, establish a Residential Lawn and Garden Fertilizer Tax/Surcharge. Such a surcharge could be placed on fertilizers sold for use within the Chesapeake watershed. The proceeds from the surcharge could be used to fund residential area nonpoint-source pollution control programs. One initiative could be an educational program for homeowners to highlight Low Impact Development (LID) techniques that can reduce runoff from residential properties. Such techniques include, among other things, planting of trees and shrubs, using porous pavement and creating "rain gardens" to better soak up rainwater. Total estimated revenue: *\$6 million annually.*

Use Approaches Such As Transfer Or Purchase Of Development Rights To Fund Protection Of Green Spaces At Community Level.

Concern over the rapid and increasing loss of farmland and open space has led to the development of innovative policies to protect valuable land resources. Two such policies are called the transfer of development rights (TDR) and the purchase of development rights (PDR). These policies refer to a method for protecting land by transferring — or purchasing — the rights to develop from one area and giving them to another. What is actually occurring is a consensus to place conservation easements on property in undeveloped areas while allowing for an increase in

development densities or bonuses in other areas targeted for development. The costs of purchasing the easements are recovered from the developers who receive the building bonus.

The Panel recommends that local communities use approaches such as the transfer of development rights or the purchase of development rights to help fund the protection of green spaces while guiding growth to areas targeted for development. The economic impact of such measures will depend entirely on the degree to which they are adopted, but the potential for cost efficiencies is significant.

Enact and Implement SAFETEA.

Highways and roads are huge sources of stormwater runoff and also alter the natural hydrology in the watershed. Improving the capacity of highway programs to remediate stormwater pollution is therefore essential. Currently, the House and Senate are working on a reauthorization of the existing Transportation Equity Act (TEA-21). The Senate version of the new act, called the Safe, Accountable, Flexible and Efficient Transportation Equity Act (SAFETEA) has a provision that includes stormwater mitigation funding. If the Act is passed and signed into law by 2005 (it is currently in a House-Senate Conference Committee), more than \$100 million could be made available to basin states over six years.

The Panel strongly recommends that the stormwater provisions in the Senate's version of the law SAFETEA be passed and that this new program be fully appropriated.

Supplementary Recommendations for Forest Restoration:

To help close the funding gap, in addition to the funds made available through the Financing Authority, the Panel recommends ...

Increase Funding for Conservation Reserve Enhancement Program (CREP).

The Conservation Reserve Enhancement Program (CREP) has supported over 90 percent of all riparian forest buffer restoration completed to date in the Chesapeake Bay watershed. Currently approved CREP programs in the Chesapeake watershed are not sufficient to accomplish the forest buffer goals within the restoration strategies. To make CREP more effective in reaching these goals would require additional funding commitments, refocusing existing CREP programs to more effectively target trees (rather than grass buffer strips), increasing approved program acreage limits, and expanding technical assistance. Additionally, to reach Tributary Strategy commitments, new programs would have to address needs on lands that do not qualify for CREP. Finally, CREP must be expanded to meet buffer implementation goals for suburban and urban lands.

The Panel recommends an increase in CREP funding by *\$60 million* per year. This is in addition to the increase in agriculture cost-share programs recommended as part of the agricultural recommendations. The funding should be targeted towards forest buffers installation and technical assistance. The Panel believes the benefits of these buffers well outweigh the costs.

Conservation Reserve Enhancement Program

One of the most effective tools for establishing forest buffers throughout the watershed has been the Conservation Reserve Enhancement Program (CREP). CREP is a voluntary land retirement program that helps agricultural producers protect environmentally sensitive land, decrease erosion, restore wildlife habitat, and safeguard ground and surface water. The program is a partnership among landowners and state and federal governments. CREP is

an offshoot of the country's largest private-lands environmental improvement program — the Conservation Reserve Program (CRP).

By combining CRP resources with state, tribal and private programs, CREP provides farmers and ranchers with a sound financial package for conserving and enhancing the natural resources of farms. Over 90 percent of all riparian forest buffer restoration completed to date has been accomplished through support provided by CREP.



Supplementary Recommendations for Air Deposition:

Enforce Federal and State Clean Air Laws.

Reducing air emissions of nitrogen compounds is extremely important for restoring water quality in the Chesapeake Bay watershed. (It is also noteworthy that air emissions are the largest continuing source of mercury in the watershed.) The Panel recommends that federal regulations under the Clean Air Act, and related state regulations, be enforced vigorously. This will pay double dividends — by contributing substantially to nitrogen reductions required to remove the Bay's tidal waters from the Clean Water Act impaired waters list, and by improving air quality for human health protection.

Extend Vehicle Tax Incentives.

A significant contribution of the nitrogen entering the Chesapeake Bay comes from millions of mobile sources within the watershed — cars, SUVs, buses and trucks. The combination of increasing population and rapidly increasing vehicles miles traveled has

drastically increased loads from these sources in recent decades. One way to reduce the impact of mobile sources is to use financial incentives to encourage greater fuel efficiency and cleaner technologies. Tax incentives can be an effective way to accomplish this goal.

The federal government has in the past offered tax incentives and credits to encourage the purchase of vehicles that incorporate advanced automotive technologies. As a result of these tax credits, hybrid vehicles have moved from the laboratory to the highway. These vehicles significantly reduce carbon dioxide, ozone and NO_x emissions. Under current law, a 10 percent credit is provided for the cost of qualified electric vehicles and fuel cell vehicles up to a maximum of \$4,000. The maximum amount of the credit began to phase down in 2002 and phases out completely in 2005.

The Panel proposes extending the tax credit in the Bay states at its \$4,000 maximum level through 2010.

Amend 2003 Tax Act to Restrict Equipment Deduction.

Just as tax credits and other financial incentives can be used to encourage

sustainable behavior, these same tools can result in harmful incentives as they relate to protecting natural resources like the Chesapeake Bay. For instance, as a result of the federal 2003 Tax Act, many small businesses can instantly deduct up to \$100,000 worth of new and pre-owned equipment such as SUVs and small trucks in the year the equipment is first placed in service (\$102,000 for 2004 after adjusting for inflation).

The new \$100,000 allowance is for tax years beginning in 2003 through 2005. The name of this generous break is the Section 179 depreciation deduction, and it can reduce both federal income tax and self-employment tax bills. Without it, businesses would have to depreciate most equipment over five to seven years. (Before the 2003 Act, the maximum Section 179 write-off for tax years beginning in 2003 and beyond was only \$25,000).

Aided by this tax break, sales of large SUVs and trucks have skyrocketed. We do not oppose such deductions when large vehicles are required for businesses, but recommend that the 2003 Tax Act be revised to restrict the equipment deduction to business uses rather than personal uses, and, further, provide the same business tax break for the purchase of hybrid and electric vehicles.

A significant contribution of the nitrogen entering the Chesapeake Bay comes from millions of mobile sources within the watershed — cars, SUVs, buses and trucks.

Members of the Chesapeake Bay Watershed Blue Ribbon Finance Panel



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The Chesapeake Bay Blue Ribbon Finance Panel, from left to right: Joseph Corrado, James Patrick Muldoon, John McNeil Wilkie, Phyllis M. Cole, William C. Baker, James D. Wilkins, II, The Honorable Gerald L. Baliles, F. Henry Habicht, II, The Honorable Penelope A. Gross, Terry L. Randall, Thomas J. Kelly, The Honorable Bruce Babbitt. Not shown: Nicholas DeBenedictis, The Honorable James W. Hubbard, Jim Purdue.

The Honorable Gerald L. Baliles, Chair

Gerald L. Baliles is the former Governor and Attorney General of Virginia. As Governor, he signed the 1987 Chesapeake Bay Agreement on behalf of the Commonwealth. He is author of the book *Preserving the Chesapeake Bay*. In 1993, President Clinton appointed him to chair the National Commission to Ensure a Strong and Competitive Airline Industry. More recently, Governor Baliles assisted the U.S. in negotiating an “open skies” air transport agreement with Japan. Governor Baliles is currently a partner in the law firm of Hunton & Williams in Richmond. He was designated to the panel by Virginia Governor Mark R. Warner.

The Honorable Bruce Babbitt

Secretary Babbitt is a resident of the District of Columbia and is Of Counsel at the law firm of Latham & Watkins. He served as the Secretary of the Interior during the Clinton administration and is former Arizona Governor and Attorney General. He currently serves as a Director of the World Wildlife Fund and Chair of the District of Columbia Mayor’s Environmental Council. Secretary Babbitt is a graduate of the Harvard University Law School. He was designated to serve on the panel by District of Columbia Mayor Anthony A. Williams.

William C. Baker

Mr. Baker is a native of Baltimore and is President of the Chesapeake Bay Foundation, where he has worked for the past 28 years. He serves on a number of boards, many of which are Chesapeake Bay-related, and is a founding member of the Living Classrooms Foundation, the Metropolitan Washington Smart Growth Alliance, and the Institute for the Venice Lagoon. Mr. Baker is a graduate of Trinity College.

Phyllis M. Cole

Ms. Cole is a resident of Petersburg, West Virginia, and is a special project consultant to local governments. She served as senior staff to the governor and was the project manager for local flood protection projects, including the coordination efforts following the flood of 1985. She has served on the Interstate Commission on the Potomac River Basin since 1986. Ms. Cole was designated to serve on the panel by West Virginia Governor Bob Wise.

Joseph Corrado

Mr. Corrado is President of the Corrado American construction firm and is Chairman of the Delaware Department of Natural Resources and Environmental Control's Wastewater Facilities Advisory Council. He also serves on the Board of Directors of Delaware State University. Mr. Corrado attended St. Joseph's University and was designated to the panel by Delaware Governor Ruth Ann Minner.

Nicholas DeBenedictis

Mr. DeBenedictis is Chairman of Aqua America, Inc and is former Secretary of the Department of Environmental Resources and Director of the Office of Economic Development for the Commonwealth of Pennsylvania. He serves on several boards for regional economic and environmental organizations. Mr. DeBenedictis has an M.S. from Drexel University, and was designated to serve on the panel by Pennsylvania Governor Edward G. Rendell.

The Honorable Penelope A. Gross

Supervisor Gross has served as an elected official to the Fairfax County Board of Supervisors since 1996. She chairs the Metropolitan Washington Council of Government's Water Supply Task Force and was recently elected to the Potomac Watershed Roundtable. Supervisor Gross has had a long career of public service at the federal and local levels. She is a graduate of the University of Oregon.

F. Henry Habicht, II

Mr. Habicht has served as Deputy Administrator of the U.S. Environmental Protection Agency, and as Assistant Attorney General for the U.S. Department of Justice where he directed the Environmental and Natural Resources Division. He is Chief Executive Officer of the Global Environment & Technology Foundation and is a founding principal of Capital E, LLC. He currently serves on numerous boards and advisory councils and is a graduate of Princeton University and the University of Virginia Law School. Mr. Habicht was designated to the panel by EPA Administrator Michael Leavitt.

The Honorable James W. Hubbard

Delegate Hubbard is a resident of Bowie, Maryland, and has been a member of the Maryland House of Delegates since 1992. He has a long history of community involvement and currently serves on the Metropolitan Washington Council of Government's Air Quality Committee, Children's Environmental Health and Protection Advisory Committee, and the Chesapeake Bay Commission. Delegate Hubbard is a graduate of the University of Maryland.

Thomas J. Kelly

Thomas J. Kelly is President of the New York State Environmental Facilities Corporation (EFC), a public benefit corporation that promotes environmental quality by providing low-cost capital and expert technical assistance to municipalities, businesses and state agencies for environmental projects in New York State. Under Mr. Kelly's leadership, EFC's financing activity has reached unprecedented volume, gaining the Corporation national recognition as one of the top bond issuers in the country in 2003. Much of this activity has been accomplished through a major refunding Mr. Kelly initiated which resulted in a total present value savings of approximately \$133 million for municipal borrowers. Mr. Kelly's professional background includes experience in real estate, environmental and municipal law, as well as municipal finance, land use and zoning, labor relations and corporate law. Until joining EFC, Mr. Kelly operated his own law firm in Brewster, New York. Thomas J. Kelly was designated to the panel by New York Governor George E. Pataki.

James Patrick Muldoon

Mr. Muldoon is a resident of the District of Columbia and has been the CEO of METCOR since 1979. He is a founding member of the Washington First Bank and serves as chairman of the board of several business and professional organizations. Mr. Muldoon is a graduate of the Georgetown University School of Law.

Jim Perdue

Mr. Perdue is a resident of Salisbury, Maryland and is the Chairman of the Board of Perdue Farms Inc., the family poultry business founded by his grandfather. He is active in poultry industry organizations and is a member of the board of several community organizations. Mr. Perdue has a M.S. in marine biology from the University of Massachusetts and a Ph.D. in fisheries from the University of Washington. He was designated to serve on the panel by Maryland Governor Robert L. Ehrlich, Jr.

Terry L. Randall

Mr. Randall is a Certified Public Accountant from Williamsport, Maryland and serves as President and CEO of Mellot Enterprises, Inc. He is former Managing Partner of the Global Group for Wolpoff & Company, LLP, Accountants and Consultants. Mr. Randall serves on the boards of several professional and civic organizations. He is a graduate of Shepherd College.

John McNeil Wilkie

Mr. Wilkie is Managing Director of Davidson Capital Group. He is the former President of Eurotech, Ltd. and former Vice Chairman of the Morgan Guaranty International Bank. He is the District of Columbia's representative to the Citizens Advisory Committee to the Chesapeake Bay Program. Mr. Wilkie is a graduate of Harvard University.

James D. Wilkins, II

Mr. Wilkins is a farmer and banker from Circleville, West Virginia. He has a history of service to the community through membership on a number of boards. He is currently the Co-Chair of the North Fork Watershed Association. Mr. Wilkins has a B.S. from Eastern Mennonite University.



CHESAPEAKE EXECUTIVE COUNCIL

DIRECTIVE NO. 03-02

MEETING THE
NUTRIENT AND SEDIMENT
REDUCTION GOALS

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In the *Chesapeake 2000* agreement, we stated that “improving water quality is the most critical element in the overall protection and restoration of the Chesapeake Bay and its tributaries.” Furthermore, we recognized the importance of integrating cooperative and statutory programs to improve water quality. The agreement committed the signatory jurisdictions to nutrient and sediment reductions that would, “By 2010, correct the nutrient- and sediment-related problems in the Chesapeake Bay and its tidal tributaries sufficiently to remove the Bay and the tidal portions of its tributaries from the list of impaired waters under the Clean Water Act.”

TO MEET THIS COMMITMENT, the signatories to *Chesapeake 2000* reached out to Delaware, New York and West Virginia. For the first time, through a Memorandum of Understanding, we have formed a Chesapeake Bay water quality partnership in which all seven jurisdictions in the watershed are engaged.

During 2003, notable progress has been made integrating the cooperative and regulatory programs.

In April 2003, water quality criteria driven by living resource needs were established to guide restoration of the Bay and its tidal tributaries. Each of the jurisdictions with tidal waters has initiated its regulatory process to adopt revised water quality standards based on the criteria. Loading allocations for nutrients and sediments in each of the major river basins were established. Accordingly, we hereby endorse the criteria and allocations as agreed to by the Principals’ Staff Committee. The water quality criteria and the allocations of nutrient and sediment reductions serve as the basis for expanded tributary strategies in each jurisdiction. Under the schedule and process we adopted at our October 2002 meeting, we will complete the tributary strategies by April 2004. We remain committed to significant reductions in the nutrient and sediment loadings to the Chesapeake Bay, and direct that the tidal water jurisdictions complete their regulatory processes to revise their Chesapeake Bay and tidal

tributary water quality standards as expeditiously as possible, with the assistance and support of the non-tidal jurisdictions and the U.S. Environmental Protection Agency.

FURTHERMORE, we reaffirm our commitment to complete the tributary strategies by April 2004, and commit to begin implementation immediately thereafter.

The U.S. Environmental Protection Agency will assist the jurisdictions, working with stakeholders, to develop watershed permitting and contractual tools and strategies to control nutrient loadings to the Chesapeake Bay and its tidal tributaries. These tools and strategies should address cost-effectiveness, including nutrient trading, and promote state-of-the-art technologies wherever possible.

WE FURTHER DIRECT the Chesapeake Bay Program to establish and convene a Chesapeake Bay Watershed Blue Ribbon Panel to consider funding sources to implement the tributary strategies basin-wide and to make recommendations regarding other actions at the federal, state and local level to the Executive Council. The Panel will convene its first meeting no later than February 2004, and will provide the Executive Council with a detailed report in October of 2004.

CHESAPEAKE EXECUTIVE COUNCIL

December 2, 2003

The Commonwealth of Virginia

The State of Maryland

The Commonwealth of Pennsylvania

The District of Columbia

The United States of America

The Chesapeake Bay Commission

The State of Delaware

The State of New York

The State of West Virginia

Meeting Agendas

AGENDA

Meeting 1: Introduction to the Issues March 30, 2004

Funding Nutrient and Sediment Controls in the Chesapeake Bay
Rachel Carson Room, Ariel Rios Building, Washington, D.C.

- 8:30 Coffee
- 9:00 Chair calls meeting to order and introduces Panel members
- 9:10 Welcome: EPA
- 9:30 Executive Council's charge to the Blue Ribbon Panel
- 9:45 Plans for today's meeting and general prospectus
- 10:00 The Problem: What Are We Trying to Fix?
Rich Batiuk, US EPA Chesapeake Bay Program
 - Discussion: Is the problem clearly defined?Facilitator: Jack Greer
- 11:30 Lunch
- 12:15 The Funding Gap: Current Costs and Revenue Sources
 - Cost of a Clean Bay & the gap
Ann P. Swanson, Executive Director,
Chesapeake Bay Commission
 - Breakdown by costs & economic impacts
Eloise Castillo, SAIC
 - Discussion: Are the funding needs clear?
- 1:45 Action Strategy for the Blue Ribbon Panel
 - Addressing the funding gap by need:
Wastewater, agriculture, stormwater
 - Forming recommendations: A stepwise process
 - Clarifying next steps and between-meeting activity
 - Approving dates and plans for the entire process
 - Identifying information needs
- 3:30 Adjourn

AGENDA

Meeting 2: Municipal and Industrial Waste May 5, 2004

Washington Council of Governments Executive Board Room
Washington, D.C.

- 9:45 Coffee and refreshments
- 10:00 Chairman Baliles calls the meeting to order
Welcome, and introduction of members not at the first meeting
A summary of the panel's action plan:
 - By sector (municipal & industrial waste, agriculture, urban & air)
 - By funding source (federal, state & local, nongovernmental)
- 10:10 Reviewing the Problem: Municipal and Industrial Waste in the Chesapeake Bay Watershed
Review, questions and comments related to background material previously provided to the panel on the strategic importance of point sources and funding required to meet nutrient goals
- 10:25 Toward Funding Alternatives and a Financing Matrix
 - Introduction to funding matrix and case studies, Jack Greer
 - Traditional financing mechanisms: federal, state, local and nongovernmental
 - Technological advances & impacts, Dr. Clifford Randall
 - Market-based techniques, Robert Rose
- 11:20 Panel Discussion: Financing Alternatives Matrix and Strategy
- 12:00 Lunch for Panelists (opportunity for informal discussions)
- 12:45 Subcommittee meetings
 - Federal
 - State/local
 - Nongovernmental
- 1:45 Break
- 2:00 Preliminary Reports from the Subcommittees
 - Federal
 - State/local
 - Nongovernmental
- 2:45 Final Synthesis of Discussion and Clarification of Next Steps
 - Refining conclusions
 - Plans for next issues, next meetings
- 3:30 Adjourn

AGENDA

**Meeting 3: Agriculture
June 30, 2004**

Washington Council of Governments Executive Board Room
Washington, D.C.

- 9:30 Welcome from Chair
- 9:45 Reports from Subcommittees on Ideas for Financing Wastewater Treatment
Each subcommittee will have 20 minutes.

Purpose: To provide Panel members with an opportunity to hear and understand the subcommittees' initial ideas for financing wastewater treatment.
- 10:45 Break
- 11:00 Highlights and Discussion of Background Material
Briefly highlight and discuss the materials in the mailing.
Presenter: Tom Simpson, University of Maryland, with other experts
Facilitator: Jack Greer

Purpose: (1) To help the Panel members understand the breadth of agricultural issues in the Chesapeake Bay watershed and how these issues affect opportunities for financing. (2) To allow Panel members to ask questions and discuss the materials with a team of experts.
- 12:15 Lunch
- 1:00 Generating Ideas for Financing Bay Restoration Related to Agriculture
Engage the entire Panel in a facilitated brainstorming session to generate ideas for further analysis by the subcommittees.
Facilitators: Jack Greer & Diana Esher

Purpose: (1) To allow the Panel as a whole to freely generate ideas about financing related to agriculture. (2) To develop initial ideas for the subcommittees to explore.
- 2:00 Conclusion of General Session
Chair closes general Panel session and directs members to meet in subcommittees to discuss work for the agriculture sector.
- 2:15 Subcommittee Meetings
Convene meetings of the subcommittees to plan and engage in further work.
Subcommittees will adjourn at the discretion of the Subcommittee Chair.

AGENDA

**Meeting 4: Air & Developed Lands
August 3, 2004**

Washington Council of Governments Executive Board Room
Washington, D.C.

- 9:30 Welcome from Chair
- 9:45 Reports from Subcommittees on Ideas for Financing Agricultural Activities
Each subcommittee will have 20 minutes.
(10 for report and 10 for questions)

Purpose: To provide Panel members with an opportunity to hear and understand the subcommittees' initial ideas for financing agricultural activities.
- 10:45 Highlights Background Material
Briefly highlight and discuss the materials in the mailing.
(15 minutes of presentation and 60 minutes of facilitated questions and answers)
Speaker: Rebecca Hanmer, U.S. EPA
Chesapeake Bay Program
Facilitator: Jack Greer

Purpose: (1) To help the Panel members understand the remaining activities identified in the tributary strategies for water quality restoration and how these issues affect opportunities for financing. (2) To allow Panel members to ask questions and discuss materials with a team of experts.
- 12:00 Lunch
- 12:45 Generating Ideas for Financing Bay Restoration
Engage the entire Panel in a facilitated brainstorming session to generate ideas for further analysis by the subcommittees.
Facilitators: Jack Greer & Diana Esher

Purpose: (1) To allow the Panel as a whole to freely generate ideas about financing related to air, developed lands, and cap maintenance. (2) To develop initial ideas for the subcommittees to explore.
- 2:00 Next Steps & Conclusion of General Session
Discuss next steps and preparation for upcoming meeting in Annapolis. Chair closes general Panel session and directs members to meet in subcommittees to discuss remaining work.
- 2:15 Subcommittee Meetings
Convene meetings of the subcommittees to plan remaining work. Subcommittees will adjourn at the discretion of the Subcommittee Chair.

AGENDA

Meeting 5: Reaching Consensus on Recommendations September 14-15, 2004

Annapolis, MD

Note that all times are estimates and will depend on the will of the Panel. Unfinished items may be carried forward, and discussions continued as needed. In general, the first day will focus on Findings and the second day on Recommendations.

September 14, 2004

Location: Chesapeake Bay Foundation
Philip Merrill Environmental Center

- 5:00 Welcome to the Chesapeake Bay Foundation
- 5:30 Tour of the Philip Merrill Environmental Center
- 6:00 Dinner
- 6:45 Discuss and Approve Acceptance of Findings
Briefly review the major findings regarding Bay water quality impairments.
- Purpose: To gain formal acceptance from the Panel to use the facts/findings as the context for the final recommendations — that is, the facts drawn from the sector discussions and reports regarding the contribution of wastewater treatment, agriculture, developed lands, forests and air to the Bay's water quality problems.
- 7:15 Finalizing the Cost of Restoration for Consideration
Present the new cost estimates for implementing tributary strategies. The Panel will have an opportunity to discuss and determine the final target for its recommendations.
- Purpose: (1) To allow the Panel to discuss and understand the estimated cost of state tributary strategies. (2) To gain consensus on a final target for the Panel's recommendations.
- 8:15 Setting the Stage for the Report – What's compelling about the Bay?
Discuss the importance of funding restoration for the Bay now; the rationale for a federal share; and other compelling reasons to fund restoration efforts.
- Purpose: To provide ideas for the final report on why the Bay restoration warrants funding to help market the recommendations.
- 8:45 Preview of September 15th Agenda
Preview the agenda and desired outcomes for September 15th.
- 9:00 Adjourn

September 15, 2004

Location: Chesapeake Bay Program Office

- 8:00 Continental Breakfast
- 8:15 Call the Meeting to Order
Review the agenda and the desired outcomes for the meeting.
- 8:30 Developing a Portfolio of Recommendations
Present a framework for discussing and evaluating the recommendations. Discuss recommendations in the context of specific sectors and across the entire Bay.
- Purpose: To reach consensus on the final recommendations.
- 10:00 Break
- 10:15 Developing a Portfolio of Recommendations Continued
Continue to develop consensus on the recommendations, with an emphasis on near-term, mid-term and longer-term strategies — from more effective use of existing programs to legislative changes and new initiatives (building toward the "Big Idea").
- 12:00 Lunch
- 12:45 Developing the "Big Idea"
Engage the Panel in discussion of the big, overarching proposals. Further develop ideas into a recommendation.
- Purpose: To develop and reach consensus on a "big" recommendation which provides the size, strength and flexibility needed to finance Chesapeake Bay restoration.
- 2:30 Writing the Final Report
Provide the Panel with a time frame and process for writing the final report.

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Maps and Charts:
WOODS HOLE RESEARCH CENTER:
Land Cover map (page 4)
and Impervious Surfaces map (page 18).
Goetz, S.J., C.A. Jantz, S.D. Prince, A.J. Smith, D. Varlyguin, and R. Wright (2004). Integrated analysis of ecosystem interactions with land use change: the Chesapeake Bay watershed. In *Ecosystem Interactions with Land Use Change*. eds. G.P. Asner, R.S. DeFries and R.A. Houghton. AGU Geophysical Monograph Series.

CHESAPEAKE BAY PROGRAM WATERSHED MODEL:
The Watershed Model uses monitored data, facility reports and estimated pollution reduction efficiencies of various best management practices. The Model results are estimates of nutrient and sediment reductions that are expected over time in an average rainfall year.



